Notice of Application for a Planning Permit

Cardinia

The land affected by the application is located at:	PC358223 V10200 F339 28-30 Main Street, Gembrook VIC 3783
The application is for a permit to:	Subdivision of the land into two (2) lots, subdivide land adjacent to road in a Transport Zone 2and create access to a road in a Transport Zone 2

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

32.09-3	Subdivide land
43.02-3	Subdivide land
52.29-2	Subdivide land adjacent to a road in a Transport Zone 2
52.29-2	Create or alter access to a road in a Transport Zone 2

APPLICATION DETAILS

The applicant for the permit is:	Land Dimensions Pty Ltd
Application number:	T250372

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:	31 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	A22558WC

Basic Information

Proposed Use	Subdivision of the land into two (2) lots, subdivide land adjacent to road in a TransportZone 2and create access to a road in a TransportZone 2
Current Use	Existing Single Residence
Site Address	28-30 Main Street Gembrook 3783

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] Land Dimensions Pty Ltd	GPO Box 1244, Waverley Gardens VIC 3170	W: 03-9790-0399 E: jay@landdimensions.net.au
Owner	[redacted]		
Preferred Contact	[redacted] Land Dimensions Pty Ltd	GPO Box 1244, Waverley Gardens VIC 3170	W: 03-9790-0399 E: jay@landdimensions.net.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
23-06-2025	Subdivision Plan	22465S-A1.pdf
23-06-2025	Explanatory Letter	LD22465-3_Cover Letter.pdf
23-06-2025	Additional Document	(Arborists Report) 20250201 - 28-30 Main Street, Gembrook_REV.pdf
23-06-2025	Additional Document	(Traffic Management Report) QT Letter Main Street, Gembrook - F.pdf
23-06-2025	Additional Document	Clause 56 Planning Report_A.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	Land Dimensions Pty Ltd	PO BOX 1244, Waverley Gardens VIC 3170	W: 03-9790-0399 E: liz@landdimensions.net.au
Submission Date	23 June 2025 - 03:51:PM		

Declaration

☑ By ticking this checkbox, [redacted]eclare 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

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

VOLUME 10200 FOLIO 339

Security no : 124125574564M
Produced 23/06/2025 03:22 PM

LAND DESCRIPTION

Land in Plan of Consolidation 358223V.
PARENT TITLES :
Volume 09144 Folio 962 to Volume 09144 Folio 963
Created by instrument PC358223V 25/11/1994

REGISTERED PROPRIETOR

[redacted]

ENCUMBRANCES, CAVEATS AND NOTICES

[redacted]

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

DIAGRAM LOCATION

SEE PC358223V 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: 28-30 MAIN STREET GEMBROOK VIC 3783

ADMINISTRATIVE NOTICES

NIL

[redacted]

DOCUMENT END

PLAN OF CONSOLIDATION

LTO use only
EDITION 1

Plan Number
PC 358223V

Location of Land

Parish: GEMBROOK

~~**Township:**~~

~~**Section:**~~

Crown Allotment: A[17] (PART)

~~**Crown Portion:**~~

LTO Base Record: CHART 10 (2645)
Title Reference: VOL 9144 FOL 962
VOL 9144 FOL 963
Last Plan Reference: LP8439 (LOTS 19 & 20)
Postal Address: MAIN STREET
(at time of consolidation) GEMBROOK 3783.

AMG Co-ordinates
(of approx. centre of land in plan) E 371 700
N 5 798 450
Zone: 55

Council Certification and Endorsement

Council Name: SHIRE OF PAKENHAM Ref: S94/083

1. This plan is certified under section 6 of the Subdivision Act 1988.

~~2. This plan is certified under section 11(7) of the Subdivision Act 1988.~~
~~Date of original certification under section 6 / /~~

3. This is a statement of compliance issued under section 21 of the Subdivision Act 1988.

Council Delegate
~~Council Seal~~

Date / /

~~Re-certified under section 11(7) of the Subdivision Act 1988~~

~~Council Delegate~~
~~Council Seal~~

~~Date / /~~

LTO use only

Statement of Compliance/ Exemption Statement
Received ✓
Date 27 / 10 / 94

LTO use only

PLAN REGISTERED
TIME 8.10 AM
DATE 25 / 11 / 94
Assistant Registrar of Titles

Notations

Depth Limitation:
DOES NOT APPLY.

Survey
This plan ~~is~~/is not based on survey
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)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
E-1	DRAINAGE	2·01	LP 8439	LOTS ON LP 8439.

Millar & Merrigan Pty. Ltd.
TOWN PLANNERS LAND SURVEYORS & CONSULTING ENGINEERS
21 COOLSTORE ROAD, CROYDON. 3136. P.O. BOX 247
(FAX. 725 2710) PH. 725 8866

Sheet 1 of 1 Sheets

ORIGINAL SCALE 1:1000
SHEET SIZE A3

SCALE
10 0 20 40
LENGTHS ARE IN METRES

LICENSED SURVEYOR (PRINT) G.J. EDWARDS
SIGNATURE..... DATE 15 / 9 / 94
REF 9591 VERSION 1 : 26 / 8 / 94

DATE 27 / 9 / 94
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

0 10 20 30 40 50 60 70 80 90 100 mm

T.O.6

PLAN OF SUBDIVISION

LV use only

EDITION

PS 926616V

Location of Land

Parish:	GEMBROOK
Township:	-
Section:	-
Crown Allotment:	A17 (PART)
Crown Portion:	-
Title Reference:	VOL. 10200 FOL. 339
Last Plan Reference:	PC358223V
Postal Address: (at time of subdivision)	28-30 MAIN STREET GEMBROOK VIC 3783
MGA2020 Co-ordinates (of approx. centre of land in plan)	E 371 880 N 5 798 655 Zone: 55

Council Certification and Endorsement

Council Name: SHIRE OF CARDINIA Ref:

Vesting of Roads and/or Reserves

Identifier	Council/Body/Person
NIL	NIL

Notations

Depth Limitation DOES NOT APPLY

Staging This is not a staged subdivision
Planning Permit No. -

Survey This plan is based on survey

This survey has been connected to permanent marks no(s) PM117, PM188
In Proclaimed Survey Area No. -

Notations

WARNING:

THIS IS A COPY OF AN UNREGISTERED PLAN. AS ALTERATIONS BEYOND THE CONTROL OF THE SURVEYOR MAY BE REQUIRED BY OTHERS PRIOR TO CERTIFICATION AND REGISTRATION, LAND DIMENSIONS PTY LTD CAN ACCEPT NO LIABILITY FOR ANY LOSS OR DAMAGE HOWSOEVER ARISING, TO ANY PERSON OR CORPORATION WHO MAY RELY ON THIS PLAN FOR ANY PURPOSE.

Easement Information

Legend: E - Encumbering Easement, Condition in Crown Grant in the Nature of an Easement or Other Encumbrance
A - Appurtenant Easement
R - Encumbering Easement (Road)

Easements & Rights implied by Section 12(2) of the Subdivision Act 1988 apply to the whole of the land in this plan.

Subject Land	Purpose	Width (metres)	Origin	Land Benefited/In Favour Of
E-1	DRAINAGE	2.01	PC358223V	LOTS ON LP8439

LAND DIMENSIONS
A.C.N. 129 548 054
Level 1 Suite 2
327 Police Road, Mulgrave
Tel: (03) 9790 0399
www.landdimensions.net.au

SURVEYORS FILE REF: 22465S-A1

ORIGINAL SHEET SIZE: A3

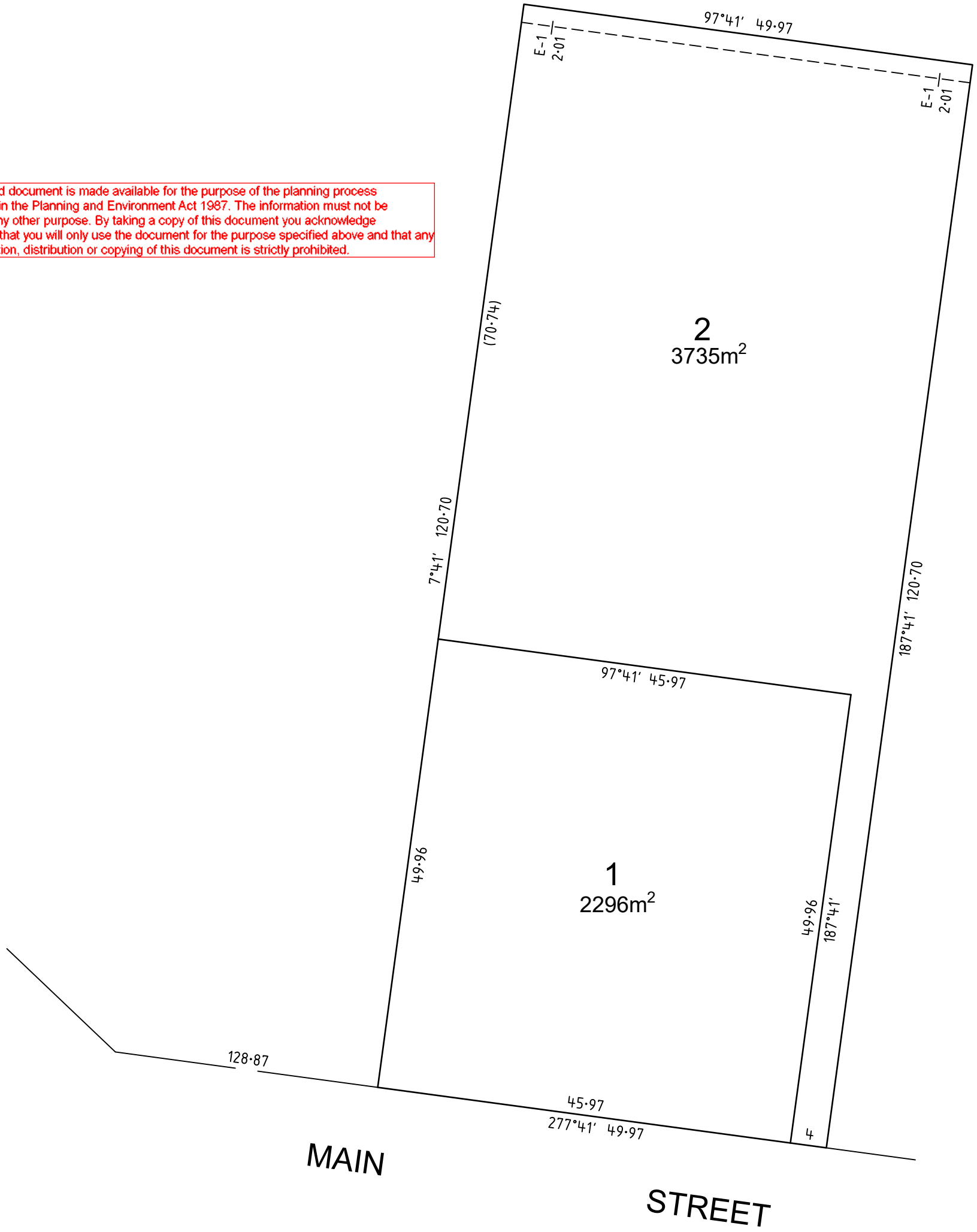
SHEET 1 OF 2 SHEETS

LICENSED SURVEYOR: JAY BARFOOT

VERSION A1

PS 926616V

MGA2020 zone 55



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LAND DIMENSIONS

A.C.N. 129 548 054
Level 1 Suite 2
327 Police Road, Mulgrave
Tel: (03) 9790 0399
www.landdimensions.net.au

SCALE		ORIGINAL SHEET SIZE: A3	SHEET 2
1:500	5 0 10 20 LENGTHS ARE IN METRES		

LICENSED SURVEYOR: JAY BARFOOT

SURVEYORS FILE REF: 22465S-A1

VERSION A1

LAND DIMENSIONS

23/06/2025

Subdivision Officer
Cardinia Shire Council
PO Box 7
Pakenham
VIC 3810

Dear Sir/Madam,

RE: **2 LOT SUBDIVISION – PS926616V**
PROPERTY: **28-30 STATION ROAD, GEMBROOK**
OUR REF: **22465**

We act for the owner of the above property and now apply for a subdivision planning permit to allow for a 2 Lot subdivision as described in the planning permit application.

Should you have any queries regarding the subdivision or require further information please contact our office on 9790 0399.

Thank you in advance,

Yours faithfully

[redacted]
Licensed Surveyor
Land Dimensions Pty Ltd

Land Dimensions Pty Ltd
ACN 129 548 054 ABN 25 129 548 054
Level 1, Suite 2
327 Police Road Mulgrave Vic 3170
PO Box 1244 Waverley Gardens Vic 3170
t: 9790 0399 f: 9790 1709
www.landdimensions.net.au

CLAUSE 56 PLANNING REPORT

TWO LOT (2) SUBDIVISION

28-30 MAIN STREET, GEMBROOK

LAND IN PC358223V

Prepared For

GEMBROOK VIEWS ESTATE

Prepared By

LAND DIMENSIONS PTY LTD
LAND DIMENSIONS REFERENCE: 22465

Contents

1. Overview

1.1 Introduction

The following report has been prepared by Land Dimensions to accompany a planning permit application for the subdivision of 28-30 Main Street, Gembrook and sets out the details and relevant planning considerations in relation to the proposed subdivision. This report and planning permit application is for a two (2) lot subdivision.

This report has been prepared to:

- Identify the subject site and provide a written and photographic analysis of the physical context, including:
    - The geographic and topographic features of the site,
    - The use and development of the site and surrounding land,
    - Neighbourhood character,
    - Landscape and natural features,
    - Transport and movement arrangements.
- Identify the relevant State and local planning policies against which the proposal will be assessed,
- Provide a comprehensive assessment against the relevant planning provisions of the Cardinia Planning Scheme, and
- Provide an assessment of the proposal against Clause 56 (Residential Subdivision) of the Cardinia Planning Scheme.

1.2 Summary of Proposal and Scope

The proposal:

- This application seeks to subdivide the 6031m^2 Certificate of Title Volume 10200 Folio 339 into two (2) lots, lot 1 and lot 2, generally in accordance with Plan of Subdivision number PS926616V
- Is affected by:
    - Neighbourhood Residential Zone – Schedule 1 (NRZ1)
    - Design and Development Overlay – Schedule 2 (DDO2)
    - Significant Landscape Overlay – Schedule 1 (SLO1)
    - Vegetation Protection Overlay – Schedule 2 (VPO2)
    - Land Adjacent to the Principal Road Network
- The site currently contains a single storey brick dwelling (to remain) and galvanized iron shed (to remain).
- Does not require the removal of any vegetation to complete the subdivision.
- Requires the construction of two crossovers additional,
    - an additional crossover for access to the proposed lot 1 and,
    - a crossover for access to the proposed lots 2.
- Will ensure all lots are connected to utility services.

The report provides a Planning Context which discusses; relevant Planning Policy Framework including the Municipal Strategic Statement, planning controls and permits triggers, a Site Analysis and Design Response which discusses; locality, existing site development, a Clause 56 assessment, a Proposal Summary and Proposal Data which discusses land details and development details.

2. Site and Context Description

2.1 Parcel Details

The subject site, known as the Land in Plan of Consolidation 358223V, is located at 28-30 Main Street, Gembrook. See attachment A for Title.

2.2 Site Conditions

The site is located on the northern side of Main Street. The site is currently accessed from Main Street (southern boundary) via the gravel driveways and gravel crossovers at the western and eastern side of the southern boundary. The subject site is rectangular in nature comprising a frontage of approximately 49.97m to Main Street, with an overall depth of approximately 120.70m from Main Street. The overall area is approximately 6031m^2. See attachment A for the Title diagram.

The site currently contains a single storey brick dwelling situated at the centre of the southern third of the site, with a galvanized iron shed west of the dwelling. See figures 2 & 4 for further details. The pool has been removed while the existing dwelling and shed are to remain and will be contained wholly within the proposed lot 1.

The site slopes down from its southern boundary to its northern boundary thus draining naturally towards the Drainage Easement E-1 along the northern boundary. The features along the street frontage include two gravel driveways and gravel crossovers, a drainage ditch and pipe, rough edge of bitumen road with no constructed kerb, two large gumtrees, two small gumtrees, a school zone traffic sign and a bus stop sign. For further details and positions see the Site Context Plan, attachment F.

As outlined in the Arborists Report, the site contains 46 vegetation items of varying size, variety, age, and retention value. The report finds that the majority of the vegetation is protected and has a moderate to high retention value. The report also provides advice discussed further in Section 5 Design Response.

The site is encumbered by a 2.01m wide drainage easement that runs along the northern boundary. See attachment A for Title Diagram.

Figure 1 – Eastern Neighbouring Dwelling from Subject Site

Figure 2 – Existing Site Dwelling from Street

Figure 3 – Western Neighbouring Dwelling from Street

Figure 4 – Subject Site in Red (Source Near Map)

2.3 Surrounding Area

2.3.1 Local Character

The subject site is approximately 55 kilometres east of Melbourne located in the suburb of Gembrook. The subject site and surrounding area are Zoned Neighbourhood Residential Schedule 1 (NRZ1). Dwellings in the surrounding area are mostly single story with the few that are double storey. Most dwellings are seemingly older if not original and most are constructed from brick or weatherboard with the rare fibro. There are a few dwellings that appear to be more modern that have incorporated rendered brick or constructed of large sandstone bricks. Figures 1, 2 and 3 show the dwellings for the subject site, eastern and western neighbour which appear are all old single storey brick dwellings. The rest of the subject sites side of the street is comprised of old single story brick dwellings and old single story weatherboard dwellings and two single storey fibro dwelling. This is a good representation of the types of dwellings in the local area. See Figure 5 below for an aerial view of the local area, see Attachment E for the Neighbourhood Character Plan.

Lots in the local area are predominantly rectangular in nature and are of a wide range of sizes. The lots from the original subdivision of this area are typically between 882m² and 2883m² with a few outliers being up and around 6046m². More recent subdivisions have typically produced lots between 305m² and 2035m². See Figure 6 below for the cadastre and subdivision composition of the local area.

2.3.2 Local Amenities and Infrastructure

The subject site is located within proximity to many of the local amenities and infrastructure.

Arterial roads in the vicinity of the site are: Belgrave – Gembrook Road, running generally in an east – west direction and Gembrook Road running generally in a north – south direction. The 695 bus route provides a service the aforementioned arterial roads, some 695 services provide transport to the Fountain Gate Shopping Centre, Narre Warren. The site is approximately 1050metres from the Gembrook local activity centre, 22 kilometres to Pakenham, 30.5 kilometres to Narre Warren and 29.5 kilometres to the Casey Hospital in Berwick.

The site benefits from its proximity to Gembrook Primary School, Gembrook Sports Ground and Gembrook Park which has walking trails and play and BBQ equipment.

East of the subject site:

- Gembrook Primary School is 200m away,
- Gembrook Station (Puffing Billy) (Connect to Belgrave Line) is 700m away,
- JCA Russell Park is 700m,
- Gembrook Main Street is 800m away.

South of the subject site:

- Gembrook Park is 600m away.

West of the subject site:

- Belgrave-Gembrook Road Bus Stop (Route No.695) is 50m away,
- Gembrook Sports Ground is 800m away,
- Emerald Secondary College is 7800m away.

2.3.3 Native Vegetation

The site contains an array of native vegetation only one of which was classified as significant with a high retention value by the Arborist. The trees marked 1, 2, 3, 4 and 5 will be removed for bushfire safety without a permit under Clause 52.12 Bushfire Protection Exemptions discussed in detail in Section 4.5 Particular Provisions and Section 5 Design Response. Just one of the trees is a Victorian native, assessed as having low retention value.

- Tree 1 – Victorian Native Low Retention Value
- Tree 2 – Exotic Low Retention Value
- Tree 3 – Exotic Low Retention Value
- Tree 4 – Exotic High Retention Value
- Tree 5 – Exotic Moderate Retention Value

2.3.4 Cultural Heritage

The subject site does not contain any areas of cultural heritage sensitivity and is not located within 200 metres of coastal waters or a watercourse. A Cultural Heritage Management Plan is not required in accordance with Aboriginal Heritage Regulations 2018.

Figure 5 – Local Area, Subject Site in Red (Source: Near Map)

Figure 6 – Cadastre of Local Area, Subject Site highlighted by bold outline (Source: LASSI)

3. Proposal

The proposal is to subdivide the 6031m² Certificate of Title Volume 10200 Folio 339 into two (2) lots. Please see Attachment C for the proposed Plan of Subdivision.

This application will create a new crossover and driveway for the Proposed Lot 2. Lot 1 will use the two existing gravel crossovers and existing driveway.

Due to the slope of the land, the site naturally drains from its southern boundary to its northern boundary, along which lies Drainage Easement E-1. This subdivision application does not include any construction or works that would impede or alter the natural drainage of the land.

Five trees along the eastern boundary are required to be removed, no other vegetation is required to be removed to facilitate the Subdivision this application supports. Please see the attached Arborists Report for further details on the existing site vegetation.

Please see section 5 Design Response and section 6 Conclusion of this application for the response to the planning requirements and the required Planning Permits.

See Attachment C for the proposed Plan of Subdivision

Proposed Lot 1 will be an 2296m² rectangular shaped lot with a depth of 49.96m, a width of 45.97m. See Attachment C Plan of Subdivision for the lot diagram.

Proposed Lot 2 will be a 3735m² vacant battle axe shaped lot with the shortest depth being 70.74m, the longest depth being 120.70m, the largest width being 49.97m and the shortest width being 4m. See Attachment C Plan of Subdivision for the lot diagram.

See Attachment's C and G for the Proposed Plans of Subdivision and Proposed Lot Boundaries.

There is no development associated with this application to subdivide, all existing vegetation is to remain on site.

4. Planning Controls

This section outlines the planning controls and policies of the Cardinia Planning Scheme that are relevant to this proposal.

4.1 State Planning Policy Framework (SPPF)

Clause 11 Settlement

Identifies that planning is to anticipate and respond to the needs of existing and future communities through provision appropriately zoned and service land for a diversity of uses, ensuring a sufficient supply of land available for residential, commercial, industry and recreational, institutional, and other community uses. It also seeks to provide for a diversity of housing within defined locations to respond to the different needs to houses and are close to jobs and services.

Clause 13.02 Bushfire

The southern half of the township of Gembrook, and areas east, northeast and southeast of the township are prone to bushfires and subject to a Bushfire Management Overlay (BMO). Despite the subdivision this application supports residing outside the areas subject to a BMO, it seeks to satisfy the applicable requirements of the BMO to ensure the protection of human life by increasing the supply of property outside the high-risk areas. As no construction is associated with this application, the construction of any future dwelling will be assessed at that time.

Clause 15 Built Environment and Heritage

Aims to create safe and functional urban environments that enhance the sense of place and identity, which positively contribute the neighbourhood character and minimizes the detrimental impact on neighbouring properties.

Clause 15.01-3S Subdivision Design

As outlined in section 2.3 and seen on the Site Context Plan (Attachment F), the proposed subdivision is within walking distance to public transport, local services and amenities. The subdivision provides additional properties to the area that are larger than average helping to increase the diversity of properties available to meet the needs and aspirations of different groups of people. The layout of the subdivision seen in Plan of Subdivision (Attachment C) and Proposed Conditions & Subdivision Layout Plan (Attachment G) is on par with other nearby 'battleaxe' subdivisions; 40 & 40A Main Street Gembrook, 15 & 15A Station Road Gembrook, 17 & 2/12 Station Road Gembrook, and 35 &35A Station Road Gembrook.

Clause 16 Housing

Seeks to promote a housing market that provides for a range of housing types and responds to the diverse community needs. It also encourages new housing with easy access to services and transport, in order to promote long sustainable and walkability and reduce development along the urban fringe.

Clause 16.01-3S Rural Residential Development

The subdivision is thoughtfully designed to fit within the rural character of the area, located in within the urban township of Gembrook, with not near high quality productive agricultural land, waterways, or natural resources. The application, will create large lots that allows for onsite water management, does not require the removal of vegetation, and is located near, and works within the constraints of, existing infrastructure, with minimal impact on local or state services. The proposal complies with Zoning and Overlay requirements as outlined in Section 4.4 of this report. This small-scale subdivision aligns with regional planning objectives for rural areas.

Clause 19.03-2S Infrastructure Design and Provision

This application, helps the growth of the area, does not include provisions for the construction of dwellings, only requires works to connect the proposed lots to existing services, and construction of two crossovers for access to the proposed lots.

Comments

The subdivision is considered to assist in satisfying the above clauses as the site is serviced by all required infrastructure and/or capable of meeting on-site servicing requirements. The proposed lots are in close proximity to local amenities and infrastructure including but not limited to; public transport, shops, schools, parks and sporting fields. Lots 1 and 2 are therefore capable of being developed with a modern dwelling that will take advantage of the site and surrounds.

4.2 Municipal Strategic Statement (MSS) and Local Planning Policy Framework (LPPF)

Clause 21.01 Municipal Strategic Statement

The proposed subdivision will create two lots of comparable size to the larger lots in the local area, with close proximity to public services and amenities and complies with the local policies for this area. Clause 21.01 contains the Municipal Strategic Statement (MSS) under the Local Planning Policy Framework (LPPF). It provides a 'snapshot' of municipal profile, demographics, and the existing and anticipated growth of the

population of the municipality. It identifies that the Cardinia Shire is on the southeast fringe of Melbourne at the transition point between urban and rural. Cardinia Shire is comprised of urban and rural areas that include high-quality agricultural lands, Bunyip State Park, Cardinia Reservoir, the Casey Cardinia Growth Corridor and the future Officer-Pakenham Industrial Precinct identified by the Plan Melbourne 2050 as a State-significant Industrial Precinct and a 2500 hectare employment corridor. The MSS expects strong population growth and anticipates an 82% increase in population between 2018 and 2041.

Clause 21.07 Local Areas

Gembrook has a well-defined rural character that is very appealing to the local community and those visiting Gembrook alike. A mix of lot sizes is a contributing factor to Gembrook's rural character as are side and front dwelling setbacks.

The subject site is located within the established township boundary and also within the urban growth boundary, accordingly the Framework Plan identifies this area Traditional Residential.

It is submitted that the two (2) lot created by the proposed subdivision will assist in providing a positive contribution to the character of the local area by the creation of lots that are proportionate with the scale of other lots in the surrounding area. The site and surrounds are well serviced with all required infrastructure and the area, dimension, and layout of the lot 2 provides ample opportunity for the lot to be developed in a manner that will respect the established residential fabric.

The proposed subdivision supports the policy intent contained in this clause.

4.3 Zoning

Neighbourhood Residential Zone – Schedule 1 (NRZ1)

The subject site is located within Neighbourhood Residential Zone – Schedule 1 (NRZ1) under the Cardinia Planning Scheme. The purposes of NRZ1 are:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To recognise areas of predominantly single and double storey residential development.*
- *To manage and ensure that development respects the identified neighbourhood character, heritage, environmental or landscape characteristics.*
- To allow educational, recreational, religious, community and a limited range of other non-residential uses to serve local community needs in appropriate locations.

It is submitted this subdivision is consistent with the identified Zone purposes.

Pursuant to Clause 32.09-3 (Neighbourhood Residential Zone) of Cardinia Shire Council, a permit is required to subdivide land, which is satisfied by this application.

Pursuant to Clause 32.09-4 (Neighbourhood Residential Zone) of Cardinia Shire Council, minimum garden area applies when constructing or extending a dwelling or residential building. For lots above 650m² a minimum of 35 per cent garden area is to be provided. There is no building associated with this application, Lot 1 contains an existing dwelling and Lots 2 will be vacant, the requirement is satisfied.

Pursuant to Clause 32.09-5 (Neighbourhood Residential Zone) the vacant Lot 2 proposed to be created by this subdivision will not require planning approval for the construction of a dwelling as the lot is greater than 300m². This application does not include the construction of any dwellings. This requirement is satisfied.

Pursuant to Clause 32.08-12 (Neighbourhood Residential Zone) of the Cardinia Shire Council, specifies what an application must be accompanied by. This application is accompanied by the outlined documents, thus satisfying this requirement.

Clause 32.09 – Schedule 1 does not outline any additional requirements that apply to this application.

Comment

This proposed subdivision is in accordance with the objectives of the Neighbourhood Residential Zone and provides an additional residential lot to an area with existing access to amenities and infrastructure. The lots being created from this subdivision are larger than those created by other recent subdivisions, are of a comparable size to the surrounding lots and will cause minimal if any amenity impact to the surrounding area. The existing dwelling will remain on lot 1, lot 2 will be vacant, and both lots will have sperate access and street frontages to Main Street. See attachment G for the Proposed Conditions & Subdivision Layout Plan.

Figure 7 – Zoning Map (Source: vicplan)

4.4 Overlays

The subject site is affected by the following overlays.

Vegetation Protection Overlay – Schedule 2 (VPO2) – Clause 42.02

The purpose of the VPO is to:

- *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.*

This clause provides protections for native vegetation but does not prevent the removal of vegetation in bushfire prone areas that meet the requirements of Clause 52.12.

Pursuant to Clause 42.02-2 of Cardinia Shire Council, a permit is required to remove, destroy, or lop any vegetation specified in a schedule to this overlay. The subdivision does not require the removal of any vegetation that would need a permit under Clause 42.02-2 and therefore complies with this provision.

Clause 42.02 – Schedule 2 does not outline any additional requirements that apply to this application.

Excluding the 5 trees being removed Pursuant to Clause 52.12-2, no vegetation is required to be removed, destroyed or lopped to facilitate the Subdivision this application supports.

Significant Landscape Overlay – Schedule 1 (SLO1) – Clause 42.03

The purpose of the SLO is to:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To identify significant landscapes.*
- *To conserve and enhance the character of significant landscapes.*

This clause provides protections for native vegetation but does not prevent the removal of vegetation in bushfire prone areas that meet the requirements of Clause 52.12.

Pursuant to Clause 42.03-2 of Cardinia Shire Council, a permit is required to construct a building. There is no building associated with this application which satisfies this provision.

Clause 42.03 – Schedule 2 does not outline any additional requirements that apply to this application.

No vegetation is required to be removed to facilitate the Subdivision this application supports.

Design and Development Overlay – Schedule 1 (DDO2)
The purpose of the DDO is to:

- *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 DDO and associated Schedule sets out design and built form requirements for the Hills Townships within the Cardinia Shire, primarily in the form of four Design objectives. The area of the subject makes it suitable for subdivision as proposed and does not include the design or construction of any dwellings, satisfying DDO2.

Pursuant to Clause 43.02-2 of Cardinia Shire Council, a permit is required to carry out works or build. There is no building associated with this application which satisfies this provision.

Pursuant to Clause 43.02-3 of Cardinia Shire Council, a permit is required to subdivide land, which is satisfied by this application.

Pursuant to Clause 43.02 – Schedule 2 – 2.0 of the Cardinia Planning Scheme, a permit is not required to construct a building or construct or carry out works provided all of the requirements listed in this provision are met. There is no building associated with this application which satisfies this provision.

Comments
The proposed subdivision is in accordance with the objectives of VPO2, SLO1 and DDO2. DDO2 requires a permit for subdivision of land which this application satisfies.

4.5 Particular Provisions

The following Particular Provisions are considered relevant to the proposed subdivision of the subject site.

Clause 52.12 'Bushfire Protection Exemptions' has the following purposes:

- To facilitate the removal of vegetation in specified circumstances to support the protection of human life and property from bushfire.
- To facilitate the construction and protection of community fire refuges and private bushfire shelters.

Pursuant to Clause 52.12-2 Exemption for vegetation removal along a fence line – A permit is not required to remove, destroy or lop any vegetation along a boundary fence that is within four metres of a boundary fence in a designated bushfire prone area under the Building Act 1993. In accordance with this Provision trees labelled as 1, 2, 3, 4 & 5 along the eastern boundary fence will be removed.

Clause 52.17 'Native Vegetation' has the following purposes:

- Avoid the removal, destruction or lopping of native vegetation.
- Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
- Provide an offset to compensate for the biodiversity impact if a permit is granted to remove, destroy or lop native vegetation.

This clause provides protections for native vegetation but does not prevent the removal of vegetation in bushfire prone areas that meet the requirements of Clause 52.12.

Clause 52.29 'Land Adjacent to the Principal Road Network' has the following purposes:

- To ensure appropriate access to the Principal Road Network or land planned to form part of the Principal Road Network.
- To ensure appropriate subdivision of land adjacent to Principal Road Network or land planned to form part of the Principal Road Network.

Pursuant to Clause 52.29-2 of the Cardinia Planning Scheme, a permit is required to subdivide land adjacent to, and to create or alter access to, a road in a Transport Zone 2. This application is applying for a permit to satisfy both requirements of this provision.

Clause 53.03-4 'Residential Reticulated Gas Service Connection' has the following purpose:

- To prohibit residential reticulated gas connections to new dwellings, new apartment developments and new residential subdivisions.

- Connect to Reticulated Gas Services for the proposed lots 1 & 2 in accordance with Clause 53.03-4.

Pursuant to Clause 53.03-4 of the Cardinia Planning Scheme, this application does not seek to establish a Connect to Reticulated Gas Services, thus satisfying this provision.

Clause 56.01 'Subdivision Site and Context Description' and 'Subdivision Design Response' has the following purposes:

- To create liveable and sustainable neighbourhoods and urban places with character and identity.
- To achieve residential subdivision outcomes that appropriately respond to the site and its context for:
  - Metropolitan Melbourne growth areas.
  - Infill sites within established residential areas.
  - Regional cities and towns.
- To ensure residential subdivision design appropriately provides for:
  - Policy implementation.
  - Liveable and sustainable communities.
  - Residential lot design.
  - Urban landscape.
  - Access and mobility management.
  - Integrated water management.
  - Site management.
  - Utilities.

See Attachment D for the Clause 56 Assessment.

4.6 General Provisions

The following General Provisions are considered relevant to the proposed subdivision of the subject site.

Clause 65 Decision Guidelines

Approval of an application or plan, states that before deciding on an application or approval of a plan, the responsible authority must consider, as appropriate:

- The matters set out in section 60 of the Act.
- Any significant effects the environment, including the contamination of land, may have on the use or development.
- The Municipal Planning Strategy and the Planning Policy Framework.
- The purpose of the zone, overlay or other provision.
- Any matter required to be considered in the zone, overlay or other provision.
- The orderly planning of the area.
- The effect on the environment, human health and amenity of the area.
- The proximity of the land to any public land.
- Factors likely to cause or contribute to land degradation, salinity or reduce water quality.
- Whether the proposed development is designed to maintain or improve the quality of stormwater within and exiting the site.
- The extent and character of native vegetation and the likelihood of its destruction.
- Whether native vegetation is to be or can be protected, planted or allowed to regenerate.
- The degree of flood, erosion or fire hazard associated with the location of the land and the use, development or management of the land so as to minimise any such hazard.
- The adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts.
- The impact the use or development will have on the current and future development and operation of the transport system.

Comment

Before a planning application, plan, or application to subdivide land can be decided upon, the responsible authority must consider the decision guidelines set out in Clause 65 of the Victorian Planning Provisions. The application is in accordance with the criteria set out in clause 65.

The property is in a designated bushfire prone area. Special bushfire construction requirements may apply. Any such construction requirements should be appropriately dealt with at a later stage as part of the any future building approval requirements.

5. Design Response

Attachment G The Proposed Conditions & Subdivision Layout Plan should be read in conjunction with the following material.
Having regard to the content described in section 2 of this report, the proposal responds appropriately to the opportunities and constraints of the site, in particular:

- The proposed subdivision will result in two lots that are 2296m² and 3735m² in size. These lots satisfy the character and density of the local area which consists of lots typically between 882m² and 2883m² with a few outliers being up to and around 6046m². Recent subdivisions have typically produced lots between 305m² and 2035m², the majority having subdivided large original lot into two lots.
    - Lot 1 Existing Dwelling 2296m²
    - Lot 2 Vacant 3735m²
- The proposed lots are comparable in size to the larger established lots along Main Street and are larger than those created by recent subdivisions in the area.
- Lot 1 will have frontage and two vehicular access via the two existing gravel driveways and existing gravel crossovers to Main Street.
- Lot 2 will have frontage and one vehicular access via the proposed gravel driveway and the proposed expansion of the eastern gravel crossover of Lot 1, which will be extended eastward to create a separate proposed gravel crossover providing Lot 2 with vehicular access to Main Street.
    - This application is applying for a permit pursuant to Clause 52.29-2 to subdivide land adjacent to, and to create or alter access to, a road in a Transport Zone 2 (Main Street).
- As outlined in the Traffic Engineering Assessment while the proposed driveway is within the minimum 15m setback of a tree.
    - Setback distance from any trees within 15m of crossovers
    - The proposed eastern edge of the new crossover would be located approximately 4m from an existing plantlet located within the road reserve along the site frontage of No. 32 Main Street. Whilst the new crossover will be within the 15m clearance prescribed, the affected plantlet is relatively young and does not appear to have significant environmental value, subject to an assessment by a qualified arborist.
    - There are several other instances along Main Street where crossovers are located within 1-2 metres of street trees, well within the offset distance prescribed. In addition, the VPA EDCM standard drawings for residential crossovers, which Cardinia Shire Council endorses, prescribes a minimum clearance of 2.5m to trees which would be met by the proposed crossover design.
    - For further details and plans regarding the proposed cross over and driveway for Lot 2 please see the attached Traffic Engineering Assessment Appendix xx.
- Lot 1 will retain the existing single storey brick dwelling and galvanized iron shed, while lot 2 remain vacant.
- The purpose of the methodology of the existing and proposed crossovers and vehicle accessways (driveways) is to enable vehicular and pedestrian access to the proposed Lots. The framework involves maintaining the existing driveways and crossovers for Lot 1 and **creating a new driveway** and **expanding the eastern existing crossover eastward** to create a new separate gravel crossover for Lot 2. The crossovers and driveways will be maintained, created and altered by the appropriate professionals who will be responsible for the method and process of maintaining, creating and altering any driveway or crossover in line with standard practices.
- For the existing and proposed driveway and existing and altered crossover locations and dimensions, see the provided to-scale Proposed Conditions & Subdivision Layout Plan, attachment G.
- The Arborist Report outlines that, while the majority of vegetation on the site is protected under the VPO, the SLO, and the Native Vegetation Provisions, the site is designated as a bushfire-prone area. This designation allows vegetation within 4 metres of an established fence line and within 10 metres of an existing building to be removed under the provisions of Clause 52.12, as discussed in Section 4.5. The five trees at the southern end of the eastern boundary fence will be removed without a permit in accordance with Clause 52.12-2 in accordance with the advice given in the Arborists Report.
- In accordance with the Arborist Report Tree Protection Zones and Structural Root Zones will be created for all retained vegetation, satisfying the objectives outlined in VPO2 and SLO1. For further details please see the Arborists Report and 22465PCSL-A Proposed Conditions & Subdivision Layout Plan.
- With the removal of the five trees along the eastern site boundary, the common side boundary between the proposed Lots 1 and 2 will form a straight line parallel to the eastern site boundary and leaving sufficient driveway width for lot 2.
- Due to the slope of the land, the site naturally drains from its southern boundary to its northern boundary, along which lies Drainage Easement E-1. This subdivision application does not include any construction or works that would impede, increase, or otherwise alter the natural drainage of the land, allowing it to continue draining as it currently does.
- The lots created in this subdivision are large in size compared to other recent subdivisions in the local area and have ample room on site for off-street parking.
- The subject site benefits from close proximity to public transport, local amenities, services, and infrastructure, with which the proposed subdivision is expected to have a negligible impact.
- This application is to support the proposed two lot subdivision and includes no provisions for development of the resulting lots.
- As per Attachment D Clause 56 assessment, the subdivision meets the relevant objectives outlines in Clause 56 of the Cardinia Planning Scheme.

Given the above features, the proposed subdivision is consistent with the preferred character of the neighbourhood and will sit comfortably in its context.

6. Conclusion

The subdivision provides additional lots with good opportunities for development that will integrate with the surrounding neighbourhood and satisfy the relevant Purposes of the NRZ1.

The proposed two lot subdivision at 28-30 Main Street, Gembrook is located within an area that can accommodate the additional lots and has access to nearby local amenities and infrastructure. The resulting two lots created by the subdivision will be of comparable size to the larger established lots in the local area, and services will be provided to all lots. Lot 1 will have separate access to Main Street using the existing crossovers and proposed crossover. Lot 2 will have separate access to Main Street using the proposed crossover.

The proposal accords with the requirements set out by State and Local Government Planning Scheme and as outline in section 4 of this report, Planning Permits will be required for this subdivision to comply with:

- Neighbourhood Residential Zone – Schedule 1 (NRZ1) – Clause 32.09-3,
- Design and Development Overlay – Schedule 2 (DDO2) – Clause 43.02-3,
- Land Adjacent to the Principal Road Network – Clause 52.29.
-

As outlined in this report, the proposal is appropriate and warrants Council approval.

Attachment A – Certificate of Title

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

VOLUME 10200 FOLIO 339

Security no : 124125574564M
Produced 23/06/2025 03:22 PM

LAND DESCRIPTION

Land in Plan of Consolidation 358223V.
PARENT TITLES :
Volume 09144 Folio 962 to Volume 09144 Folio 963
Created by instrument PC358223V 25/11/1994

REGISTERED PROPRIETOR

[redacted]

ENCUMBRANCES, CAVEATS AND NOTICES

[redacted]

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

DIAGRAM LOCATION

SEE PC358223V 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: 28-30 MAIN STREET GEMBROOK VIC 3783

ADMINISTRATIVE NOTICES

NIL

[redacted]

DOCUMENT END

PLAN OF CONSOLIDATION

LTO use only
EDITION 1

Plan Number
PC 358223V

Location of Land

Parish: GEMBROOK

~~**Township:**~~

~~**Section:**~~

Crown Allotment: A[17] (PART)

~~**Crown Portion:**~~

LTO Base Record: CHART 10 (2645)
Title Reference: VOL 9144 FOL 962
VOL 9144 FOL 963
Last Plan Reference: LP8439 (LOTS 19 & 20)
Postal Address: MAIN STREET
(at time of consolidation) GEMBROOK 3783.

AMG Co-ordinates
(of approx. centre of land in plan) E 371 700
N 5 798 450
Zone: 55

Council Certification and Endorsement

Council Name: SHIRE OF PAKENHAM Ref: S94/083

1. This plan is certified under section 6 of the Subdivision Act 1988.

~~2. This plan is certified under section 11(7) of the Subdivision Act 1988.~~
~~Date of original certification under section 6 / /~~

3. This is a statement of compliance issued under section 21 of the Subdivision Act 1988.

Council Delegate
~~Council Seal~~

Date / /

~~Re-certified under section 11(7) of the Subdivision Act 1988~~

~~Council Delegate~~
~~Council Seal~~

~~Date / /~~

LTO use only

Statement of Compliance/ Exemption Statement
Received ✓
Date 27 / 10 / 94

LTO use only

PLAN REGISTERED
TIME 8.10 AM
DATE 25 / 11 / 94
Assistant Registrar of Titles

Notations

Depth Limitation:
DOES NOT APPLY.

Survey
This plan ~~is~~/is not based on survey
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)

Easement Reference	Purpose	Width (Metres)	Origin	Land Benefited/In Favour Of
E-1	DRAINAGE	2·01	LP 8439	LOTS ON LP 8439.

Millar & Merrigan Pty. Ltd.
TOWN PLANNERS LAND SURVEYORS & CONSULTING ENGINEERS
21 COOLSTORE ROAD, CROYDON. 3136. P.O. BOX 247
(FAX. 725 2710) PH. 725 8866

Sheet 1 of 1 Sheets

ORIGINAL SCALE 1:1000
SHEET SIZE A3

SCALE
10 0 20 40
LENGTHS ARE IN METRES

LICENSED SURVEYOR (PRINT) G.J. EDWARDS
SIGNATURE..... DATE 15 / 9 / 94
REF 9591 VERSION 1 : 26 / 8 / 94

DATE 27 / 9 / 94
COUNCIL DELEGATE SIGNATURE

Original sheet size A3

0 10 20 30 40 50 60 70 80 90 100 mm

T.O.6

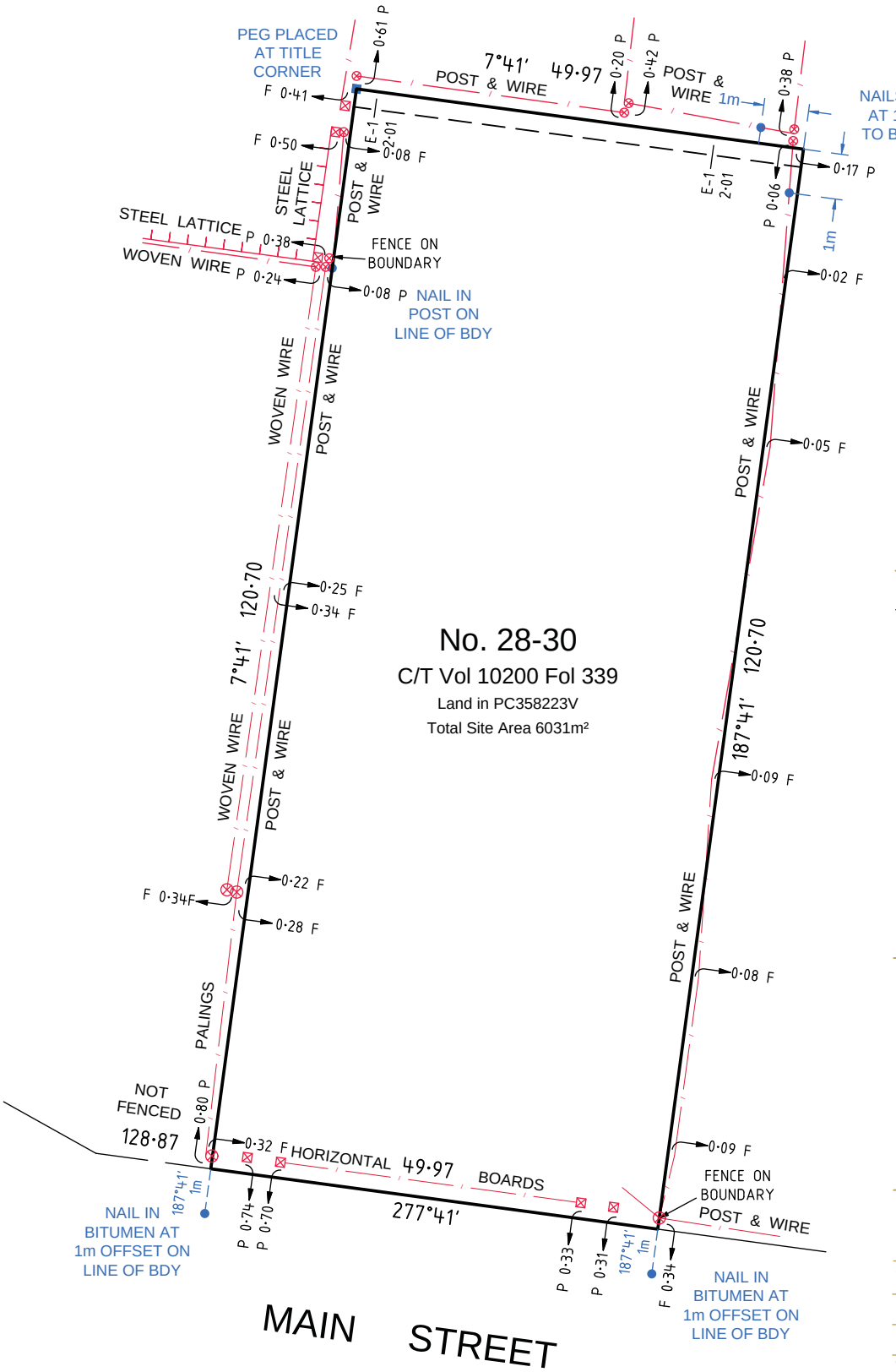
Attachment B – Survey Plan

Title Re-establishment Survey

28-30 Main Street, Gembrook

Certificate of Title Vol 10200 Fol 339
Land in Plan of Consolidation No. 358223V

MGA2020 Zone 55



No. 28-30

C/T Vol 10200 Fol 339
Land in PC358223V
Total Site Area 6031m²

Adverse Possession Rights may apply to fence or building encroachments which are in excess of 15 years of age (see notations)*

Notations

Land Subject to Easement

E-1 Drainage 2.01m wide vide LP8439

The position of Easements, Fences, Buildings and Survey marks shown in this plan are not necessarily plotted to scale and in most instances their positions have been exaggerated for clarity.

Offsets between boundaries and fences/walls are shown thus 0·05 and are in metres

Denotes fence (F)
Denotes post (P)
Denotes steel lattice

* Where the location of existing fences/walls differs substantially to Title boundaries, the relevant neighbour (owner) should be notified of any design or works on or near those boundaries as Adverse Possession Rights may apply.

Certification by Licensed Surveyor

I, Jay Barfoot of Land Dimensions Pty Ltd certify that this plan has been prepared from a survey made under my direction and supervision in accordance with the **Surveying Act 2004** and completed on 12/09/2022, that this plan is accurate and correctly represents the adopted boundaries and the survey accuracy accords with that required by regulation 7(1) of the Surveying (Cadastral Surveys) Regulations 2015.

Date:

Licensed Surveyor
Surveying Act 2004

Scale	1:500 Lengths are in metres (5 0 5 10 15 20 25)				
Job Reference No.	22465				
Drawn	RB	**Checked**	JB	**Date**	15/09/2022
Drawing number	22465R			**Version**	-
Original sheet size	A3			**Sheet**	1 of 1
Client	Gembrook Views Estate				

LAND DIMENSIONS
A.C.N. 129 548 054
PO Box 1244
Waverley Gardens Vic 3170
Level 1 Suite 2, 327 Police Road
Mulgrave Vic 3170
T (03) 9790 0399
W landdimensions.net.au

Attachment C – Plan of Subdivision

PLAN OF SUBDIVISION

LV use only

EDITION

PS 926616V

Location of Land

Parish: GEMBROOK
Township: -
Section: -
Crown Allotment: A17 (PART)
Crown Portion: -
Title Reference: VOL. 10200 FOL. 339

Last Plan Reference: PC358223V

Postal Address: 28-30 MAIN STREET
(at time of subdivision) GEMBROOK VIC 3783

MGA2020 Co-ordinates (of approx. centre of land in plan) E 371 880 N 5 798 655 Zone: 55

Council Certification and Endorsement

Council Name: SHIRE OF CARDINIA Ref:

Vesting of Roads and/or Reserves

Identifier	Council/Body/Person
NIL	NIL

Notations

Depth Limitation DOES NOT APPLY

Staging This is not a staged subdivision
Planning Permit No. -

Survey This plan is based on survey

This survey has been connected to permanent marks no(s) PM117, PM188
In Proclaimed Survey Area No. -

Notations

WARNING:

THIS IS A COPY OF AN UNREGISTERED PLAN. AS ALTERATIONS BEYOND THE CONTROL OF THE SURVEYOR MAY BE REQUIRED BY OTHERS PRIOR TO CERTIFICATION AND REGISTRATION, LAND DIMENSIONS PTY LTD CAN ACCEPT NO LIABILITY FOR ANY LOSS OR DAMAGE HOWSOEVER ARISING, TO ANY PERSON OR CORPORATION WHO MAY RELY ON THIS PLAN FOR ANY PURPOSE.

Easement Information

Legend: E - Encumbering Easement, Condition in Crown Grant in the Nature of an Easement or Other Encumbrance
A - Appurtenant Easement
R - Encumbering Easement (Road)

Easements & Rights implied by Section 12(2) of the Subdivision Act 1988 apply to the whole of the land in this plan.

Subject Land	Purpose	Width (metres)	Origin	Land Benefited/In Favour Of
E-1	DRAINAGE	2.01	PC358223V	LOTS ON LP8439

LAND DIMENSIONS
A.C.N. 129 548 054
Level 1 Suite 2
327 Police Road, Mulgrave
Tel: (03) 9790 0399
www.landdimensions.net.au

SURVEYORS FILE REF: 22465S-A1

ORIGINAL SHEET SIZE: A3

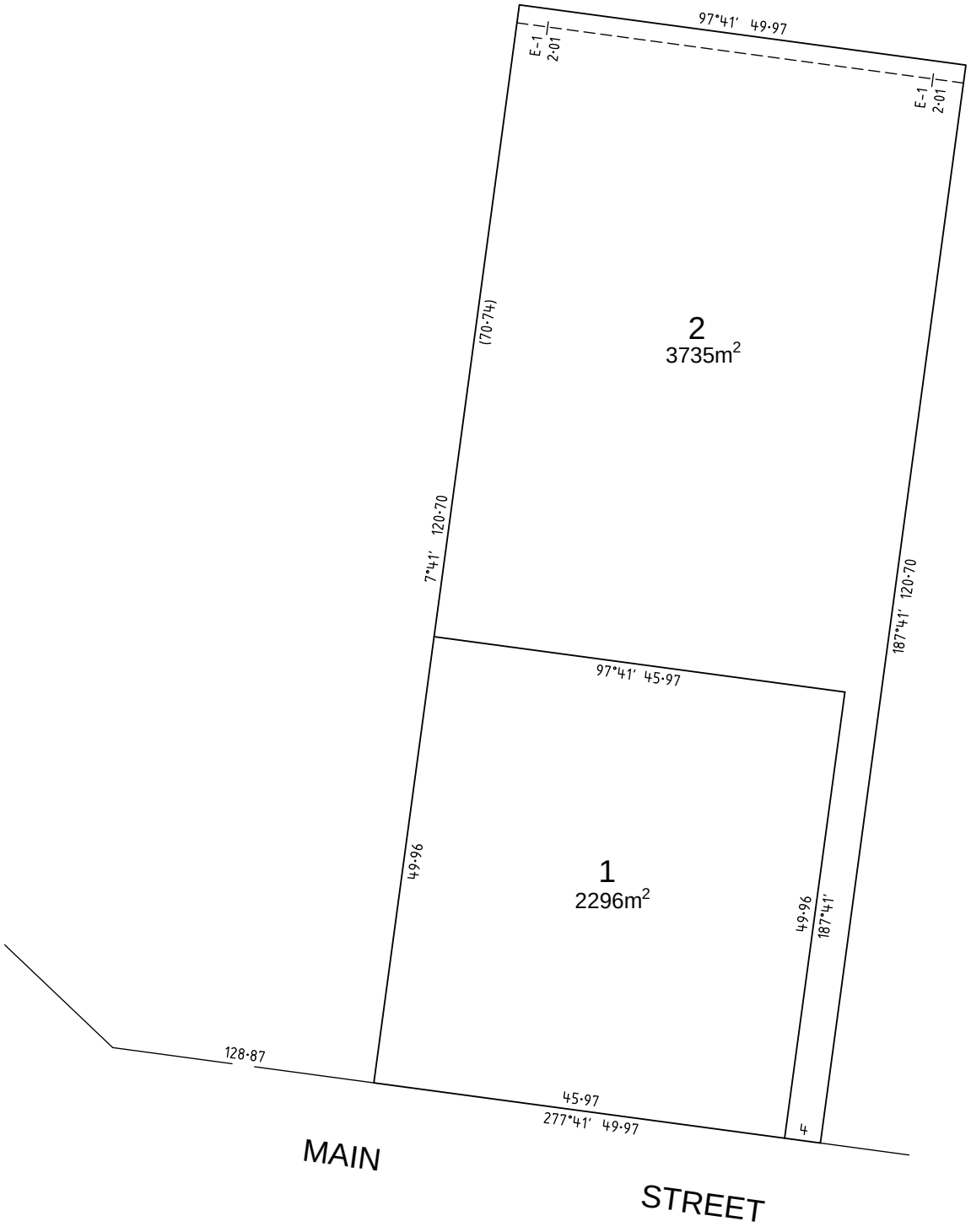
SHEET 1 OF 2 SHEETS

LICENSED SURVEYOR: JAY BARFOOT

VERSION A1

PS 926616V

MGA2020 zone 55



LAND DIMENSIONS

A.C.N. 129 548 054
Level 1 Suite 2
327 Police Road, Mulgrave
Tel: (03) 9790 0399
www.landdimensions.net.au

SCALE		ORIGINAL SHEET SIZE: A3	SHEET 2
1:500	5 0 10 20 LENGTHS ARE IN METRES		
LICENSED SURVEYOR: JAY BARFOOT SURVEYORS FILE REF: 22465S-A1 VERSION A1			

Attachment D – Clause 56 Assessment

DESIGN ELEMENT		OBJECTIVES	COMMENTS
56.02-1	**C1 Strategic implementation**	To ensure that the layout and design of a subdivision is consistent with and implements any objective, policy, strategy or plan for the area set out in this scheme.	EXEMPT Clause 56 subdivisions for less than 16 lots are exempt from this provision.
56.03-1	**C2 Compact and walkable neighbourhoods**	• To create compact neighbourhoods that are oriented around easy walking distances to activity centres, schools and community facilities, public open space and public transport. • To allow easy movement through and between neighbourhoods for all people.	EXEMPT Clause 56 subdivisions for less than 60 lots are exempt from this provision.
56.03-2	**C3 Activity Centre**	To provide for mixed-use activity centres, including neighbourhood activity centres, of appropriate area and location.	EXEMPT Clause 56 subdivisions for less than 60 lots are exempt from this provision.
56.03-3	**C4 Planning for community facilities**	To provide appropriately located sites for community facilities including schools, libraries, preschools and childcare, health services, police and fire stations, recreation, and sports facilities.	EXEMPT Clause 56 subdivisions for less than 60 lots are exempt from this provision.
56.03-4	**C5 Built Environment**	To create urban places with identity and character	EXEMPT Clause 56 subdivisions for less than 16 lots are exempt from this provision.
56.03-5	**C6 Neighbourhood character**	To design subdivisions that respond to neighbourhood character	COMPLIES The proposed subdivision will create two lots, lot 1 (2296m²) will retain the existing dwelling and lot 2 (3735m²) is vacant. The lots are of a comparable sized to those in the surrounding area, which hosts various building types, ages and materials used.
56.04-1	**C7 Lot diversity and distribution**	• To achieve housing densities that support compact and walkable neighbourhoods and the efficient provision of public transport services. • To provide higher housing densities within walking distance of activity centres. • To achieve increased housing densities in designated growth areas. • To provide a range of lot sizes to suit a variety of dwelling and household types.	EXEMPT Clause 56 subdivisions for less than 3 lots are exempt from this provision.
56.04-2	**C8 Lot area and building envelopes**	To provide lots with areas and dimensions that enable the appropriate siting and construction of a dwelling, solar access, private open space, vehicle access and parking, water management, easements and the retention of significant vegetation and site features.	COMPLIES All lots are greater than 500m² and contain a rectangle greater than 10m x 15m. Whilst there is no construction associated with this application, it is noted that no vegetation is required to be removed to facilitate the subdivision.
56.04-3	**C9 Solar orientation of lots**	To provide good solar orientation of lots and solar access for future dwellings	COMPLIES Lots 1 and 2 have sufficient area to achieve east-west orientation and the axial deviation limits set out in the provision. Lots have sufficient space to ensure access to solar gains can be achieved. This application does not seek to construct a solar energy system.

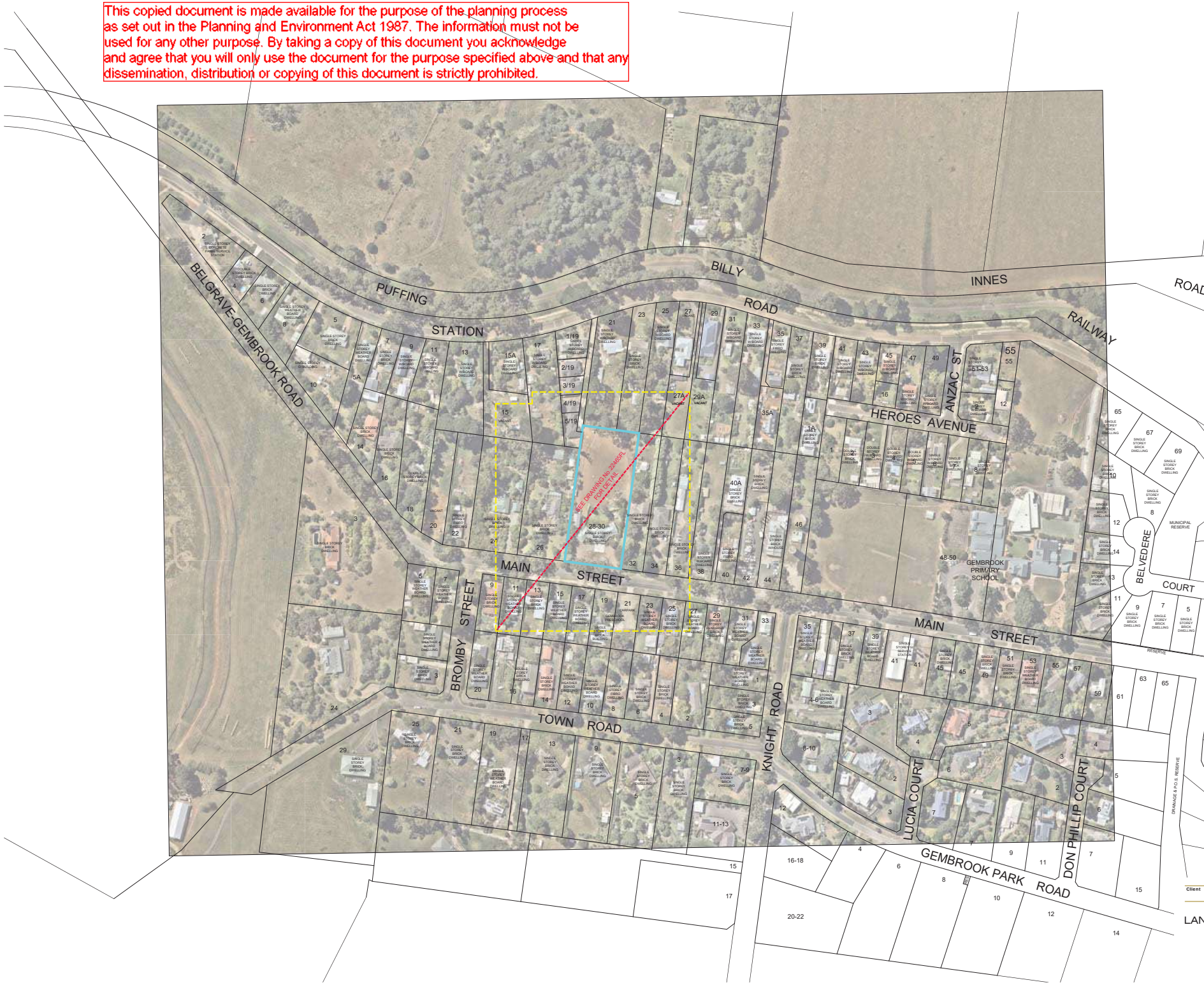
DESIGN ELEMENT		OBJECTIVES	COMMENTS
56.04-4	**C10 Street orientation**	To provide a lot layout that contributes to community social interaction, personal safety and property security.	EXEMPT Clause 56 subdivisions for less than 3 lots are exempt from this provision.
56.04-5	**C11 Common area**	• To identify 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.	COMPLIES Both lots created by this subdivision have separate access to Main Street, utilities, etc... thus, no common property or common areas are required. The resulting subdivision does not obstruct or prevent use of footpaths or public access along Main Street.
56.05-1	**C12 Integrated urban landscape**	• To provide attractive and continuous landscaping in streets and public open spaces that contribute to the character and identity of new neighbourhoods and urban places or to existing or preferred neighbourhood character in existing urban areas. • To incorporate natural and cultural features in the design of streets and public open space where appropriate. • To protect and enhance native habitat and discourage the planting and spread of noxious weeds. • To provide for integrated water management systems and contribute to drinking water conservation.	EXEMPT Clause 56 subdivisions for less than 3 lots are exempt from this provision.
56.05-2	**C13 Public open space provision**	• To provide a network of quality, well-distributed, multi-functional and cost-effective public open space that includes local parks, active open space, linear parks and trails, and links to regional open space. • To provide a network of public open space that caters for a broad range of users. • To encourage healthy and active communities. • To provide adequate unencumbered land for public open space and integrate any encumbered land with the open space network. • To ensure land provided for public open space can be managed in an environmentally sustainable way and contributes to the development of sustainable neighbourhoods.	EXEMPT Clause 56 subdivisions for less than 16 lots are exempt from this provision.
56.06-1	**C14 Integrated mobility**	• To achieve an urban structure where compact and walkable neighbourhoods are clustered to support larger activity centres on the Principal Public Transport Network in Metropolitan Melbourne and on the regional public transport network outside Metropolitan Melbourne. • To provide for walking (including persons with impaired mobility), cycling, public transport and other motor vehicles in an integrated manner. • To contribute to reduced car dependence, improved energy efficiency, improved transport efficiency, reduced greenhouse gas emissions and reduced air pollution.	EXEMPT Clause 56 subdivisions for less than 60 lots are exempt from this provision.

DESIGN ELEMENT		OBJECTIVES	COMMENTS
56.06-2	**C15 Walking and cycling network**	• To contribute to community health and well being by encouraging walking and cycling as part of the daily lives of residents, employees and visitors. • To provide safe and direct movement through and between neighbourhoods by pedestrians and cyclists. • To reduce car use, greenhouse gas emissions and air pollution.	EXEMPT Clause 56 subdivisions for less than 3 lots are exempt from this provision.
56.06-3	**C16 Public transport network**	• To provide an arterial road and neighbourhood street network that supports a direct, efficient and safe public transport system. • To encourage maximum use of public transport.	EXEMPT Clause 56 subdivisions for less than 60 lots are exempt from this provision.
56.06-4	**C17 Neighbourhood street network**	To provide for direct, safe and easy movement through and between neighbourhoods for pedestrians, cyclists, public transport and other motor vehicles using the neighbourhood street network.	EXEMPT Clause 56 subdivisions for less than 3 lots are exempt from this provision.
56.06-5	**C18 Walking and cycling network detail**	• To design and construct footpaths, shared path and cycle path networks that are safe, comfortable, well constructed and accessible for people with disabilities. • To design footpaths to accommodate wheelchairs, prams, scooters and other footpath bound vehicles.	EXEMPT Clause 56 subdivisions for less than 3 lots are exempt from this provision.
56.06-6	**C19 Public transport network detail**	• Bus priority measures must be provided along arterial roads forming part of the existing or proposed Principal Public Transport Network in Metropolitan Melbourne and the regional public transport network outside Metropolitan Melbourne to the requirements of the relevant roads authority. • Road alignment and geometry along bus routes should provide for the efficient, unimpeded movement of buses and the safety and comfort of passengers. • The design of public transport stops should not impede the movement of pedestrians.	EXEMPT Clause 56 subdivisions for less than 16 lots are exempt from this provision.
56.06-7	**C20 Neighbourhood street network detail**	To design and construct street carriageways and verges so that the street geometry and traffic speeds provide an accessible and safe neighbourhood street system for all users.	EXEMPT Clause 56 subdivisions for less than 3 lots are exempt from this provision.
56.06-8	**C21 Lot access**	To provide for safe vehicle access between roads and lots.	COMPLIES The existing gravel crossover and proposed crossover will connect lot 1 Main Street. The proposed crossover will provide lots 2 with access to Main Street. Main Street is classified as an arterial road by Vic Roads.
56.07-1	**C22 Drinking water supply**	• To reduce the use of drinking water. • To provide an adequate, cost-effective supply of drinking water.	COMPLIES Water supply to the lots will be provided from the reticulated network in accordance with the water authority requirements (Yarra Valley Water).

DESIGN ELEMENT		OBJECTIVES	COMMENTS
56.07-2	**C23 Reused and recycled water**	To provide for the substitution of drinking water for non-drinking purposes with reused and recycled water.	COMPLIES Recycled water can be facilitated through detailed design. In the alternate, the provision of recycled water is capable of being achieved through the relevant Water Authority goals (Yarra Valley Water) and strategies. Both lots will be of sufficient size to incorporate rainwater collection for reuse if desired.
56.07-3	**C24 Waste water management**	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.	COMPLIES All lots have sufficient space on site to facilitate a waste water system, which will be designed and constructed in accordance with the requirements of the Water Authority.
56.07-4	**C25 Urban run-off management**	• To minimise damage to properties and inconvenience to residents from stormwater. • To ensure that the street operates adequately during major storm events and provides for public safety. • To minimise increases in stormwater and protect the environmental values and physical characteristics of receiving waters from degradation by stormwater. • To encourage stormwater management that maximises the retention and reuse of stormwater. • To encourage stormwater management that contributes to cooling, local habitat improvements and provision of attractive and enjoyable spaces.	COMPLIES Storm water from the lots is managed by discharge to the reticulated network. Both lots have sufficient space for water tanks to capture and utilize storm water.
56.08-1	**C26 Site management**	• 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.	COMPLIES There are minimal works required to provide service and access to the lots in this subdivision. These will be undertaken to ensure off-site impacts are minimised. These works will be undertaken by qualified professionals to the standards required by the relevant authorities.
56.09-1	**C27 Shared trenching**	• To maximise the opportunities for shared trenching. • To minimise constraints on landscaping within street reserves.	COMPLIES As all lots will be serviced separately, shared trenching is not possible.
56.09-2	**C28 Electricity and telecommunications**	• To provide public utilities to each lot in a timely, efficient and cost-effective manner. • To reduce greenhouse gas emissions by supporting generation and use of electricity from renewable sources	COMPLIES All utilities will be provided to all lots in accordance with the relevant authority requirements.
56.09-3	**C29 Fire hydrants**	To provide fire hydrants and fire plugs in positions that enable fire fighters to access water safely, effectively, and efficiently.	EXEMPT Clause 56 subdivisions for less than 3 lots are exempt from this provision.

DESIGN ELEMENT		OBJECTIVES	COMMENTS
56.09-4	**C30 Public lighting**	• To provide public lighting to ensure the safety of pedestrians, cyclists and vehicles. • To provide pedestrians with a sense of personal safety at night. • To contribute to reducing greenhouse gas emissions and to saving energy.	EXEMPT Clause 56 subdivisions for less than 3 lots are exempt from this provision.

Attachment E – Neighbourhood Character Plan



NEIGHBOURHOOD CHARACTER PLAN

28-30 Main Street, Gembrook

Notations

Date of Survey 12 September 2022

Property boundaries & other property details shown hereon have been derived from the digital cadastral map base and are approximate only. No guarantee is given as to the accuracy or completeness of this information.

Contour information is not the result of a survey and has been obtained from Digital Cadastral Map Base. No guarantee is given as to the accuracy or completeness of this information.

Date	Version	Amendment

Job Reference No.	22465
Scale	1:1500 Lengths are in metres

15 0 15 30 45 60 75

Drawn	NT	Checked	JB
Date	14/11/2024		
Drawing number	22465NC	Version	-
Original sheet size	A1	Sheet	1 of 1

Client: Gembrook Views Estate

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Attachment F – Site Context Plan

Site Context Plan

28-30 Main Street, Gembrook

SITE CONTEXT LEGEND

SYMBOL	LOCATION	DIST. TO
	PARKS: GEMBROOK PARK GEMBROOK SPORTS GROUND JCA RUSSELL PARK	600m 800m 700m
	PRIMARY SCHOOL: GEMBROOK PRIMARY SCHOOL	200m
	SECONDARY SCHOOL: EMERALD SECONDARY COLLEGE	7800m
	BUS STOP: BELGRAVE-GEMBROOK ROAD ROUTE No. 695	50m
	TRAIN STOP: GEMBROOK STATION (PUFFING BILLY) (CONNECTION TO BELGRAVE LINE)	600m
	SHOPS: GEMBROOK MAIN STREET	800m

Legend

102	Top of Bank	606	Door		
103	Toe of Bank	609	Retaining Wall		
104	Existing Surface	617	Wall		
107	Floor Level	618	Chimney		
108	Roof Level	628	Steps		
201	Single Tree > 2m	632	Eave		
203	Group of Trees / Shrubs	634	Ridge Line		
304	Reinforced Concrete Pipe	635	Spouting/Gutter		
308	Side Entry Drainage Pit	712	Electricity Pole only		
322	Kerb Outlet	713	Electricity Pole with Light		
403	Edge of Bitumen	716	Electricity Pit		
407	Invert of Kerb/Channel	717	Overhead Electricity Line		
408	Back of Kerb/Channel	721	Telecommunications Pit		
410	Pedestrian Path	738	Gas Meter		
411	Driveway	741	Sewerage Pit		
412	Track - Vehicular	753	Fire Hydrant		
503	Signs	754	Water Meter		
601	House	903	Fence		
602	Minor Building	904	Gate		
604	Verandah/Deck	950	Boundary		
605	Window		Cadastral Map Base		

Notations

Date of Survey 12th September 2022

For Title Re-establishment Survey showing relationship between fences and Title Boundaries refer to survey drawing No. 22465R

Land Subject to Easements
E-1 Drainage 2.01m wide vide LP8439

Direction of Photographs shown thus ①
Refer to drawing 22465PH for photos

Levels shown thus 337.159 are to Australian Height Datum vide Gembrook PM188 with a stated value of RL 337.159

Levels shown thus × are to Map Grid of Australia vide Gembrook PM188 with a stated Easting of 372085.923 & a Northing of 5798549.877

Tree heights shown thus HT.12m are approximate only

Contour Interval 0.2 metres

Location of buildings beyond site fences and shown as dashed lines are indicative only

Property Information shown thus —— or ------ is not based on Survey and has been obtained from the Digital Cadastral Map Base.

* Windows noted HAB N/HAB UNCL (unclassified) have been determined by external visual appearance at the time of survey. Land Dimensions Pty Ltd can accept no responsibility for any person or corporation who may rely on this for any purpose. All window types should be verified on site by a designer or planning consultant.

Services shown hereon have been located by field survey. Other hidden underground services may exist and prior to any demolition, excavation or construction on the site, the relevant authority or 'Dial before you Dig' should be contacted for possible location of further underground services.

This plan has been prepared for Gembrook Views Estate and is not to be reproduced for use by any other person or corporation without the prior written consent of Land Dimensions Pty Ltd.

Date	Version	Amendment
3/3/25	B	Above ground pool removed

MGA2020 zone 55

Job Reference No.	22465		
Scale	1:300	Lengths are in metres	
Drawn	AW	Checked	JB
Date	15/9/2022		
Drawing number	22465FL-B	Version	B
Original sheet size	A1	Sheet	1 of 1
Client	Gembrook Views Estate		

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Attachment G – Proposed Conditions & Subdivision Layout Plan

Proposed Conditions & Subdivision Layout

28-30 Main Street, Gembrook

PROPOSED 2 3735m²

PROPOSED 1 2296m²

28-30 C/T Vol 10200 Fol 339 Total Site Area 6031m²

EFFLUENT FIELD 538m² AS PER LCA

INDICITIVE BUILDING ENVELOPE 15m X 20m

MAIN STREET

3 TREES TO BE REMOVED UNDER BUSHFIRE MANAGEMENT CODE

EDGE OF EXISTING CROSSOVER. NO WORKS TO EXTEND BEYOND. (NEW CROSSOVER AS PER REPORT BY QUANTUM TRAFFIC)

PROPOSED SUBDIVISION BOUNDARY

DENOTES TREE PROTECTION ZONE

STRUCTURAL ROOT ZONE (SRZ)

DENOTES TREE TO BE REMOVED UNDER BUSHFIRE MANAGEMENT CODE

Legend

102	Top of Bank		606	Door
103	Toe of Bank		609	Retaining Wall
104	Existing Surface		617	Wall
107	Floor Level		618	Chimney
108	Roof Level		628	Steps
201	Single Tree > 2m		632	Eave
203	Group of Trees / Shrubs		634	Ridge Line
304	Reinforced Concrete Pipe		635	Spouting/Gutter
308	Side Entry Drainage Pit		712	Electricity Pole only
322	Kerb Outlet		713	Electricity Pole with Light
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408	Back of Kerb/Channel		721	Telecommunications Pit
410	Pedestrian Path		738	Gas Meter
411	Driveway		741	Sewerage Pit
412	Track - Vehicular		753	Fire Hydrant
503	Signs		754	Water Meter
601	House		903	Fence
602	Minor Building		904	Gate
604	Verandah/Deck		950	Boundary
605	Window			Cadastral Map Base

Notations

Date of Survey 03/03/2025

For Title Re-establishment Survey showing relationship between fences and Title Boundaries refer to survey drawing No. 22465R

Land Subject to Easements
E-1 Drainage 2.01m wide vide LP8439

Direction of Photographs shown thus ①▶
Refer to drawing 22465PH for photos

Levels shown thus 337.159 are to Australian Height Datum vide Gembrook PM188 with a stated value of RL 337.159

Levels shown thus × are to Map Grid of Australia vide Gembrook PM188 with a stated Easting of 372085.923 & a Northing of 5798549.877

Tree heights shown thus HT:13m are approximate only

Contour Interval 0.2 metres

Location of buildings beyond site fences and shown as dashed lines are indicative only

Property Information shown thus ——— or - - - - - is not based on Survey and has been obtained from the Digital Cadastral Map Base.

* Windows noted HAB N/HAB UNCL (unclassified) have been determined by external visual appearance at the time of survey. Land Dimensions Pty Ltd can accept no responsibility for any person or corporation who may rely on this for any purpose. All window types should be verified on site by a designer or planning consultant.

Services shown hereon have been located by field survey. Other hidden underground services may exist and prior to any demolition, excavation or construction on the site, the relevant authority or 'Dial before you Dig' should be contacted for possible location of further underground services.

This plan has been prepared for Gembrook Views Estate and is not to be reproduced for use by any other person or corporation without the prior written consent of Land Dimensions Pty Ltd.

Date	Version	Amendment

MGA2020 zone 55

Job Reference No.	22465				
Scale	1:300 Lengths are in metres (3 0 3 6 9 12 15)				
Drawn	NT	**Checked**	JB	**Date**	03/03/2025
Drawing number	22465PCSL-B			**Version**	-
Original sheet size	A1			**Sheet**	1 of 1
Client	Gembrook Views Estate				

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2nd May 2025

[redacted]
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Application No.: T240679 PA

QuantumTraffic

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Proposal: Two-Lot Subdivision

Site: 28-30 Main Street, Gembrook VIC

Traffic Engineering Assessment: Request for Further Information Assessment

Introduction & Proposal

Further to receiving your instructions, we have reviewed the request for further information (RFI)issued by Cardinia Shire Council dates 13 January 2025 (reference: T240679 PA) and provide the following traffic engineering assessment of the proposed two lot subdivision at 28-30 Main Street, Gembrook.

The application is proposing the:

> *"Subdivision of the land into two (2) lots, subdivide land adjacent the road in a Transport Zone 2 and create access to a road in a Transport Zone 2."*

We have been instructed to review and respond to the conditions nested under ***No. 7 Creation and Alteration of Access***. The assessment has also reviewed any other relevant RFI considerations that relate to matters under Section No. 7.

The relevant matters are listed below, and our responses are provided in line.

Provide a separate detailed design plan, fully dimensioned and drawn to scale, for the creation and alteration of access. This plan must include:

The proposed crossover design including location, width, angle, and line of sight for all crossovers, constructed in accordance with the requirements of the relevant road authority (VicRoads).

The relevant standard drawing for the proposed crossing is attached at Appendix A of this report. Crossovers within several Victorian Councils, including Cardinia Shire, endorse and use the VPA's Engineering Design and Construction Manual (EDCM) which provides engineering standards for new developments and subdivisions, which are typically supported by the Department of Transport and Planning (DTP) in our experience.

A crossover application will be submitted to, and approved by DTP, and all vehicle crossing details shall be provided in accordance with the standard drawing at the time of application. The critical dimensions of the proposed crossing include a minimum crossover width of 7.0m at the title boundary, and 600mm splays on both sides.

The existing eastern crossover will be formally constructed and combined with a new crossover proposed to service Lot 2.

The existing crossovers that serve Lot 1 are not proposed to be relocated or tangibly modified and therefore, the prevailing sightlines will continue to be provided per existing conditions for access points to Lot 1. We have reviewed the sightlines that would be available to the new crossover serving Lot 2 against the requirements of SISD and AS/NZS 2890.1 in both the east and west directions. Our review suggests that a driver would have more than 200m of sight distance to the east and approximately 160m metres to the west. These estimated sight distances are in accordance with the relevant design guidelines for a road with a 60km/h speed zone, summarised at Figure 1, noting that the posted speed limit is 50km/h on Main Street.

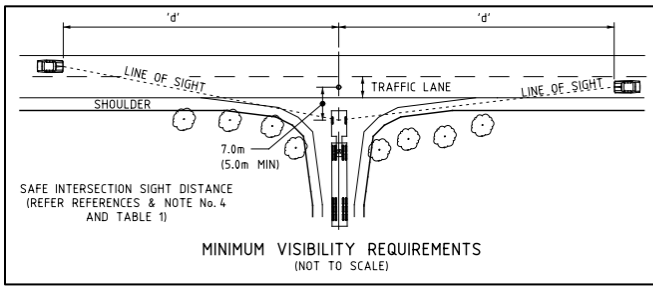


TABLE 1: SIGHT DISTANCES

DESIGN SPEED (Km/h)	'd' SAFE INTERSECTION SIGHT DISTANCE (m)	CORRECTION (m)							
		ROADWAY UPGRADE				ROADWAY DOWNGRADE			
		2%	4%	6%	8%	2%	4%	6%	8%
60	123	-2	-4	-6	-7	2	5	8	11
70	151	-3	-5	-8	-10	3	7	11	15
80	181	-4	-7	-10	-13	4	9	14	20
90	226	-5	-9	-13	-16	5	11	18	25
100	262	-6	-11	-16	-20	6	14	22	31
110	300	-7	-13	-19	-24	8	17	26	38

THE DESIGN SPEED IS ASSUMMED TO BE 10km/h GREATER THAN THE POSTED SPEED LIMIT FOR RURAL HIGHWAYS AND ROADS

Figure 1: SISD Minimum Visibility Requirements

Setback distance from any trees within 15m of crossovers

The proposed eastern edge of the new crossover would be located approximately 4m from an existing plantlet located within the road reserve along the site frontage of No. 32 Main Street. Whilst the new crossover will be within the 15m clearance prescribed, the affected plantlet is relatively young and does not appear to have significant environmental value, subject to an assessment by a qualified arborist.

There are several other instances along Main Street where crossovers are located within 1-2 metres of street trees, well within the offset distance prescribed. In addition, the VPA EDCM standard drawings for residential crossovers, which Cardinia Shire Council endorses, prescribes a minimum clearance of 2.5m to trees which would be met by the proposed crossover design.

How vehicles enter and exit the road (i.e. driving forward and not reversing into traffic)

An access must be designed to allow for forward entry and forward exit where an access:

- Serves 4 or more car spaces; or
- Connects to a road in a Transport Zone 2 or Transport Zone 3.

In this regard, vehicles must be provided with access arrangements allowing forward entry and exit on each Lot. Lot 1 is provided with a porte-cochere with two (2) access points, allowing for forward entry at the western crossover and forward exit at the eastern crossover.

For the purposes of this subdivision application, the plan attached at Appendix B has been prepared to indicatively show that a turnaround area could be provided within Lot 2 and demonstrate the area that may be required to allow the B99 design vehicle to turnaround and exit the site in a forward direction.

The design of the turnaround facility may be adapted to suit any future development of the Lot, however, should be designed such that it continues to provide for forward entry and exit. This requirement would be reviewed and approved as part of a future development application that is submitted on Lot 2.

Existing road conditions including traffic volume, speed, and existing infrastructure such as the bus stop

Main Street is an arterial road within a declared Transport Zone 2 and provides the primary east-to-west link through Gembrook, connecting Gembrook Road in the east (continuing as Beenak East Road), with Station Road in the west (continuing as Belgrave-Gembrook Road).

Main Street has a posted speed limit of 50km/h, reducing to 40km/h during school drop-off and pick-up times/days adjacent the subject site.

Based on the Department of Transport and Planning's (DTP) open data resource, Main Street adjacent the subject site carries two-way average annual traffic volumes of approximately 2,600 vehicles daily, comprising of ~11% of heavy vehicle total volumes. Based on the

foregoing, Main Street is estimated to carry in the order of 130 vehicles during peak hours, inclusive of 14 heavy vehicle movements, in each direction.

A plan reference name, reference number, version number, date of version and version update details including date and reason for update.

A crossover and indicative access plan have been prepared with the details listed at Appendix B.

Conclusion

The relevant appendices have been enclosed.

If you have any questions or require any further information, please do not hesitate to contact us by phone (1300 757 016) or email (admin@quantumtraffic.com.au).

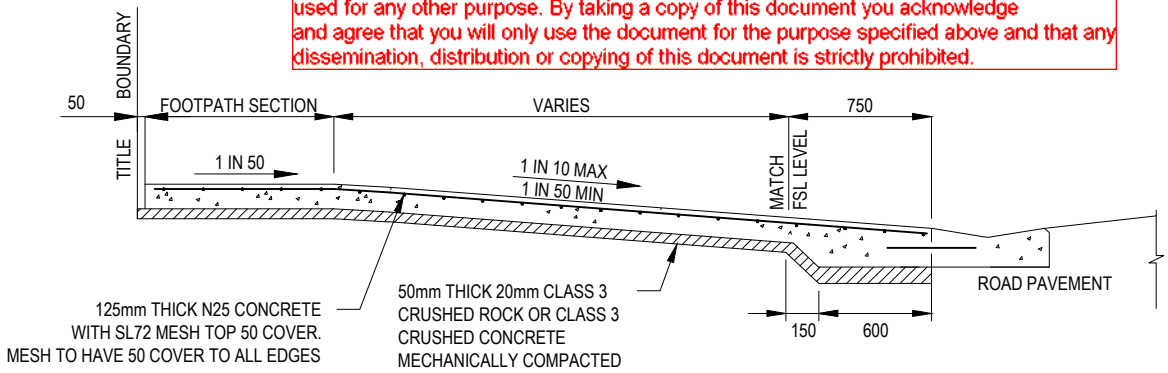
Encl.

Appendix A – VPA EDCM Standard Crossover Drawing

Appendix B – Crossover and Indicative Access Plan

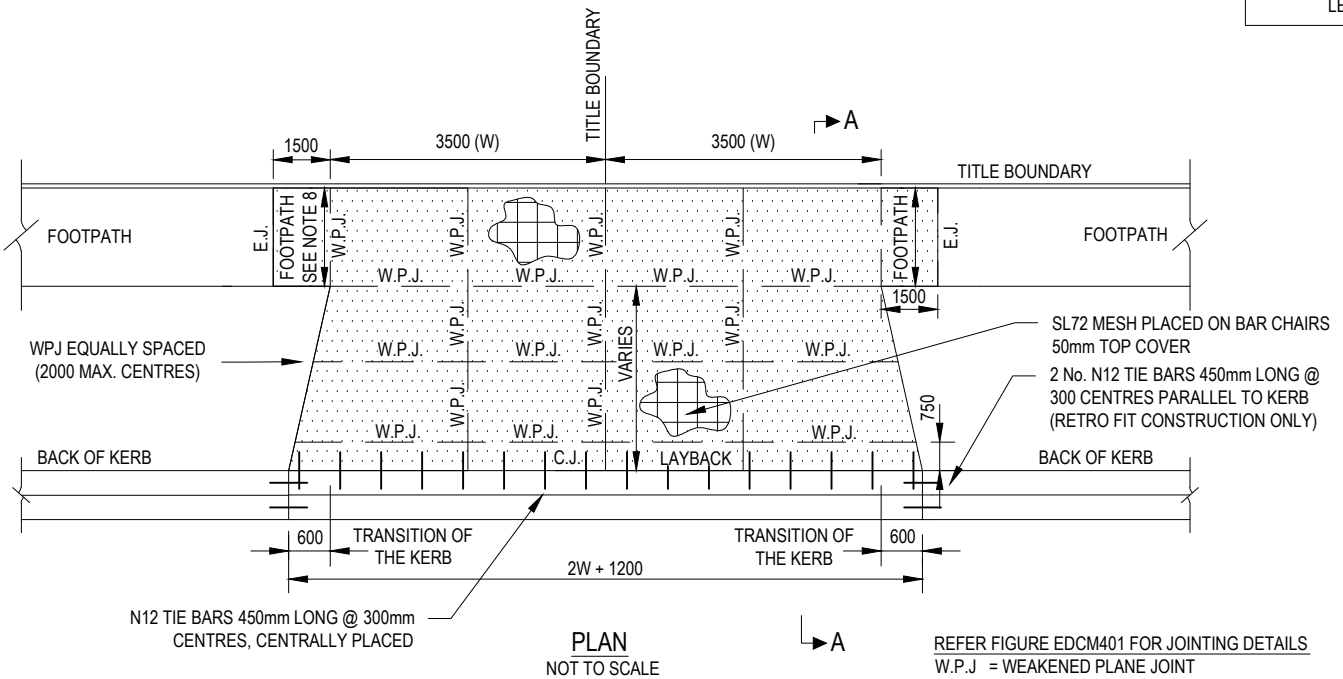
Appendix A

VPA EDCM Standard Crossover Drawing



SECTION A - A
NOT TO SCALE

TABLE 1: MINIMUM CLEARANCES	
BETWEEN CROSSOVERS	7 METRES AT KERB
DRAINAGE PITS	0.75 METRES (WITHIN 0.75m - INSTALL CLASS D PIT LID)
TRAFFIC MANAGEMENT DEVICES	1 METRE
UTILITY SERVICE ASSETS	1 METRE
STREET LIGHT	1 METRE
INTERSECTIONS	6 METRES FROM TANGENT POINT AND CLEAR OF SPLITTER ISLANDS
PRAM CROSSING	2 METRES AT KERB
TREES	2.5 METRES
FIRE HYDRANT	1 METRE
LEGAL POINT OF DISCHARGE	1 METRE



PLAN
NOT TO SCALE

REFER FIGURE EDCM401 FOR JOINTING DETAILS
W.P.J = WEAKENED PLANE JOINT
E.J. = EXPANSION JOINT
C.J. = CONSTRUCTION JOINT

NOTES:

1. NO BULLNOSE IN THE INVERT OF KERB.
2. CONCRETE TO BE LIGHT BROOM FINISH WITH EDGES AND JOINTS NEATLY TOOLED AFTER THE BROOM IS APPLIED.
3. ALL FINISHED SURFACES TO COMPLY WITH AS 4586 - SLIP RESISTANT CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS.
4. THE USE OF PATTERN PAVING OR COLOURED CONCRETE MUST BE APPROVED BY COUNCIL. MINIMUM STRENGTH OF COLOURED CONCRETE 32 MPa.
5. WIDTH OF CROSSING (W) 3500 UNLESS SHOWN OTHERWISE ON APPROVED PLANS.
6. WHERE CONCRETE PAVING CROSSES SERVICE, SEWER AND DRAINAGE TRENCHES, THE TRENCHES TO BE BACKFILLED WITH COMPACTED 20mm CLASS 3 CRUSHED ROCK OR CLASS 3 CRUSHED CONCRETE.
7. WHERE VEHICLE CROSSING IS RETROFITTED THE EXISTING KERB AND CHANNEL IS TO BE REMOVED AND IF THE EXISTING FOOTPATH IS LESS THAN 125mm THICK - ONE BAY OF PATH (TYPICAL 1500 WIDE) ON EITHER SIDE OF THE CROSSING IS TO BE REMOVED, REPLACED WITH 125mm THICK FOOTPATH AND JOINED TO THE EXISTING PATH WITH AN EXPANSION JOINT REFER FIGURE EDCM401.

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Checked	Approved	Date
0	FINAL ISSUE		DG	MM	-	16.11.15

Plot Date: 16 November 2015 - 3:33 PM Plotted by: Kerry Walton

Cad File No: Q:\Infrastructure Planning\MPA standard drawings\20150506 EDCM DRAWINGS (NEW)\28082015 Drawings\ECDM - 502.dwg

STANDARD DRAWINGS FOR SUBDIVISIONS IN GROWTH AREAS

RESIDENTIAL VEHICLE CROSSING - DOUBLE

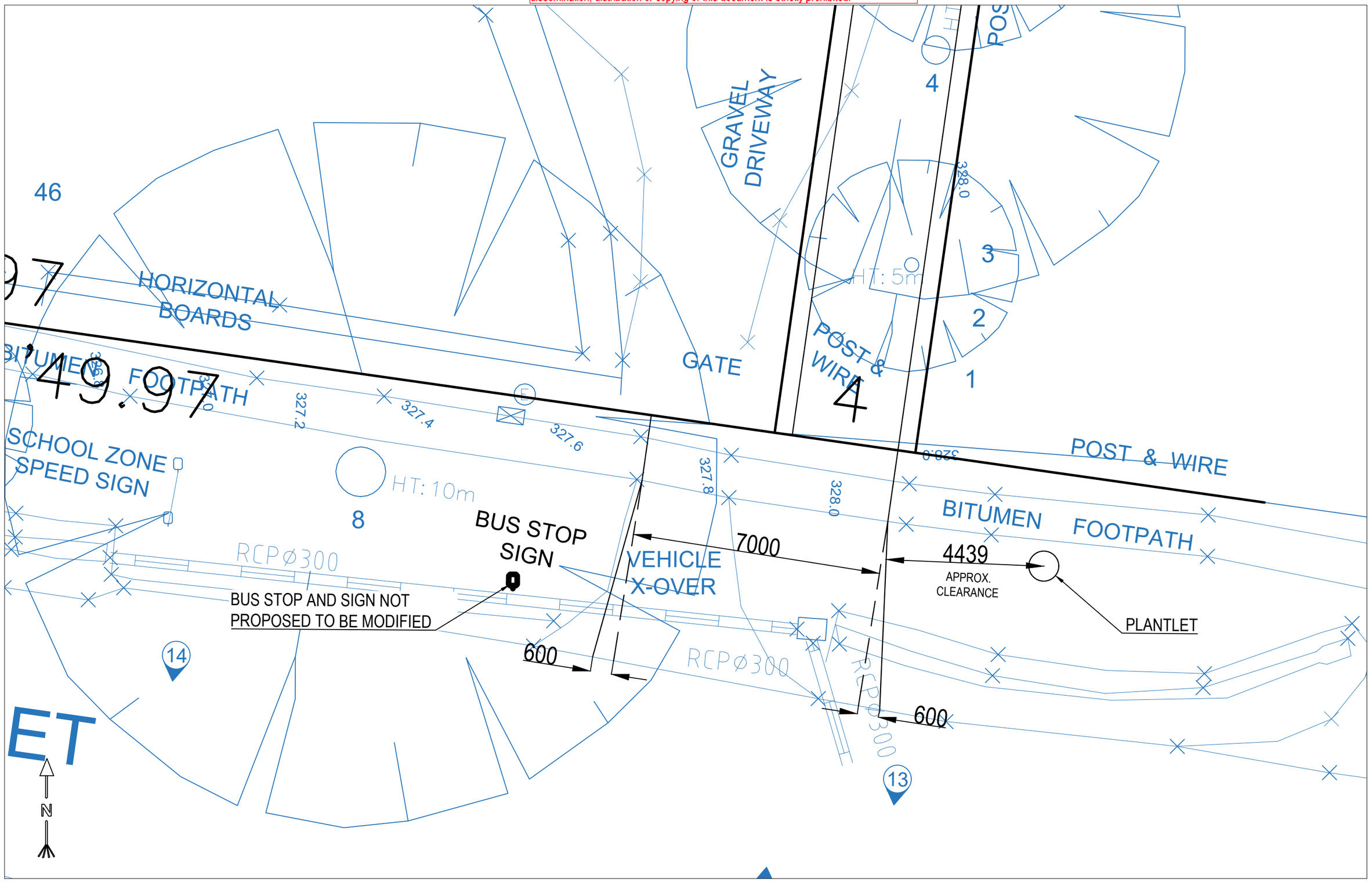
Revision 0

Date DEC 2015

EDCM 502

Appendix B

Crossover and Indicative Access Plan



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LGA:	CARDINIA SHIRE
Development Type:	RESIDENTIAL SUBDIVISION
Assessment:	INDICATIVE ACCESS PLANS

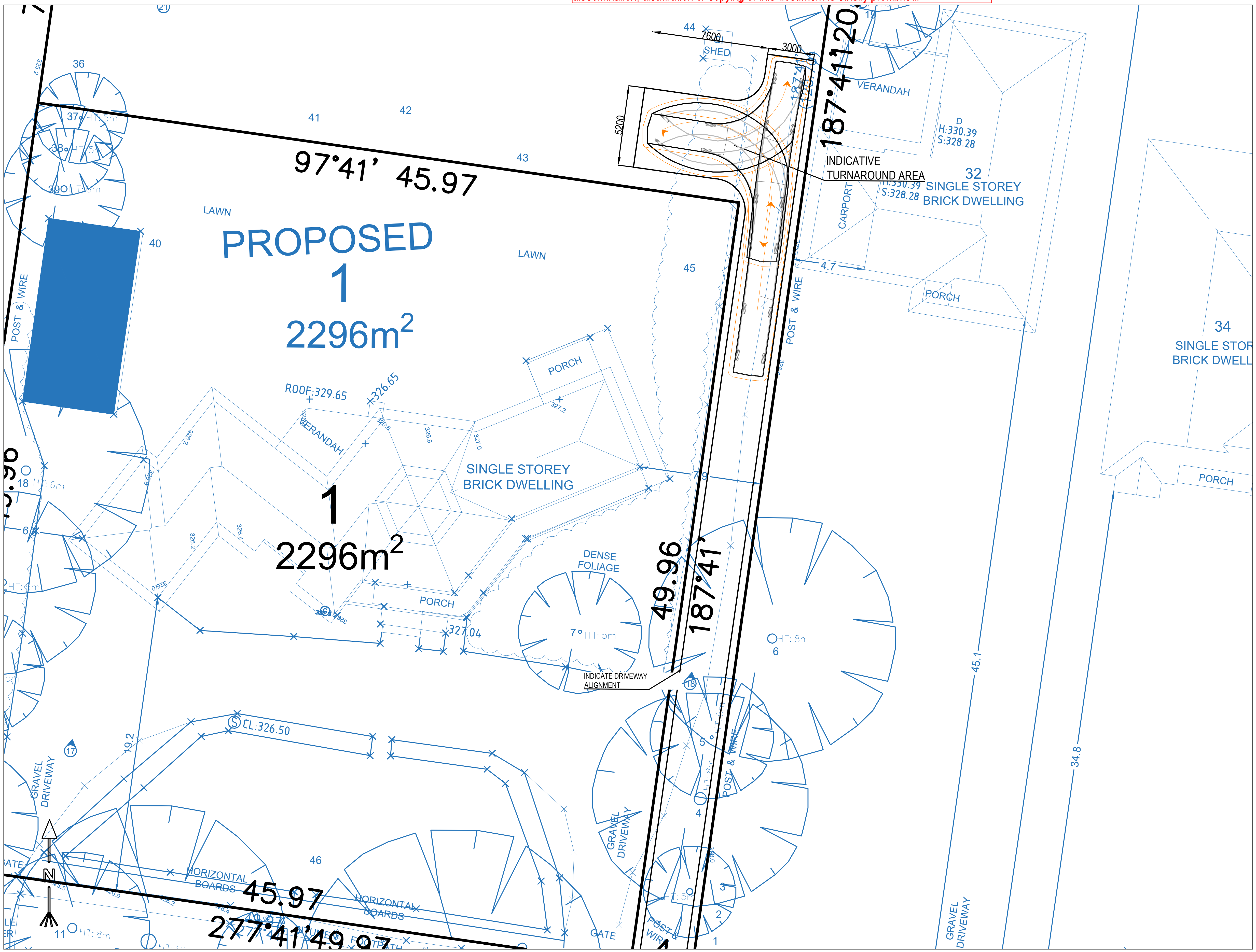
SHEET 01
CROSSOVER DETAIL

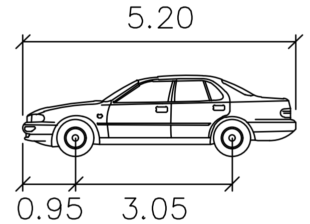
REVISION	DATE	DESCRIPTION
A	29/04/25	DRAFT FOR DISCUSSION

NOTES:
- BASE PLANS PREPARED BY LAND SURVEY

REFERENCE	REVISION	SHEET	STATE	SCALE
25-0115	A	1 of 3	VIC	1:100 @ A3

0 1 2





B99 Design Car - AS2890.1:2004

Width	: 1940 mm
Track	: 1840 mm
Lock to Lock Time	: 6.0 sec
Steering Angle	: 33.9 degrees

LEGEND

- Vehicle Body
- Wheel Tracks
- Clearance Lines (300mm)

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LGA:	CARDINIA SHIRE
Development Type:	RESIDENTIAL SUBDIVISION
Assessment:	INDICATIVE ACCESS PLANS

SHEET 02

REVISION	DATE	DESCRIPTION
A	29/04/25	DRAFT FOR DISCUSSION

NOTES:
- BASE PLANS PREPARED BY LAND SURVEY

REFERENCE	REVISION	SHEET	STATE	SCALE
25-0115	A	2 of 3	VIC	1:250 @ A3

0 2.5 3.0

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Address: 28-30 MAIN STREET, GEMBROOK
LGA: CARDINIA SHIRE
Development Type: RESIDENTIAL SUBDIVISION
Assessment: INDICATIVE ACCESS PLANS

SHEET 03
SIGHT DISTANCE

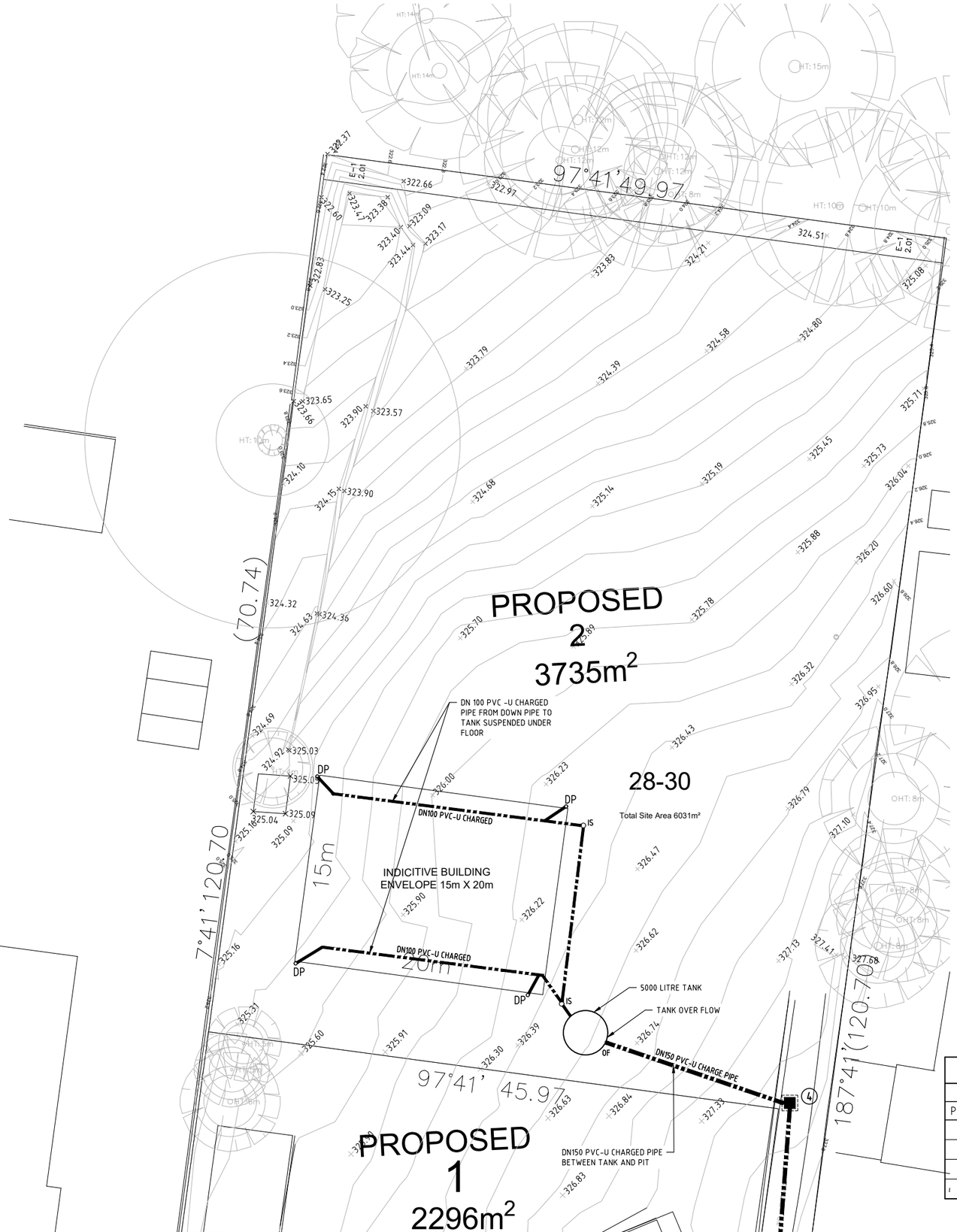
REVISION	DATE	DESCRIPTION
A	29/04/25	DRAFT FOR DISCUSSION

NOTES:
- BASE PLANS PREPARED BY LAND SURVEY

REFERENCE	REVISION	SHEET	STATE	SCALE
25-0115	A	3 of 3	VIC	1:1000 @ A3

0 10 20

PROPOSED SUBDIVISION
28–30 MAIN STREET, GEMBROOK



ALL STORMWATER DRAINAGE WORK TO BE COMPLETED TO THE SATISFACTION OF THE RELEVANT BUILDING SURVEYOR.

CONTRACTOR TO CONFIRM INVERT LEVEL OF CONNECTION POINT TO COUNCIL DRAIN BEFORE COMMENCING WORK. IF LEVEL IS NOT AS PER DRAWINGS CONTACT VICSTRUCT ENGINEERING FOR ADVICE.

BEWARE OF UNDERGROUND SERVICES THE BUILDER IS TO DETERMINE EXACT LOCATIONS OF ANY EXISTING UNDERGROUND SERVICES PRIOR ANY CONSTRUCTION ON SITE.

- ×99.00 EXISTING LEVEL
- IS INSPECTION SHAFT
- (1) PIT NUMBER. REFER SCHEDULE
- GRATED JUNCTION PIT. REFER SCHEDULE
- JUNCTION PIT. REFER SCHEDULE
- STORMWATER PIPE. DN100 PVC-U (UNO) PROVIDE 1 IN 100 FALL MIN.
- OF WATER TANK OVER FLOW. DN100 PVC-U (UNO) PROVIDE 1 IN 100 FALL MIN.
- DP DOWNPIPE LOCATIONS. REFER ARCHITECT'S DRAWINGS FOR EXACT LOCATIONS.

✳ ASTERISKS INDICATES PIT OR PIPE TO BE CONFIRMED
SLOPE OF ALL PIT LIDS MUST MATCH THE SURROUNDING, EXISTING OR FINISHED SURFACE

PIT SCHEDULE

					INLET			OUTLET		
PIT NO.	PIT TYPE	SIZE	SURFACE LEVEL	DEPTH	FROM	DIA.	IL	DIA.	IL	PIT COVER
1	EXISTING	TBC	327.67	1.27	2	150	326.45	300	326.40	CLASS B CONCRETE
2	GRATED	900x600	327.90	1.40	3	150	326.52	150	326.50	CLASS B GRATED
3	GRATED	900x600	327.84	1.11	4	150	326.75	150	326.73	CLASS B GRATED
4	JUNCTION	450x450	327.50	0.60	OF	150	326.92	150	326.90	CLASS B CONCRETE

REV	ISSUE DESCRIPTION	DATE
1	PRELIMINARY DESIGN	05.09.25

CARDINIA SHIRE COUNCIL

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION PURPOSES

CLIENT
GEMBROOK VIEWS ESTATE
-
-

VICSTRUCT ENGINEERING

Vicstruct Engineering Pty Ltd
admin@vicstruct.com.au
www.vicstruct.com.au

PROJECT TITLE
PROPOSED SUBDIVISION
-
-

SITE ADDRESS
28-30 MAIN STREET
GEMBROOK
-

DRAWING TITLE
STORMWATER DRAINAGE PLAN

DESIGN	D.C	SHEET No.	JOB No.	REV
DRAWN	S.S	C01	10063	1
SCALE	1:100 @A1			

PROPOSED SUBDIVISION
28–30 MAIN STREET, GEMBROOK

99.00	EXISTING LEVEL
IS	INSPECTION SHAFT
1	PIT NUMBER. REFER SCHEDULE
	GRATED JUNCTION PIT. REFER SCHEDULE
	JUNCTION PIT. REFER SCHEDULE
	STORMWATER PIPE. DN100 PVC-U (UNO) PROVIDE 1 IN 100 FALL MIN.
OF	WATER TANK OVER FLOW. DN100 PVC-U (UNO) PROVIDE 1 IN 100 FALL MIN.
DP	DOWNPIPE LOCATIONS. REFER ARCHITECT'S DRAWINGS FOR EXACT LOCATIONS.

BEWARE OF UNDERGROUND SERVICES THE BUILDER IS TO DETERMINE EXACT LOCATIONS OF ANY EXISTING UNDERGROUND SERVICES PRIOR ANY CONSTRUCTION ON SITE.

CONTRACTOR TO CONFIRM INVERT LEVEL OF CONNECTION POINT TO COUNCIL DRAIN BEFORE COMMENCING WORK. IF LEVEL IS NOT AS PER DRAWINGS CONTACT VICSTRUCT ENGINEERING FOR ADVICE.

ALL STORMWATER DRAINAGE WORK TO BE COMPLETED TO THE SATISFACTION OF THE RELEVANT BUILDING SURVEYOR.

REV	ISSUE DESCRIPTION	DATE
1	PRELIMINARY DESIGN	05.09.25

CARDINIA SHIRE COUNCIL

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CLIENT
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GEMBROOK
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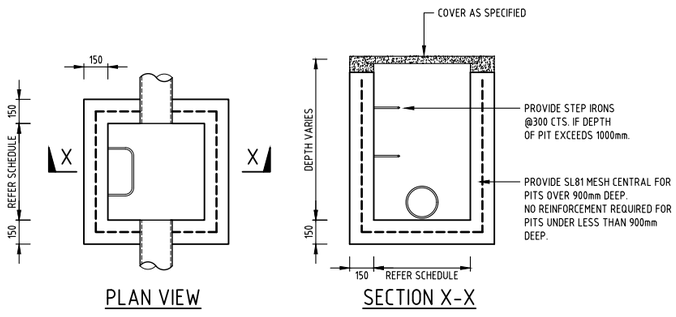
DRAWN S.S	C01	10063	1
SCALE 1:100 @A1			

REV	ISSUE DESCRIPTION	DATE
1	PRELIMINARY DESIGN	05.09.25

NOTE:
TRENCHES OVER 1500mm
DEEP SHALL BE SHORED AS
PER WORKSAFE GUIDELINES

PIPE TRENCH DETAIL (UNDER PAVEMENT)

PIPE TRENCH DETAIL (UNDER LANSCAPE)



PLAN VIEW

SECTION X-X

PRECAST PITS SHALL HAVE 100mm OF 20NS CRUSHED
ROCK BEDDING, AND BE BACKFILLED WITH SAME

TYPICAL GRATED/JUNCTION PIT DETAIL

CIVIL DRAINAGE NOTES

1. CONTRACTOR TO CONFIRM ABILITY TO CONNECT TO NOMINATED OUTFALL PRIOR TO COMMENCING WORK. NOTIFY ENCO ENGINEERING IF EXISTING LEVELS NOT AS DOCUMENTED.
2. MINIMUM FALL TO 100 DIA. PIPES TO BE 1 IN 100 (UNLESS NOTED OTHERWISE)
3. PROVIDE 100 DIA. S.W.P. WHERE NO SIZE SPECIFIED FROM DOWNPIPES, WITH INSPECTION OPENINGS AT ALL CHANGES IN GRADE AND/OR DIRECTION, AND AT 10 METRE MAXIMUM CTS.
4. ALL 100 & 150 DIA. PIPEWORK SHALL BE CLASS SN4 PVC-U AS/NZS 1260. ALL JOINTS TO BE SOLVENT WELD JOINTED (SWJ). (UNLESS NOTED OTHERWISE)
5. STORMPRO PIPES TO COMPLY WITH AS/NZS 5065.
6. GRATED SURFACE DRAINS TO BE PROVIDED WHERE LANDSCAPING PREVENTS RUN OFF OF SURFACE WATER.
7. ALL DRAINAGE LINES OFF SET 500 mm FROM ADJACENT BUILDING U.N.O.
8. ALL SET OUT DIMENSIONS AS PER ARCHITECTURAL PLANS.
9. ALL GRADES AND OUTFALL INVERT LEVELS TO BE CHECKED ON SITE AND ANY DISCREPANCY IS TO BE REFERRED TO THIS OFFICE BEFORE ANY PIPE LAYING COMMENCES.
10. PRIOR TO COMMENCEMENT OF WORKS ON ADJOINING PROPERTIES, CONTRACTOR SHALL REACH AGREEMENT WITH THE OWNER/GOVERNING AUTHORITY AS TO THE TIMING AND EXTENT OF WORKS.
11. CONTRACTOR TO APPLY AND PAY FOR ALL ROAD OPENINGS AND CONNECTION OR ALL OTHER RELEVANT. PERMIT MAY BE REQUIRED BY COUNCIL.
12. CARE MUST BE TAKEN WHEN BREAKING INTO EXISTING DRAINS, KERBS AND CHANNELS, AND FOOTPATHS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THESE ARE REINSTATED TO THE SATISFACTION OF THE CLIENTS REPRESENTATIVE.
14. CONTRACTOR TO ARRANGE FOR ALL SERVICES IN THE VICINITY OF THE WORKS (GAS, TELECOM ETC) TO BE ACCURATELY LOCATED PRIOR TO COMMENCEMENT OF EXCAVATION AND ALL EXCAVATION AROUND THESE SERVICES ARE TO BE BY HAND AND NOT MACHINERY.
15. PROVIDE OVERFLOWS TO AS3500.3 TO ALL BOX GUTTERS & RAINHEADS.

CARDINIA SHIRE COUNCIL

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION PURPOSES

CLIENT
GEMBROOK VIEWS ESTATE
-
-

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PROJECT TITLE
PROPOSED SUBDIVISION
-
-

SITE ADDRESS
28-30 MAIN STREET
GEMBROOK
-

DRAWING TITLE
DRAINAGE NOTES & DETAILS

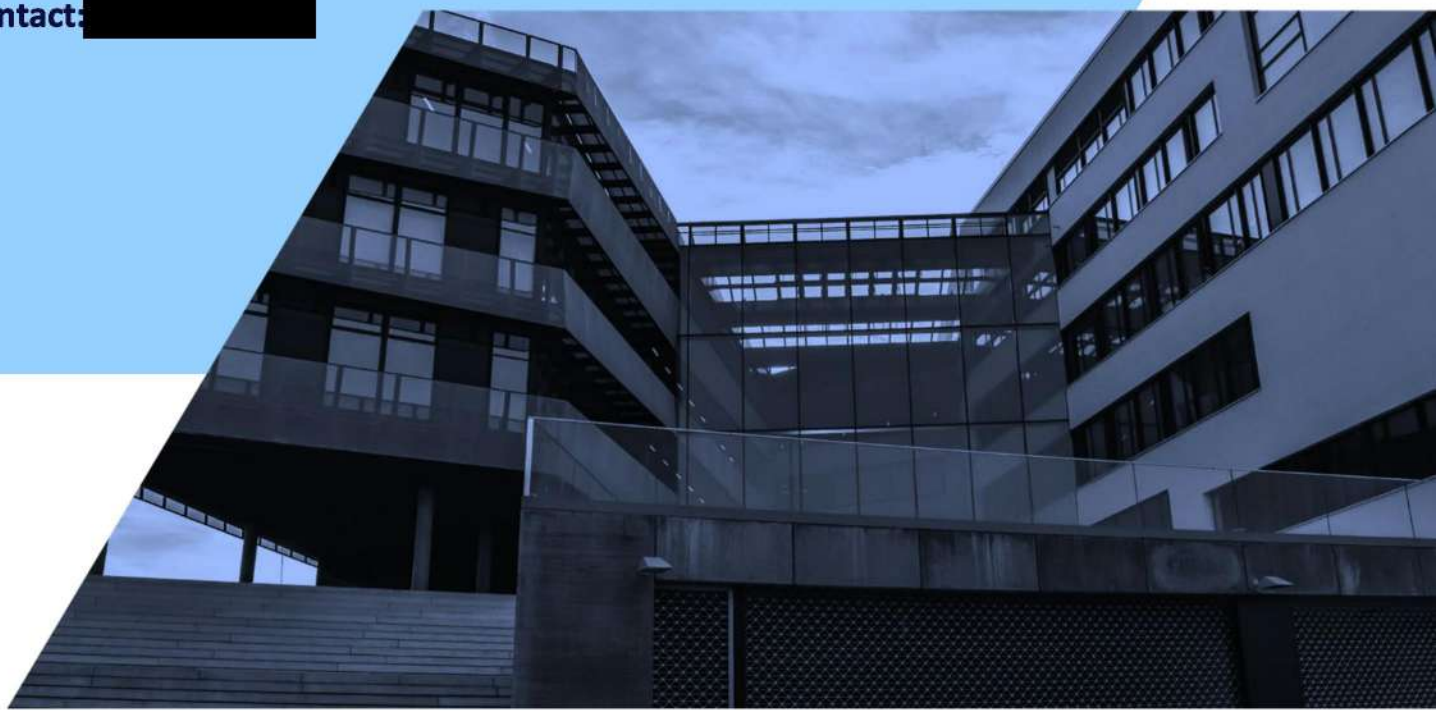
DESIGN D.C	SHEET No.	JOB No.	REV
DRAWN S.S	C03	10063	1
SCALE 1:20 @A1			

PROSPEC
PLUMBING & DRAINAGE

master plumbers
Expert. Committed. Professional.

PLUMBING REPORT

Email: info@prospecplumbing.com.au
Contact: [redacted]



COMPANY: Gembrook View Estate
Address: 28 Main Street, Gembrook

Job: [redacted]
Add

REPORT

Report:

- **Attended Site to Investigate ex. Septic Tank. Found the septic tank in the front Grassed area next to the drive way.**
- **Inspected the Septic Tank from the opening in the center and found the septic tank to be made of concrete and in good condition. The septic tank was installed in the mid-1990s.**
- **The ex. Septic tank is appox. 1 mtr wide and 1.5m deep to the water level**

Please see attached photos below:

Sub-Division Land Capability Assessment (LCA)

Commissioned on 09 September 2025 and prepared for: Colin Parkes

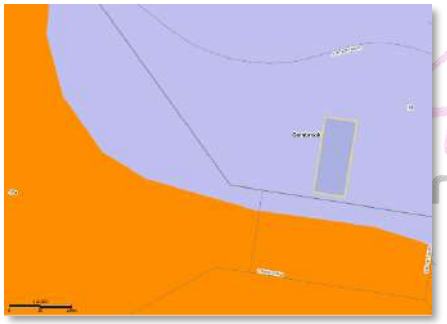
LCA Site: 28-30 Main St, Gembrook 3783

GPS: -37.950209, 145.541839

Report Date: 23 September 2025

Reference: 1433-090925-H

Refer to Site Analysis Plan section 10.0, Conclusions and Mitigation Recommendations section 17.0.



Geotechnical Executive Summary

Field Assessment Date 17 September 2025

Project: **28-30 Main St, Gembrook 3783** Reference: 1433-090925-H

Client: [redacted] Commissioned Date: 09 September 2025

Summary: The results of our land capability assessment conclude that on-site wastewater management **contains moderate constraints** for on-site wastewater management. **Successful capability can be achieved** with appropriate design measures as mentioned throughout this report for use with the **proposed**. Refer to Section 10.0 for Analysis Plan, Section 6.0 and 17.0 for **Conclusions and Mitigation Recommendations, Section 3.2 for site assessment particulars.**

General Notes and Report Recommendations:

- Secondary Quality Treatment 20/30
- Sub-surface irrigation area of **538 m² at 3.5mm DIR**.
- Using WELS rated efficiency fixtures and fittings the irrigation area can be reduced to **448 m²**.
- Based on a maximum 3-Bedrooms.
- This report assumes that the original dwelling's septic effluent and dispersal is located within its proposed boundary and within the required setback distances and is NOT within the new proposed allotment.

[redacted]

BGeolSc (*Monash*)

Table of Contents

1.0 Acronyms

AS/NZS:	Australian Standard/New Zealand Standard
BOD:	Biochemical Oxygen Demand
BOM:	Bureau of Meteorology
DEPI:	Department of Environment and Primary Industries
DIR:	Design Irrigation Rate
DLR:	Design Loading Rate
DSE:	Department of Sustainability and Environment
EA:	Emerson Aggregate
EAC:	Emerson Aggregate Class
EC:	Electrical Conductivity
EPA:	Environment Protection Authority
ESP:	Exchangeable Sodium Percentage
ET:	Evapotranspiration
LCA:	Land Capability Assessment
LAA:	Land Application Area
LPED:	Low Pressure Effluent Distribution
MAV:	Municipal Association of Victoria
RF:	Rainfall Runoff Factor
RR:	Retained Rainfall
SAR:	Sodium Absorption Ratio
SS:	Suspended Solids
TDS:	Total Dissolved Salts
TN:	Total Nitrogen
TP:	Total Phosphorus
P:	Test Pit
TSS:	Total Suspended Solids
WATL:	(Bureau of Meteorology) Department of Water and the Land

2.0 Property Details and Particulars

Subject Site:	28-30 Main St, Gembrook 3783
Environmental/Geotechnical Service:	Sub-Division Land Capability Assessment (LCA)
GPS:	-37.950209, 145.541839
Commissioned by:	[redacted]
Prepared by:	[redacted]BGeolSc (Monash)
Commission Date:	09 September 2025
Council (LGA):	Cardinia
Site Size:	Area defines approximately 3735m^2
Council Planning Zone & Overlays:	Zone: (NRZ). Overlays: (DDO), (SLO), (SLO1), (VPO), (VPO2),
Flood Prone:	Not in a Flood prone Area (MapshareVic)
Field Assessment:	17 September 2025
Assessment Risk:	Moderate
Rural Water Authority:	Southern Rural Water
Retail Water Corporation:	Yarra Valley Water
Is the site in a Catchment area?	Not within a catchment area

Note: Articulated sewage is not available or within reasonable proximity (source: Greater Western Water).

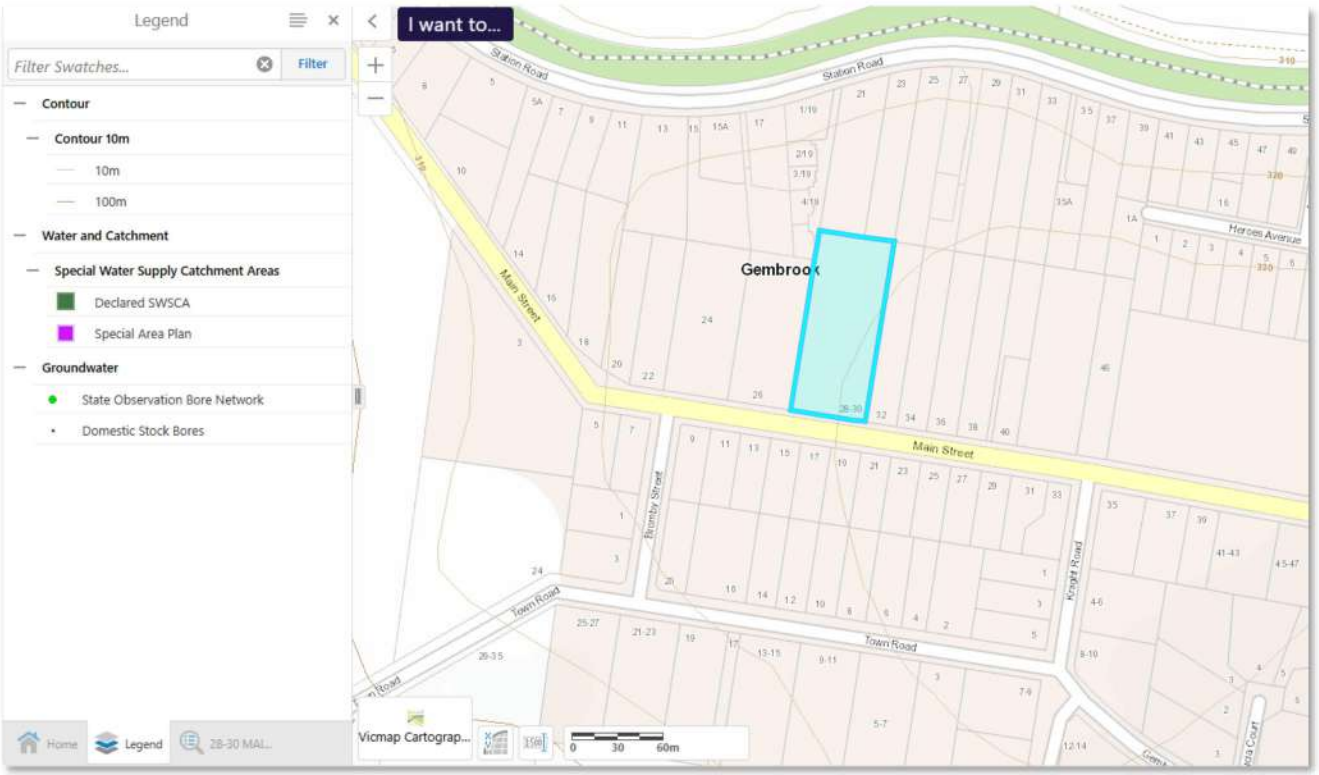


Figure 2.1 source: Mapshare

3.0 Introduction

Instruction from the clie[redacted]was commissioned on **09 September 2025** for the purpose of **a Sub-division land capability assessment (LCA) for septic capabilities of a new allotment. The client intends to sub-divide an allotment from the existing parcel of land known as 28-30 Main St, Gembrook. It was indicated that a 3-bedroom dwelling would be constructed on the new parcel.** Note that it is assumed that the existing septic and dispersal is located within the existing parcel of land containing the existing dwelling with appropriate setback distances conforming to EPA and Council guidelines. A land capability assessment was conducted at site on **17 September 2025** following Australian Standards (AS1557-2012), (AS1726), EPA GOWM and 891(4) code of practice, MAV framework, council guidelines and recommends a conceptual design, placement and recommendations for monitoring and management. The purpose of the report is to accompany a sub-division to council with suitable system and dispersal area recommendation.

3.1 Competent Persons

The 4 Spheres acknowledges that the person/s herein conducting field tests, assessing the land capability and reporting is tertiary qualified in Geosciences incorporating tertiary studies in (hydrogeology and environmental geoscience, geology, environmental chemistry-water, chemistry, geomechanics) with suitable industry training and experience and has the appropriate professional indemnity insurances for such evaluations and assessments. Our professional indemnity certificate is available on request.

3.2 Site Assessment Particulars

3.2.1 Proposed Improvements

Proposed Sub-Division:	Proposed Dwelling Size
LCA was conducted for a **proposed sub-division.** The potential maximum design flow was based on a maximum of 3 bedrooms (and includes other rooms >7.5 sq.m being reasonably capable of becoming a future bedroom).	Total 3-Bedrooms
Potable water source:	Town water (180) L/Per.day
Available application area (LAA)	>600sq.m
Reserve area	N/A. GOWM recommends reserves areas for Trench and Bed LAA's only.

3.2.2 Site Keys Features

70th Percentile annual rainfall	1321mm
Average annual evaporation (mm)	1063mm
Elevation Above Sea Level	Approx. 320-330m
Slope (approximate):	Between 3-5°
Drainage direction (approximate):	Northeast
Proximity to open water (as defined by the Water Act 1989 (m):	>60m
Proximity to ground bore:	>60m

3.2.3 Soil Analysis

Surface type:	Grassland/Pasture
Trees in vicinity of LAA:	N/A
Soil texture and soil Category:	0-250mm Silty Clay loam topsoil **(CAT 4)**, 250-1200mm Clayey SILT Loam **(Limiting (Cat 4). 1200-1500** Clayey SILT Loam.
Indicative field Permeability (K_{sat})(m/d):	0.5-1.5m/day
Soil Textural Classification Method.	
Structure	High-Moderately Structured
Ground water table:	>2.0m

3.2.4 Site Constraints

Cat 6 soils, Space Constraints	Refer to Mitigation Recommendations (sect. 17.0), Site Plan (sect. 10.0). Constraints sect.9.0).

3.2.5 Wastewater system sizing

Total Rooms + 1	3+1= 4 Total
Flow concessions (conservative)	180
Design wastewater flow (L/day):	720
Adopted Design Irrigation Rate (mm/day) considering soil amelioration and carrying capacity improvement.	3.5mm/day
Indicated Dispersal:	MAV Subsurface Drip irrigation area (**538 sq.m**).
Primary or Secondary:	Secondary Quality 20/30.
Recommended dispersal system:	Pressurised and alternatively dosed Shallow Sub-surface irrigation. (2 fields)

3.2.6 Management

Periodic servicing	As per engineering or manufactured design
Desludging	3 years or as per technician
System checks and inspection of LAA	As above

4.0 Choosing a Suitable Treatment and Disposal System

It is the owner or new dwelling applicants' responsibility to choose a final treatment system and dispersal method as per recommendation option/s within an applicable LCA report. Recommendations shall consider the site characteristics, soil analysis, standards and guidelines. The chosen system **will require a designed site plan by commissioned septic plumbers** detailing the layout and scale of the wastewater treatment system and dispersal area. Plumbers must check measure the dispersal area and confirm the area and setback distances prior to council application. The design layout forms part of a council application to install a wastewater treatment system. Table 6.0 (Section 8) shows available treatment systems that will meet the site and soil characteristics assessed.

5.0 Site Overlay.

Information supplied by client plus communications suggests a total of 3 bedrooms for any future development and to make a total of 3 Bedrooms for the purposes of assessment. Figure 5.1 shows the proposed sub-division plan and was the current plan at the time of the report.

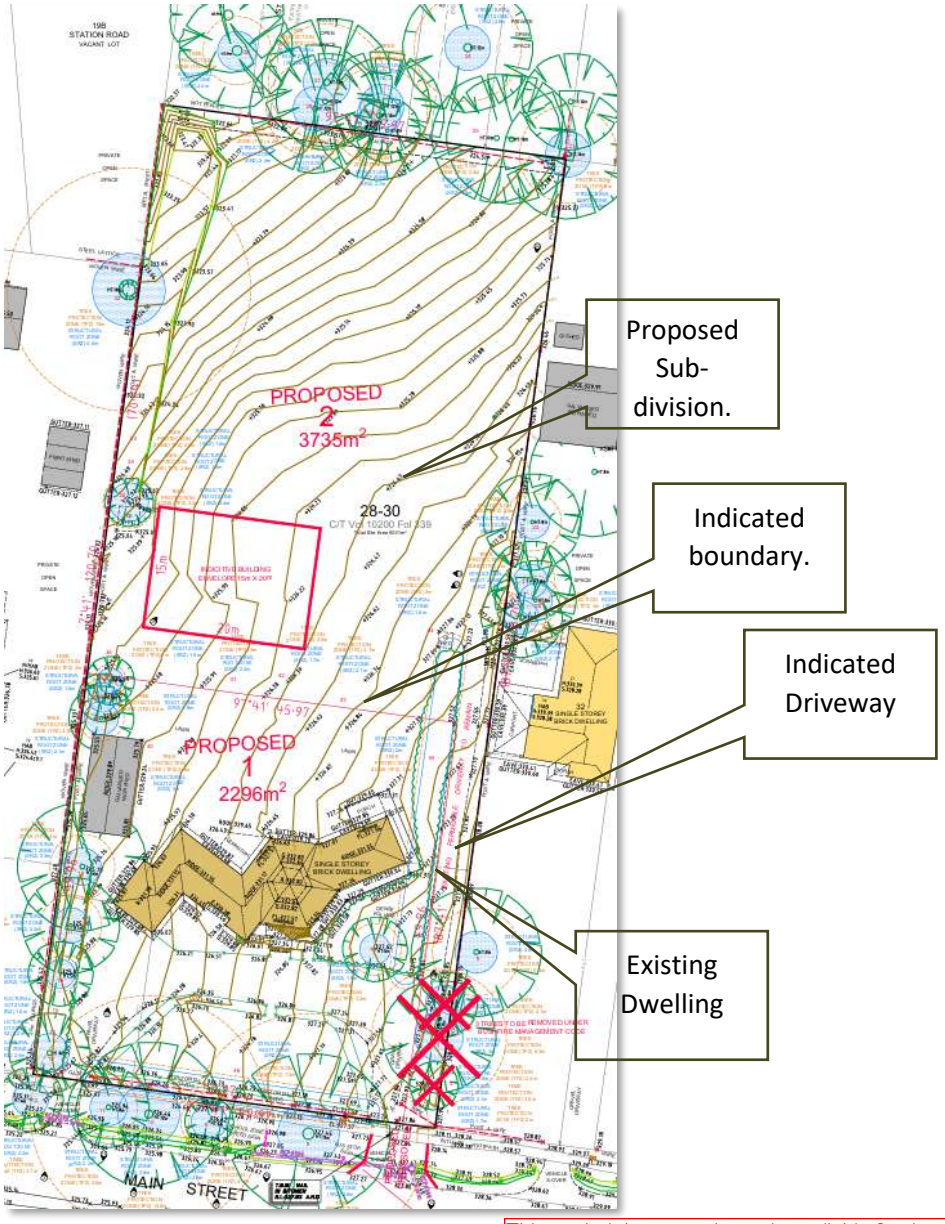


Figure 5.1 Shows the sub-division proposal.

6.0 Identified Constraints (if any)

Desktop and field studies identified the following constraints. In terms of minor, moderate or major constraints:

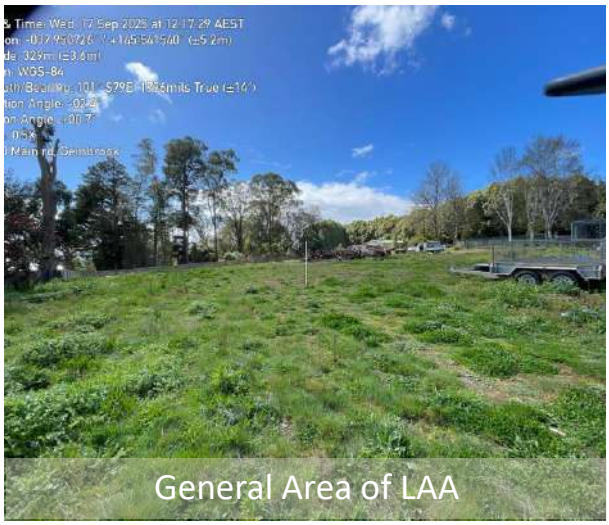
Table 6.1 indicates observed constraints and suggested mitigations.

Constraints	Mitigation
Higher density Zones smaller Land Area	1. Use of Secondary Quality Treatment 20/30.
Limiting CAT 4 Soils, (Moderate).	1. Use a pressurised shallow sub-surface irrigation drip system with alternating dosing beds. 2. Place emitters 120mm into ground, back fill. Add 30mm finished Layer of humic rich topsoil over application area to make emitters 150mm below finished ground level. 3. Seed with grass or lay turf as per Landscape design. Use 'all year' moisture tolerant grasses.

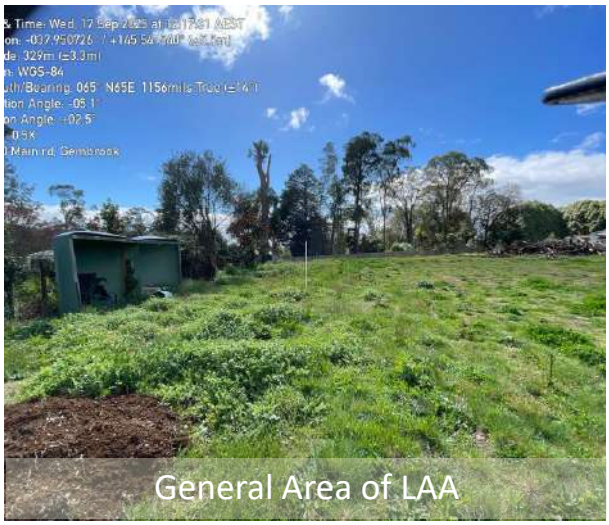
7.0 Site Photographs of the proposed effluent field.

Plan view of Property

General area of LAA

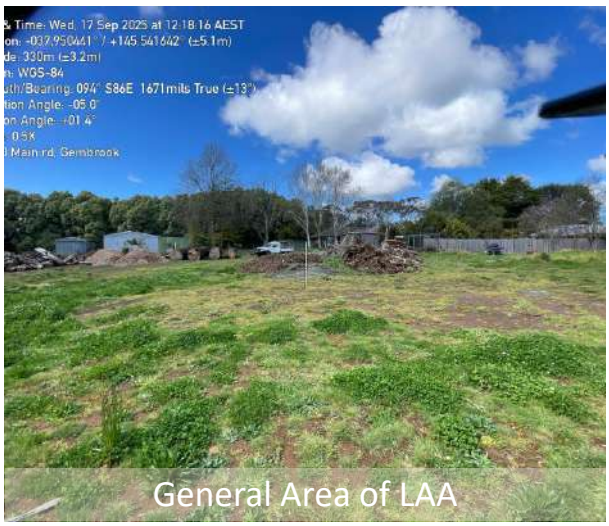


General Area of LAA



General Area of LAA

General Area of LAA



General Area of LAA

8.0 Site and Soil Assessment

A field site assessment was conducted at the location as per Appendix A on 17 September 2025. Table 8.1 describes the waste treatment and dispersal system recommended.

Table 8.1 Site Assessment

Treatment and effluent systems options considered are:

Treatment System

Waste Treatment System	Pros	Cons
~~Option A:~~ **(Not Recommended)** Primary Treatment Systems Anerobic (Septic tank), Aerobic biological filter (wet composting, vermiculture). (Removes approximately 30% of pollutants).	Minimal maintenance Solid construction Inexpensive to operate	Design service life of 15 years Generally, not allowed on blocks <8000m² **Lower quality final effluent** Not suitable for high or low hydraulic conductivity areas Not suitable in environmentally sensitive areas Must be connected to sewer if it becomes available Desludged every 3 years
Option B: (Recommended) EPA approved aerobic biological processing and settling or filtering of effluent. (Secondary Treatment System (20/30). Removes approximately 90% of the pollutants.	**Excellent final quality effluent** Suitable for environmentally sensitive areas Suitable for high and low hydraulic conductive areas Suitable for sandy sites Suitable for rocky sites Suitable for steep sites Suitable for high ground water sites Suitable for shallow subsurface and drip irrigation	More expensive to install and operate Requires electricity connection Desludged every 3-5 years Quarterly servicing
~~Option C:~~ **(Not Recommended)** **Primary Anerobic Treatment System coupled with a Secondary Add-on e.g. Approved Sand Filter System or another approved Add-on.**	**Excellent final quality effluent** Suitable for environmentally sensitive areas Suitable for high and low hydraulic conductive areas Suitable for sandy sites Suitable for rocky sites Suitable for steep sites Suitable for high ground water sites Suitable for shallow subsurface and drip irrigation	Can be more expensive to install and operate Requires electricity or Solar Battery connection Desludging every 3-5 years Some servicing
~~Option D:~~ **(Not Recommended)** **Pump Out System (S.T.C.A)**	No environmental impact from dispersal	Ongoing Cost Frequent Pump Outs May not be permitted by Council (S.T.C.A).

Dispersal System

Dispersal System	Pros	Cons
~~Option 1~~ **(Not Recommended)** Conventional absorption Trenches and Beds	Works well with natural slope to 15% Most suitable for soil categories 3 -5 Can be used with Primary Treatments systems	Not suitable in prolonged soil saturation from high rainfall More disturbance during installation
~~Option 2~~ **(Not Recommended)** Evapo-Transpiration Absorption (ETA) Bed systems	Works well with natural slope Suitable for soil categories 4 -6 Can be used with Primary Treatments systems	Not suitable in prolonged soil saturation from high rainfall Max slope 10%
~~Option 3~~ **(Not Recommended)** Wick trenches and bed system	Can be used with Primary and Secondary Treatments systems Can be Terraced on sloped Topography	Requires experienced Installation
~~Option 4~~ **(Not Recommended)** Mounds systems	Good in shallow soils Suitable in Category 4 – 6 Soils Can be used with Primary Treatments systems	Not suitable in prolonged soil saturation from high rainfall Can take up space, maybe require imported sands
~~Option 5~~ **(Not Recommended)** Low pressure effluent distribution (Lped) system	Can be used with Primary Treatments systems	More expensive to install
~~Option 6~~ **(Not Recommended)** Pressurised subsurface irrigation systems (requires secondary treatment)	Max slope 30% Good in shallow soils Good in all rainfall climates	Prolonged saturation in upper soils impedes treatment and hinders absorption Requires more dispersal space
Option 7 (Recommended) Sub-Surface irrigation systems (requires secondary treatment)	Suitable for soil categories 1 -6	Prolonged saturation in upper soils impedes treatment and hinders absorption Max slope 10%
~~Option 8~~ **(Not Recommended)** Specialised Systems (Reed Beds, Sand Filters, Lined Beds etc.	Provides natural treatments,	Can require plant resets, Treatment still requires discharge to land application

LCA Reference number: 1433-090925-H

9.0 Soil Analysis and Constraints

Soil Survey Analysis and assessment

A soil survey was conducted using soil texture classification methods and constant head permeability test at the site to determine suitability for application of treated effluent. Soil investigations were conducted at various locations including the vicinity of the proposed dispersal envelope (Appendix B), 3 boreholes were sufficient to adequately characterise the soils as little to no variations were detected throughout the area of interest. Two major soil horizons were encountered in these investigations. Full profile descriptions are provided below and within Appendix C. Samples of all discrete soil layers for each soil type were collected for subsequent analysis of pH, electrical conductivity and a modified Emerson aggregate class particularly with the limiting layer. (Figures 9.1-9.4) shows partial Emerson class evaluations showing **Slaking and No Dispersion**. Table 9.1 describes the soil constraints for soils encountered to a depth of 1500mm and any mitigation requirements. Further soil descriptions refer to soil profile logs in (Appendix C). Note ground water was not detected. Note that part of the LAA contains surface fill (see soil logs).

Figure 9.1 Partial Emerson Class Evaluation at Start

Figure 9.2 Partial Emerson Class Evaluation at Finish after 10 minutes suggests slaking and No dispersion.

Figure 9.3 Partial Emerson Class Evaluation at Finish after 10 minutes suggests slaking and No dispersion.

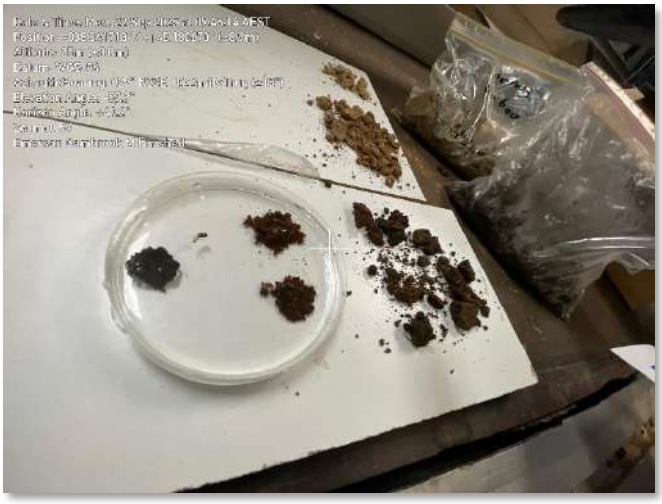


Figure 9.4 Partial Emerson Class Evaluation at Finish after 10 minutes suggests slaking and No dispersion.

9.1 Soil Parameters and Constraints

Table 9.1 Indicates Soil Parameters and Constraints

Soil Parameters and Constraints				
Feature	**Assessment**		**Level of Constraint**	**Mitigation Measures**
Water table (depth to)	Groundwater was not encountered.		Minor Mitigation:	 NN
Cation Exchange Capacity (CEC)	Not physically assessed.		Minor Mitigation:	 NN
Electrical Conductivity	EC was assessed and a non-saline Class 2 salinity hazard was established and may have effects on sensitive flora, however most grasses will not be affected.		Minor Mitigation:	 NN
Modified Emerson Aggregate Class	Emerson Class 3, Slaking and moderate dispersion.		**NN**	
pH	Soil field pH tests were between pH 7.0-7.5 (see soil logs appendix C). pH ranges between 5.0-8.0 are suitable for growth of many plants.		Minor	NN
Rock Fragments	<<1% coarse fragments in soil horizons.		Minor	NN
Sodicity (ESP)	Not Tested		Minor	NN
Sodium Absorption Ratio (SAR)	SAR not assessed.		Minor	NN
Soil Permeability & Design Loading Rates	(Sub-surface irrigation) DIR of **3.5mm/day** has been determined and recommended after any mitigation or amelioration of LAA (if any).	Moderate	**Place emitters 120mm into natural ground. Add an additional layer of 30mm humic rich topsoil over to make emitters a total of 150mm below finished ground level. spread topsoil 500mm past extents of LAA. Grass or Turf with "All-year" moisture resistant grasses, water regularly until treatment system is functioning, mow regularly. Level with humic rich topsoil where depressions may form.**	

NN: not needed.

9.2 Risk Assessment of Site Characteristics

Table 9.2 Risk Assessment of the Site Characteristics

Risk Assessment of Site Characteristics					
Characteristic	**Level of Constraint**			**Assessed Level of Constraint for Site**	
	Nil or Minor	**Moderate**	**Major**		
Aspect (Affects solar radiation received)	North / North-East / North-West	East / West / South-East / South-West		South	***Area is open and will receive a good amount of wind and solar.***
Climate (Difference between annual rainfall and pan evaporation)	Excess of evaporation over rainfall in the wettest months	Rainfall approximates to evaporation	Excess of rainfall over evaporation in the wettest months	***Rainfall is based on 70th percentile which provides a buffer. Water balance and soil amelioration will be adequate to remove excess moisture.***	
Erosion (or potential for erosion)	Nil or minor	Moderate	Severe	**Nil**	
Exposure to sun and wind	Full sun and/or high wind or minimal shading	Dappled light	Limited patches of light and little wind to heavily shaded all day	Nil	
Fill (imported)	No fill or minimal fill, or fill is good quality topsoil	Moderate coverage and fill are good quality	Extensive poor-quality fill and variable quality fill	Nil	
Flood frequency (ARI)	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	Nil	
Groundwater bores	No apparent bores listed on Mapshare or within the vicinity of neighbouring properties	Setback distance from bore complies with requirements in EPA Code of Practice 891.3 (as amended)	Setback distance from bore does not comply with requirements in EPA Code of Practice 891.4 (as amended)	Nil	

Cont... Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Land area. available for LAA	Exceeds LAA and duplicate LAA and buffer distance requirements	Meets LAA, Little/No reserve available, meets buffer distance requirements	Insufficient area for LAA	Nil
Landslip (or landslip potential)	Nil	Minor to moderate	High or Severe	**Note: Landslip is always a potential where slopes are concerned but not likely in this situation.**
Rock outcrops (% of surface)	<10%	10-20%	>20%	Nil
Slope Form (Affects water shedding ability)	Convex or divergent side-slopes	Straight side-slopes	Concave or convergent side-slopes	*Raised Bed Flat site, No run-on expected.*
Slope gradient (%)				
(a) for absorption trenches and beds	<6%	6-15%	>15%	N/A
(b) for surface irrigation	<6%	6-10%	>10%	**Not recommended in Victoria**.
(c) for subsurface irrigation	<10%	10-30%	>30%	Nil.
Soil Drainage (qualitative)	No visible signs or likelihood of dampness, even in wet season	Some signs or likelihood of dampness during wetter months.	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface, soil pit fills with water	*Raised Bed*

Cont... Characteristic	Level of Constraint					Assessed Level of Constraint for Site
	Nil or Minor	Moderate			Major	
Stormwater run-on	Low likelihood of stormwater run-on			High likelihood of inundation by stormwater run-on		Nil
Surface waters - setback distance (m)	Setback distance complies with requirements in EPA GOWM Code of Practice/AS1547 (as amended)				Setback distance does not comply with requirements in EPA GOWM Code of Practice/AS1547 (as amended)	Nil
Vegetation coverage over the site	Plentiful vegetation with healthy growth and good potential for nutrient uptake	Limited variety of vegetation	Sparse vegetation or no vegetation		***Moderate: Soil amelioration and the addition of humic topsoil would be required***. See Section 17.0	
Soil Drainage (Field Handbook definitions)	Rapidly drained. Water removed from soil rapidly in relation to supply, excess water flows downward rapidly. No horizon remains wet for more than a few hours after addition	Well drained. Water removed from the soil readily, excess flows downward. Some horizons may remain wet for several days after addition	Moderately well drained. Water removed slowly in relation to supply, some horizons may remain wet for a week or more after addition	Imperfectly drained. Water removed very slowly in relation to supply, seasonal ponding, all horizons wet for periods of several months, some mottling	Poorly/Very poorly drained. Water remains at or near the surface for most of the year, strong gleying. All horizons wet for several months	

Nil or Minor: If all constraints are minor, conventional/standard designs are satisfactory.
Moderate: For each moderate constraint, an appropriate design modification over and above that of a standard design, should be outlined.
Major: Any major constraint might prove an impediment to successful on-site wastewater management or alternatively will require in-depth investigation and incorporation of sophisticated mitigation measures in the design to permit compliant onsite wastewater management.

10.0 Site Analysis Plan

Recommendations

It is specifically recommended that:

- **The recommendation is based on a 3-Bedroom dwelling Size.**
- **A Secondary Treatment System 20/30** be used due to constraints (Section 6.0).
- **For a Dwelling Application** (As a condition of the application or included within the septic application) **A detailed and scaled Plumber's plan drawing of the complete treatment system**, piping, fittings and outlay be obtained from the commissioned licensed plumbing installers prior to and submitted with the application permit for a septic/treatment system**. Note landscape design will need to consider the LAA which must not be obstructed or built over (including paths or driveways).**
- **Requires 538sq.m of shallow sub-surface irrigation system** with **dual timer dosed fields** sized to the effective area as described in section 3.2 or (as above) wastewater system sizing, site plan section 10 and the example in Appendix E, with emitters installed 150mm below the finished surface for sustainably recycling of secondary treated sewage effluent to land which is pressure-compensating sub-surface irrigation (with disc or mesh filters and scour and vacuum valves) which evenly distributes effluent throughout the irrigation area. Where distribution pipes (driplines) fill up with effluent until a certain pressure is reached which opens emitter valves. More controlled pressure can be applied when the field is divided into two or more zones and are **alternatively dosed using a sequencing valve**.
- **Install drip emitters 120mm** into ameliorated ground backfill after inspection (if required).
- **Build up the LAA above the emitters a further 30mm** with imported humic rich topsoil to add additional fertility and water holding capacity to the dispersal area to make finished emitter depth of 150mm and spread to the extents 0.5m either side of the emitter pipes.
- **Re-seed or turf with moisture tolerant grasses** or as per professional land scaped design where parts of the LAA may have to be included. (You may contact council or other competent/knowledgeable persons (e.g., turf specialist) for suitable grass recommendations for the region). This is important to promote good nutrient and moisture uptake and mow regularly to promote evapotranspiration, nutrient uptake and growth. Continue to assist growth until the treatment system begins to operate.
- **Alarm the treatment system** to notify users of any system failure.
- **Add Signage** to the LAA to inform persons of effluent dispersal in the area.
- **Educate the end users**, create and execute scheduled maintenance programs.
- **Avoid driving vehicles or heavy equipment** on the effluent dispersal area. Fence to avoid where appropriate.
- **Consider final design incorporating driveways, shedding or other structures.**

Note_1: Pool wastewater (if any) **must not** be connected to the treatment system which will cause biological and system failure. Pools must use their own self sufficient recirculation system such as dedicated sand recirculation filtration.

Site Analysis and Plan

Sensitivity Analysis

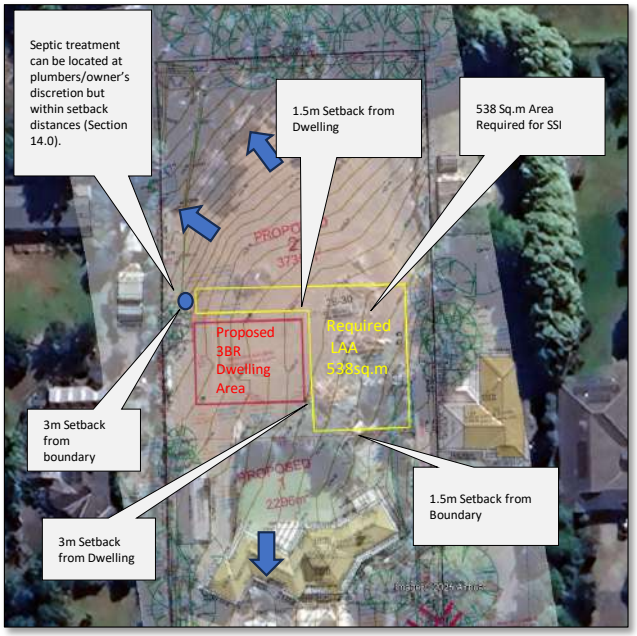
As per Section 9.0 and Appendix C
Available Area (Sq.m) 540 Sq.m.
Actual required LAA (Sq.m) 538 Sq.m
Adopted DIR 3.5mm/day (after amelioration).
Dist. To waterway: >60m
Dist. To Bores: >60m
Dist. To Vertical Water Table: >2.0m

LAA Site Constraint Analysis

Slope/Topography	1
Lot Size	3
Soil Suitability	3
Drainage/Inundation	2
Depth to Water	1
Distance to Water	1
Constraint (Σ)=	11

1. Ideal – 2. Minor - 3. Moderate - 4. Poor - 5. Very Poor

Ideal No Constraints = 6
Moderate Constraints = 7 – 12
Major Constraints = > 12



Legend

Drainage Direction
Effluent Land Application Area (LAA)
Secondary Treatment System
Dwelling Area

Scale is approximate only and must be checked by a licensed plumber.

Land Capability Assessment 20-30 Main St, Gembrook 3783	GPS reference -37.950209, 145.541839	Plan Source: SCLA. Plan Not to Scale

Note: Design plans are to be designed by a licensed plumber. Scaled design plans will be required **as part of the council septic application or a condition within the permit**. See (Appendix F) for an expanded view.

LCA Reference number: 1433-090925-H

11.0 Vegetation Impacts

Indicated field permeability rates (as given in section 3.2) must not be exceeded by wastewater input rates and storm water run-on should be diverted away from entering the dispersal area in order not to overwhelm the dispersal area with excessive moisture which can cause vegetation and soil impacts. Furthermore, chemicals and salts can also have large impacts on the dispersal areas biological eco-system which could lead to system failure.

12.0 Suitable Waste Treatment and Land Area Application (LAA) Systems

The purpose of on-site wastewater management guidelines, EPA codes of practice and Australian Standards is to establish a treatment system that is sustainable and protects public health and the environment including impacts on vegetation to keep the effluent safely and sustainably within the allotment boundaries. Receiving soils are not impervious to eventual blocking of interstitial pore spaces, therefore do have a finite service life and higher quality effluent systems apply less pollutant particles therefore contribute to design life but come at a higher financial cost. To this end the results of the abovementioned risk analysis and assessments along with the guidelines have determined that the following treatment systems and dispersal systems have been offered for consideration. Based on client preferences and the minimum suitability criteria and assessment, we have recommended the following treatment and dispersal systems for the site.

12.1 Water Based Treatment Systems

Treatment systems are divided into two types of effluent treatment systems, 'Primary' and 'Secondary' treatment which are based on the output quality of the effluent from the treatment systems. As follows:

Primary onsite wastewater management (EPA Approved 891(4)

Treatment System	Effluent Disposal Options
~~Anaerobic (septic systems)~~	~~Absorption Trenches/Beds,~~ ~~Evapo-Transpiration Absorption (ETA) Beds,~~ ~~Low Pressure Effluent Distribution (LPED),~~ ~~Mounds,~~ ~~Wick Trench and Beds~~
~~Aerobic Biological Filter (wet composting, vermiculture)~~	

Secondary onsite wastewater management (EPA Approved 891(4)) ✓

Treatment System	Effluent Disposal Options
Sewage and Grey water	Absorption Trenches/Beds, Evapo-Transpiration Absorption (ETA) Beds, Low Pressure Effluent Distribution (LPED), Mounds, Sub-surface irrigation with pressure compensating valves. ✓ Wick Trench and Beds
Aerated Wastewater Treatment System (AAWTS) 20/30	
Biological Filters (wet composting, vermiculture) 20/30	
Membrane Filtration	
Ozonation	
Reed Beds	
Sand Filters	
Textile Filters	
Trickling Aerobic Filters: (foam, plastic, mixture of media)	

✓ **Represents the best practicable option when considering the effluent quality and area footprint and constraints with limitations, sensitivity and the requirement for sustainable long-term environmental and health wastewater management (as above).**

12.2 Recommended Secondary Treatment System

We recommend using a **Secondary Treatment System 20/30** treatment quality size to suit the design flow. due to the proximity to river systems and proximity to land inundation areas. All waste tank operational capacities must meet the design flow or number of bedrooms. Desludging service times are as per the manufacture's service agreement or maintenance recommendations.

12.3 Sizing the design flow.

Calculation of daily design flow Rate

Information received from the client requires a maximum peak design flow based on the number of bedrooms including other rooms reasonably capable of becoming a bedroom that is an area >7.5 sq.m. The peak design flow is based on (3 bedrooms plus 1 for guideline purposes). The property has access to reticulated water. Additionally, we strongly recommend WELS rated fixtures and fittings to reduce peak design flow using water saving devices. Table H1 of AS1547 which provides a reduction in flow allowance for WELS fixtures of **30** (L/person/day) with such fixtures and fittings. However, a conservative design flow is calculated as follows:

Thus: (3 bedrooms + 1) x 180 L/day = Total **720 L/day** is required for the daily design flow.

12.4 Sizing of the dispersal area

In sizing the required dispersal area, **we adopted the MAV irrigation spreadsheet (Appendix G)**. As a further check we calculated the irrigation size based on the equation given by (RMIT, 2009) as follows:

Sizing calculations:

$$\mathbf{IV = DIR \times m^2} \qquad \text{Equation 1}$$

Legend:

IV = Irrigation Volume
DIR = Design Irrigation Rate in mm/day
m^2 = Proposed Land Application Area (LAA)

12.5 Sub-surface irrigation area

Using the above equation, with conservative land area inputs of 450m^2 of irrigation using the following sizing information:

Q = 720 L/day
DIR = 3.5 mm/day (incorporating amelioration)
Conservative (LAA) of 450 m^2

The above demonstrates based on the above equation and inputs, that the soil in this area has the capacity to dispose of **1575L** of effluent a day based on **3.5mm/day** on an area of **450m^2.** The total design flow for this dwelling is **720L** of effluent a day. The land is sufficient (with excess capacity) to support an irrigation system with these inputs. The adopted irrigation area is **538m^2** after a water balance as per below.

NOTE 1: a further irrigation and water balance was conducted using the Municipal Association of Victoria (MAV) irrigation and water balance spreadsheet and **was adopted as the preferred method** to calculate the dispersal area being **538m^2** for the land application area (LAA) (Appendix G) (Appendix H).
NOTE 2: if WELS water saving devices area used the LAA area can be lowered to 448sq.m (see Appendix I.

13.0 Storm Water Measures

Any LAA that is affected by stormwater can affect low lying topography or downslope slope characteristics run on from overland or perched subsoil waters. It is particularly important to mitigate any possibility of overland or perched water inundation in the dispersal area, diversion and deeper drainage should be constructed. Stormwater creates a risk during significant rainfall events which can overwhelm dispersal areas and best practice is to divert and mitigate any potential influences. **In this case we do not recommend storm water measures as the and existing topography and road stormwater drainage will suffice for overland flow.**

14.0 Setback Distances

EPA 891(4) provides the following guidance for setback distances for various landscape features of structures.

Table 14.0 of setback distances sourced from EPA 891(4).

	Setback Distance (m)		
Landscape feature or structure	Primary sewage and greywater systems	Secondary sewage and greywater systems	Advanced secondary sewage and greywater systems 10/10/10
Building			
Wastewater field up-slope of building	6	3	3
Wastewater field down-slope of building	3	1.5	1.5
Wastewater up-slope of cutting/escarpment	15	15	15
Allotment boundary			
Wastewater field up-slope of adjacent lot	6	3	1
Wastewater field down-slope of adjacent lot	3	1.5	0.5
Services			
Water supply pipe	3	1.5	1.5
Wastewater up-slope of potable supply channel	300	150	150
Wastewater field down-slope of potable supply channel	20	10	10
Gas supply pipe	3	1.5	1.5
In-ground water tank	15	7.5	3
Stormwater drain	6	3	2
Recreational areas			
Children's grassed playground	6	3	2
In-ground swimming pool	6	3	2
Surface waters (up-slope of:)			
Dam, lake or reservoir (potable water supply)	300	300	150
Waterways (potable water supply)	100	100	50
Waterways, wetlands (continuous or ephemeral, non-potable); estuaries, ocean beach at high-tide mark; dams, reservoirs or lakes (stock and domestic, non-potable)	60	30	30
Groundwater bores	NA	50	20
Category 2b to 6 soils	20	20	20
Water table			
Vertical depth from base of trench to the highest seasonal water table	1.5	1.5	1.5
Vertical depth from irrigation pipes to the highest seasonal water table	NA	1.5	1.5

15.0 Reserve Area

A reserve area is a duplicate land area of equal size to the designated LAA which may be used as the alternative LAA if the original area fails, is inadequate, needs to be extended or rested. A reserve area is required for all Trench and Bed type dispersal arrangements including ETA and LPED systems unless council is satisfied that based on local knowledge and evidence from a comprehensive LCA that there is a minimal risk of negative impact on the environment or public health. We recommend that pressurized sub-surface drip irrigation dispersal is warranted due to higher density living as per zoning is appropriate and that Trench and Bed based systems should not be used. Reserve fields are required according to GOWM Section 4.4.4.

16.0 Operation, Training, Monitoring and Maintenance of the Wastewater System

The importance of this section cannot be overstated. It is a requirement that installers, manufacturers designers or commissioners of all on-site treatment systems **provide evidence of clear operational training to site users or residents** to incorporate maintenance programs or schedules, incident and emergency response procedures, provide adequate training for ongoing monitoring and recording of treatment systems which must include regular checking of the systems performance; including any warning alarms, odours, any excessive dispersal dampness, dying vegetation, regular checking of effluent levels via inspection ports, desludging (which must be mandatorily conducted as per manufacturers service agreement or approved maintenance contractor, or upon checking effluent levels on a quarterly basis (or as specified by the manufacturer) and training on appropriate use of household chemicals and salts being used within the system. Chemicals, detergents and salts with high sodium contents should be avoided as they can be detrimental to the biota and can kill soil microbes, block soil pore spaces, limit vegetation performance and will cause system failure. EPA 891(4) CL 2.3.4. suggests salts in the effluent field should be evaluated annually to determine salt levels, this is important to confirm the dispersal field is in good health to continue to process on-site effluent in the long term.

Ensure the treatment system receives on-going best practice and functions adequately, residents must at a minimum:

- ✓ Have a qualified contractor to service your treatment system at intervals recommended by the manufacturer.
- ✓ Use suitable household cleaning products with low sodium contents and low toxic chemicals.
- ✓ Refrain from poring spoils, oils and fats down the sewage drains of the system.
- ✓ Do not put sanitary items or other products into the system.
- ✓ Do not flush wipes down the system.

To ensure the LAA (dispersal) functions adequately, users/residents should at a minimum:

- ✓ Regularly mow the grassed dispersal area.
- ✓ Conduct checks, monitoring and complete records as per maintenance and manufacturers requirements.
- ✓ Regularly clean filters and check effluent levels.
- ✓ Avoid driving or livestock compressing LAA (Area should be fenced off from livestock).
- ✓ Avoid emplacing any structure over the LAA.
- ✓ Ensure LAA is correctly graded as intended at installation and apply superior quality topsoils (not clay) to cover any developing depressions.
- ✓ Check LAA for excessively wet areas.
- ✓ Check dispersal area for effluent odours.
- ✓ Desludge the system every 3 years or as per manufacturer's schedule maintenance program.
- ✓ Abide by the conditions and training set out by the manufacturer and the council permit.

17.0 Conclusion and Mitigation Recommendations

The results of our land capability assessment conclude that on-site wastewater management **contains minor - moderate constraints** for on-site wastewater management. However, these constraints can be mitigated to achieve appropriate design measures as mentioned throughout this report for use with what has been proposed, being no more than a dwelling with **3 bedrooms**. Moreover, we are of the opinion that the designated area should work satisfactorily. **Note** that council must approve any works or applications prior to undertaking of same.

It is specifically recommended that:

- **The recommendation is based on a 3-Bedroom dwelling Size.**
- **A Secondary Treatment System 20/30** be used due to constraints (Section 6.0).
- **For a Dwelling Application** (As a condition of the application or included within the septic application) **A detailed and scaled Plumber's plan drawing of the complete treatment system**, piping, fittings and outlay be obtained from the commissioned licensed plumbing installers prior to and submitted with the application permit for a septic/treatment system**. Note landscape design will need to consider the LAA which must not be obstructed or built over (including paths or driveways).**
- **Requires 538sq.m of shallow sub-surface irrigation system** with **dual timer dosed fields** sized to the effective area as described in section 3.2 or (as above) wastewater system sizing, site plan section 10 and the example in Appendix E, with emitters installed 150mm below the finished surface for sustainably recycling of secondary treated sewage effluent to land which is pressure-compensating sub-surface irrigation (with disc or mesh filters and scour and vacuum valves) which evenly distributes effluent throughout the irrigation area. Where distribution pipes (driplines) fill up with effluent until a certain pressure is reached which opens emitter valves. More controlled pressure can be applied when the field is divided into two or more zones and are **alternatively dosed using a sequencing valve**.
- **Install drip emitters 120mm** into ameliorated ground backfill after inspection (if required).
- **Build up the LAA above the emitters a further 30mm** with imported humic rich topsoil to add additional fertility and water holding capacity to the dispersal area to make finished emitter depth of 150mm and spread to the extents 0.5m either side of the emitter pipes.
- **Re-seed or turf with moisture tolerant grasses** or as per professional land scaped design where parts of the LAA may have to be included. (You may contact council or other competent/knowledgeable persons (e.g., turf specialist) for suitable grass recommendations for the region). This is important to promote good nutrient and moisture uptake and mow regularly to promote evapotranspiration, nutrient uptake and growth. Continue to assist growth until the treatment system begins to operate.
- **Alarm the treatment system** to notify users of any system failure.
- **Add Signage** to the LAA to inform persons of effluent dispersal in the area.
- **Educate the end users**, create and execute scheduled maintenance programs.
- **Avoid driving vehicles or heavy equipment** on the effluent dispersal area. Fence to avoid where appropriate.
- **Consider final design incorporating driveways, shedding or other structures.**

Note_1: Pool wastewater (if any) **must not** be connected to the treatment system which will cause biological and system failure. Pools must use their own self sufficient recirculation system such as dedicated sand recirculation filtration.

18.0 Validation

Collection of information and its appraisal should continue during any construction works (and during use), to confirm or otherwise the assumed ground model. In most cases, this is undertaken by an experienced contractor, building/construction surveyor, superintendent, clerk of works or engineer. In some cases, it is preferred that consultants or licensed plumbers assesses and monitors the ground conditions (which may also include special control testing) during construction and ongoing use particularly considering potentially poor or variable conditions or unexpected findings.

19.0 Important Information

19.1 Expectations of a Geotechnical report

This geotechnical report is intended to be used by technical construction designers, engineering designers and licensed plumbers to provide them with specific site information to manage risks associated with site specific geotechnical conditions. Geotechnical services and engineering are a less exact science than other engineering disciplines and longer-term dynamic earth processes along with changing climate can affect geotechnical assessments which can influence site conditions that can lead to consequential damage or failure. Furthermore, the effect of humanmade climate change is unknown and may play a significant long-term role. This report considers due diligence and considers a duty of care where safety of life, health and the health of the environment are concerned when presenting the information contained. Information is included within the document to help you understand where our responsibilities as geotechnical and environmental consultants begin and end. **Note that we have an 18-month expiry limitation on the validity this report from the report date.** This is due to the changing environment (natural and humanmade). Information is also provided to help the designers, constructors and ongoing owners to recognise their responsibilities and risks regarding design, design life, site conditions, management and economical design as mentioned throughout the applicable standards, references and guidelines.

19.2 Site and Project Specific Report

This report should not be used for any other purpose and is site and condition specific and has been written before any development or any change in ground conditions. You should always inform us of any changes including minor changes and request an assessment of their impact. Where we are not informed of developments that are relevant to your geotechnical report, we cannot be held responsible or liable for problems or damages that may arise consequently. This document and any attached materials, records or data are the sole property of The 4 Spheres. Ownership of the document remains with The 4 Spheres until all amounts owing by the client are fully discharged. No responsibility is accepted for any use other than the context of the investigation and location for which it was intended.

19.3 General Environmental Duty

We identify recent EPA Act 2017 legislation that requires general environmental duty to reduce risk to the environment and human health.

19.4 Report not for distribution.

This report and any attached materials are not to be distributed, disseminated, or otherwise conveyed throughout the public domain, social media or any other public communication network without authorisation to any third parties without the express written permission of The 4 Spheres. The client and / or its representatives alone shall have a license to use this report. This report shall not be reproduced except in full.

20.0 References

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21.0 Appendix A – Property Report

PLANNING PROPERTY REPORT

From www.planning.vic.gov.au at 19 September 2025 09:23 AM

PROPERTY DETAILS

Address:	**28-30 MAIN STREET GEMBROOK 3783**
Lot and Plan Number:	**Plan PC358223**
Standard Parcel Identifier (SPI):	**PC358223**
Local Government Area (Council):	**CARDINIA** www.cardinia.vic.gov.au
Council Property Number:	**2513001000**
Planning Scheme:	**Cardinia** Planning Scheme - Cardinia
Directory Reference:	**Melway 312 H10**

UTILITIES

Rural Water Corporation:	**Southern Rural Water**
Melbourne Water Retailer:	**Yarra Valley Water**
Melbourne Water:	**Inside drainage boundary**
Power Distributor:	**AUSNET**

STATE ELECTORATES

Legislative Council:	**EASTERN VICTORIA**
Legislative Assembly:	**MONBULK**

OTHER

Registered Aboriginal Party:	**Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation**
Fire Authority:	**Country Fire Authority**

View location in VicPlan

Planning Zones

NEIGHBOURHOOD RESIDENTIAL ZONE (NRZ)
NEIGHBOURHOOD RESIDENTIAL ZONE - SCHEDULE 1 (NRZ1)

GWZ - Green Wedge
MUZ - Mixed Use
NRZ - Neighbourhood Residential
PUZ1 - Public Use-Service and Utility
PUZ2 - Public Use-Education
PUZ6 - Public Use-Local Government
PUZ7 - Public Use-Other Public Use
TRZ2 - Principal Road Network
Railway line

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

PLANNING PROPERTY REPORT

VICTORIA State Government | Department of Transport and Planning

Planning Overlays

DESIGN AND DEVELOPMENT OVERLAY (DDO)
DESIGN AND DEVELOPMENT OVERLAY - SCHEDULE 2 (DDO2)

DDO - Design and Development Overlay Railway line

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

SIGNIFICANT LANDSCAPE OVERLAY (SLO)
SIGNIFICANT LANDSCAPE OVERLAY - SCHEDULE 1 (SLO1)

SLO - Significant Landscape Overlay Railway line

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

PLANNING PROPERTY REPORT

Department of Transport and Planning

Planning Overlays

VEGETATION PROTECTION OVERLAY (VPO)

VEGETATION PROTECTION OVERLAY - SCHEDULE 2 (VPO2)

VPO - Vegetation Protection Overlay Railway line

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

ENVIRONMENTAL SIGNIFICANCE OVERLAY (ESO)

HERITAGE OVERLAY (HO)

ESO - Environmental Significance Overlay HO - Heritage Overlay Railway line

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

LCA Reference number: 1433-090925-H

PLANNING PROPERTY REPORT

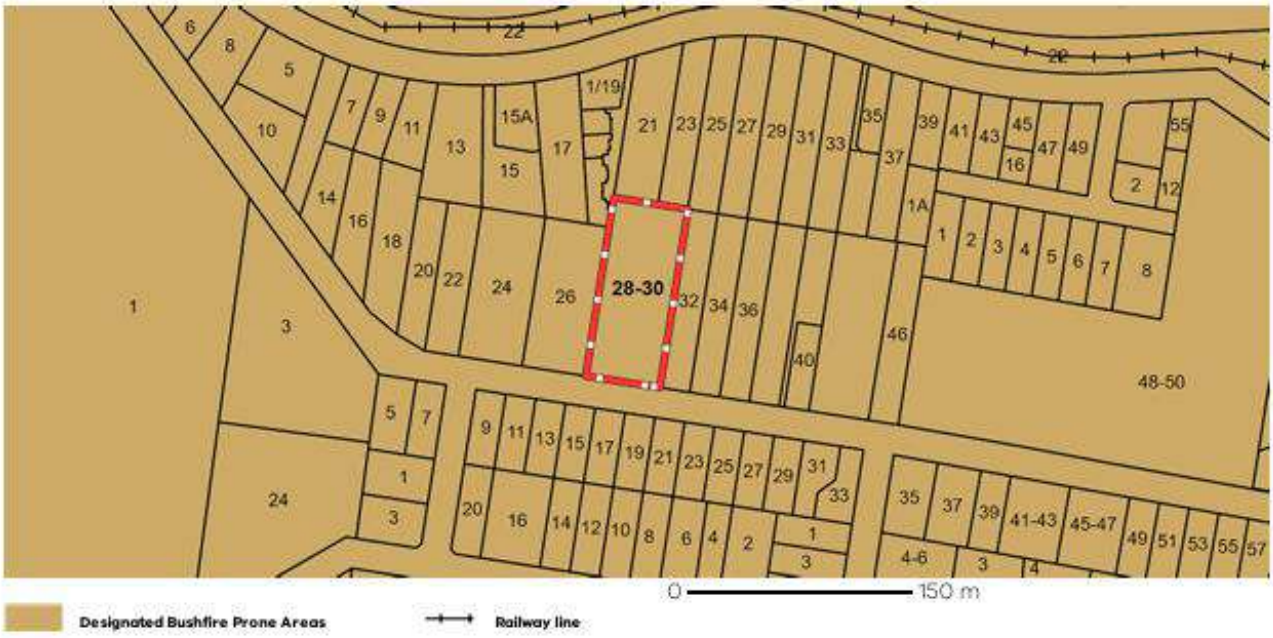
VICTORIA State Government | Department of Transport and Planning

Designated Bushfire Prone Areas

This property is in a designated bushfire prone area. Special bushfire construction requirements apply to the part of the property mapped as a designated bushfire prone area (BPA). Planning provisions may apply.

Where part of the property is mapped as BPA, if no part of the building envelope or footprint falls within the BPA area, the BPA construction requirements do not apply.

Note: the relevant building surveyor determines the need for compliance with the bushfire construction requirements.



Designated BPA are determined by the Minister for Planning following a detailed review process. The Building Regulations 2018, through adoption of the Building Code of Australia, apply bushfire protection standards for building works in designated BPA.

Designated BPA maps can be viewed on VicPlan at https://mapshare.vic.gov.au/vicplan/ or at the relevant local council.

Create a BPA definition plan in VicPlan to measure the BPA.

Information for lot owners building in the BPA is available at https://www.planning.vic.gov.au.

Further information about the building control system and building in bushfire prone areas can be found on the Victorian Building Authority website https://www.vba.vic.gov.au. Copies of the Building Act and Building Regulations are available from http://www.legislation.vic.gov.au. For Planning Scheme Provisions in bushfire areas visit https://www.planning.vic.gov.au.

Native Vegetation

Native plants that are indigenous to Victoria and important for biodiversity might be present on this property. This could include trees, shrubs, herbs, grasses or aquatic plants. There are a range of regulations that may apply including need to obtain a planning permit under Clause 52.17 of the local planning scheme. For more information see Native Vegetation (Clause 52.17) with local variations in Native Vegetation (Clause 52.17) Schedule

To help identify native vegetation on this property and the application of Clause 52.17 please visit the Native Vegetation Regulations Map (NVR Map) https://mapshare.vic.gov.au/nvr/ and Native vegetation (environment.vic.gov.au) or please contact your relevant council.

You can find out more about the natural values on your property through NatureKit NatureKit (environment.vic.gov.au)

22.0 Appendix B Bore Log Location Plan

Appendix B – Soil Profile Location Plan

Legend

Approximate Borehole Profile Locations

	Land Capability Assessment 28-30 Main St, Gembrook 3783	GPS reference -37.950209, 145.541839 Plan Not to Scale	Plan Source: Google Maps/SCLA

23.0 Appendix C Soil Logs

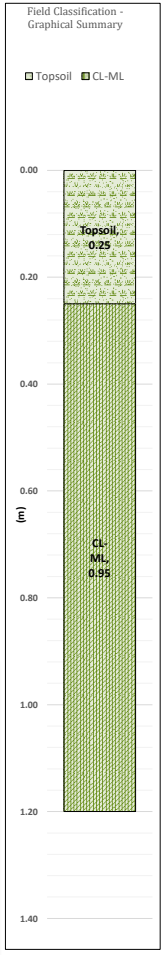
Bore Hole 01

Client:	Colin Parkes
Address:	28-30 Main St, Gembrook
Project:	Sub-division
Location:	28-30 Main St, Gembrook
Method:	GOWM
Site Number (As Per Plan):	1

Date:	Wednesday, 17 September 2025
Report Number:	1433
Job Number:	1433

Hole Depth	Lithology Layer	Symbol	Field Description (per AS-1726) - Appendix A	Sample From	Sample To	Sample ID.	Comments	% of Depth
0.00	0.00							
0.25	0.25 Topsoil		(CL) Silty CLAY Loam topsoil, High Organic Content, Biota, Root Systems, Carbon, Natural Origin, Low-Medium Plasticity, Moderately Cohesive, Brown Colour, Moist, Well Structured, Brown Hand Stain.				(CL) <50mm Ribbons Cat 4, pH 5.5-6.5, EC 0.03 dS/m,	17%
1.20	0.95 CL-ML		(CL) Silty CLAY Loam, High Organic Content, Biota, Root Systems, Carbon, Natural Origin, Low-Medium Plasticity, Moderately Cohesive, Oreange-Red Colour, Moist, Well Structured, Orange-Red Hand Stain.				(CL) <50mm Ribbons Cat 4, pH 5.5-6.5, EC 0.03 dS/m,	63%
1.50	0.30 CL		(SiC) Silty CLAY Loam, High Organic Content, Biota, Root Systems, Carbon, Natural Origin, Low-Medium Plasticity, Moderately Cohesive, Orange-Red Colour graduating to an Orange Red at depth, Moist, Well Structured, Orange-Red Hand Stain.				(SiC) <50mm Ribbons Cat 5, pH 5.5-6.5, EC 0.03 dS/m,	20%
END							No Water in open hole	
Total	1.50							100%

The 4 Spheres - Geo-Drilling, Environmental & Soil Tests Throssell Street, Bittern, Victoria, Australia 3918
(Mobile: 0400 372 763) Telephone. (03) 59836611 email: admin@4Spheres.com.au website www.4Spheres.com.au



Bore Hole 02

Client:	Colin Parkes
Address:	28-30 Main St, Gembrook
Project:	Sub-division
Location:	28-30 Main St, Gembrook
Method:	GOWM
Site Number (As Per Plan):	2

Date:	Wednesday, 17 September 2025
Report Number:	1433
Job Number:	1433

Hole Depth	Lithology Layer	Symbol	Field Description (per AS-1726) - Appendix A	Sample From	Sample To	Sample ID.	Comments	% of Depth
0.00	0.00							
0.25	0.25 Fill		Mix Soil (Fill-CL) Silty CLAY Loam topsoil, trace Gravel Sub-angular, High Organic Content, Biota, Root Systems, Carbon, Natural Origin, Low-Medium Plasticity, Moderately Cohesive, Brown Colour, Moist, Well Structured, Brown Hand Stain.				(CL) <50mm Ribbons Cat 4, pH 5.5-6.5, EC 0.03 dS/m,	21%
0.43	0.18 Topsoil		(CL) Silty CLAY Loam topsoil, High Organic Content, Biota, Root Systems, Carbon, Natural Origin, Low-Medium Plasticity, Moderately Cohesive, Brown Colour, Moist, Well Structured, Brown Hand Stain.				(CL) <50mm Ribbons Cat 4, pH 5.5-6.5, EC 0.03 dS/m,	15%
1.20	0.77 CL		(CL) Silty CLAY Loam, High Organic Content, Biota, Root Systems, Carbon, Natural Origin, Low-Medium Plasticity, Moderately Cohesive, Oreange-Red Colour, Moist, Well Structured, Orange-Red Hand Stain.				(SiC) <50mm Ribbons Cat 5, pH 5.5-6.5, EC 0.03 dS/m,	64%
END							No Water in Open Hole	
Total	1.20							100%

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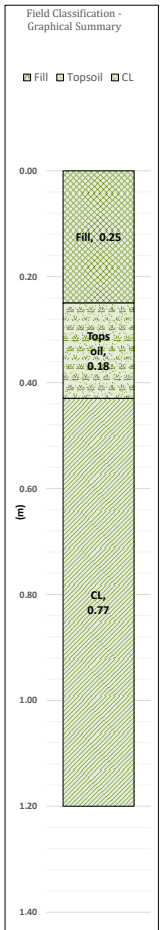

Bore Hole 03

Client:	Colin Parkes
Address:	28-30 Main St, Gembrook
Project:	Sub-division
Location:	28-30 Main St, Gembrook
Method:	GOWM
Site Number (As Per Plan):	3

Date:	Wednesday, 17 September 2025
Report Number:	1433
Job Number:	1433

Hole Depth	Lithology Layer	Symbol	Field Description (per AS-1726) - Appendix A	Sample From	Sample To	Sample ID.	Comments	% of Depth
0.00	0.00							
0.60	0.60 Fill		Mix Soil (Fill-CL) Silty CLAY Loam topsoil, trace Gravel Sub-angular, High Organic Content, Biota, Root Systems, Carbon, Natural Origin, Low-Medium Plasticity, Moderately Cohesive, Brown Colour, Moist, Well Structured, Brown Hand Stain.				(CL) <50mm Ribbons Cat 4, pH 5.5-6.5, EC 0.03 dS/m,	50%
0.80	0.20 Topsoil		(CL) Silty CLAY Loam topsoil, High Organic Content, Biota, Root Systems, Carbon, Natural Origin, Low-Medium Plasticity, Moderately Cohesive, Brown Colour, Moist, Well Structured, Brown Hand Stain.				(CL) <50mm Ribbons Cat 4, pH 5.5-6.5, EC 0.03 dS/m,	17%
1.20	0.40 CL		(CL) Silty CLAY Loam, High Organic Content, Biota, Root Systems, Carbon, Natural Origin, Low-Medium Plasticity, Moderately Cohesive, Oreange-Red Colour, Moist, Well Structured, Orange-Red Hand Stain.				(SiC) <50mm Ribbons Cat 5, pH 5.5-6.5, EC 0.03 dS/m,	33%
END							No Water in Open Hole	
Total	1.20							100%

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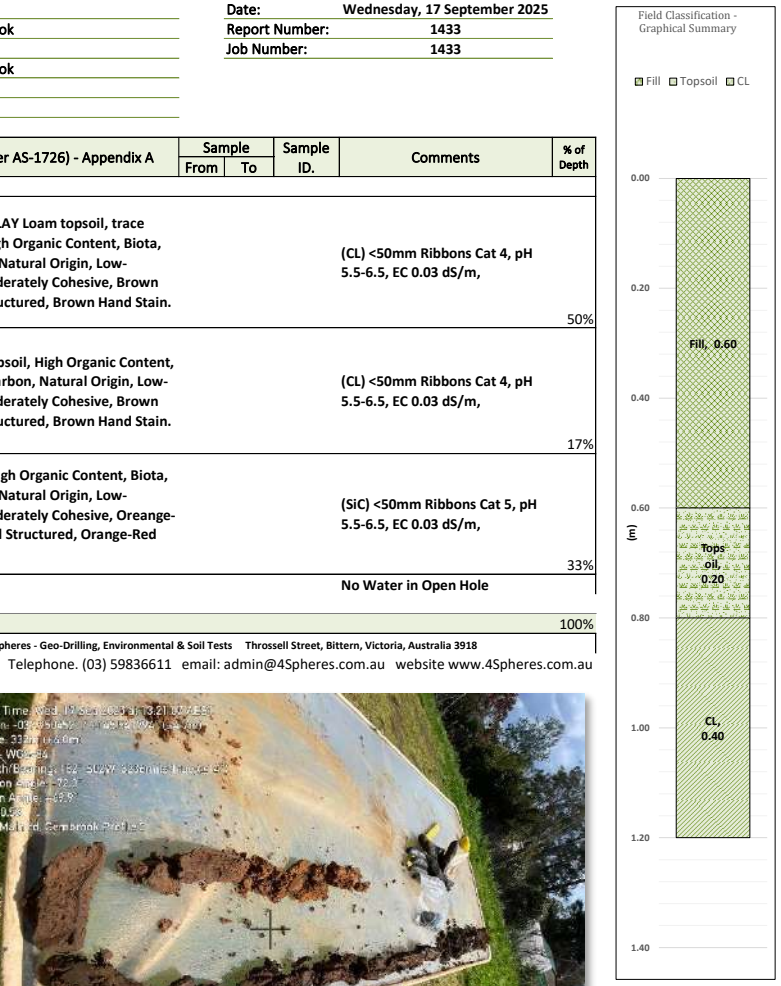


24.0 Appendix D Bureau of Meteorology (BOM)

Appendix D – Bureau of Meteorology (BOM)

Annual Rainfall and Evaporation for Gembrook Area

Location: [-37.950, 145.541] Precipitation Australian Bureau of Meteorology													
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Average	70th Percentile
Jan	36	59	93	52	66	18	134	128	87	27	149	77	**93**
Feb	43	73	24	102	8	34	148	40	10	46	26	64	**46**
Mar	43	64	68	65	52	54	75	87	82	98	15	57	**75**
Apr	120	88	68	118	31	52	198	88	97	116	173	84	**118**
May	83	107	133	64	135	143	117	90	54	126	47	102	**126**
Jun	150	48	134	47	87	99	85	185	174	115	65	104	**134**
Jul	126	116	122	78	107	117	79	90	87	56	225	109	**117**
Aug	80	143	105	120	107	164	150	89	197	71	36	112	**143**
Sep	90	61	114	116	52	118	85	123	75	61	104	103	**114**
Oct	94	33	157	85	46	71	142	193	244	178	80	106	**157**
Nov	94	72	79	56	160	125	84	114	197	75	67	111	**114**
Dec	69	59	74	178	84	28	79	31	89	136	58	91	**84**
Total	**1028**	**923**	**1171**	**1081**	**935**	**1023**	**1376**	**1258**	**1393**	**1105**	**1045**	**1120**	**1321**

Pan Evaporation: Gembrook Area

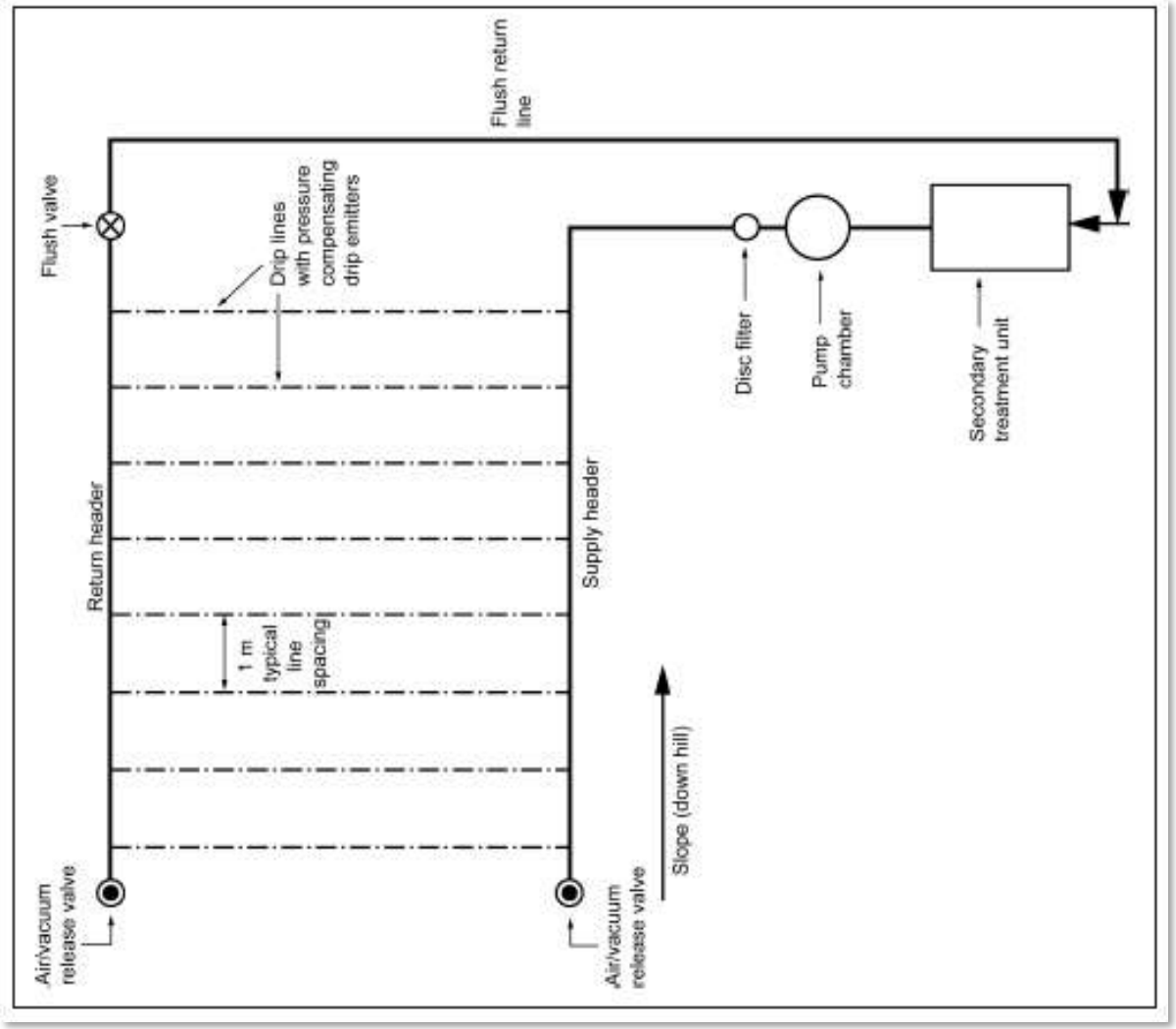
Pan Evaporation, VIC [-37.950, 145.541] Australian Bureau of Meteorology												
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Average
Jan	185	159	157	170	166	182	149	147	177	166	148	**164**
Feb	139	135	143	132	131	127	114	109	124	116	136	**128**
Mar	109	111	109	132	110	110	88	82	96	90	107	**104**
Apr	62	67	73	70	74	74	46	53	52	53	49	**61**
May	47	47	45	49	42	48	28	30	29	31	31	**39**
Jun	26	33	28	30	39	38	19	18	17	19	15	**26**
Jul	34	33	29	37	46	40	20	22	22	23	20	**30**
Aug	59	42	52	50	56	50	36	42	35	41	48	**46**
Sep	82	80	70	65	78	76	70	65	59	77	59	**71**
Oct	117	134	99	109	112	113	90	101	94	96	110	**107**
Nov	143	129	123	159	113	115	137	117	109	119	137	**127**
Dec	155	190	159	158	150	156	147	158	166	145	177	**160**
Total	**1158**	**1160**	**1087**	**1161**	**1117**	**1129**	**944**	**944**	**980**	**976**	**1037**	**1063**

Land Capability Assessment
28-30 Main Street, Gembrook 3738

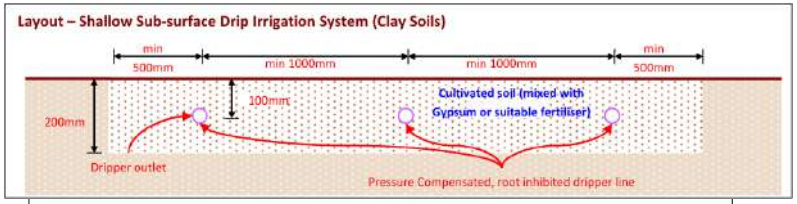
Property GPS reference
-37.950209, 145.541839

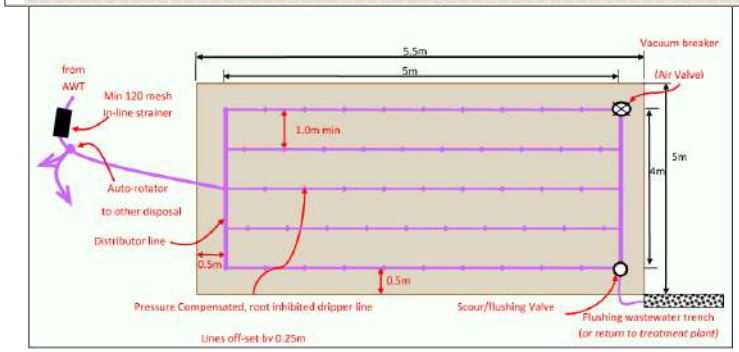
Plan Source: Australian Government BOM (Australian Water Outlook)

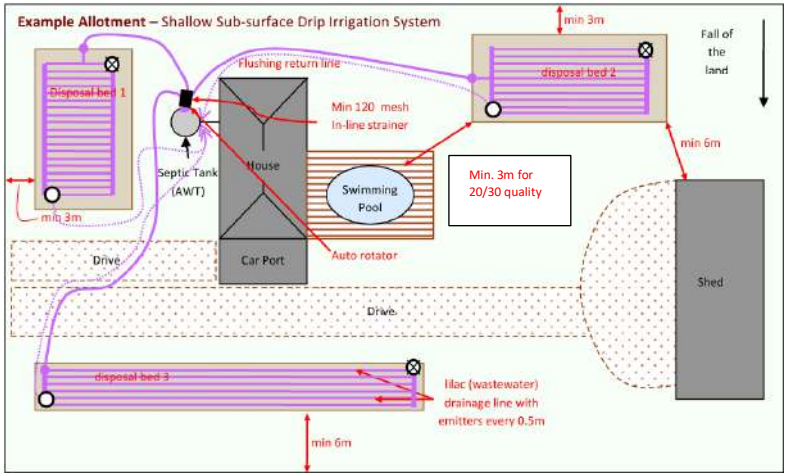
25.0 Appendix E Sub-Surface Irrigation Examples



Example of a sub-surface irrigation system (EPA 891.4 Code of Practice)

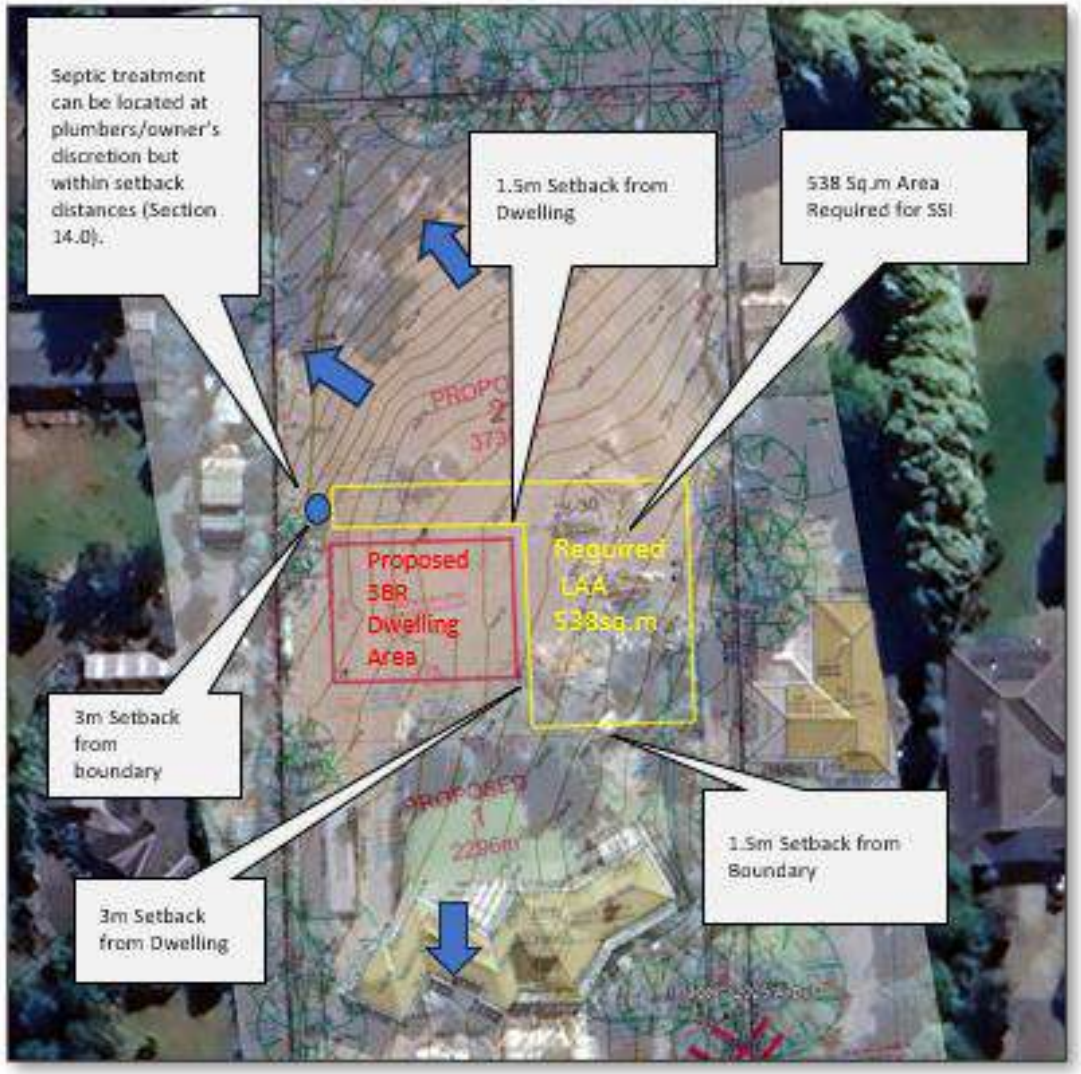






Refer to Section 10.0 or Section 17.0 for correct area sizing and emitter depth placement and required soil amelioration recommendations.

26.0 Appendix F Expanded Site Diagram



Legend

Drainage Direction

Effluent Land Application Area (LAA)

Secondary Treatment System

Dwelling Area

NOTE: Area and Measurements are approximate and not to scale. Septic plumber must conduct a set out check when conducting their detailed plumbing plan.

27.0 Appendix G Irrigation area sizing using Nominated Area Water Balance for Zero Storage

Source: MAV Council Spreadsheet

Irrigation area sizing using Nominated Area Water Balance for Zero Storage

Site Address:	28-30 Main St, Gembrook 3783																	
17/09/2025				**Assessor:**	C.Honrado													
INPUT DATA																		
Design Wastewater Flow	Q	720	L/day	Based on maximum potential occupancy and derived from Table 4 in the EPA Code of Practice (2013)														
Design Irrigation Rate	DIR	3.5	mm/day	Based on soil texture class/permeability and derived from Table 9 in the EPA Code of Practice (2013)														
Nominated Land Application Area	L	267	m^2	[1]														
Crop Factor	C	0.6-0.8	unitless	Estimates evapotranspiration as a fraction of pan evaporation; varies with season and crop type [2]														
Rainfall Runoff Factor	RF	0.6	untiless	Proportion of rainfall that remains onsite and infiltrates, allowing for any runoff														
Mean Monthly Rainfall Data	Gembrook			BoM Station and number														
Mean Monthly Pan Evaporation Data	Gembrook			BoM Station and number														

Parameter	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D		days	31	28	31	30	31	30	31	31	30	31	30	31	**365**
Rainfall	R		mm/month	93	46	75	118	126	134	117	143	114	157	114	84	**1321**
Evaporation	E		mm/month	164	128	104	61	39	26	30	46	71	107	127	160	**1063**
Crop Factor	C		unitless	0.80	0.80	0.70	0.70	0.60	0.60	0.60	0.60	0.70	0.80	0.80	0.80	
OUTPUTS																
Evapotranspiration	ET	ExC	mm/month	131	102	73	43	23	16	18	28	50	86	102	128	**798.6**
Percolation	B	DIRxD	mm/month	108.5	98	108.5	105.0	108.5	105.0	108.5	108.5	105.0	108.5	105.0	108.5	**1277.5**
Outputs		ET+B	mm/month	239.7	200.4	181.3	147.7	131.9	120.6	126.5	136.1	154.7	194.1	206.6	236.5	**2076.1**
INPUTS																
Retained Rainfall	RR	RxRF	mm/month	55.8	27.6	45	70.8	75.6	80.4	70.2	85.8	68.4	94.2	68.4	50.4	**792.6**
Applied Effluent	W	(QxD)/L	mm/month	83.6	75.5	83.6	80.9	83.6	80.9	83.6	83.6	80.9	83.6	80.9	83.6	**984.3**
Inputs		RR+W	mm/month	139.4	103.1	128.6	151.7	159.2	161.3	153.8	169.4	149.3	177.8	149.3	134.0	**1776.9**
STORAGE CALCULATION																
Storage remaining from previous month			mm/month	0.0	0.0	0.0	0.0	4.0	31.3	72.0	99.3	132.6	127.2	110.9	53.6	
Storage for the month	S	(RR+W)-(ET+B)	mm/month	-100.3	-97.3	-52.7	4.0	27.3	40.7	27.3	33.3	-5.4	-16.3	-57.3	-102.5	
Cumulative Storage	M		mm	0.0	0.0	0.0	4.0	31.3	72.0	99.3	132.6	127.2	110.9	53.6	0.0	
Maximum Storage for Nominated Area	N		mm	132.58												
	V	NxL	L	35400												
LAND AREA REQUIRED FOR ZERO STORAGE			m^2	121	117	164	281	396	537	396	444	250	223	156	120	
MINIMUM AREA REQUIRED FOR ZERO STORAGE:				538.0	m^2											

28.0 Appendix H Nitrogen Balance

Nitrogen Balance

Site Address:	28-30 Main St, Gembrook 3783

SUMMARY - LAND APPLICATION AREA REQUIRED BASED NITROGEN BALANCE	191	m^2

INPUT DATA[1]

Wastewater Loading			Nutrient Crop Uptake					
Hydraulic Load	720	L/day	Crop N Uptake	220	kg/ha/yr	which equals	60.27	$mg/m^2/day$
Effluent N Concentration	20	mg/L						
% N Lost to Soil Processes (Geary & Gardner 1996)	0.2	Decimal						
Total N Loss to Soil	2880	mg/day						
Remaining N Load after soil loss	11520	mg/day						

NITROGEN BALANCE BASED ON ANNUAL CROP UPTAKE RATES

Minimum Area required with zero buffer			Determination of Buffer Zone Size for a Nominated Land Application Area (LAA)		
Nitrogen	191	m^2	Nominated LAA Size	267	m^2
			Predicted N Export from LAA	-1.67	kg/year
			Minimum Buffer Required for excess nutrient	0	m^2

Source: MAV Spreadsheet-Nitrogen Balance

29.0 Appendix I Irrigation area sizing using Nominated Area Water Balance for Zero Storage using WELS Fixtures and Fittings.

Irrigation area sizing using Nominated Area Water Balance for Zero Storage

Site Address:				**28-30 Main St, Gembrook 3783**												
17/09/2025						**Assessor:**	C.Honrado									
INPUT DATA																
Design Wastewater Flow	Q	600	L/day	Based on maximum potential occupancy and derived from Table 4 in the EPA Code of Practice (2013)												
Design Irrigation Rate	DIR	3.5	mm/day	Based on soil texture class/permeability and derived from Table 9 in the EPA Code of Practice (2013)												
Nominated Land Application Area	L	267	m^2	[1]												
Crop Factor	C	0.6-0.8	unitless	Estimates evapotranspiration as a fraction of pan evaporation; varies with season and crop type[2]												
Rainfall Runoff Factor	RF	0.6	untiless	Proportion of rainfall that remains onsite and infiltrates, allowing for any runoff												
Mean Monthly Rainfall Data	Gembrook			BoM Station and number												
Mean Monthly Pan Evaporation Data	Gembrook			BoM Station and number												

Parameter	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D		days	31	28	31	30	31	30	31	31	30	31	30	31	**365**
Rainfall	R		mm/month	93	46	75	118	126	134	117	143	114	157	114	84	**1321**
Evaporation	E		mm/month	164	128	104	61	39	26	30	46	71	107	127	160	**1063**
Crop Factor	C		unitless	0.80	0.80	0.70	0.70	0.60	0.60	0.60	0.60	0.70	0.80	0.80	0.80	
OUTPUTS																
Evapotranspiration	ET	ExC	mm/month	131	102	73	43	23	16	18	28	50	86	102	128	**798.6**
Percolation	B	DIRxD	mm/month	108.5	98	108.5	105.0	108.5	105.0	108.5	108.5	105.0	108.5	105.0	108.5	**1277.5**
Outputs		ET+B	mm/month	239.7	200.4	181.3	147.7	131.9	120.6	126.5	136.1	154.7	194.1	206.6	236.5	**2076.1**
INPUTS																
Retained Rainfall	RR	RxRF	mm/month	55.8	27.6	45	70.8	75.6	80.4	70.2	85.8	68.4	94.2	68.4	50.4	**792.6**
Applied Effluent	W	(QxD)/L	mm/month	69.7	62.9	69.7	67.4	69.7	67.4	69.7	69.7	67.4	69.7	67.4	69.7	**820.2**
Inputs		RR+W	mm/month	125.5	90.5	114.7	138.2	145.3	147.8	139.9	155.5	135.8	163.9	135.8	120.1	**1612.8**
STORAGE CALCULATION																
Storage remaining from previous month			mm/month	0.0	0.0	0.0	0.0	0.0	13.4	40.6	53.9	73.3	54.4	24.2	0.0	
Storage for the month	S	(RR+W)-(ET+B)	mm/month	-114.2	-109.9	-66.6	-9.5	13.4	27.2	13.4	19.4	-18.9	-30.2	-70.8	-116.4	
Cumulative Storage	M		mm	0.0	0.0	0.0	0.0	13.4	40.6	53.9	73.3	54.4	24.2	0.0	0.0	
Maximum Storage for Nominated Area	N		mm	73.30												
	V	NxL	L	19572												
LAND AREA REQUIRED FOR ZERO STORAGE			m^2	101	97	136	234	330	448	330	370	209	186	130	100	
MINIMUM AREA REQUIRED FOR ZERO STORAGE:				448.0	m^2											

Source: MAV Council Spreadsheet

30.0 Appendix J Nitrogen Balance using WELS Fixtures and Fittings

Nitrogen Balance

Site Address:	28-30 Main St, Gembrook 3783

SUMMARY - LAND APPLICATION AREA REQUIRED BASED NITROGEN BALANCE	191	m^2

INPUT DATA[1]

Wastewater Loading			Nutrient Crop Uptake					
Hydraulic Load	720	L/day	Crop N Uptake	220	kg/ha/yr	which equals	60.27	$mg/m^2/day$
Effluent N Concentration	20	mg/L						
% N Lost to Soil Processes (Geary & Gardner 1996)	0.2	Decimal						
Total N Loss to Soil	2880	mg/day						
Remaining N Load after soil loss	11520	mg/day						

NITROGEN BALANCE BASED ON ANNUAL CROP UPTAKE RATES

Minimum Area required with zero buffer			Determination of Buffer Zone Size for a Nominated Land Application Area (LAA)		
Nitrogen	191	m^2	Nominated LAA Size	267	m^2
			Predicted N Export from LAA	-1.67	kg/year
			Minimum Buffer Required for excess nutrient	0	m^2

Source: MAV Spreadsheet-Nitrogen Balance

31.0 Appendix K Installation Checklist

Note: this checklist must be checked off by the commissioning plumber, signed and date accordingly.

Checklist 13.1 Installation of subsurface irrigation systems			
Do you have a copy of the consent / approval?		☐ Yes	☐ No
Does it specify the nature / sizing / location of the effluent irrigation area?		☐ Yes	☐ No
Is the irrigation system located as detailed in the conditions of consent / approval?		☐ Yes	☐ No
Headworks			
Is the control panel/controller installed according to manufacturer's instructions and the irrigation system design details?		☐ Yes	☐ No
Is a foot valve fitted to the suction inlet in the treated effluent tank?	☐ N/A	☐ Yes	☐ No
Is an appropriate pump installed according to the manufacturer's specifications and/or the irrigation system design requirements?		☐ Yes	☐ No
Is a standby pump available for the system?		☐ Yes	☐ No
If yes, has it been installed, or stored or available within 24 hours?	☐ N/A	☐ Yes	☐ No
Is a permanent pressure gauge installed following the pump?		☐ Yes	☐ No
Is a non-return valve installed following the pressure gauge?		☐ Yes	☐ No
Is an appropriate filter with 100-150 micron filter installed?		☐ Yes	☐ No
Are any solenoid valves, cabling, sequencing or manual valves installed to enable alternate dosing of the irrigation fields according to the design?		☐ Yes	☐ No
Is the controller capable of operating the specified pump, filter and any solenoid valves for the irrigation fields according to the design?		☐ Yes	☐ No
Has the controller been tested to operate satisfactorily for each field?		☐ Yes	☐ No
Is a low level cut-off float switch installed in the effluent tank that overrides the irrigation controller to prevent the system pumping dry?	☐ N/A	☐ Yes	☐ No
Is a high level cut-in float switch installed in the effluent tank that overrides the standard irrigation schedule during times of high flow?	☐ N/A	☐ Yes	☐ No
Have the headworks been installed and located according to the design?		☐ Yes	☐ No
Do the headworks meet the hydraulic specifications of the design?		☐ Yes	☐ No
Mainline and dosing pipeworks			
Does all pipework match the size, pressure class specifications detailed in the design?		☐ Yes	☐ No
Is all pipework installed, tested and commissioned according to 'AS/NZS 2566.2:2002 Buried Flexible Pipelines Part 2: Installation'?		☐ Yes	☐ No
Are all pipe fittings, clamps and joints made to match the pressure class of the pipe at that location?		☐ Yes	☐ No

Drip line and field layouts		
Is all installed drip line according to the design (eg pressure compensating, anti-siphon) with 600 mm dripper spacings and 1.6 L an hour dripper flow rate?	☐ Yes	☐ No
Is all dripline installed under mulch or soil according to the hydraulic design?	☐ Yes	☐ No
Are dripline laterals spaced between 600 – 1,000 mm (ideally 600 mm spacings)?	☐ Yes	☐ No
Do all laterals comply with appropriate buffer distances?	☐ Yes	☐ No
Are the connections of laterals to mainlines, sub-mains and flushing manifolds according to the manufacturer's recommendations?	☐ Yes	☐ No
Is all dosing and flushing pipework according to the manufacturer's recommendations?	☐ Yes	☐ No
Are air/vacuum release valves installed at all significant high points in each field?	☐ Yes	☐ No
Is a flushing valve installed at the end of each flushing manifold as recommended by the manufacturer?	☐ Yes	☐ No
Has the field flush valve been connected back to the treatment system?	☐ Yes	☐ No
Has the field flush valve been directed to a small absorption trench (approximately 3 m x 0.6 m)?	☐ Yes	☐ No
Does each field have the facilities for measurement of pressure (eg needle test point or similar) immediately before the entrance to the first lateral and immediately following the exit of the final lateral?	☐ Yes	☐ No
Do the installed dripline subsections meet the hydraulic specifications detailed in the design?	☐ Yes	☐ No
Drip line fields hydraulic design		
Is the operating pressure at the pump within 10% of that specified for each field at the time of commissioning?	☐ Yes	☐ No
Is the operating pressure at the pump within 10% of the design value?	☐ Yes	☐ No
Is the pressure difference between the entrance to the first lateral and exit of the last lateral less than 15%?	☐ Yes	☐ No
Are all flushing velocities greater than 0.4 m/s for all fields?	☐ Yes	☐ No
Commissioning and testing		
Has the pump, filter and control equipment been commissioned and tested according to the manufacturer or supplier specifications?	☐ Yes	☐ No
Have all mainlines and sub-mains been commissioned and tested according to 'AS/NZS 2566.2:2002 Buried Flexible Pipelines Part 2: Installation'?	☐ Yes	☐ No
Have all drip line field layout, connections and fittings been checked before covering?	☐ Yes	☐ No
Have all fields been flushed with clean water adequately before pressurising to remove construction debris that may have accumulated during installation?	☐ Yes	☐ No
Have all drip line fields been tested for leakage from joints and fittings before covering?	☐ Yes	☐ No

Have all operating pressures been checked at the pump and the end of each field or subsection at the time of commissioning according to the design?	☐ Yes	☐ No
Has Council inspected the system before backfilling?	☐ Yes	☐ No
Has the owner/operator been provided with an Operation and Maintenance Manual, including layout?	☐ Yes	☐ No
Service provider: **Contact number:**		
Comments, action or repairs needed: (Where a response in the above Checklist needs extra information or action, specify the action plan and/or the process to fix the problem, or specify an alternative that is being offered)		
Name / title of inspector:		
Signature:	**Date:**	

End Appendix

End Report

Ajarboriculture

Preliminary Arboricultural Report and Impact Statement

28-30 Main Street, Gembrook

September 2025

PO Box 547 Leongatha VIC 3953 | 0407 625 121 | david@ajarboriculture.com

Client [redacted]

Appraisal Prepared by [redacted] Principal Consultant

1. Summary

There are a number of horticultural rarities identified within the site including an Interior Live Oak (*Quercus wislizeni*) and a Chinese Evergreen Magnolia (*Magnolia delavayi*), both of which are worthy of retention. However, these trees along with most other trees and hedges identified within the site are exempt from vegetation and landscape protection due to bushfire management provisions.

2. Objectives

In this Preliminary Arboricultural Report and Impact Statement (appraisal), the following objectives have been identified:

2.1. Inspect 28-30 Main Street, Gembrook (subject site) and adjacent land as directed by the client and assess the tree(s) for the purpose of determining merit within the landscape. A tree is defined in this appraisal as a perennial plant that is greater than 3 metres in height. Perennial plants smaller than 3 metres in height may be included contingent on landscape contribution. Trees in this appraisal are represented as Individual Trees, Hedge Rows or Grouped Trees.

2.2. Collect and report details concerning the identified tree(s) in accordance with the Australian Standard AS 4970 - 2025 'Protection of trees on development sites' (Standard) with specific reference to Clause 2.2.5, applicable local laws, statutory planning and other relevant documents.

2.3. Provide an unbiased arboricultural perspective within the aforementioned frameworks that clearly informs the client and associated stakeholders of tree merit, likely impacts of proposed works, impact mitigation strategies, and protection measures.

3. Method

The following methods were employed to inform the contents of this appraisal:

3.1. The site inspection was undertaken on Monday, 24 February 2025 and again on Monday, 8 September 2025.

3.2. A thorough ground-based visual tree assessment using appropriate tools was conducted for all trees identified in this appraisal. Where access to a tree was limited, some characteristics may have been estimated or overlooked. Trees identified in this appraisal have been located and numbered in Appendix 1 - 'Site Plan'. Specific observations including relevant photographs have been included in Appendix 2 - 'Site Data'. Definitions of the information catalogued in Appendix 2 are contained in Appendix 3 - 'Tree Feature Descriptions'.

3.3. Notional Root Zones (NRZ), Structural Root Zones (SRZ) and Tree Protection Zones (TPZ) identified in this appraisal have been determined in accordance with the Standard or as specified by a relevant authority. Please refer to Section 6.4 for a concise description of these terms and Appendix 1 for a diagrammatic representation of these requirements within and adjacent to the subject site.

3.4. Tree protection specifications (TPS) have been provided where applicable.

4. Documents and Literature

The following documents were reviewed in the preparation of this appraisal. The property title for the subject site was not inspected, and it is unknown if there are any specific tree protection controls under existing planning permits or Section 173 Agreements relevant to the subject site:

4.1. Planning Property Report from https://mapshare.vic.gov.au/vicplan/ accessed on the Wednesday, 10 September 2025 for the subject site.

4.2. Application No. T250372 PA, Further Information Required 28-30 Main Street, Gembrook Subdivision of the land into two (2) lots issued by Cardinia Shire Council dated 21 July 2025.

4.3. Cardinia Shire Council Community Local Law 2024.

4.4. 42.02 Vegetation Protection Overlay (VPO) and the associated Schedule VPO2 from the Cardinia Planning Scheme.

4.5. 42.03 Significant Landscape Overlay (SLO) and the associated Schedule SLO1 from the Cardinia Planning Scheme.

4.6. 52.12 Bushfire Protection Exemptions from the Cardinia Planning Scheme.

4.7. 52.17 Native Vegetation and the associated Schedule from the Cardinia Planning Scheme.

4.8. Bioregion Benchmark for Vegetation Quality Assessment Highlands - Southern Fall bioregion including EVC's 16, 18, 29, 30 and 45 published by the Department of Sustainability and Environment.

4.9. Victorian Biodiversity Atlas (VBA) catalog entries within a 5 km radius of the subject site.

4.10. Job Reference No. 22465 Feature and Level Survey for 28-30 Main Street, Gembrook dated 15 September 2022 and Proposed Conditions and Subdivision Layout dated 3 March 2025 prepared by Land Dimensions.

4.11. Weed Identification Guide City of Casey, Cardinia Shire Council and City of Greater Dandenong and is undated.

5. Observations

The ensuing observations were made during the site inspection and have been included to summarise data, inform discussion, opinions and recommendations contained in this appraisal:

5.1. Forty-seven (47) Individual Trees and three (3) Hedge Rows as defined in this appraisal were identified during the site inspection. Eight (8) trees including Site# 6,19, 20, 21, 22, 45, 46 and 47 and one (1) hedge including Site# 50 were located in the adjoining property to the east identified as 32 Main Street, one (1) tree in the adjoining property to the north east identified 25 Station Road including Site# 23, two (2) trees in the adjoining property to the north identified 23 Station Road including Site# 24 and 25, six (6) trees in the adjoining property to the north identified 21 Station Road including Site# 26, 27, 28, 29, 30 and 31, one (1) tree in the adjoining property to the west identified 26 Main Street including Site# 32 and five (5) trees in the Main Street road reserve to the south including Site# 8, 9, 10, 11and 12. The remaining twenty-four (24) trees and two (2) hedges were located within the subject site

Please refer to Appendix 1 for details concerning the location of trees identified in this appraisal.

5.2. One (1) tree received a High Retention Value and twenty-seven (27) trees and three (3) hedges received Moderate Retention Values as defined in this appraisal. The remaining nineteen (19) trees received Low Retention Values.

Please refer to Section 6.1 for discussion on Retention Values and Appendix 2 for details of the trees identified.

5.3. With the exception of Site#'s 14, 36, 37 and 44 identified as environmental weeds, all other trees identified in this appraisal are considered protected trees under either the Community Local Law, the VPO or the SLO.

Please refer to Section 6.2 for summaries of Local Laws and/or Statutory Planning relevant to these trees.

5.4. Thirteen (13) trees in this survey were identified as Victorian Native. Seven (7) Victorian Native trees believed to be indigenous to the locale including Site# 24, 25, 26, 27, 28, 29 and 30; all identified as Narrow-leaved Peppermint (*Eucalyptus radiata*), are located in the two adjoining properties to the north. Site# 32 a Mountain Grey Gum (*Eucalyptus cypellocarpa*) located in the adjoining property to the west is believed to be indigenous to the locale. Two (2) Victorian Native trees located in the Main Street road reserve including Site #8 and 10; both identified as Southern Mahogany (*Eucalyptus botryoides*), are not considered indigenous to the locale. Located within the site; Site# 1 a Southern Mahogany is likely a re-sprout, Site# 35 a Crimson Bottlebrush (*Callistemon citrinus*) is not indigenous to the locale and is believed to be planted and Site# 36 a Sweet Pittosporum (*Pittosporum undulatum*) is a distributed weed.

Please refer to Section 6.2 for a summary of the Native Vegetation provisions.

5.5. Excluding Site#'s 41, 42, 43 and parts of the hedge row 45, all other trees identified within the subject site are exempt from the provisions of the VPO and SLO as this site is located within a Designated Bushfire Prone Area.

Please refer to Section 6.2 for a summary of the Bushfire Exemptions relevant to the site.

5.6. Additional shrubs and small and/or young trees were noted during the site assessment but have not been included in this appraisal as they do not provide any particular landscape significance or make a contribution to local amenity. Trees in adjoining properties where drip lines did not extend into the subject site were also observed during the site assessment but have not been included in this appraisal as they will not be affected by any proposed development within the subject site.

6. Discussion

6.1. In this appraisal and as required under the Standard; the virtues of a tree are expressed in its ***Retention Value***. The benefits of tree retention within an evolving urban landscape are significant and quantifiable,

Aesthetic Qualities - the qualities of a tree that appeals to our sensory experiences and sense of beauty that encompasses how it looks, feels, sounds, or even smells.

Cultural and Heritage Values - represent the significance and meaning that a tree attaches to a place, object, tradition, and other aspects of culture.

Social, Health and Psychological Benefits - tree stature and longevity provide a sense of 'place' and a direct link with a sites past. They are living structures that instil serenity, soften vistas and provide cover from the harsh planes of surrounding concrete, glass, brick and asphalt.

Ecosystem Benefits - Trees contribute to privacy, emphasise views, reduce glare, moderate climate, improve air quality, conserve water and harbour wildlife.

Economic Benefits - Trees can provide direct economic benefit through increased property values and reduced energy costs.

Trees that receive a ***High*** or ***Moderate*** value express one or more of these qualities and can, with adequate design consideration and protection during construction, continue to contribute as viable landscape elements. Trees that receive a ***Low*** value add little to the site; may not respond well to changes in their environment, become hazardous or create an amenity nuisance in an evolving landscape. Low value trees should be excluded from retention considerations.

Acknowledging the value of trees and adopting a balanced perspective between a tree's ***Retention Value*** and protection status is an important design consideration in ensuring a successful outcome.

There are just as many reasons to remove a tree as there are to retain the very same. What an existing tree will bring to a renewing landscape is at the discretion of the imagination but at the very least, should be a representative symbol of a living and dynamic location where people, structures and trees can coexist in harmony.

6.2. In Victoria, tree protection is afforded through local planning, laws, policy, and other legal instruments. Vegetation located within the subject site and on adjoining land that may be impacted by proposed development and is subject to protection provisions must be managed in accordance with Standard and local policy where they exist. Tree protection provisions relevant to the subject site listed in Section 4 are outlined below.

52.17 Native Vegetation applies to all living and dead Victorian native tree and plant species on contiguous land under single ownership equal to or greater than 4,000 square metres (≈1 acre) where there is no Native Vegetation Precinct Plan (52.16). Furthermore, native vegetation located in a road reserve is also subject to this provision unless specifically exempt under the Schedule. The purpose of this provision is to ensure no net loss in biodiversity and to minimise land and water degradation as a result of the removal, destruction or lopping of native vegetation. These objectives are achieved through a three step process detailed in Guidelines for the removal, destruction or lopping of native vegetation (Department of Environment, Land, Water and Planning, 2017) that aims to avoid loss, minimise impact or provide an offset to compensate for

outcomes where loss or impact cannot be circumvented.There are various exemptions to the provisions of this ordinance including planted vegetation where the native vegetation that is to be removed, destroyed or lopped was either planted or grown as a result of direct seeding.

The purpose of 42.02 Vegetation Protection Overlay and the associated Schedule VPO2 from the Cardinia Planning Scheme is to protect areas of significant vegetation, to ensure that development minimises loss of vegetation and to preserve existing trees and other vegetation. To that end, VPO2 requires the applicant to obtain a permit to remove or destroy any vegetation that is not exempt from the provisions of the overlay.

Similarly, 42.03 Significant Landscape Overlay and the associated Schedule SLO1 is to identify, conserve and enhance significant landscapes along the Puffing Billy Tourist Railway Scenic Corridor. To that end, SLO1 requires the applicant to obtain a permit for works that results in the removal, destruction or lopping of any vegetation that is not exempt from the provisions of the overlay

However, trees and vegetation within 4 metres of established fence lines or within 10 metres of existing buildings used for accomodation are exempt under the provisions of 52.12 listed in Section 4.5.

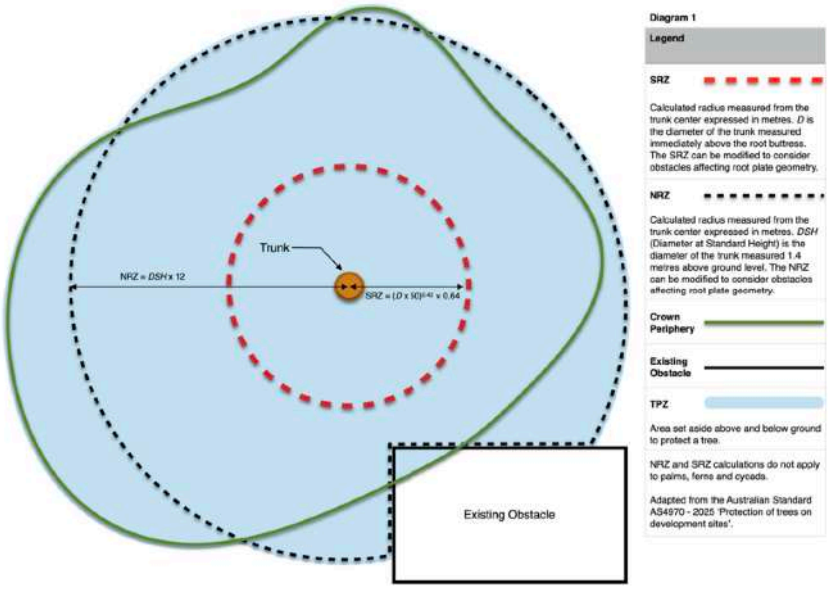
Trees on adjoining property that are exempt from protection provisions and could potentially be impacted by proposed development should be managed in accordance with the Standard. Under the Building Act 1993, Building Regulations 2018 Part 7 – Protection of Adjoining Property, the Local Authority may require an applicant to implement tree protection measures on adjoining land. Neighbouring tree owners may pursue a claim under the common law tort of negligence where an act or omission leads to damage, loss or injury to a tree.

Failure to apply appropriate protection measures to a tree on adjoining land can result in project delays, unnecessary disputes, undermine good neighbourly relationships, or give rise to needless legal action.

6.3. The Notional Root Zone (NRZ) as defined under the Standard is a cylindrical area below ground, at a given distance from the trunk center, set aside for the viability of a tree's root system. The Structural Root Zone (SRZ) is the area within the NRZ where structural roots and soil cohesion are crucial to root plate stability.

The Tree Protection Zone (TPZ) is the specified zone above and below ground at a given offset from the trunk set aside to protect a tree's parts from damage by site development . Please refer to Diagram 1 for details.

Proposed development encroachment into the NRZ is considered **Minor** if it is less than or equal to 10% of the total NRZ area and does not breach the SRZ. Minor encroachments are unlikely to have a significant impact on tree health, structure or longevity. Tree protection may be implemented during site works and an area equivalent to the encroachment may be added to the TPZ.



Proposed development encroachment into the NRZ is considered **Moderate** if it is greater than 10% and less than or equal to 20% of the total NRZ area and does not breach the SRZ. The impact of a moderate encroachment shall be determined based on considerations identified in the Standard that may include additional investigation. Tree protection shall be implemented during site works that may also include design measures and construction control. An area equivalent to the encroachment shall be added to the TPZ unless the project arborist can demonstrate that the tree will remain a viable landscape element.

Proposed development encroachment into the NRZ is considered **Major** if it is greater than 20% of the total NRZ area or breaches the SRZ. In these circumstances, the project arborist shall explore with the planning team alternative designs or clearly demonstrate that the tree will remain a viable landscape element through additional investigation with attention to the considerations identified in the Standard. An area equivalent to the encroachment shall be added to the TPZ unless the project arborist can demonstrate that the tree will remain a viable landscape element.

Proposed development that encroaches into the crown of the tree shall be assessed on a case-by-case basis with due attention to considerations identified in the Standard. Any proposed works to the crown of the tree shall be undertaken in accordance with AS4373-2007 'Pruning of amenity trees' and recognised best practice.

7. Opinions and Guidance

The following opinions and guidance have been made within the context of the proposal listed in Section 4.9 of this appraisal:

7.1. The proposal identifies the removal of potentially five (5) trees, including Site#s 1, 2, 3, 4, and 5, to allow for a straight driveway access to the rear lot. It is acknowledged that these trees are exempt from statutory planning provisions under 52.12 Bushfire Protection Exemptions; however, there would appear to be more than enough space along the edge of the driveway to allow for the retention of these trees without compromising site access requirements, in particular those relating to bushfire management. Furthermore, as there are no proposed changes to the existing permeable (crushed rock) driveway, these trees should remain unaffected.

7.2. Only the crossover on the eastern side of the property frontage is proposed to be modified. The widening of the existing crossover on the east side only with no proposed cuts and top dressing with crushed rock only will have minimal or no impact upon existing trees including Site#'s 8, 49 and 50.

7.3. No other tree identified in this appraisal should be impacted by the proposal.

[redacted]

Attachments

- Appendix 1 - Site Plan
- Appendix 2 - Site Data
- Appendix 3 - Tree Feature Descriptions
- Appendix 4 - Tree Protection Specifications

Appendix 1 - Site Plan

& Subdivision Layout

19A STATION ROAD VACANT LOT

19B STATION ROAD VACANT LOT

17 STATION ROAD SINGLE STOREY WEATHER-BOARD DWELLING

21 STATION ROAD EXISTING SINGLE STOREY WEATHER-BOARD DWELLING OVER 45m AWAY

23 STATION ROAD EXISTING SINGLE STOREY WEATHER-BOARD DWELLING OVER 45m AWAY

25 STATION ROAD EXISTING SINGLE STOREY WEATHERBOARD DWELLING OVER 1km AWAY

PROPOSED 2 3735m²

PROPOSED 1 2296m²

28-30 C/T Vol 10200 Fol 339 Total Site Area 6031m²

INDICITIVE BUILDING ENVELOPE 15m X 29m

26 SINGLE STOREY BRICK DWELLING

32 SINGLE STOREY BRICK DWELLING

34 SINGLE STOREY BRICK DWELLING

SINGLE STOREY BRICK DWELLING

3 TREES TO BE REMOVED UNDER BUSHFIRE MANAGEMENT CODE

EDGE OF EXISTING CROSSOVER. NO WORKS TO EXTEND BEYOND. (NEW CROSSOVER AS PER REPORT BY QUANTUM TRAFFIC)

MAIN STREET

28-30 Main Street, Gembrook

Legend

Individual Tree (AS4970)

Retention Value

- High (1)
- Moderate (27)
- Low (19)

Hedge Row (AS4970)

Retention Value

- High (0)
- Moderate (3)
- Low (0)

TPZ

SRZ

N

Scale: 1:500

Date: 10/09/2025

0 4 8 16 24 32 40 Meters

Aja Arboriculture | 0407-625-121 | aja.arbor@gmail.com
PO Box 547 Leongatha VIC 3953 | ABN 23 451 725 400

Coordinate System: GDA 1994 VICGRID94. Trees represented as points, polylines or polygons not identified in the underlying feature survey have been plotted by Aja Arboriculture using a GNSS receiver with NTrip correction, available field references and/or aerial imagery. Location accuracy and dimensional characteristics associated with points, polylines and polygons can be assumed to not exceed one (1) metre from true position. Layers and attributes listed in the Legend are georeferenced in this plan and can be accessed in CAD using the PDFIMPORT command.

Site #:	1
Species & Common Name:	***Eucalyptus botryoides (Southern Mahogany)***
Origin:	Victorian Native
Height (m):	9
Width (m):	3
DSH Field Measurements (cm):	16
AS4970 DSH Calculation (cm):	16
Basal Diameter (cm):	21
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Minor Correction
Growth Space:	Major Limitation
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	2
AS4970 SRZ Calculation (m):	1.7
Retention Value:	**Low**

Canopy Cover (m2): 7

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	2
Species & Common Name:	***Yucca gigantea (Giant Yucca)***
Origin:	Exotic
Height (m):	4
Width (m):	1
DSH Field Measurements (cm):	30
AS4970 DSH Calculation (cm):	30
Basal Diameter (cm):	35
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Minor Limitation
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	3.6
AS4970 SRZ Calculation (m):	2.1
Retention Value:	**Low**

Canopy Cover (m2): 1

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	3
Species & Common Name:	***Larix decidua (European Larch)***
Origin:	Exotic
Height (m):	11
Width (m):	3
DSH Field Measurements (cm):	20
AS4970 DSH Calculation (cm):	20
Basal Diameter (cm):	24
Life Stage:	Semi-mature
Vigour:	Poor
Structure:	Acceptable
Growth Space:	Major Limitation
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	2.4
AS4970 SRZ Calculation (m):	1.8
Retention Value:	**Low**

Canopy Cover (m2): 7

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	4
Species & Common Name:	***Quercus wislizeni (Interior Live Oak)***
Origin:	Exotic
Height (m):	13
Width (m):	12
DSH Field Measurements (cm):	64,25
AS4970 DSH Calculation (cm):	69
Basal Diameter (cm):	81
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	8.3
AS4970 SRZ Calculation (m):	3
Retention Value:	**High**

Canopy Cover (m2): 113

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Notable
Landscape Significance
Horticultural Rarity
Ecosystem Contribution
Specimen

Comments:

Site #:	5
Species & Common Name:	***Quercus dentata (Diaimo Oak)***
Origin:	Exotic
Height (m):	11
Width (m):	7
DSH Field Measurements (cm):	34
AS4970 DSH Calculation (cm):	34
Basal Diameter (cm):	47
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Acceptable
Growth Space:	Major Limitation
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	4.1
AS4970 SRZ Calculation (m):	2.4
Retention Value:	**Moderate**

Canopy Cover (m2): 38

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	6
Species & Common Name:	***Cedrus atlantica (Atlas Cedar)***
Origin:	Exotic
Height (m):	17
Width (m):	13
DSH Field Measurements (cm):	45
AS4970 DSH Calculation (cm):	45
Basal Diameter (cm):	55
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Acceptable
Growth Space:	Minor Limitation
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	5.4
AS4970 SRZ Calculation (m):	2.6
Retention Value:	**Moderate**

Canopy Cover (m2): 133

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: DBH and basal diameter estimated.

Site #:	7
Species & Common Name:	***Hamamelis virginiana (Witch-hazel)***
Origin:	Exotic
Height (m):	5
Width (m):	8
DSH Field Measurements (cm):	8,8,8,6,8,6,9,7,7,6,6,7,8,8
AS4970 DSH Calculation (cm):	27
Basal Diameter (cm):	27
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	3.2
AS4970 SRZ Calculation (m):	1.9
Retention Value:	**Moderate**

Canopy Cover (m2): 50

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	8
Species & Common Name:	***Eucalyptus botryoides (Southern Mahogany)***
Origin:	Victorian Native
Height (m):	23
Width (m):	18
DSH Field Measurements (cm):	123
AS4970 DSH Calculation (cm):	123
Basal Diameter (cm):	142
Life Stage:	Early-mature
Vigour:	Fair
Structure:	Major Correction
Growth Space:	Minor Limitation
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	14.8
AS4970 SRZ Calculation (m):	3.8
Retention Value:	**Low**

Canopy Cover (m2): 254

Land Use and Social Contribution

Land Use (Victoria)
Local Law
Landscape Function
Notable
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: Extensive decay present in base of trunk. Decay present in primary union between stem supporting upper crown. Evidence of multiple limb loss, either pruning or failures.

Site #:	9
Species & Common Name:	***Pittosporum tenuifolium (Kohuhu)***
Origin:	Exotic
Height (m):	6
Width (m):	4
DSH Field Measurements (cm):	21,20
AS4970 DSH Calculation (cm):	29
Basal Diameter (cm):	39
Life Stage:	Early-mature
Vigour:	Poor
Structure:	Major Correction
Growth Space:	Minor Limitation
Landscape Viability:	**Remove**
AS4970 NRZ Calculation (m):	3.5
AS4970 SRZ Calculation (m):	2.2
Retention Value:	**Low**

Canopy Cover (m2): 13

Land Use and Social Contribution

Land Use (Victoria)
Local Law
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	10
Species & Common Name:	***Eucalyptus botryoides (Southern Mahogany)***
Origin:	Victorian Native
Height (m):	25
Width (m):	22
DSH Field Measurements (cm):	122
AS4970 DSH Calculation (cm):	122
Basal Diameter (cm):	138
Life Stage:	Early-mature
Vigour:	Fair
Structure:	Minor Correction
Growth Space:	Minor Limitation
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	14.6
AS4970 SRZ Calculation (m):	3.8
Retention Value:	**Moderate**

Canopy Cover (m2): 380

Land Use and Social Contribution

Land Use (Victoria)
Local Law
Landscape Function
Notable
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	11
Species & Common Name:	***Pittosporum tenuifolium (Kohuhu)***
Origin:	Exotic
Height (m):	5
Width (m):	8
DSH Field Measurements (cm):	10,10,12,12,8,8,10,14
AS4970 DSH Calculation (cm):	30
Basal Diameter (cm):	42
Life Stage:	Early-mature
Vigour:	Good
Structure:	Minor Correction
Growth Space:	Minor Limitation
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	3.6
AS4970 SRZ Calculation (m):	2.3
Retention Value:	**Low**

Canopy Cover (m2): 50

Land Use and Social Contribution

Land Use (Victoria)
Local Law
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	12
Species & Common Name:	***Corymbia ficifolia (Red-flowering Gum)***
Origin:	Australian Native
Height (m):	8
Width (m):	6
DSH Field Measurements (cm):	31
AS4970 DSH Calculation (cm):	31
Basal Diameter (cm):	39
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Minor Correction
Growth Space:	Minor Limitation
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	3.7
AS4970 SRZ Calculation (m):	2.2
Retention Value:	**Moderate**

Canopy Cover (m2): 28

Land Use and Social Contribution

Land Use (Victoria)
Local Law
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	13
Species & Common Name:	***Liriodendron tulipifera (Tulip Tree)***
Origin:	Exotic
Height (m):	16
Width (m):	9
DSH Field Measurements (cm):	41
AS4970 DSH Calculation (cm):	41
Basal Diameter (cm):	47
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	4.9
AS4970 SRZ Calculation (m):	2.4
Retention Value:	**Moderate**

Canopy Cover (m2): 64

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Notable
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	14
Species & Common Name:	***Arbutus unedo (Irish Strawberry Tree)***
Origin:	Exotic
Height (m):	9
Width (m):	6
DSH Field Measurements (cm):	22,15
AS4970 DSH Calculation (cm):	27
Basal Diameter (cm):	39
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Minor Limitation
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	3.2
AS4970 SRZ Calculation (m):	2.2
Retention Value:	**Moderate**

Canopy Cover (m2): 28

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	15
Species & Common Name:	***Ginkgo biloba (Maidenhair Tree)***
Origin:	Exotic
Height (m):	7
Width (m):	3
DSH Field Measurements (cm):	13
AS4970 DSH Calculation (cm):	13
Basal Diameter (cm):	17
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Minor Limitation
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	2
AS4970 SRZ Calculation (m):	1.6
Retention Value:	**Moderate**

Canopy Cover (m2): 7

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	16
Species & Common Name:	***Magnolia denudata (Yulan)***
Origin:	Exotic
Height (m):	7
Width (m):	6
DSH Field Measurements (cm):	18
AS4970 DSH Calculation (cm):	18
Basal Diameter (cm):	23
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	2.2
AS4970 SRZ Calculation (m):	1.8
Retention Value:	**Moderate**

Canopy Cover (m2): 28

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	17
Species & Common Name:	***Magnolia grandiflora (Bull Bay)***
Origin:	Exotic
Height (m):	8
Width (m):	7
DSH Field Measurements (cm):	28,15
AS4970 DSH Calculation (cm):	32
Basal Diameter (cm):	38
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	3.8
AS4970 SRZ Calculation (m):	2.2
Retention Value:	**Moderate**

Canopy Cover (m2): 38

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	18
Species & Common Name:	***Magnolia delavayi (Chinese Evergreen Magnolia)***
Origin:	Exotic
Height (m):	7
Width (m):	12
DSH Field Measurements (cm):	17,18,22
AS4970 DSH Calculation (cm):	33
Basal Diameter (cm):	43
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	4
AS4970 SRZ Calculation (m):	2.3
Retention Value:	**Moderate**

Canopy Cover (m2): 113

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
Horticultural Rarity
Ecosystem Contribution
Specimen

Comments:

Site #:	19
Species & Common Name:	***Betula pendula (Silver Birch)***
Origin:	Exotic
Height (m):	14
Width (m):	6
DSH Field Measurements (cm):	25
AS4970 DSH Calculation (cm):	25
Basal Diameter (cm):	35
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Minor Limitation
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	3
AS4970 SRZ Calculation (m):	2.1
Retention Value:	**Moderate**

Canopy Cover (m2): 28

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: DBH and basal diameter estimated.

Site #:	20
Species & Common Name:	***Betula pendula (Silver Birch)***
Origin:	Exotic
Height (m):	14
Width (m):	4
DSH Field Measurements (cm):	25
AS4970 DSH Calculation (cm):	25
Basal Diameter (cm):	35
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Acceptable
Growth Space:	Minor Limitation
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	3
AS4970 SRZ Calculation (m):	2.1
Retention Value:	**Moderate**

Canopy Cover (m2): 13

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: DBH and basal diameter estimated.

Site #:	21
Species & Common Name:	***Betula pendula (Silver Birch)***
Origin:	Exotic
Height (m):	14
Width (m):	4
DSH Field Measurements (cm):	25
AS4970 DSH Calculation (cm):	25
Basal Diameter (cm):	35
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Minor Limitation
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	3
AS4970 SRZ Calculation (m):	2.1
Retention Value:	**Moderate**

Canopy Cover (m2): 13

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: DBH and basal diameter estimated.

Site #:	22
Species & Common Name:	***Paulownia tomentosa (Royal Paulownia)***
Origin:	Exotic
Height (m):	11
Width (m):	7
DSH Field Measurements (cm):	30
AS4970 DSH Calculation (cm):	30
Basal Diameter (cm):	35
Life Stage:	Semi-mature
Vigour:	Poor
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	3.6
AS4970 SRZ Calculation (m):	2.1
Retention Value:	**Low**

Canopy Cover (m2): 38

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: DBH and basal diameter estimated.

Site #:	23
Species & Common Name:	***Quercus robur (English Oak)***
Origin:	Exotic
Height (m):	13
Width (m):	15
DSH Field Measurements (cm):	50
AS4970 DSH Calculation (cm):	50
Basal Diameter (cm):	65
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Minor Limitation
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	6
AS4970 SRZ Calculation (m):	2.8
Retention Value:	**Moderate**

Canopy Cover (m2): 177

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: DBH and basal diameter estimated.

Site #:	24
Species & Common Name:	***Eucalyptus radiata (Narrow-leaved Peppermint)***
Origin:	Victorian Native
Height (m):	25
Width (m):	12
DSH Field Measurements (cm):	55
AS4970 DSH Calculation (cm):	55
Basal Diameter (cm):	65
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	6.6
AS4970 SRZ Calculation (m):	2.8
Retention Value:	**Moderate**

Canopy Cover (m2): 113

Land Use and Social Contribution

Land Use (Victoria)
Native Vegetation
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Indigenous

Comments: DBH and basal diameter estimated.

Site #:	25
Species & Common Name:	***Eucalyptus radiata (Narrow-leaved Peppermint)***
Origin:	Victorian Native
Height (m):	13
Width (m):	3
DSH Field Measurements (cm):	20
AS4970 DSH Calculation (cm):	20
Basal Diameter (cm):	25
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	2.4
AS4970 SRZ Calculation (m):	1.8
Retention Value:	**Moderate**

Canopy Cover (m2): 7

Land Use and Social Contribution

Land Use (Victoria)
Native Vegetation
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Indigenous

Comments: DBH and basal diameter estimated.

Site #:	26
Species & Common Name:	***Eucalyptus radiata (Narrow-leaved Peppermint)***
Origin:	Victorian Native
Height (m):	25
Width (m):	8
DSH Field Measurements (cm):	50
AS4970 DSH Calculation (cm):	50
Basal Diameter (cm):	60
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Minor Correction
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	6
AS4970 SRZ Calculation (m):	2.7
Retention Value:	**Moderate**

Canopy Cover (m2): 50

Land Use and Social Contribution

Land Use (Victoria)
Native Vegetation
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Indigenous

Comments: DBH and basal diameter estimated.

Site #:	27
Species & Common Name:	***Eucalyptus radiata (Narrow-leaved Peppermint)***
Origin:	Victorian Native
Height (m):	22
Width (m):	8
DSH Field Measurements (cm):	50
AS4970 DSH Calculation (cm):	50
Basal Diameter (cm):	60
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Minor Correction
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	6
AS4970 SRZ Calculation (m):	2.7
Retention Value:	**Moderate**

Canopy Cover (m2): 50

Land Use and Social Contribution

Land Use (Victoria)
Native Vegetation
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Indigenous

Comments: DBH and basal diameter estimated.

Site #:	28
Species & Common Name:	***Eucalyptus radiata (Narrow-leaved Peppermint)***
Origin:	Victorian Native
Height (m):	25
Width (m):	8
DSH Field Measurements (cm):	50
AS4970 DSH Calculation (cm):	50
Basal Diameter (cm):	60
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Minor Correction
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	6
AS4970 SRZ Calculation (m):	2.7
Retention Value:	**Moderate**

Canopy Cover (m2): 50

Land Use and Social Contribution

Land Use (Victoria)
Native Vegetation
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Indigenous

Comments: DBH and basal diameter estimated.

Site #:	29
Species & Common Name:	***Eucalyptus radiata (Narrow-leaved Peppermint)***
Origin:	Victorian Native
Height (m):	22
Width (m):	6
DSH Field Measurements (cm):	35
AS4970 DSH Calculation (cm):	35
Basal Diameter (cm):	45
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Minor Correction
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	4.2
AS4970 SRZ Calculation (m):	2.4
Retention Value:	**Moderate**

Canopy Cover (m2): 28

Land Use and Social Contribution

Land Use (Victoria)
Native Vegetation
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Indigenous

Comments: DBH and basal diameter estimated.

Site #:	30
Species & Common Name:	***Eucalyptus radiata (Narrow-leaved Peppermint)***
Origin:	Victorian Native
Height (m):	15
Width (m):	7
DSH Field Measurements (cm):	35
AS4970 DSH Calculation (cm):	35
Basal Diameter (cm):	45
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Minor Correction
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	4.2
AS4970 SRZ Calculation (m):	2.4
Retention Value:	**Moderate**

Canopy Cover (m2): 38

Land Use and Social Contribution

Land Use (Victoria)
Native Vegetation
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Indigenous

Comments: DBH and basal diameter estimated.

Site #:	31
Species & Common Name:	***Pinus radiata (Monterey Pine)***
Origin:	Exotic
Height (m):	28
Width (m):	12
DSH Field Measurements (cm):	60
AS4970 DSH Calculation (cm):	60
Basal Diameter (cm):	75
Life Stage:	Early-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	7.2
AS4970 SRZ Calculation (m):	2.9
Retention Value:	**Low**

Canopy Cover (m2): 113

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Weed

Comments: DBH and basal diameter estimated.

Site #:	32
Species & Common Name:	***Eucalyptus cypellocarpa (Mountain Grey Gum)***
Origin:	Victorian Native
Height (m):	15
Width (m):	5
DSH Field Measurements (cm):	190
AS4970 DSH Calculation (cm):	190
Basal Diameter (cm):	210
Life Stage:	Early-mature
Vigour:	Good
Structure:	Major Correction
Growth Space:	Optimal
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	15
AS4970 SRZ Calculation (m):	4.5
Retention Value:	**Low**

Canopy Cover (m2): 20

Land Use and Social Contribution

Land Use (Victoria)
Native Vegetation
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Indigenous

Comments: Tree has been topped.

Site #:	33
Species & Common Name:	***Nothofagus menziesii (Silver Beech)***
Origin:	Exotic
Height (m):	7
Width (m):	3
DSH Field Measurements (cm):	21
AS4970 DSH Calculation (cm):	21
Basal Diameter (cm):	24
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	2.5
AS4970 SRZ Calculation (m):	1.8
Retention Value:	**Moderate**

Canopy Cover (m2): 7

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
Horticultural Rarity
Ecosystem Contribution
Specimen

Comments:

Site #:	34
Species & Common Name:	***Rhododendron sp. (Rhododendron)***
Origin:	Exotic
Height (m):	3
Width (m):	3
DSH Field Measurements (cm):	17,16
AS4970 DSH Calculation (cm):	23
Basal Diameter (cm):	26
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Major Correction
Growth Space:	Optimal
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	2.8
AS4970 SRZ Calculation (m):	1.9
Retention Value:	**Low**

Canopy Cover (m2): 7

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	35
Species & Common Name:	***Callistemon citrinus (Crimson Bottlebrush)***
Origin:	Victorian Native
Height (m):	5
Width (m):	5
DSH Field Measurements (cm):	16,14,17
AS4970 DSH Calculation (cm):	27
Basal Diameter (cm):	46
Life Stage:	Early-mature
Vigour:	Poor
Structure:	Major Correction
Growth Space:	Optimal
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	3.2
AS4970 SRZ Calculation (m):	2.4
Retention Value:	**Low**

Canopy Cover (m2): 20

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	36
Species & Common Name:	***Pittosporum undulatum (Sweet Pittosporum)***
Origin:	Victorian Native
Height (m):	2
Width (m):	2
DSH Field Measurements (cm):	5,9
AS4970 DSH Calculation (cm):	10
Basal Diameter (cm):	13
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Minor Correction
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	2
AS4970 SRZ Calculation (m):	1.5
Retention Value:	**Low**

Canopy Cover (m2): 3

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Weed

Comments:

Site #:	37
Species & Common Name:	***Prunus lusitanica (Portugese Laurel)***
Origin:	Exotic
Height (m):	3
Width (m):	3
DSH Field Measurements (cm):	13
AS4970 DSH Calculation (cm):	13
Basal Diameter (cm):	17
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	2
AS4970 SRZ Calculation (m):	1.6
Retention Value:	**Low**

Canopy Cover (m2): 7

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Weed

Comments:

Site #:	38
Species & Common Name:	***Rhododendron sp. (Rhododendron)***
Origin:	Exotic
Height (m):	4
Width (m):	3
DSH Field Measurements (cm):	12,16
AS4970 DSH Calculation (cm):	20
Basal Diameter (cm):	25
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Major Correction
Growth Space:	Optimal
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	2.4
AS4970 SRZ Calculation (m):	1.8
Retention Value:	**Low**

Canopy Cover (m2): 7

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	39
Species & Common Name:	***Rhododendron sp. (Rhododendron)***
Origin:	Exotic
Height (m):	4
Width (m):	3
DSH Field Measurements (cm):	23
AS4970 DSH Calculation (cm):	23
Basal Diameter (cm):	34
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Major Correction
Growth Space:	Optimal
Landscape Viability:	**Short**
AS4970 NRZ Calculation (m):	2.8
AS4970 SRZ Calculation (m):	2.1
Retention Value:	**Low**

Canopy Cover (m2): 7

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	40
Species & Common Name:	***Laburnum anagyriodes (Laburnum)***
Origin:	Exotic
Height (m):	5
Width (m):	2
DSH Field Measurements (cm):	21
AS4970 DSH Calculation (cm):	21
Basal Diameter (cm):	29
Life Stage:	Semi-mature
Vigour:	Fair
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	2.5
AS4970 SRZ Calculation (m):	2
Retention Value:	**Low**

Canopy Cover (m2): 3

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	41
Species & Common Name:	***Pittosporum tenuifolium (Kohuhu)***
Origin:	Exotic
Height (m):	5
Width (m):	5
DSH Field Measurements (cm):	10,10,12,12,8,8
AS4970 DSH Calculation (cm):	25
Basal Diameter (cm):	36
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Minor Limitation
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	3
AS4970 SRZ Calculation (m):	2.2
Retention Value:	**Low**

Canopy Cover (m2): 20

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	42
Species & Common Name:	***Camellia japonica (Camellia)***
Origin:	Exotic
Height (m):	6
Width (m):	5
DSH Field Measurements (cm):	16,7,6,10
AS4970 DSH Calculation (cm):	21
Basal Diameter (cm):	21
Life Stage:	Semi-mature
Vigour:	Very Poor
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Remove**
AS4970 NRZ Calculation (m):	2.5
AS4970 SRZ Calculation (m):	1.7
Retention Value:	**Low**

Canopy Cover (m2): 20

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	43
Species & Common Name:	***Magnolia X soulangeana (Saucer Magnolia)***
Origin:	Exotic
Height (m):	5
Width (m):	8
DSH Field Measurements (cm):	14,16,15
AS4970 DSH Calculation (cm):	26
Basal Diameter (cm):	33
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	3.1
AS4970 SRZ Calculation (m):	2.1
Retention Value:	**Moderate**

Canopy Cover (m2): 50

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	44
Species & Common Name:	***Cornus capitata (Evergreen Dogwood)***
Origin:	Exotic
Height (m):	6
Width (m):	4
DSH Field Measurements (cm):	15
AS4970 DSH Calculation (cm):	15
Basal Diameter (cm):	24
Life Stage:	Semi-mature
Vigour:	Poor
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Medium**
AS4970 NRZ Calculation (m):	2
AS4970 SRZ Calculation (m):	1.8
Retention Value:	**Low**

Canopy Cover (m2): 13

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Marginal
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments:

Site #:	45
Species & Common Name:	***Alnus sp. (Alder)***
Origin:	Exotic
Height (m):	14
Width (m):	8
DSH Field Measurements (cm):	35
AS4970 DSH Calculation (cm):	35
Basal Diameter (cm):	45
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	4.2
AS4970 SRZ Calculation (m):	2.4
Retention Value:	**Moderate**

Canopy Cover (m2): 50

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: DSH and basal diameter estimated.

Site #:	46
Species & Common Name:	***Alnus sp. (Alder)***
Origin:	Exotic
Height (m):	14
Width (m):	8
DSH Field Measurements (cm):	35
AS4970 DSH Calculation (cm):	35
Basal Diameter (cm):	45
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	4.2
AS4970 SRZ Calculation (m):	2.4
Retention Value:	**Moderate**

Canopy Cover (m2): 50

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: DSH and basal diameter estimated.

Site #:	47
Species & Common Name:	***Alnus sp. (Alder)***
Origin:	Exotic
Height (m):	14
Width (m):	8
DSH Field Measurements (cm):	35
AS4970 DSH Calculation (cm):	35
Basal Diameter (cm):	45
Life Stage:	Semi-mature
Vigour:	Good
Structure:	Acceptable
Growth Space:	Optimal
Landscape Viability:	**Long**
AS4970 NRZ Calculation (m):	4.2
AS4970 SRZ Calculation (m):	2.4
Retention Value:	**Moderate**

Canopy Cover (m2): 50

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Comments: DSH and basal diameter estimated.

Site #: 48
Primary Species: ***Camellia japonica (Camellia)***
Secondary Species:
Other Species:
Average Height (m): 3
Average Width (m): 3
Average DSH Measurements (cm): 10
AS4970 DSH Calculation (cm): 10
Average Basal Diameter (cm): 15
Life Stage: Semi-mature
Vigour: Good
Structure: Acceptable
Growth Space: Optimal
Landscape Viability: **Long**
AS4970 NRZ Calculation (m): 2
AS4970 SRZ Calculation (m): 1.5
Retention Value: **Moderate**
Comments:

Canopy Cover (m2): 127

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Site #: 49
Primary Species: ***Photinia serratifolia (Chinese Hawthorn)***
Secondary Species:
Other Species:
Average Height (m): 2
Average Width (m): 1
Average DSH Measurements (cm): 8
AS4970 DSH Calculation (cm): 8
Average Basal Diameter (cm): 15
Life Stage: Semi-mature
Vigour: Good
Structure: Acceptable
Growth Space: Optimal
Landscape Viability: **Long**
AS4970 NRZ Calculation (m): 2
AS4970 SRZ Calculation (m): 1.5
Retention Value: **Moderate**
Comments:

Canopy Cover (m2): 18

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Site #: 50
Primary Species: ***Pittosporum tenuifolium (Kohuhu)***
Secondary Species:
Other Species:
Average Height (m): 5
Average Width (m): 3
Average DSH Measurements (cm): 20
AS4970 DSH Calculation (cm): 20
Average Basal Diameter (cm): 25
Life Stage: Semi-mature
Vigour: Good
Structure: Minor Correction
Growth Space: Optimal
Landscape Viability: **Medium**
AS4970 NRZ Calculation (m): 2.4
AS4970 SRZ Calculation (m): 1.8
Retention Value: **Moderate**
Comments:

Canopy Cover (m2): 57

Land Use and Social Contribution

Land Use (Victoria)
Low Density
Landscape Function
Adequate
Landscape Significance
None
Ecosystem Contribution
Specimen

Appendix 3 - Tree Feature Descriptors

Feature Classes - Trees are classified into three groups, Individual Trees, Grouped Trees or Hedge Rows.

Category	Description
Individual Tree	An individual tree with one or more trunks that is represented in the Site Plan as a point. This may include two or more trees growing in close proximity where all trees are engaged in mutual structural support.
Grouped Trees	Multiple trees of one or more species that are represented in the Site Plan as a polygon. Grouped trees are generally managed as a discrete unit.
Hedge Row	Multiple trees of one or more species in a linear arrangement that are represented in the Site Plan as a polyline. Hedge Rows are generally managed as a discrete unit.

Site ID. ## - textural reference to the location of an Individual Tree, Grouped Trees or Hedge Row within the attached Site Plan appendix.

Species and Common Name - Defines the botanical name including genus, species, sub-species, variety and cultivar (if known) according to taxonomical classifications as published in current literature. The common name will be that that is familiar to the arboricultural assessor, the local community or referenced literature. This is a consideration of AS4970.

Origin - Identifies the general geographic origins of the tree species identified.

Category	Description
Victorian Native	Occurs naturally within some part of the State of Victoria.
Australian Native	Occurs naturally within Australia but is not a Victorian native.
Exotic	Does not occur naturally within Australia.
Mixed	Applies to Hedge Rows and Grouped Trees only where the feature is comprised of multiple species that have multiple places of origin.

Dimensional Characteristics
Diameter, circumference and other dimensional measurements not considered by AS4970 are determined and included as required by the relevant Local Authority.

Height and Width - Dimensions are expressed in metres (m). Identifies the estimated height and width of a tree crown or combined crown for Grouped Trees or Hedge Rows. Crown heights are measured with a clinometer where possible. Crown width is paced and estimated at the widest axis or as an average of multiple radius in highly asymmetric crowns unless otherwise stated. Measurements rounded to the nearest metre.

Diameter at Standard Height (DSH) - Identifies the trunk diameter expressed in centimetres (cm) of a tree measured at 1.4m above the site grade unless otherwise stated. The methods used to determine this measurement are described in Appendix A of the Australian Standard AS 4970-2025 'Protection of trees on development sites'. Measurements undertaken using a diameter tape or builders tape. In the case of multi-stem (> 1 stem) Individual Trees, DSH field measurements are shown and a single DSH calculated value provided in accordance with the aforementioned Standard. DSH calculations are rounded to the nearest centimetre.

Stem Diameter - Identifies the diameter of the trunk expressed in centimetres (cm) of a tree immediately above the root buttress. Measurements undertaken using a diameter tape or builders tape and rounded to the nearest centimetre.

Crown Area - Calculated value of the crown area using the formula πr^2, where 'r' is the average radius of the crown.

Life Stage - Identifies the physiological stage of the Features life cycle.

Category	Description
Young	Sapling tree and/or recently planted that is not yet established in the landscape.
Semi-mature	The tree is established in the landscape. Tree rapidly increasing in size and yet to achieve expected size in situation.
Early Mature	Specimen approaching expected size in situation.
Mature	Specimen has reached expected size in situation, with reduced incremental growth.
Over-mature	Tree may be senescent and in decline or crown area substantially reduced relative to trunk size.

Vigour - Describes the overall health and vigour of a Feature and is derived from the Condition variables identified in the iTree Eco v6.0 model. Category selection is based on the Feature displaying one or more of the criteria listed in the corresponding Description. This is a consideration of AS4970 and may be referred to elsewhere as Health.

Category	Description
Excellent	100% live crown. Leaf size and colour is consistent with that of a healthy example of the species. Shoot tips are healthy and display excellent extension. Buds are swollen.
Good	97% - 92% live crown. Leaf size and colour is consistent with that of a healthy example of the species. Shoot tips are healthy and display adequate extension. Buds are swollen.
Fair	87% - 77% live crown. Leaf size and colour is generally consistent with that of a healthy example of the species although some foliage (less than 20% of total crown volume) displays discolouration or reduced leaf size. Some shoot tips may display reduced extension and buds may show signs of damage or desiccation.
Poor	72% - 52% live crown. Leaf size and colour is not consistent with that of a healthy example of the species. Foliage (greater than 20% but less than 40% of total crown volume) displays discolouration or reduced leaf size. Shoot tips may display reduced extension and buds may show signs of damage or desiccation.
Critical	47% - 27% live crown. Leaf size and colour is not consistent with that of a healthy example of the species. Foliage (greater than 40% but less than 60% of total crown volume) displays discolouration or reduced leaf size. Shoot tips display reduced extension and buds show signs of damage or desiccation.
Dying	22% - 2% live crown. Leaf size and colour is not consistent with that of a healthy example of the species. Foliage (greater than 60% but less than 95% of total crown volume) displays discolouration or reduced leaf size. Shoot tips display limited extension and buds show distinct signs of damage or desiccation.
Dead	0% live crown. Leaf size and colour is not consistent with that of a healthy example of the species. Foliage (greater than 95% of total crown volume) displays discolouration or reduced leaf size. Shoot tips display no extension and buds are damage or desiccated.

Structure - Adapted in part from the Quantified Tree Risk Assessment (QTRA) manual and a consideration of AS4970, the descriptor is designed to inform planners, architects and arborists of the overall structural capacity of a Feature and provide a concise description of the input required to maintain a Feature within the landscape.

Category	Description
Acceptable	Minimal or no damage, disease or decay visible in the root plate, trunk, primary scaffold limbs or outer crown. No works are required to relieve structural faults or remedy conflict with adjoining edifices. The probability of failure is generally considered to be less than 1/1M
Minor Correction	Minimal to moderate damage, disease or decay visible in primary scaffold limb(s), outer crown or peripheral root(s) that could be corrected through appropriate treatment that would moderately improve Landscape Viability. Adjoining edifices may benefit from treatment. The probability of failure is generally considered to be less than 1/10K but greater than 1/M.
Major Correction	Moderate to major damage, disease or decay visible in primary scaffold limb(s), outer crown or peripheral root(s) that could be corrected through appropriate treatment that would significantly improve Landscape Viability. Adjoining edifices would benefit from treatment. The probability of failure is generally considered to be less than 1/1K but greater than 10/K.
Unacceptable	Moderate to major damage, disease or decay visible in the root plate or lower trunk. Major damage, disease or decay in primary scaffold limb(s) that cannot be corrected through appropriate treatments. Landscape Viability unlikely to be improved by treatment. The probability of failure is generally considered to be greater than 1/1K.

Appendix 3 - Tree Feature Descriptors

Available Growth Space - Describes the space above and below ground that can be reasonably assumed based on visual inspection of the site that the Feature can exploit for future crown and root development.

Category	Description
Optimal	Open, level or gently sloping ground. Minimal competition for available light, water and nutrient. Part of a group of similar species that is suitably spaced and likely to provide mutual support. Specie genetically suited or adapted to the existing environment.
Minor Limitation	Moderately constrained location. Long standing built form present on one side of Features root zone. Surrounding trees are competing for available space, light, water or nutrients. Feature is regularly pruned to meet clearance requirements.
Major Limitation	Heavily constrained location. Root zone has been compacted by continuous and on-going traffic movements or built over with impervious surfaces. Crown crowded by surrounding larger trees or structures that impede natural form development.

Landscape Viability - Referred to in AS4970 as Estimated Life Expectancy after Barrell in Tree AZ, describes how long it could be reasonably expected that a tree feature will remain viable in an evolving landscape. Landscape Viability is informed by Life Stage, Vigour, Structure and Available Growth Space.

Category	Description
Long	Feature will likely contribute to the landscape for forty (40) or more years.
Medium	Feature will likely contribute to the landscape for between fifteen (15) to forty (40) years.
Short	Feature will likely contribute to the landscape for between five (5) to fifteen (15) years.
Remove	Feature will likely require removal within five (5) years.

Land Use and Environmental Contribution - Describes the contribution a tree feature provides to an existing landscape and is derived from MIS506 (2022) 'Tree Valuation' published by Arboriculture Australia and the Council of Tree and Landscape Appraisers (CTLA) 10th Edition 2018. Landscape Function, Landscape Significance and Ecosystem Contribution are considerations of AS4970.

Land Use (Victoria)	
Category	**Description**
Legal Instrument	Legal Instrument. Section 173 agreements that contain conditions on the property title requiring the retention and/ or protection of vegetation.
Local Law	Local laws protecting vegetation on all land within a municipal area. Exempt trees are attributed according to designated land use for the site.
Statutory Planning	Statutory planning scheme overlays that protect vegetation on private and public land. Existing planning permits requiring the retention of trees. Exempt trees are attributed according to designated land use for the site.
Native Vegetation	Property subject to the provisions of 52.16 or 52.17 Native Vegetation. Exempt trees are attributed according to designated land use for the site.
Public Space	Public Space. Public Park and Recreation Zones. Public Conservation and Resource Zones.
High Density	High Density Mixed Use Zones. Township Zones.
Medium Density	Medium Density. Residential Growth Zone. General Residential Zone.
Low Density	Low Density Residential Zones. Neighbourhood Residential Zones. Green Wedge Zones. Rural Conservation Zones.
Special Purpose	Special Purpose Zones. Public Use Zones. Transport Zones. Commercial Zones.

Land Use (Victoria)	
Category	**Description**
Industrial/ Farming	Industrial and Farming Zones.
Exempt Land	Exempt Land. Land not subject to statutory land zoning, native vegetation provisions, legal instruments or local laws.

Landscape Function	
Category	**Description**
Minimal	Nondescript tree, hedge or grouped planting in a poorly designed and/or maintained landscape. Planting contributes minimally to positive architectural, engineering, aesthetic or climate function. Canopy intersecting another tree
Marginal	Tree, hedge or grouped planting in a poorly designed and/ or maintained landscape. Planting contributes marginally to positive architectural, engineering, aesthetic or climate function. One of a group of close plantings
Adequate	Tree, hedge or grouped planting of moderate value that contributes as a positive architectural, engineering, aesthetic or climate function. Wide plantings. Irregular spacing between trees; regular spacing one side (not hard surface)
Notable	Tree, hedge or grouped planting of moderate to high value that contributes as a positive architectural, engineering, aesthetic or climate function in a built environment. Hard surface planting (street or pathway), or plantings with regular spacing both sides
Exceptional	Individual feature specimen tree, hedge or grouped planting of significant value as a positive architectural, engineering, aesthetic or climate modifier. Avenue, park, reserve or other green space feature planting.

Landscape Significance	
Category	**Description**
None	The tree(s) is not considered significant within the landscape.
Important private property	The tree(s) represents a significant feature within the subject site or adjoining properties.
Important public space	The tree(s) represents a significant feature within the public realm as viewed from the subject site, adjoining properties and/or streetscapes.
Horticultural Rarity	Outstanding horticultural or genetic value; could be an important source of propagating stock, including specimens that are particularly resistant to disease or exposure. Any tree of a species or variety that is rare.
Local/state significant tree	Tree is listed in either a local or state significant tree register.
National significant tree	Tree is listed in a national significant tree register.

Ecosystem Contribution	
Category	**Description**
Weed	The tree(s) is a listed weed species.
Specimen	A typical garden specimen of a species commonly found in the urban context.
Indigenous	Remnant, regenerated or planted indigenous vegetation that contributes to biological diversity.

Appendix 3 - Tree Feature Descriptors

Ecosystem Contribution	
Category	**Description**
Habitat	Tree(s) could have value as habitat for indigenous wildlife, including providing breeding, foraging or roosting habitat, or is a component of a wildlife reserve.

Retention Value - Provides a concise rating of the Features value within the context of an evolving landscape that may include built form. Retention Value is informed by Landscape Viability, Landscape Contribution, published literature and the experience of the surveyor on the capacity of the Feature to tolerate and adapt to change.

Category	Description
High 	A tree of good quality that displays acceptable vigour and structure. The tree contributes to the existing landscape and has the potential to be long-term component in an evolving one if appropriately managed. The species is known to perform well within its given context and has desirable aesthetic traits. Retention of this tree is highly desirable.
Moderate 	A tree of reasonable quality that displays acceptable vigour and structure. The tree may have a condition, and or structural problem that can be corrected with arboricultural treatment. The species is known to perform within its given context. The tree has the potential to be a medium to long-term component of the landscape if managed appropriately. Retention of these trees is generally desirable.
Low 	A tree of poor quality that displays unacceptable vigour or structure. The tree may present an unacceptable hazard to existing and future users of the site. The tree is not considered significant within the landscape. These tree is easily replaceable. The species is functionally inappropriate given the context and may demand excessive management if retained. The cost to maintain this tree within the given context may exceed the benefit it provides to the landscape.

Tree Asset Value - Conforming with MIS506 'Tree Valuation' published by Arboriculture Australia and NZArb 2022, this adaptation of the minimum industry standard provides the shadow and actual monetary value for a tree feature. The values provided should be considered a guide to the value of a tree feature and are not suitable for cost recovery purposes without further consideration.

Shadow Value (**B**) - derived from MIS506 and tables published by Andrew Strauss (2022), the baseline shadow value is determined by the DSH of the tree feature.

Land Use Factor (**Z**) - determined by the Planning Property Report with reference to Local Laws, Section 173 agreements, existing planning permits, legal instruments and relevant documents listed in Section 4 of the appraisal.

Landscape Factors (**T**) - derived from field assessments. Population Densities are not considered in this component of the valuation;

Landscape Function (Tp) - adapted from location and proximity considerations in MIS506 and CTLA, the variable provides a concise description of the tree's function within landscape.

Ecosystem (Te) - adopted from MIS506, the variable provides a concise description of the tree's contribution to the ecosystem. Climate suitability is not considered.

Landscape Significance (Tg) - adopted from MIS506, the variable provides a concise description of the tree's significance within the landscape.

S Score = (Tp + Te + Tg) / (6 + 6 + 0)

Quality Factors (**Q**) - derived from field assessments;

Vigour (V) - adapted from MIS506 and iTree Eco, the variable provides a concise description of the tree's vigour or health.

Structure (F) - adapted from MIS506 and QTRA, the variable provides a concise description of the tree's structure and form.

Landscape Viability (L) - adapted from MIS506 after Barrell, the variable provides a concise description of the anticipated life expectancy of a tree feature within a given landscape.

Q Score = (V + F + L) / (24 + 28 + 28)

Actual Value = **B** x **Z** x **T** x **Q**

Comments - Provides additional information concerning the Feature.

Notional Root Zone (NRZ) - Dimensions are expressed in metres (m) to one decimal place as a radius measured from the center of the trunk. Defined under the Standard as a specified area below ground and at a given distance from the trunk set aside for the protection of a tree's roots to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development.

Structural Root Zone (SRZ) - Dimensions are expressed in metres (m) to one decimal place as a radius measured from the center of the trunk. Defined under the Standard as the area around the base of a tree required for the tree's stability in the ground. Woody root growth and soil cohesion in this area is necessary to hold the tree upright.

Appendix 4 - Tree Protection Specifications

1. General

The following specifications have been adapted from the Standard and current industry best practice and include processes designed to protect the trees identified for retention within and adjacent to the subject site.

2. Restricted Activities within the TPZ

The listed activities are not permitted in the TPZ for a retained tree located in the subject site or adjacent land:

2.1. The disturbance of soil profiles including excavation, cultivation or compaction of soil grades. Exceptions to this clause identified in Section 7 of this appraisal are specified under Clauses 9 or 10 of this Appendix.

2.2. Changes to soil grades including the placement of fill. Exceptions to this clause identified in Section 7 are specified under Clause 8 of this Appendix.

2.3. Waste, plant and material storage regardless of duration.

2.4. The preparation or use of chemicals including cement and fuels.

2.5. The cleaning or storage of equipment.

2.6. Vehicle, plant or pedestrian access or egress. Exceptions to this clause identified in Section 7 are specified under Clauses 4 and 5 of this Appendix.

2.7. The lighting of fires.

2.8. Physical damage to the tree including the affixing of temporary services cables, nails, screws or any other fixing device.

Important: Site workers and sub-contractors must be advised of the tree protection requirements identified for the subject site and adjacent land as part of the site induction process. Successful tree preservation requires a commitment from all parties involved including design, construction and management.

3. TPZ Fencing and Signs

3.1. Fencing must be constructed in accordance with AS 4687.2 and be erected prior to commencement of any works, including demolition. Fencing should ideally be placed in a manner that corresponds with the outside edge of the TPZ. Shade cloth or similar should be attached to reduce the transport of particulate matter into the protected area. Existing perimeter fencing and other structures may be suitable as part of the protective fencing. Please refer to Figure 1 for detail.

3.2. Signs should be affixed to the fencing that provides clear and accessible information concerning the establishment of the TPZ and should be a minimum A3 size. The lettering on the sign should comply with AS 1319. Please refer to Figure 2 for detail.

3.3. Once erected, fencing must not be removed or altered without approval by the project arborist until such time as the project is completed.

3.4. Fencing must be secured in a manner to restrict access or unauthorised relocation.

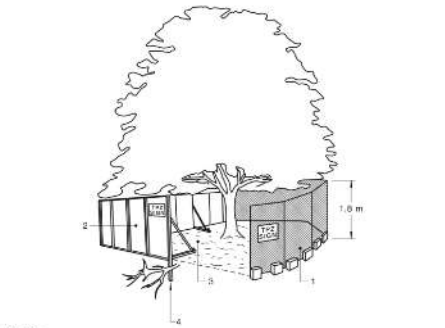


Figure 1 - from AS4970, Protective Fencing

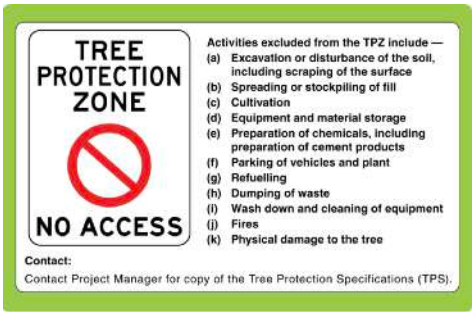


Figure 2 - from AS4970, TPZ sign example

Appendix 4 - Tree Protection Specifications

4. Trunk and Branch Protection

Where tree protection fencing cannot be practicably installed to prevent damage to a tree's crown or requires temporary removal, the following measures must be applied.

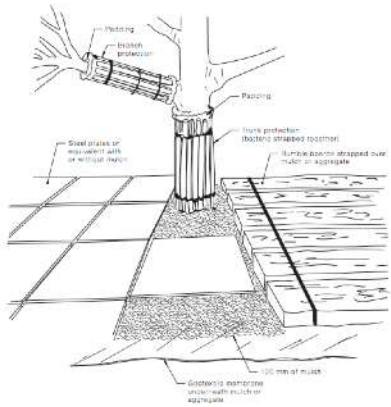


Figure 3 - from AS4970, Trunk and Ground Protection Measures

4.1. Impact damage to trunks and/or limbs that could result from the slewing action of plant must be avoided by appropriate positioning of machinery. Passing construction traffic must follow traffic routes outside the drip line of the tree or height restrictions placed on passing vehicles if the access route passes within the drip line.

4.2. Trunk protection material should not be maintained for prolonged periods and should be removed from the tree as soon as the threat ceases.

4.3. Where necessary, install protection to the trunk and branches of trees as shown in Figure 3. The materials and positioning of protection are to be specified by the project arborist. A minimum height of 2 metres above site grade is recommended.

4.4. Do not attach temporary power lines, stays, guys and the like to the tree unless specifically permitted. Do not drive nails into the trunks or branches.

4.5. If required, flexible branches should be tied back rather than pruned. If the branch is not sufficiently flexible, then pruning in accordance with local requirements and AS 4373-2007 Pruning of amenity trees shall be applied.

5. Ground Protection

Where tree protection fencing cannot be practicably installed or where construction access cannot be avoided and is required within a TPZ, ground protection to prevent root damage and soil compaction within the TPZ must be applied:

5.1. Temporary measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch below rumble boards, steel plates or ground (bog) mats as per Figure 3.

5.2. Temporary or more permanent measures may include the use of a permeable ground stabilisation technology such as GeoHex™.

5.3. Ground protection within a TPZ must be used for construction access or egress only. Restrictions identified in Clause 2 must be applied in TPZ areas where ground protection is applied.

6. Vegetation Removal

Vegetation removal that has been identified and approved within or adjacent to the TPZ of a retained tree will be subject to the following clauses:

6.1. Unwanted vegetation will be removed from a TPZ by hand. Debris generated by vegetation removal must not be stockpiled in the TPZ and will be disposed of in an appropriate manner.

6.2. Pulling machinery must not be used for the removal of stumps within or immediately adjacent to the TPZ.

6.3. Grinders may be used within the TPZ of a retained tree for the purpose of removing tree parts that protrude above natural site grade. Grinders must not be used to 'chase' surface roots outside the root crown of the tree being removed. Grinders must not be used within the SRZ of a retained tree.

6.4. Stumps located within the SRZ of a retained tree shall be cut off as close to grade as possible. The use of herbicide to prevent regrowth must be undertaken in accordance with herbicide use.

6.5. Herbicides used for the control of vegetation including turf or herbaceous weed infestations must not negatively impact the health of a retained tree and must be appropriate for the type of

vegetation to be controlled. Herbicides that are non-residual and do not translocate shall be selected. Residual or water-mobile herbicides must not be used under any circumstance. Herbicides must be applied as per label instructions.