Form 2

NOTICE OF AN APPLICATION FOR PLANNING PERMIT

The land affected by the application is located at:	**385 Bullumwaal Road WY YUNG 3875 Lot: 2 PS: 434082**
The application is for a permit to:	**Multi- Lot Subdivision, Works (Roadworks), Earthworks & Removal of Native Vegetation**
The applicant for the permit is:	**Crowther & Sadler Pty Ltd**
The application reference number is:	**5.2024.135.1**

You may look at the application and any documents that support the application free of charge at: https://www.eastgippsland.vic.gov.au/building-and-development/advertised-planning-permit-applications

You may also call 5153 9500 to arrange a time to look at the application and any documents that support the application at the office of the responsible authority, East Gippsland Shire. This can be done during office hours and is free of charge.

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

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.

The Responsible Authority will not decide on the application before:	**Subject to applicant giving notice**

If you object, the Responsible Authority will tell you its decision**.**

The Victorian Government acknowledges the Traditional Owners of Victoria and pays respects to their ongoing connection to their Country, History and Culture. The Victorian Government extends this respect to their Elders, past, present and emerging.

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

VOLUME 10510 FOLIO 873 Security no : 124114595177D
Produced 01/05/2024 12:53 PM

LAND DESCRIPTION

Lot 2 on Plan of Subdivision 434082A.
PARENT TITLE Volume 09887 Folio 094
Created by instrument PS434082A 13/04/2000

REGISTERED PROPRIETOR

Estate Fee Simple
Joint Proprietors

[redacted] 13/04/2000

ENCUMBRANCES, CAVEATS AND NOTICES

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

DIAGRAM LOCATION

SEE PS434082A 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: 385 BULLUMWAAL ROAD WY YUNG VIC 3875

DOCUMENT END

Delivered from the LANDATA System by Dye & Durham Terrain Pty Ltd

PLAN OF SUBDIVISION

STAGE No. /

LTO USE ONLY
EDITION 2

PLAN NUMBER
PS 434082A

LOCATION OF LAND

PARISH: WY YUNG

TOWNSHIP: —

SECTION: —

CROWN ALLOTMENT: 24B (PART)

CROWN PORTION: —

LTO BASE RECORD:
TITLE REFERENCES: VOL 9887 FOL 094

LAST PLAN REFERENCE/S: LP 215873E LOT 2

POSTAL ADDRESS: 375 BULLUMWAAL ROAD,
(At time of subdivision) WY YUNG, 3875

AMG Co-ordinates
(of approx centre of land in plan) E 552 900 N 5816 900 ZONE: 55

COUNCIL CERTIFICATION AND ENDORSEMENT

COUNCIL NAME: EAST GIPPSLAND SHIRE COUNCIL REF: 40/00015/SD

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.~~

OPEN SPACE

(i) A requirement for public open space under Section 18 of the Subdivision Act 1988 ~~has~~/has not been made.

~~(ii) The requirement has been satisfied.~~

~~(iii) The requirement is to be satisfied in Stage .....~~

Council Delegate
~~Council Seal~~
Date 8 / 3 / 2000

Re-certified under Section 11(7) of the Subdivision Act 1988.
Council Delegate
Council Seal
Date / /

VESTING OF ROADS AND/OR RESERVES

IDENTIFIER	COUNCIL/BODY/PERSON
NIL	NIL

NOTATIONS

STAGING This ~~is~~/is not a staged subdivision.
Planning permit No.

DEPTH LIMITATION DOES NOT APPLY

LOT 2 IS BY DEDUCTION FROM TITLE

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	ELECTRICITY SUPPLY	SEE DIAG.	INST. E970172	S.E.C.V.
E-2	POWER LINE	16	THIS PLAN - SECTION 44 OF THE ELECTRICITY INDUSTRY ACT 1993	EASTERN ENERGY LTD.
E-3	GAS PIPELINE	20	AB437466J	DUKE EASTERN GAS PIPELINE PTY LTD DEI EASTERN GAS PIPELINE PTY LTD VOL.10474 FOL.067

LTO USE ONLY

STATEMENT OF COMPLIANCE/
EXEMPTION STATEMENT

RECEIVED ☑

DATE. 7 / 4 / 00

LTO USE ONLY

PLAN REGISTERED
TIME 6.00 PM
DATE 13 / 4 / 00

Assistant Registrar of Titles

SHEET 1 OF 3 SHEETS

Crowther & Sadler Pty Ltd
CONSULTING SURVEYORS
152 MACLEOD STREET, BAIRNSDALE, 3875
TELEPHONE (03) 5152 5011

LICENSED SURVEYOR (PRINT) MICHAEL JOSEPH SADLER

SIGNATURE ..... DATE / /

REF 9234 VERSION 1

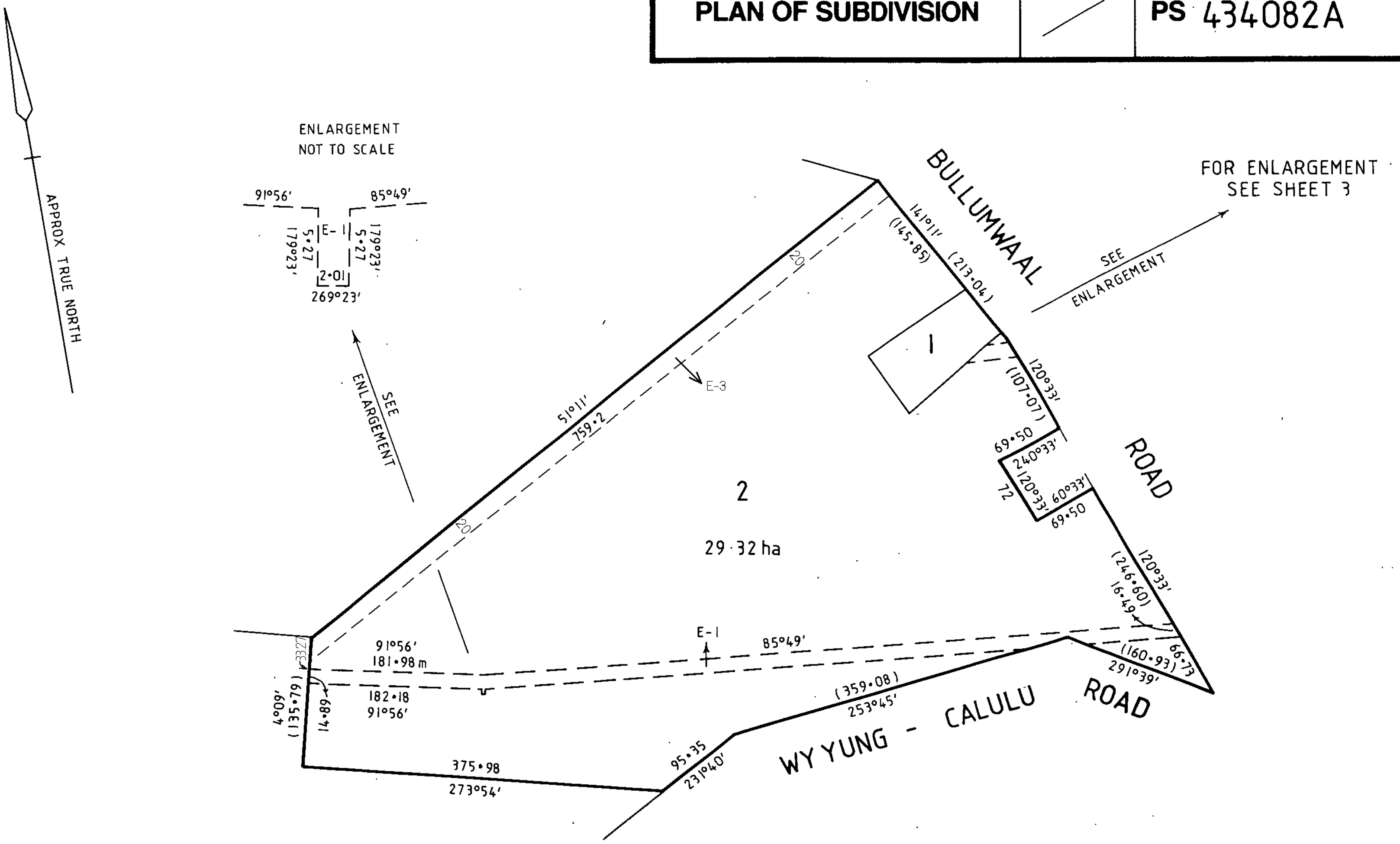
..... DATE / /

COUNCIL DELEGATE SIGNATURE

ORIGINAL SHEET SIZE A3

PLAN OF SUBDIVISION

STAGE No.	PLAN NUMBER
/	PS 434082A



Crowther & Sadler Pty Ltd
CONSULTING SURVEYORS
152 MACLEOD STREET, BAIRNSDALE, 3875
TELEPHONE (03) 5152 5011

SCALE
40 0 100 200
LENGTHS ARE IN METRES

ORIGINAL SCALE	ORIGINAL SHEET SIZE
1:4000	A3

LICENSED SURVEYOR (PRINT) MICHAEL JOSEPH SADLER
SIGNATURE ..... DATE / /
REF 9234 VERSION 1

SHEET 2 OF 3 SHEETS
DATE / /
COUNCIL DELEGATE SIGNATURE

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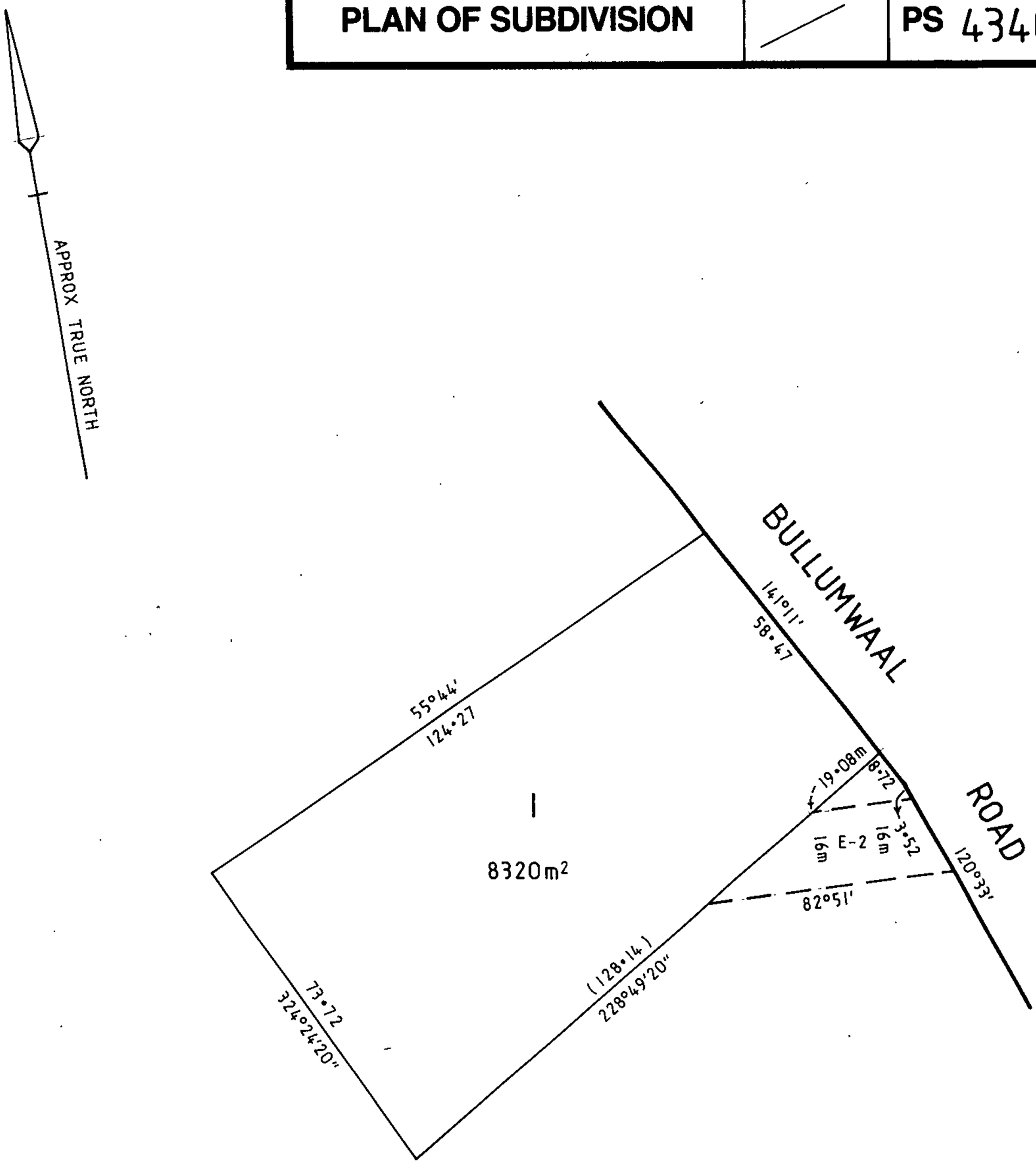
Creffields PS04

PLAN OF SUBDIVISION

STAGE No. /

PLAN NUMBER PS 434082A



Crowther & Sadler Pty Ltd
CONSULTING SURVEYORS
152 MACLEOD STREET, BAIRNSDALE, 3875
TELEPHONE (03) 5152 5011

10 0 20 40
LENGTHS ARE IN METRES

ORIGINAL

SCALE	SHEET SIZE
1:1000	A3

LICENSED SURVEYOR (PRINT) MICHAEL JOSEPH SADLER

SIGNATURE ..... DATE / /

REF 9234 VERSION 1

SHEET 3 OF 3 SHEETS

..... Printed 16/07/2024 Page 5 of 178

DATE / /

COUNCIL DELEGATE SIGNATURE

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

Creffield: PS03

MODIFICATION TABLE

RECORD OF ALL ADDITIONS OR CHANGES TO THE PLAN

PLAN NUMBER

PS434082A

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

AFFECTED LAND/PARCEL	LAND/PARCEL IDENTIFIER CREATED	MODIFICATION	DEALING NUMBER	DATE	TIME	EDITION NUMBER	ASSISTANT REGISTRAR OF TITLES
LOT 2	E-3	CREATION OF EASEMENT	AB437466J	25.2.03		2	PAUL MCMAHON

PLAN OF SUBDIVISION

EDITION 1 | PS 921657H

LOCATION OF LAND

COUNCIL NAME: EAST GIPPSLAND SHIRE COUNCIL

PARISH: WY-YUNG
TOWNSHIP: ———
SECTION: ———
CROWN ALLOTMENT: 24B (PART)
CROWN PORTION: ———
TITLE REFERENCE: VOL 10510 FOL 873

LAST PLAN REFERENCE: LOT 2 - PS434082A

POSTAL ADDRESS: (at time of subdivision) 385 BULLUMWAAL ROAD, WY YUNG 3875

MGA2020 CO-ORDINATES: (of approx centre of land in plan) E: 553 100 N: 5817 130 ZONE: 55

VESTING OF ROADS AND/OR RESERVES

IDENTIFIER	COUNCIL/BODY/PERSON
NIL	NIL

NOTATIONS

DEPTH LIMITATION DOES NOT APPLY

SURVEY:
This plan is based on survey.

STAGING:
This is not a staged subdivision.
Planning Permit No. 5.2023.103.1

This survey has been connected to permanent marks No(s). 32, 82 & 145

In Proclaimed Survey Area No. NIL

NOTATIONS

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	ELECTRICITY SUPPLY	SEE DIAG	INST E970172	S.E.C.V.
E-2	POWERLINE	16	PS434082A - SECTION 44 OF THE ELECTRICITY INDUSTRY ACT 1993	EASTERN ENERGY LTD.
E-3	GAS PIPELINE	20	AB437466J	DUKE EASTERN GAS PIPELINE PTY LTD DEI EASTERN GAS PIPELINE PTY LTD VOL. 10474 FOL. 067

Crowther&Sadler Pty.Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
152 MACLEOD STREET, BAIRNSDALE, VIC., 3875
P. (03) 5152 5011 E. contact@crowthersadler.com.au

SURVEYORS FILE REF: 20415

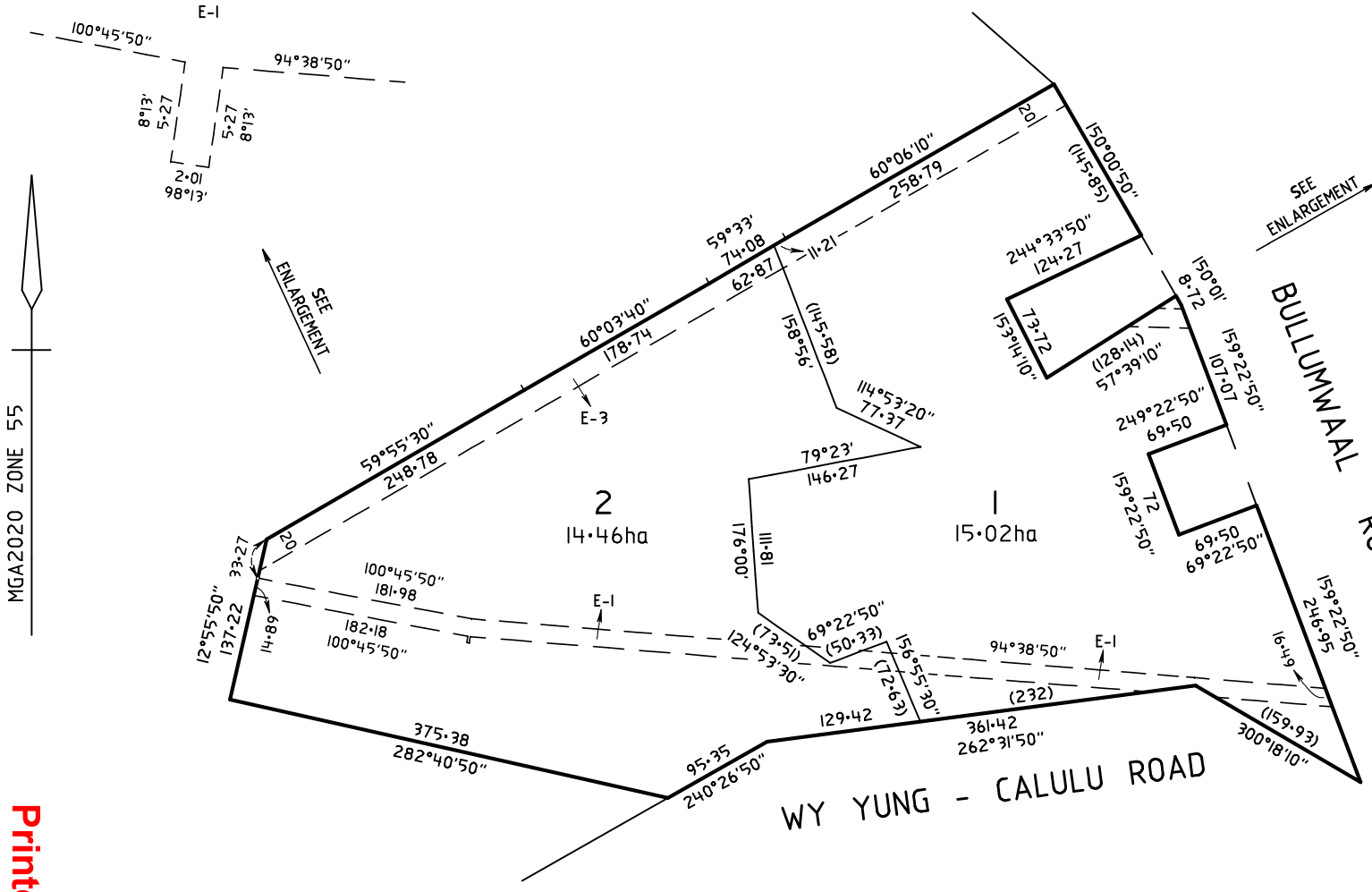
ORIGINAL SHEET SIZE: A3

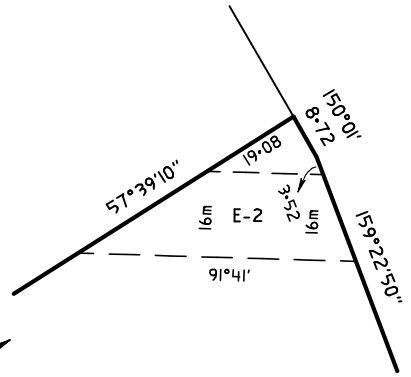
SHEET 1 OF 2 SHEETS

PAUL ANTHONY DWYER, VERSION 2

PS 921657H

SCALE OF ENLARGEMENT
1:250





SCALE OF ENLARGEMENT
1:1000

SURVEYORS REF	SCALE		ORIGINAL SHEET SIZE: A3	SHEET 2
20415	1:4000	40 0 40 80 120 160 LENGTHS ARE IN METRES		

PAUL ANTHONY DWYER, VERSION 2

Crowther & Sadler Pty. Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
152 MACLEOD STREET, BAIRNSDALE, VIC., 3875
P. (03) 5152 5011 E. contact@crowthersadler.com.au

Planning Report

Multi-lot Subdivision, Works (Roadworks), Earthworks & Removal of Native Vegetation
385 Bullumwaal Road, Wy Yung

Our reference – 20432

April 2024

152 Macleod Street
Bairnsdale VIC 3875

PO Box 722
Bairnsdale VIC 3875

Ph. 03 5152 5011
E: contact@crowthersadler.com.au

Contents

Note: Applicable Planning Application fee is $2,369.10

1. Introduction

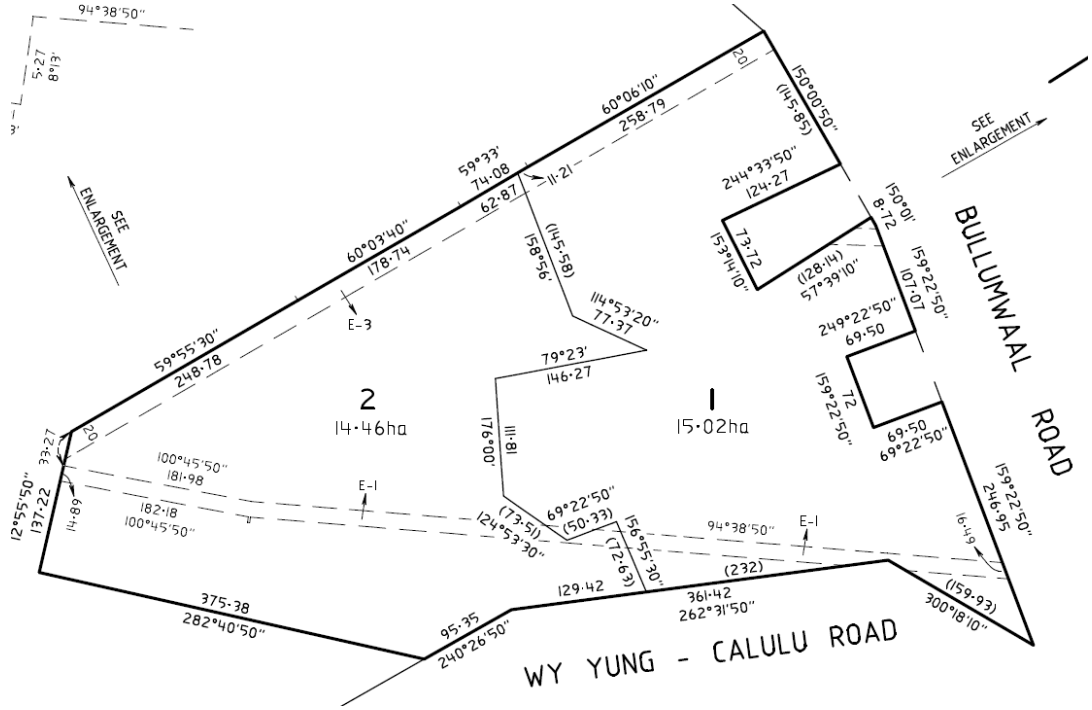
This Planning Report is prepared in support of a proposed multi-lot subdivision, roadworks, works (earthworks) and removal of native vegetation at 385 Bullumwaal Road, Wy Yung. The Report addresses the provisions of the Low Density Residential Zone, Vegetation Protection Overlay and Erosion Management Overlay as contained within the *East Gippsland Planning Scheme.*

Aerial view of subject land and surrounds – Source: VicPlan

2. Subject Land & Surrounding Context

The subject land is known as 385 Bullumwaal Road, Wy being part of Lot 2 on PS434082A. It is a large parcel of land having an area of 15.02ha hectares.

A preceding two lot subdivision is in the process of being finalised which will result in the creation of the subject land. Planning Permit 5.2023.103.1 issued on 24 October 2023 allowing for the two lot subdivision and an Application for Certification (SPEAR ref S23424M) is currently being considered by Council. Upon issue of the title for the proceeding subdivision the land will ultimately be described as Lot 1 on PS 921657H.



Extract of PS921657H currently being considered as part of SPEAR Ref S23424M

The property is undulating in nature with the eastern portion of the site generally being higher in elevation than the western and southern sections of the property.

View north across subject land from south-east corner

View west from the northeastern portion of the site

View south across subject land from the centre of property

View west across subject land from the centre of property

View north from subject land

Historically the property has been used for grazing livestock and contains two agricultural outbuildings and stockyards located in the north-eastern portion of the land. A stock dam is also located on the northeastern corner of the site.

Image of the north-eastern part of the property looking north-east at an existing stock dam, stockyards and access gate off Bullumwaal Road.

Whilst the land has historically been utilised for grazing purposes and comprises pastoral grasses, there are several large, scattered trees throughout the property.

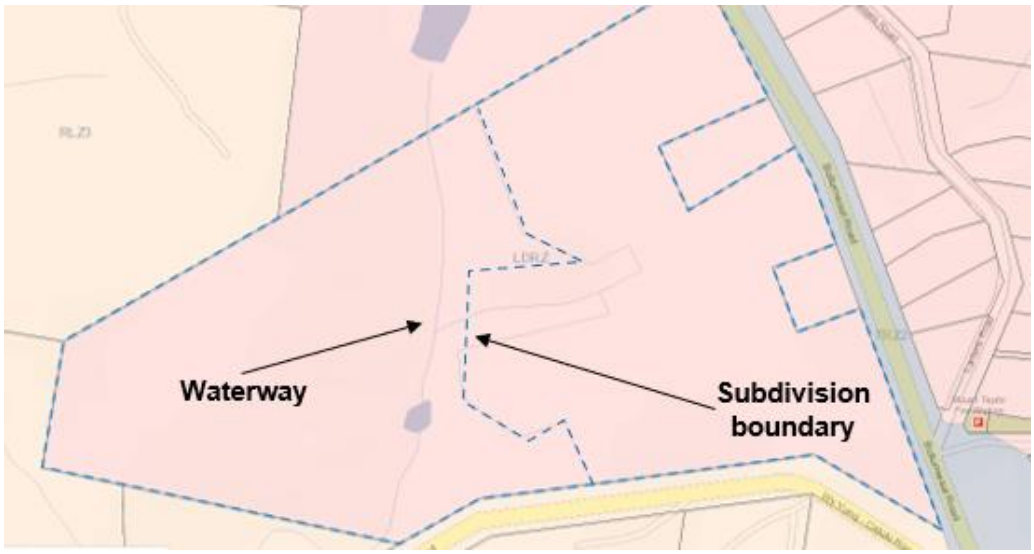
A 20 metre wide easement is established adjacent to the northern boundary which encompasses the Eastern Gas Pipeline and a 16.0 metre wide easement dissects the southern portion of the property which accommodates overhead powerlines.

The subject land has frontage to Wy Yung – Calulu Road to the south and Bullumwaal Road to the east both of which are good quality sealed roads. Bullumwaal Road is contained within the Transport Zone 2.

Both Wy Yung – Calulu Road and Bullumwaal Road contain treed road reserves with access to the property currently provided adjacent to the north-east corner of the property via by a gravel service lane in Bullumwaal Road.

A minor secondary waterway extends into the subject land from the western boundary.

Image of the main waterway and secondary waterway looking west from the subject land central area



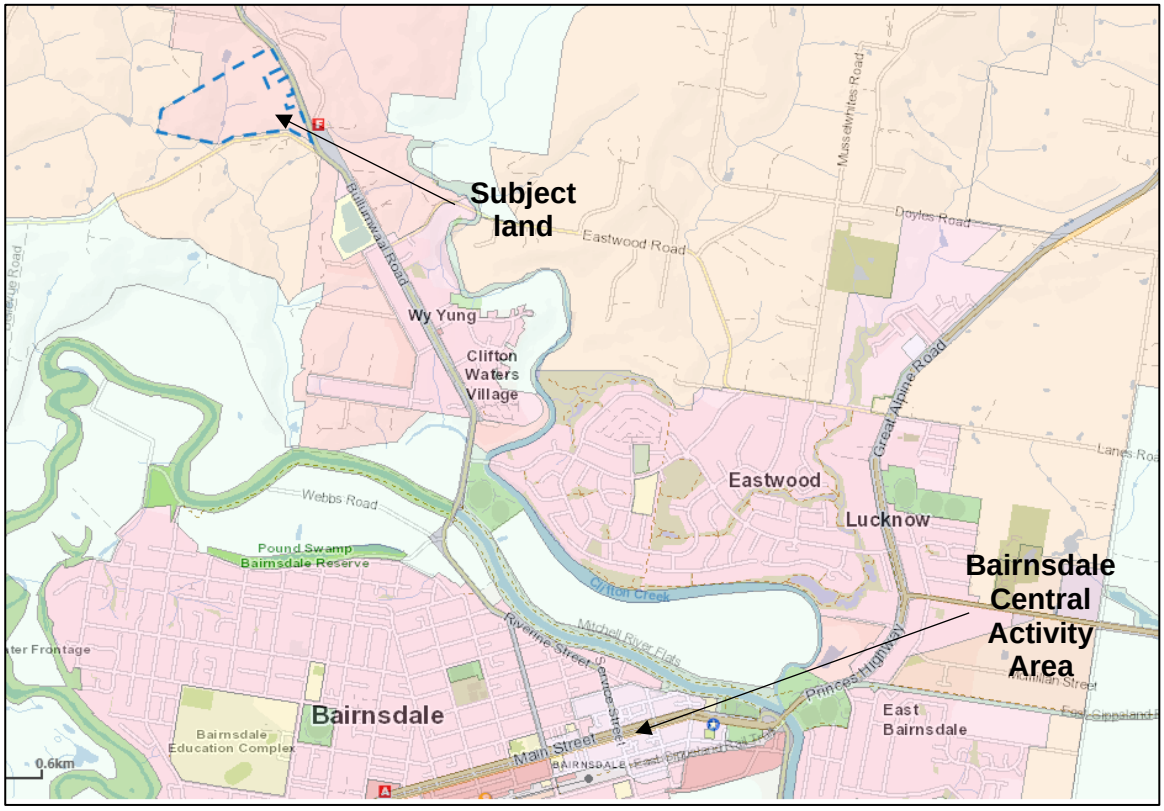
Zone mapping showing approved subdivision boundary and waterway
Source: VicPlan
Please note that the east-west waterway is mapped incorrectly and is located further north on ground

The subject land is contained within the Low Density Residential Zone, Erosion Management Overlay and Vegetation Protection Overlay – Schedule 1 of the *East Gippsland Planning Scheme.*

Land immediately to the north and east is also contained with the Low Density Residential Zone. Two established residential properties adjoin the subject land with both properties taking access from Bullumwaal Road. Land immediately to the west and in the southern side of Wy Yung – Calulu Road is contained within the Rural Living Zone – Schedule 3.

Properties within the low density residential area are generally smaller in size than the subject land and developed with single storey dwellings with associated outbuildings and treed and garden environs. Rural Living zoned properties are more generously sized however also contain dwellings and outbuildings with hobby or land management grazing taking place.

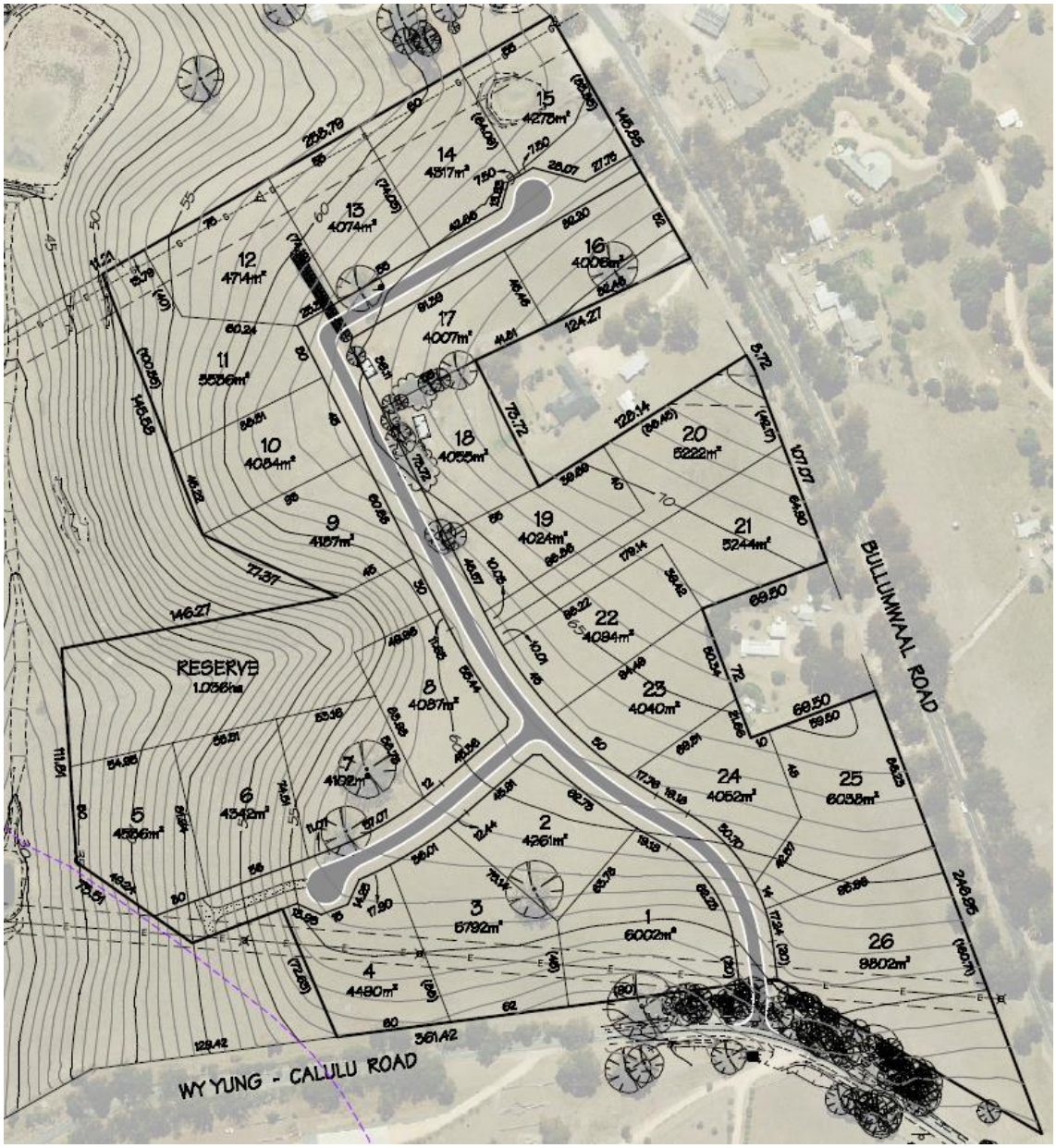
The subject land is well located on the periphery of the residential area of Wy Yung and is within four kilometres of the Bairnsdale Central Activity Area. A locality plan showing the subject land within close proximity to Wy Yung, Eastwood and Bairnsdale identifies that the land is located closely to all the services and facilities that Bairnsdale has to offer.



Locality plan demonstrating the location of the subject land and the close proximity to the Bairnsdale Central Activity Area (Source: VicPlan)

3. The Application & Proposal

The Application seeks approval for a multi-lot subdivision, works (roadworks), earthworks and removal of native vegetation to facilitate land for future low density residential development.



Proposed Subdivision Layout (Version 2)

The proposed subdivision has been designed having regard to the various site constraints and characteristics and ultimately achieves an allotment layout which balances residential occupation with environmental values of the land.

The subdivision provides for 26 lots each having an area greater than 0.4ha. The layout also proposes a Reserve for proposed stormwater drainage infrastructure.

The accompanying Design Response Plan (Version 2) has been provided to demonstrate the available area for future residential development and associated onsite wastewater disposal having regard to the presence of the Eastern Gas Pipeline and overhead powerlines and surrounding bushfire hazard. It also demonstrates the ability to retain numerous scattered native trees which have the potential to coexist with residential occupation of the land.

Traffic

Given Bullumwaal Road is a Principal Road that carries significant volumes of traffic it was determined a safer option to establish access from Wy Yung Calulu Road to the south.

The proposed intersection has been located appropriately to provide for appropriate sight lines in both directions whilst avoiding the steeper sections of the embankment along Wy Yung – Calulu Road.

Sight lines to the west and to the east of the proposed intersection

Accompanying the Application is a Traffic Impact Assessment Report prepared by One Mile Grid which provides an assessment of traffic volumes and the new road intersection.

As part of the assessment the traffic movements at the intersection of Bullumwaal Road/Wy Yung - Calulu Road was assessed revealing the intersection is currently operating under excellent conditions during both the morning and afternoon weekday peak hours and Saturday peak hour.

It is proposed that a new intersection be created to access the subdivision from Wy Yung – Calulu Road. Sight distances have been assessed and reveals that the Minimum Gap Sight Distance are in excess of 181 metres as out lined in the Austroads Safe Intersection Sight Distance for 80km/h design speed to align with recorded speeds.

Traffic generation from the subject land will be approximately 260 vehicle trips and even when focused into one access point, traffic volumes generated by the proposed subdivision is very low and can be absorbed into the surrounding road network.

Additional traffic volumes created by the subdivision will still allow the Bullumwaal Road and Wy Yung – Calulu Road intersection to continue to operate under excellent conditions post-development.

Based from Austroads Guide to Traffic Management a basic left turn lane and right turn lane treatment is required.
The internal road network has been reviewed and is considered to accord with a Rural Living Access Road and is able to accommodate traffic movements from the lots being created. Court bowls have been designed with a 10 metre radius allowing waste collection and emergency services vehicles to turn around appropriately.

Access and Services

A Stormwater Management Strategy has been prepared to accompany the application, which includes an Access and Servicing Plan and a Site Drainage Plan.

It is proposed to drain the subdivision through a network of stormwater drainage pipes, leading to gross pollutant traps, then secondary proprietary systems and into a retarding basin with bioretention in the base filter area.

It is also proposed to utilise 5,000 litre rain water tanks to be connected to dwellings prior to occupancy on each lot allowing for reuse within sanitary facilities and garden irrigation.

To facilitate the site drainage plan a drainage reserve encompassing the retarding basin is proposed to be created and vested in Council to for access and maintenance.

The access and servicing plan demonstrates that all lots will be provided with water, electricity, NBN communications and drainage.

The traffic assessment provides road cross sections and intersection commentary.

Wastewater

There is no reticulated sewerage within the precinct resulting in the need to design lots that exceed 4,000m² in accordance with the provisions of the Low Density Residential Zone.

A Land Capability Assessment Report (LCAR) as prepared by *Chris O'Brien & Company Pty Ltd* has been provided to demonstrate the ability of the proposed allotments to treat and retain wastewater onsite in the absence of reticulated sewer within the immediate precinct.

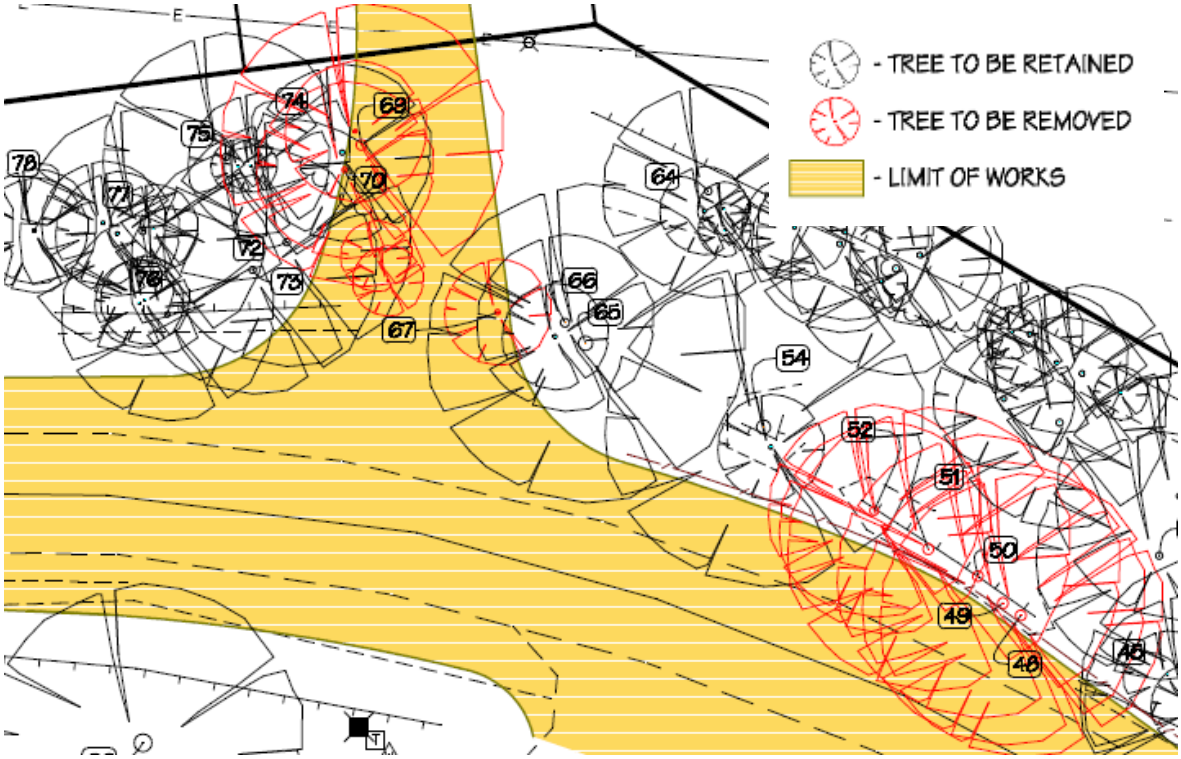
The accompanying Design Response Plan (Version 2) provides a demonstration of how each allotment will have sufficient area available accommodate future residential development together with a land application area of 280m².

Vegetation Removal

The proposal incorporates the removal and assumed loss of native vegetation within the site and within the adjoining road reserve to accommodate proposed intersection and servicing.

Accompanying the Application is a Plan of Vegetation Removal which nominates both native and non-native vegetation to be removed to accommodate the proposed subdivision.

Extract from Plan of Vegetation Removal (Version 1) – within subject land



Extract from Plan of Vegetation Removal (Version 1) – within Wy Yung-Calulu Road

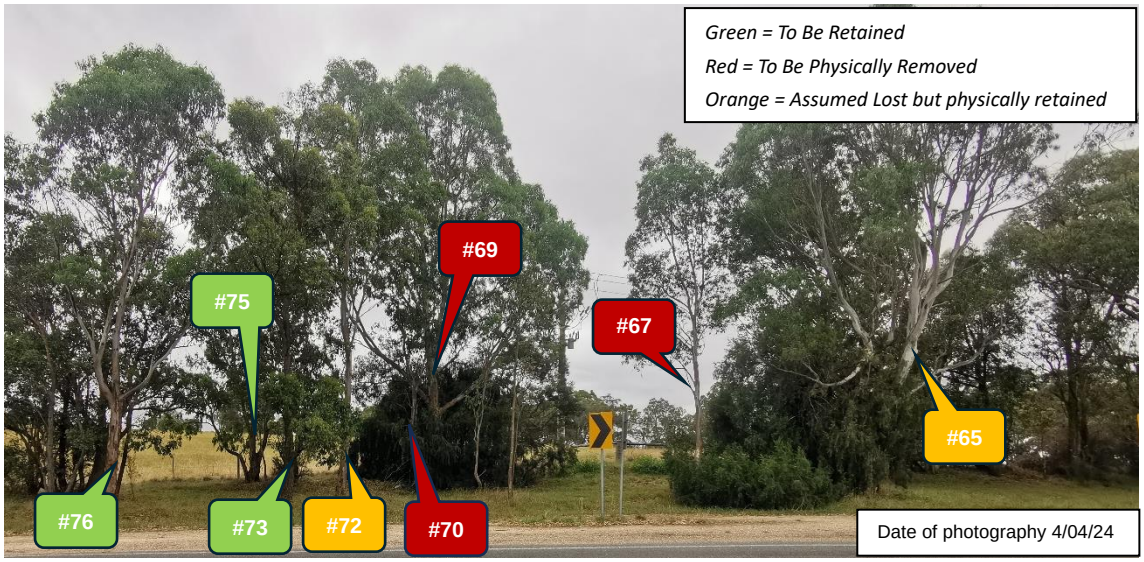
The vegetation identified for removal within the subject land includes two native trees near the frontage of Lot 13 (Trees 2 & 3) and a native tree within the frontage of Lot 7 (Tree 89). It also includes the removal of planted vegetation established on the northern portion of the land within proximity to the existing sheds.

Trees within the subject land earmarked for removal - Trees 2, 3 & 89
(Trees identified as M, B & G on NVRR)

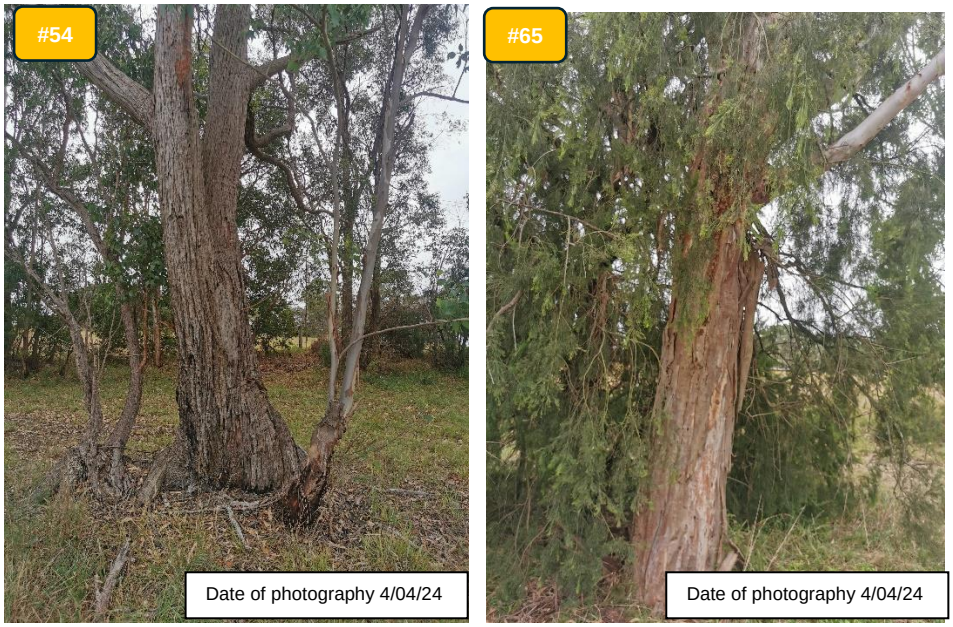
Looking in a south westerly direction towards planted vegetation along existing fence line within proximity to existing shedding

The Traffic Impact Assessment prepared by *One Mile Grid* includes detail of the alignment of the intersection which has been carefully designed to ensure safe traffic movements and good sight lines whilst minimising impacts to native vegetation.

The native vegetation within proximity to the proposed intersection is less dense than other areas of the road reserve however the proposed intersection results in the need to accommodate the loss of a patch of native vegetation 0.059ha in area and which also includes two large trees (Trees 54 & 65).

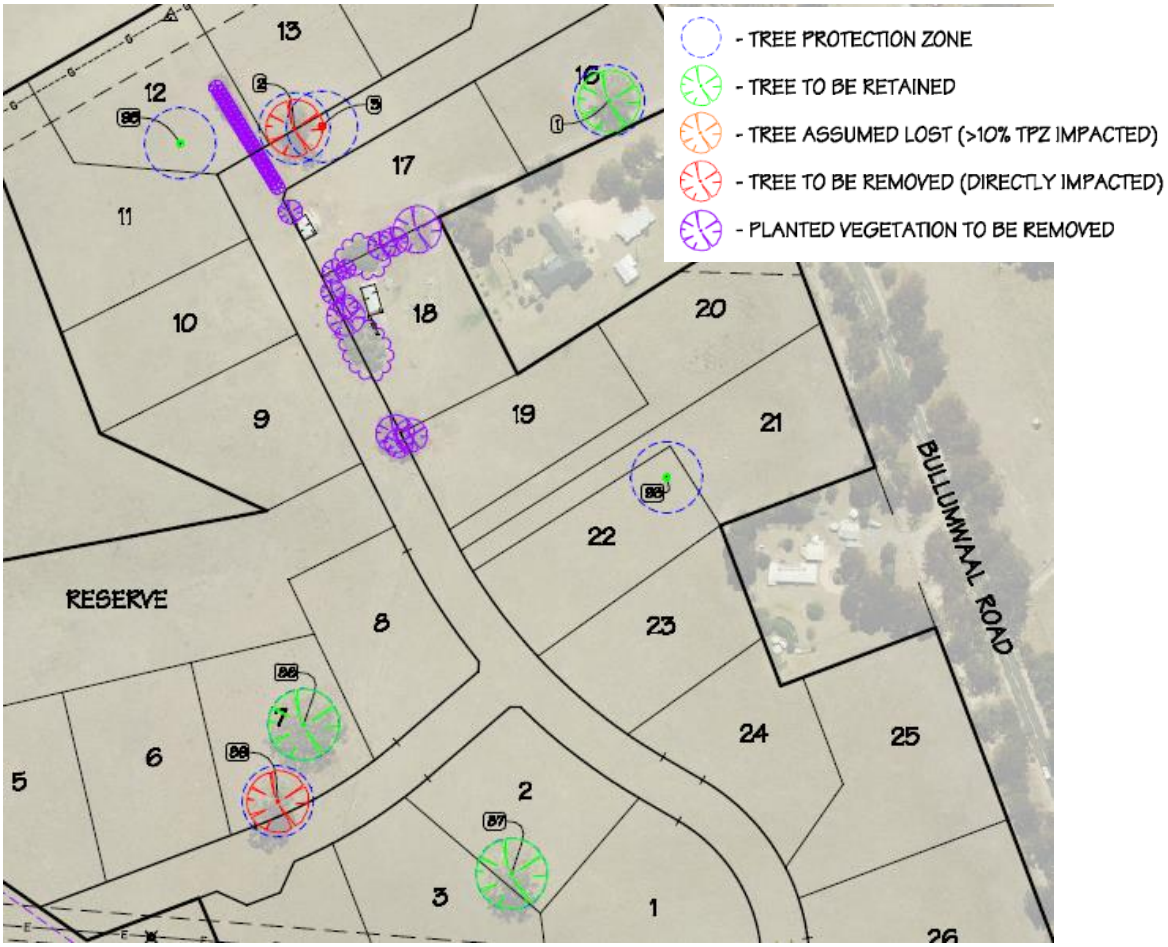


View north towards vegetation in proximity to proposed intersection
Note: Tree numbers match Plan of Vegetation (V1)

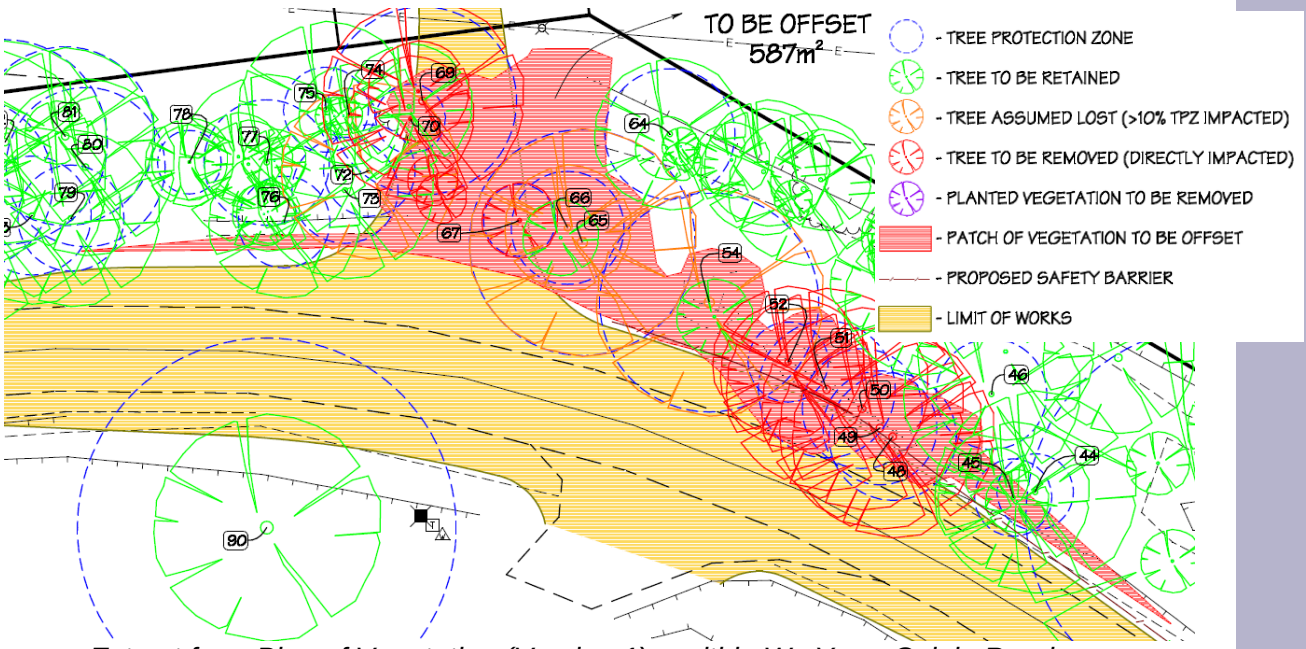


Large Trees within patch of vegetation earmarked for removal

A Plan of Vegetation (Version 1) has been provided to show the extent of native vegetation that will be directly impacted by the proposal together with the assumed vegetation losses incurred where TPZ's are impacted by more than 10%.



Extract from Plan of Vegetation (Version 1) – within the subject land



Extract from Plan of Vegetation (Version 1) – within Wy Yung-Calulu Road

The following table provides detail on the existing vegetation located within proximity to the proposed intersection works and scattered trees internal to the site. This data is to be read in conjunction with the accompanying Plan of Vegetation.

Tree # Based off Field Data	**Tree ID** As per NVRR 319_20240417_WYX	**Circumference** (in cm) **at Breast Height** (1.3m above ground level)	**DBH (cm)**	**TPZ (m)**	**% TPZ Impacted** *Green = To Be Retained* *Red = To Be Physically Removed* *Orange = Assumed Lost but physically retained*
1.		VLOT (ST)	-	15	0%
2.	M (large)	VLOT (ST)	-	15	47.1%
3.	B (large)	VLOT (dead) (ST)	-	15	Directly Impacted
4.		95	30.24	3.63	0%
5.		184	58.57	7.03	6.5%
6.		190	60.48	7.26	0.6%
7.		189	60.16	7.22	5.4%
8.		75	23.87	2.87	0%
9.		202	64.3	7.72	8.0%
10.		VLOT	-	15	3.4%
11.		185	58.9	7.07	1.9%
12.		281	89.45	10.73	5.8%
27.		91	29.0	3.48	0%
28.		140	44.56	5.35	3.3%
40.		VLOT	-	15	8.7%
44.		79	25.15	3.02	0%
45.		80	25.46	3.06	3.4%
46.		115	36.61	4.39	0%

Tree # Based off Field Data	Tree ID As per NVRR 319_20240417_WYX	Circumference (in cm) at Breast Height (1.3m above ground level)	DBH (cm)	TPZ (m)	% TPZ Impacted *Green = To Be Retained* *Red = To Be Physically Removed* *Orange = Assumed Lost but physically retained*
48.	I	132	42.02	5.04	38.7%
49.	N	118	37.56	4.51	37.5%
50.	L	124	39.47	4.74	30.9%
51.	K	142	45.20	5.42	33.7%
52.	O	83	26.42	3.17	12.5%
54.	A (large)	227	72.26	8.67	19.5%
64.		135	42.97	5.16	0%
65.	F (large)	234	74.48	8.94	31.8%
66.	D	117	37.24	4.47	11.1%
67.	J	75	23.87	2.86	Directly Impacted
69.	C	195	62.07	7.45	Directly Impacted
70.	E	72	22.92	2.75	Directly Impacted
72.	H	95	30.24	3.63	17.0%
73.		110	35.01	4.20	7.3%
74.		54	17.19	2.06	0%
75.		88	28.01	3.36	0%
76.		95	30.24	3.63	0%
86.		VLOT	-	15	7.6%
87.		VLOT (ST)	-	15	0%
88.		VLOT (ST)	-	15	0%
89.	G (large)	VLOT (ST)	-	15	26%
90.		VLOT	-	15	1.13%
91.		VLOT	-	15	5.2%
93.		VLOT (dead) (ST)	-	15	0%
95.		VLOT (dead) (ST)	-	15	0%

Note: TPZ's impacted by >10% are assumed lost and will be offset consistent with the provisions of Clause 52.17.

Vegetation offsets will be provided to accommodate both the physical and assumed vegetation losses consistent with the provisions of Clause 52.17 however only the vegetation nominated on the Plan of Vegetation Removal (Version 1) will be removed to accommodate the proposed works.

Given that the vegetation is located within the road reserve it is anticipated that the Application will be referred to Council's Land Manager as part of the planning process to obtain Land Manager Consent to the removal of the vegetation from within the road reserve.

Planning approval is required pursuant to the following Clauses of the East Gippsland Planning Scheme:

Planning Scheme Clause No.	Description of what is Proposed
32.03-3 Low Density Residential Zone	Subdivision
44.01-2 Erosion Management Overlay	Carry out roadworks
44.01-5 Erosion Management Overlay	Subdivision
44.01-3 Erosion Management Overlay	Vegetation Removal
52.17 Native Vegetation	Removal of native vegetation
52.29 Land Adjacent to the Principal Road Network	Subdivide land adjacent to a Transport Zone 2

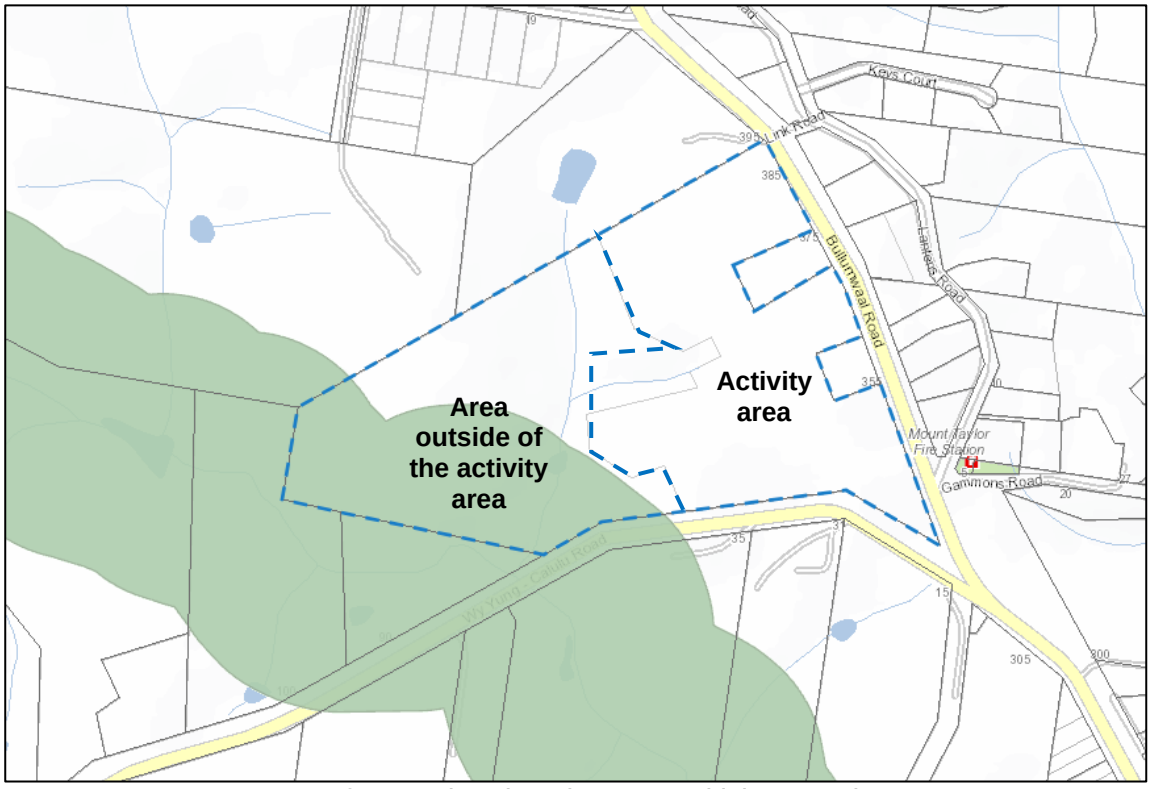
The application is required to be referred pursuant to Section 55 of the *Planning and Environment Act 1987* to the following:

- The relevant water, drainage or sewerage authority (subdivision exceeds a two lot subdivision).
- The relevant electricity supply or distribution authority (subdivision exceeds a two lot subdivision).
- The Country Fire Authority (as the subdivision creates a road).
- The relevant gas supply authority (subdivide land crossed by a gas transmission pipeline).
- Head, Transport for Victoria (to subdivide land adjacent to a road declared as an arterial road).

4. Cultural Heritage

Pursuant to Regulation 7 of the *Aboriginal Heritage Regulations 2018,* a CHMP is required for an activity if:

(a) *all or part of the activity area for the activity is in an area of cultural heritage sensitivity; and*
(b) all or part of the activity is a high impact activity



Extract from Cultural Heritage Sensitivity mapping, with sensitive areas shown in green (Source: VicPlan)

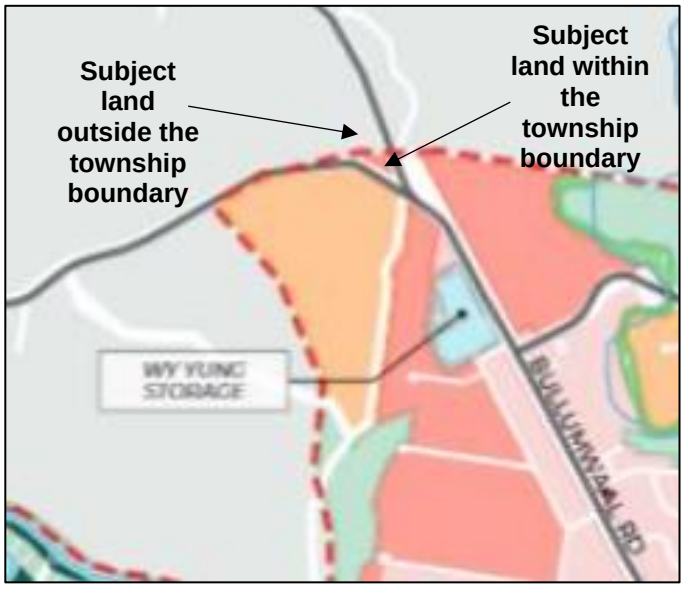
The subdivision of land into three or more lots is a high impact however, the activity area is not within an area of cultural heritage sensitivity. Therefore, a CHMP is not required for the proposed subdivision and associated works.

5. Planning Policy

5.1 Planning Policy Framework

To facilitate the sustainable growth and development of Victoria and deliver choice and opportunity for all Victorians through a network of settlements is the objective of Clause 11.01-1S Settlement.

While the majority of the subject lad is located outside the Bairnsdale Township Boundary subdivision of the property for residential purposes can be reasonably expected being within the Low Density Residential Zone.



North-western extract of the Bairnsdale Framework Plan – red dashed line represents Bairnsdale Township Boundary (Source: EGSC)

The proposed subdivision will support the objective through the achievement of a range of strategies:

- The proposal will assist to support the sustainable development of the regional centre of Bairnsdale.
- Provides for the growth in population close to the facilities and services Bairnsdale offers.
- In part assists to limit urban sprawl and directs growth within an existing settlement.
- Provides in part infill development within the township boundary.

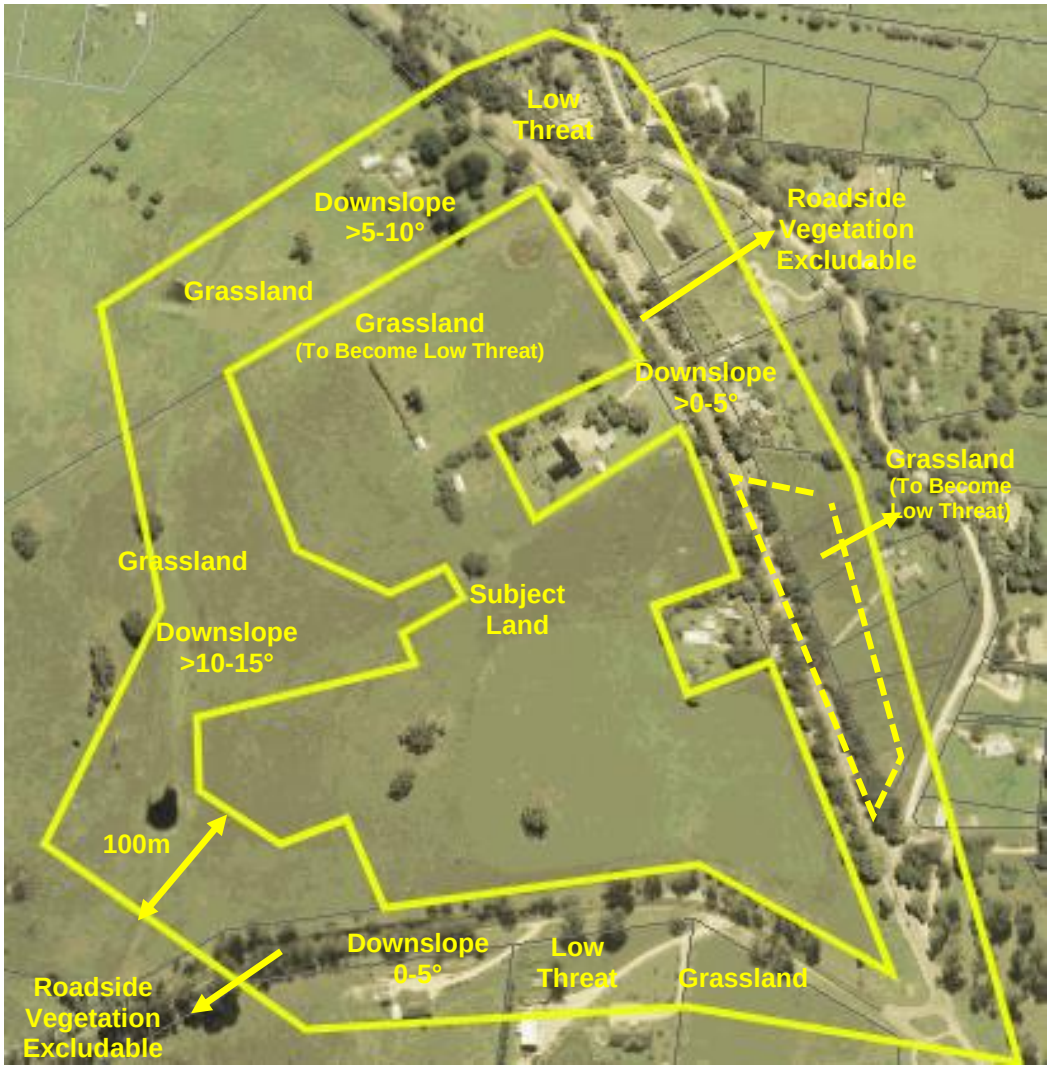
Clause 11.01-1L-02 Growth area towns – Bairnsdale applies to all land in the Bairnsdale Framework Plan. The proposed subdivision will achieve a key strategy to facilitate urban development for Bairnsdale within the existing town boundary.

The objective of Clause 12.01-2S Native vegetation management is to ensure no net loss to biodiversity as a result of the removal of native vegetation. The subdivision has been carefully and thoughtfully designed to avoid and minimise impacts to native vegetation. This has been achieved by limiting vehicle access from the adjoining road network to the proposed intersection in Wy Yung Calulu Road only and accommodating allotments which can enable sufficient building area which has regard to Tree Protection Zones.

Whilst an element of vegetation removal has been incorporated into the proposal to ensure there is sufficient area to accommodate a safe intersection consistent with Engineering design and to accommodate servicing and access. These losses are expected to be offset to ensure there is no net loss of biodiversity as a result of the proposal.

The proposal has considered Clause 13.02-1S Bushfire Planning as the whole of the subject land is within a declared Bushfire Prone Area. The application includes a bushfire hazard assessment which reviews the bushfire risk in the wider landscape, at a local level and at a neighbourhood level. The following comments is a summary of the bushfire assessment:

- The wider landscape provides some threat from bushfire however it is dramatically reduced by the presence of wide-open paddocks and proximity to developed residential areas.
- The proposed allotments are all sufficient size and dimensions to cater for residential development that responds to the bushfire risk. The generous size of the allotments (>4000m² in area) together with the predominance of ‘grassland’ and gentle gradient all contribute to a favourable bushfire response and enable adequate separation distances to be established in accordance with AS 3959.
- Egress from the subdivision to the south is achieved and does not transverse through areas of risk. Access to places of reduced risk in a fire event is easily achieved within the urban areas of Wy Yung, Eastwood and Bairnsdale within close proximity.
- The recently established subdivision on the eastern side of Bullumwaal Road will ultimately be developed for residential purposes with the land being maintained accordingly.
- The proposed allotments will also provide one another with protection as they will also ultimately be managed and maintained to residential standards.
- The vegetation within the subject land and the immediately surrounding area has been classified in accordance with Table 2.3 of Australian Standard AS 3959.
- Future dwellings are able to be sited within each lot with separation from classifiable vegetation so to achieve BAL-12.5 construction standards.



Aerial view of subject land and immediate surrounds – Source: VicPlan

The subject land in its current format is identified as being 'grassland' however this environment will be modified into the future through the establishment of residential allotments which will ultimately result in a 'low threat' environment.

The generous size of the allotments ensures there is good opportunity to achieve separation distances prescribed by AS 3959 having regard to the landform and surrounding vegetation classifications.

A geotechnical risk assessment accompanies the application and advises that the land is not subject to erosion processes and provided precautions are undertaken during the subdivision construction works there will be no detrimental environmental impacts as sought by Clauses 13.04-2S and 13.04-2L Erosion.

Catchment planning and management at clause 14.02-1S seeks to assist the protection and restoration of catchments, waterways, estuaries, bays, water bodies, groundwater and the marine environment. The land is not contained within a water supply catchment. The waterway on the adjoining land has been protected from encroachment and sediment runoff during construction can be managed.

The application includes a land capability assessment to demonstrate the disposal of on-site wastewater can satisfy EPA requirements. The application also includes a stormwater management strategy to demonstrate the opportunities to treat and control stormwater from the allotments and roads in accordance with best practice standards.

It is considered that the proposed subdivision will achieve an attractive, safe, diverse and sustainable neighbourhood as sought by Clause 15.01-3S Subdivision design.

Care has been taken to ensure the proposed new road intersection has been located to allow for safe access and egress to the subdivision, encumbered lots have been designed to provide for housing sites outside of easements. A range of lot sizes within the subdivision are proposed suiting the development of a variety of energy dwellings. The new road will provide for sufficient verges for the establishment of street trees providing an attractive environment and detrimental impacts to flora and fauna has been minimised.

The character of the Low Density Residential zoned areas within the precinct is one of larger allotments greater than 4000m² with access obtained from secondary roads leading off Bullumwaal Road. The proposed subdivision will continue this theme and will be consistent with the neighbourhood character as encouraged by Clause 15.01-5S Neighbourhood character.

The proposed subdivision will assist to provide much needed housing supply within close proximity of the urban area of Bairnsdale. The subdivision will facilitate diverse housing opportunities for the community allowing for larger allotments and an opportunity to develop a variety of housing styles as sought by Clause 16.01-1S Housing supply.

Clause 16.01-3L-01 Rural living seeks to ensure residential development is located on land suitable for on-site wastewater treatment. The land capability assessment has determined on-site wastewater requirements can be achieved.

As sought by Clause 18.02-4S Roads the proposed subdivision has been designed to provide an internal road that is accessed/egressed from Wy Yung – Calulu Road avoiding direct access or a road intersection onto a principal road network being Bullumwaal Road allowing the road network to remain efficient.

The proposed subdivision will be serviced with electricity, reticulated water, drainage and telecommunications. The internal road will be developed in accordance with the Infrastructure Design Manual maintaining a consistency of infrastructure provision as sought by Clauses 19.03-2S and 19.03-2L Infrastructure, planning, design and construction.

5.2 Municipal Planning Strategy

Bairnsdale is identified as the largest town in the Shire at Clause 02.03-1 Settlement and housing. The proposal will assist to forward the relevant strategic directions for Bairnsdale through encouraging population growth on serviced residential land and providing allotments that allow for a range of housing types and styles.

Care has been taken to design the subdivision in an environmentally sensitive manner consistent with the strategic directions within Clause 02.03-2 Environmental and landscape values. The subdivision has been designed to minimise earthworks associated with the development of the internal road and during construction sediment runoff can be effectively managed to ensure local waterways are not detrimentally impacted. Although native vegetation will be required to be removed in particular at the new road intersection, vegetation removal has been minimised and will be offset in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation (Department of Environment, Land, Water and Planning 2017)*.

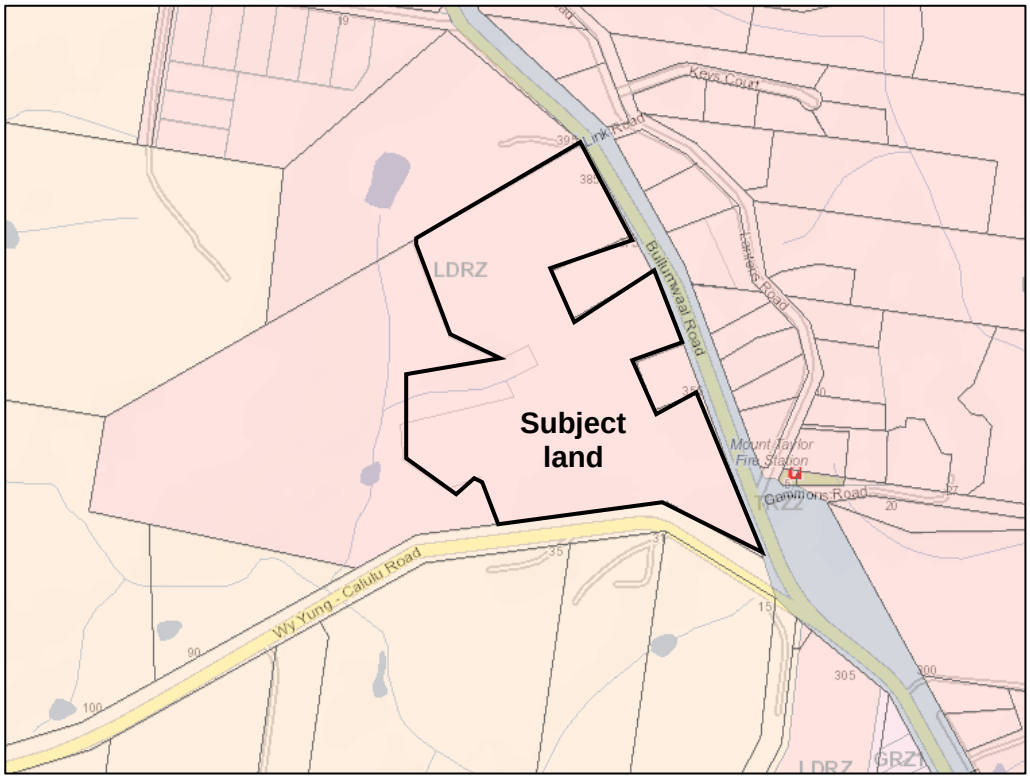
Clause 02.03-3 Environmental risks and amenity advises that the extent and composition of forests in East Gippsland leads to a risk of bushfire within the landscape. The proposed subdivision is located within a relatively low risk environment which reduces the potential impact from a bushfire event. Egress from the subdivision allows for a southerly route to places of reduced risk during a potential bushfire event.

A geotechnical risk hazard assessment accompanies the application and advises that currently the property is not subject to erosion processes and during construction of the development potential sediment runoff can be managed.

6. Planning Elements

6.1 Low Density Residential Zone

The subject land is contained within the Low Density Residential Zone under the *East Gippsland Planning Scheme*.



Planning scheme zone mapping (Source: VicPlan)

The subdivision is achieves with the purposes of the zone by being consistent with the Municipal Planning Strategy and the Planning Policy Framework. The land is also accommodate the treatment and disposal of wastewater within the boundaries of the lots as advised by the Land Capability Assessment.

The Application triggers planning approval at Clause 32.03-3 for subdivision of the Low Density Residential Zone. The subdivision layout has been designed in accordance with the zone requirements by providing allotments which are greater than 4000m² in area given the absence of reticulated sewer in area.

Application Requirements

The accompanying Land Capability Assessment Report confirms the site's ability to treat and retain wastewater on site associated with future residential development.

Accompanying the Application is a Design Response Plan which demonstrates the available area for future residential development and shows conceptual Land Application Areas for wastewater disposal.

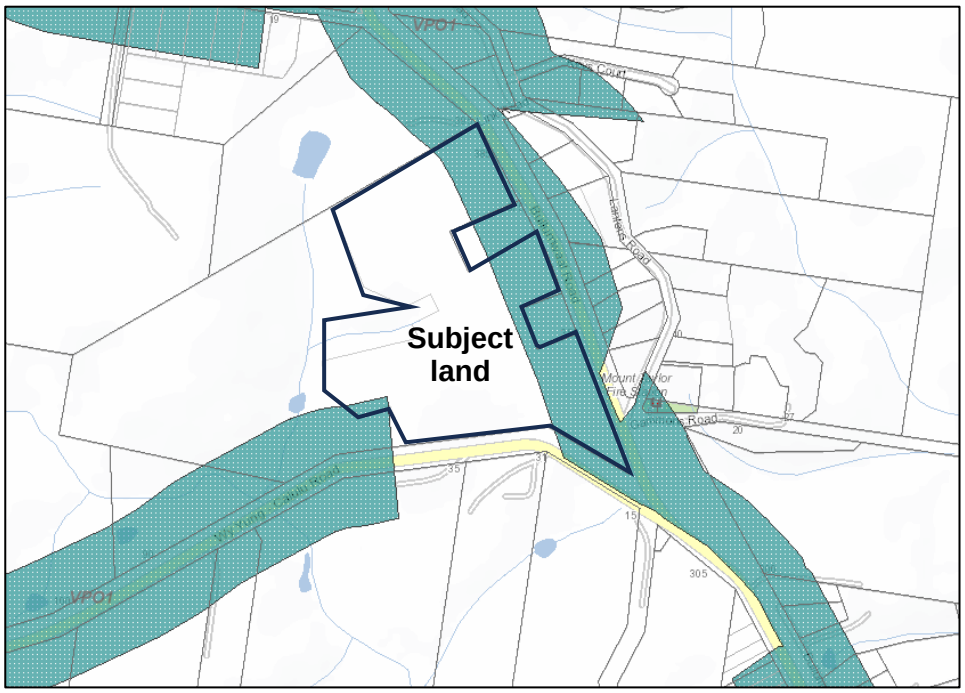
Decision Guidelines

The proposed subdivision positively forwards the decision guidelines of the zone:

- Strong planning policy support for the proposal is found within the Planning Policy Framework and Municipal Planning Strategy as outlined within Section 5 of this planning report.
- The principals of avoidance and minimisation of vegetation loss have been adopted with the subdivision design limiting the extent of native vegetation loss. This has been achieved by nominating all access from the new intersection thereby maximising retention of roadside vegetation. The design and size of lots 2, 7, 12, 16 & 22 also provides the ability for residential development and vegetation to coexist.
- Utility services will be provided to the lots created including water, drainage, electricity and telecommunications.
- The Land Capability Assessment accompanying the application advises that the allotments to be created are capable of managing and treating wastewater within lot boundaries.
- All lot sizes to be created will be less than 2 hectares allowing allotments to be efficiently maintained without the need for agricultural techniques and equipment.

6.2 Vegetation Protection Overlay 1

The eastern portion of the land adjoining Bullumwaal Road and a small section of the site within proximity to Wy Yung-Calulu Road are within the Vegetation Protection Overlay – Schedule 1.



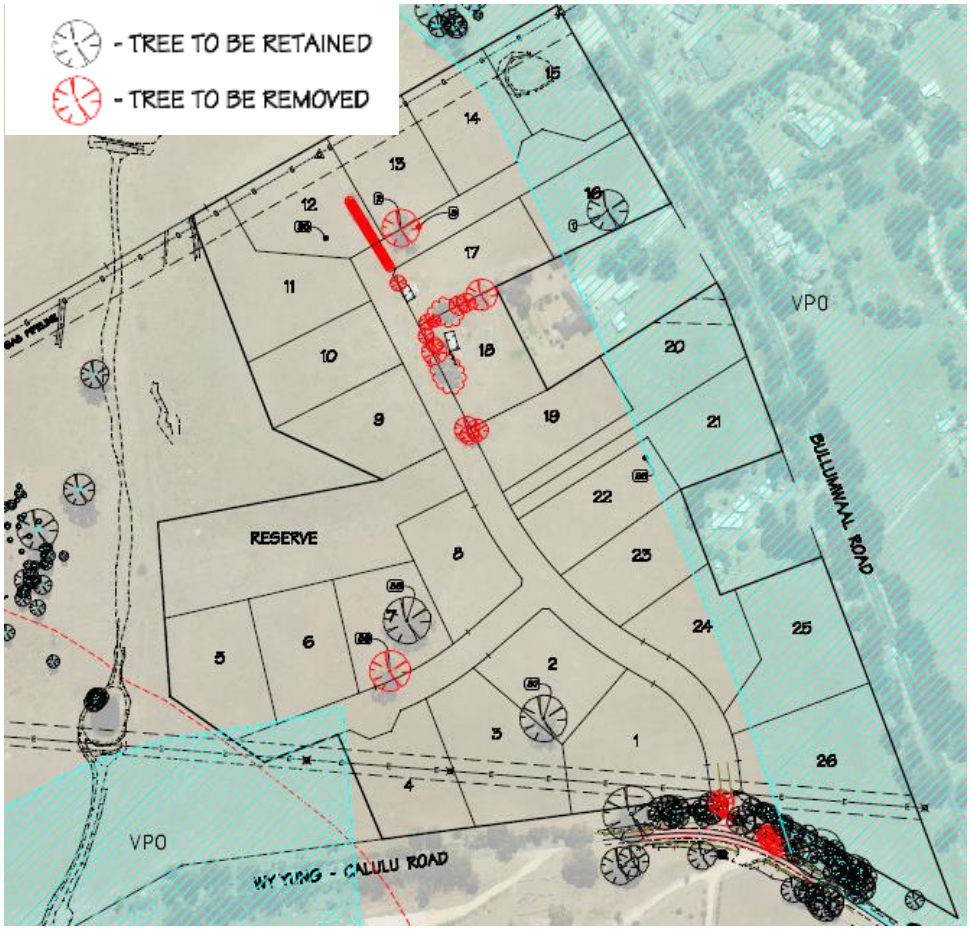
Vegetation Protection Overlay Mapping (Source: VicPlan)

Schedule 1 to the Vegetation Protection Overlay, *"Tambo-Bairnsdale Roadside Vegetation Protection Network",* identifies native vegetation along roadsides as being significant for habitat, landscape and aesthetic values.

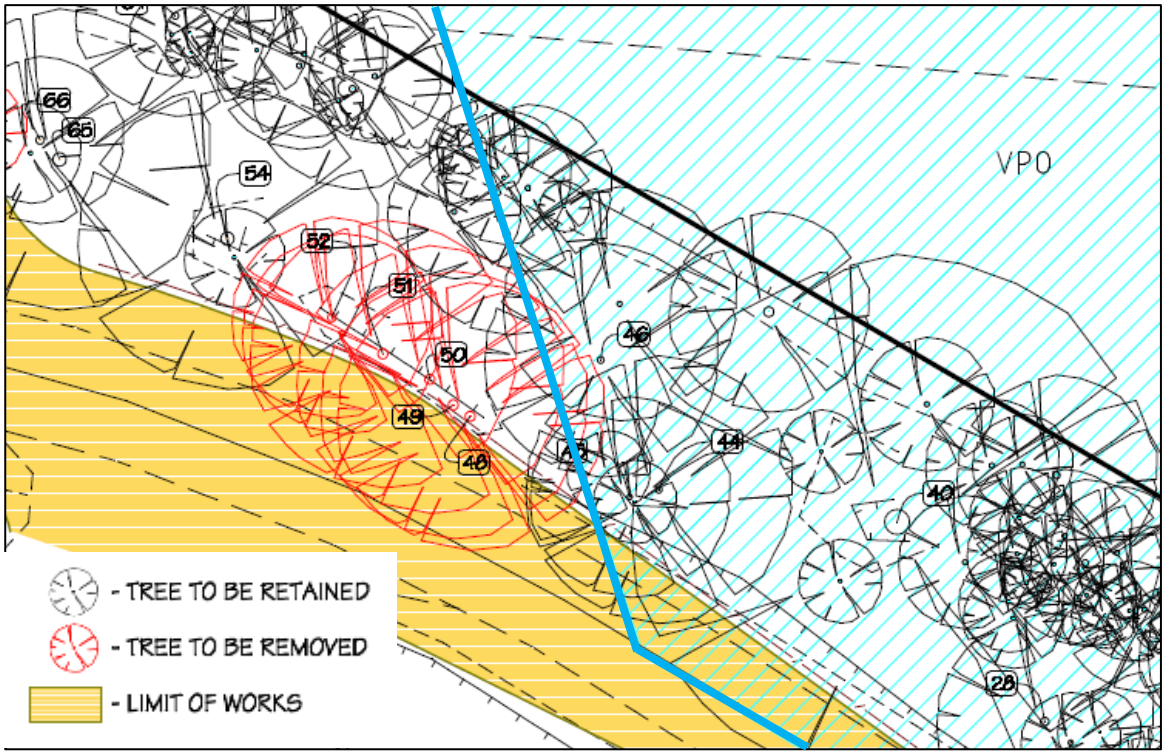
The objective of Schedule 1 to the Vegetation Protection Overlay is to protect high conservation value roadside vegetation from potential adverse impacts of establishing access and maintenance and construction activities.

The proposed intersection has been nominated along Wy Yung – Calulu Road in an area which is excluded from the Vegetation Protection Overlay and there is not access otherwise proposed from Bullumwaal Road.

The design of the subdivision has avoided any loss of vegetation contained within the area affected by the provisions of the Vegetation Protection Overlay – Schedule 1.



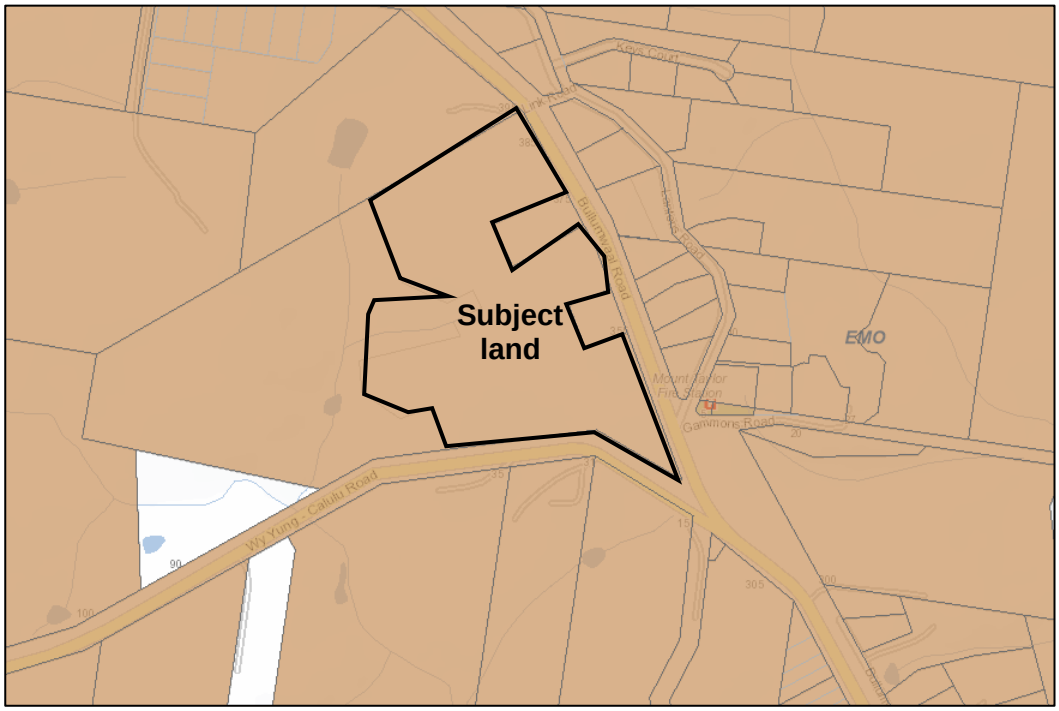
Extract of Plan of Vegetation Removal (V1) with VPO mapping



Extract of Plan of Vegetation Removal (V1) with VPO mapping within proximity to the proposed intersection

6.3 Erosion Management Overlay

The is contained within the Erosion Management Overlay. A permit is required at Clause 44.01-2 for earthworks and roadworks, Clause 44.01-5 for subdivision of the land and Clause 44.01-3 for vegetation removal.



Planning scheme overlay mapping (Source: VicPlan)

Application Requirements

- The property is characterised by southerly and westerly slopes with the grade of slopes ranging from approximately 1:20 to 1:5. The land has a contiguous cover of vegetation and does not display any areas of erosion, landslip or instability.
- Earthworks and ground disturbance associated with the subdivision will include establishment of the road, services, vehicle crossings, filling of the dam, removal of selected vegetation. Any earthworks associated with the construction of future dwellings which exceeds 1.0 metre in height or depth would require further planning approval under the provisions of the Overlay.
- Areas to be disturbed will be stabilised with the completion of works. A sealed road pavement will provide stability for the road and swale drains will be stabilised with grass. Sediment control measures will be adopted during construction to be specified in detailed plans to be approved for all civil construction works and as part of a construction management plan.

A Geotechnical Risk Assessment Report prepared by *Chris O'Brien & Company Pty Ltd* has been provided in response to the Application Requirements prescribed by the Schedule to the Overlay.

The Geotechnical Risk Assessment advises that the summary of risk for landslide, sheet/rill erosion and tunnel erosion is low. The soil structure is well suited for forming batters up to a maximum slope of 1:2 for cut batters and 1:3 for fill batters.

The risk of creating erosion or sediment runoff as a result of the subdivision construction can be managed by the implementation of a construction management plan as detailed in the geotechnical risk assessment.

Existing dam to be removed

6.4 Native Vegetation

Planning approval is required at Clause 52.17-1 for the removal of native vegetation and the assumed loss of trees within proximity to the proposed works which will have their TPZ's impacted by more than 10%.

Application Requirements

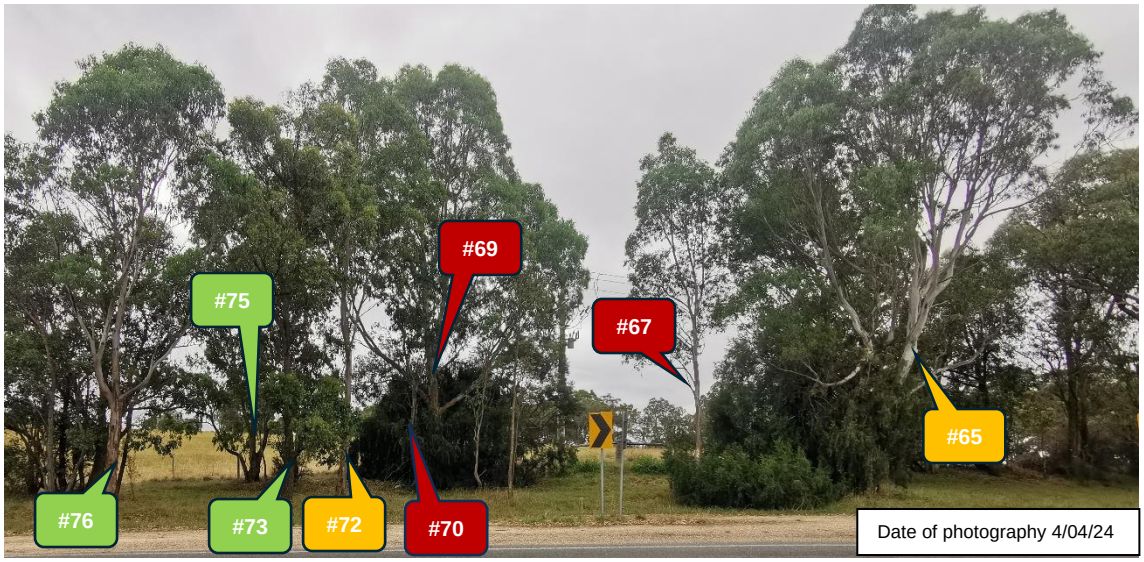
Information including plans and photos accompany the application in accordance with the application requirements specified within the *Guidelines for the Removal, Destruction or Lopping of Native Vegetation, December 2017* ('the Guidelines').

Accompanying the Application is a Native Vegetation Removal Report (NVRR ID: 319_20240417_WYX) which confirms the assessment pathway (Intermediate Assessment Pathway), details of the vegetation to be removed and assumed lost, mapping and offset requirements, along with other details required by Table 4 of the Guidelines.

The extent of vegetation removal being considered under the provisions of Clause 52.17 includes:

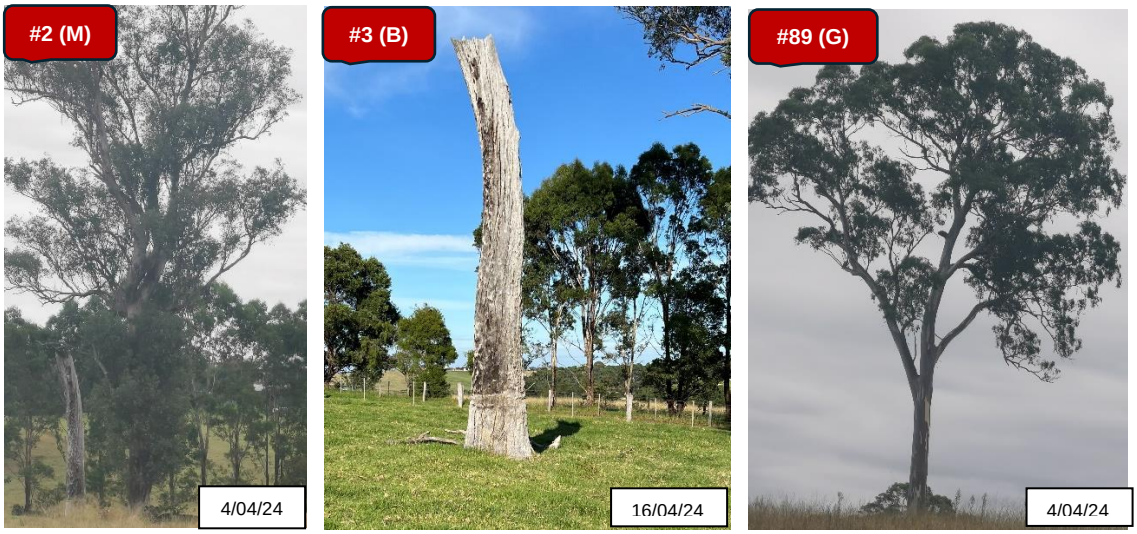
- A patch of native vegetation 0.059ha in area containing 2 large trees (Trees 54 & 65). The NVRR describes the patch as Zone 1 and the large trees within as A & F;
- The loss of 3 Scattered Trees (Trees 2, 3 & 89) internal to the site which are identified on the NVRR as Zones B, G & M.

The understory within Wy Yung-Calulu Road comprises >25% native perennial groundcover and the presence of more than three trees with touching canopies categorises the vegetation within proximity to the proposed intersection as a patch.



View north towards patch of vegetation in proximity to proposed intersection (Zone1)
Note: Tree numbers match Plan of Vegetation (V1)

The standalone nature of the three trees proposed to be removed internal to the site and abundance of non-native pastoral grasses (<25% native coverage) classifies the trees as "*scattered trees*".



Trees within the subject land earmarked for removal - Trees 2, 3 & 89
(Trees identified as M, B & G on NVRR)

To compensate for the removal and assumed loss of vegetation, a third-party offset will be secured to ensure no net loss of biodiversity occurs in accordance with the requirements of Clause 52.17-5. Search results from the Native Vegetation Credit Register provided in support of the Application confirm the availability of the required offsets on the current market with all necessary attributes (Report ID: 23814).

In response to the application requirements specified at Table 4 of the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017) ('the Guidelines') we offer the following response.

	Application Requirement	Response/Comment
1.	Vegetation to be removed	The accompanying Native Vegetation Removal Report includes adequate information to address this Application Requirement. The extent of vegetation being considered under the provisions of Clause 52.17 includes a patch of native vegetation 0.059ha in area which includes 2 large trees. It also accommodates the loss of 3 scattered trees. A total offset amount of 0.075general habitat units with 5 large trees is required with a minimum strategic biodiversity value of 0.54 within the East Gippsland Catchment Management Authority or East Gippsland Shire Council areas.

2.	Topographic and land information	The landform within proximity to the proposed vegetation removal is on a relatively gentle grade and does not contain any steep slopes. There are no drainage lines or water courses located within proximity to the vegetation proposed to be removed.
3.	Photographs	Photographs of the existing vegetation included within this report are recent having been taken on 4 April 2024 or 16 April 2024.
4.	Past Removal	There are no records on Council's Online Register of any removal of native vegetation within the Road Reserve within the last 5 years.
5.	Avoid and minimise statement	See later section of Report.
6.	Property Vegetation Plan	Not applicable.
7.	Defendable space statement	The vegetation removal element of the project is not being undertaken to create defendable space.
8.	Native Vegetation Precinct Plan	The Application is not being made under the provisions of Clause 52.16.
9.	Offset statement	As a Permit is required to remove native vegetation, the biodiversity impacts from the removal must be offset in accordance with the Guidelines. It is anticipated that the standard Conditions will be imposed on Permit which specify the offset requirement and the timing to secure the offset. There is no ability to provide a first party offset in this instance given the subject land does not contain the necessary attributes and is intended for residential development. It is therefore necessary that vegetation offsets be achieved through third party arrangements. A search statement from the Native Vegetation Credit Register has been provided in support of the proposal which confirms suitable offsets are available to compensate for the proposed vegetation removal and vegetation assumed lost.

In response to the decision guidelines specified at Table 6 of the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017) ('the Guidelines') we offer the following response.

	Decision Guidelines	Response/Comment
1.	Efforts to avoid and minimise vegetation removal to be commensurate with the biodiversity and other values.	Efforts to avoid and minimise impacts to native vegetation are considered commensurate to the biodiversity values of the area. The subdivision has been specifically designed to maximise the retention of the roadside vegetation and to provide retention of large scattered trees internal to the site, where possible. The extent of vegetation removal is quite limited, and the design of the intersection and servicing has otherwise enabled the retention of the remaining and more significant vegetation within the roadside corridor. The vegetation removal element of the proposal has also been restricted to areas outside of the Vegetation Protection Overlay – Schedule 1. The impacted vegetation has not been identified as being of significance as it is mapped as being within Location 1.
2.	Water courses, land degradation and groundwater.	The vegetation in question is considered to play a minimal role in protecting water quality and preventing land degradation given its location. The vegetation is well offset from existing water courses (>30m) and is not contained on steep land. The remaining vegetation provided on the site and within the adjoining road reserves along Bullumwaal Road and Wy Yung-Calulu Road will be retained.
3.	Identified landscape values.	Whilst the vegetation has some aesthetic value it is not considered to have a high environmental value having regard for the NVIM mapping and associated scores. The Environmental Significance Overlay does not apply to the land. Whilst the Vegetation Protection Overlay impacts part of the subject land and adjoining road network, it does not capture the vegetation to be removed or otherwise assumed lost by the proposal.
4.	Aboriginal Heritage Act 2006.	The vegetation earmarked for removal is not identified as being protected under the *Aboriginal Heritage Act 2006.*
5.	Defendable space.	The vegetation is not being removed for the purpose of defendable space.

6.	Property Management Plan.	There is no Property Management Plan applying to the subject land.
7.	Offsets	There is the ability to obtain and secure vegetation offsets which meet the offset requirements in accordance with the Guidelines. This has been demonstrated through the inclusion of a search statement from the Native Vegetation Credit Register.
8.	Clause 52.16	N/A The Application is not being made under the provisions of Clause 52.16.
9.	Impacts on biodiversity	The vegetation being considered under Clause 52.17 includes limited physical loss and assumed loss and will not have any significant impact on habitat for rare or threatened species. The Native Vegetation Removal Report identifies the Application as a Intermediate Assessment Pathway.

Avoid & Minimise Statement

The subject land is contained within the Low Density Residential Zone which anticipates residential occupation of the land similarly to that established within the surrounding context. It is also affected by the provisions of the Erosion Management Overlay and Vegetation Protection Overlay – Schedule 1 of the *East Gippsland Planning Scheme.*

There are no Environment Significance Overlays applying to the site or immediate surrounds and the subdivision design avoids any need for planning approvals under the provisions of the Vegetation Protection Overlay – Schedule 1.

Strategic documentation such as the Bairnsdale Growth Strategy specifically nominates the area for low density residential infill development. The zoning of the land and the presence of servicing within the area including power, water and telecommunications further enhances this expectation.

Whilst the adjoining road reserves along both Bulluwmaal Road and Wy Yung – Calulu Road are generally well vegetated, access that is both safe and meets specifications prescribed by the Traffic Impact Assessment needs to be established for safe egress and access to the land.

View across subject land towards vegetation within Bullumwaal Road to be retained

Whilst individual access points could have been nominated from Bullumwaal Road and Wy Yung – Calulu Road to service the proposed lots immediately adjoining the established road network, careful consideration was given to avoid and minimise impacts to the vegetated roadside corridor by nominating access to all allotments from the internal road network which will be accessed via the proposed intersection with Wy Yung – Calulu Road.

The limiting of access to the land to the one intersection only has drastically reduced impacts to native vegetation which could otherwise have been incurred if additional points of access were proposed. Any future desire of landowners to gain access directly from Bullumwaal Road or Wy Yung – Calulu Road that impacts native vegetation would trigger further planning approval.

The proposed intersection layout avoids any impacts to existing vegetation within the Vegetation Protection Overlay – Schedule 1 and makes use of a section of the road reserve which contains vegetation at a lower density. The location of the intersection has been determined by a Traffic Impact Assessment and provides opportunity for safe vehicle movements and sight lines whilst also being in a an area with reduced native vegetation cover. There isn't any other site for an intersection which achieves the necessary safety criteria which would otherwise further limit impacts to native vegetation.

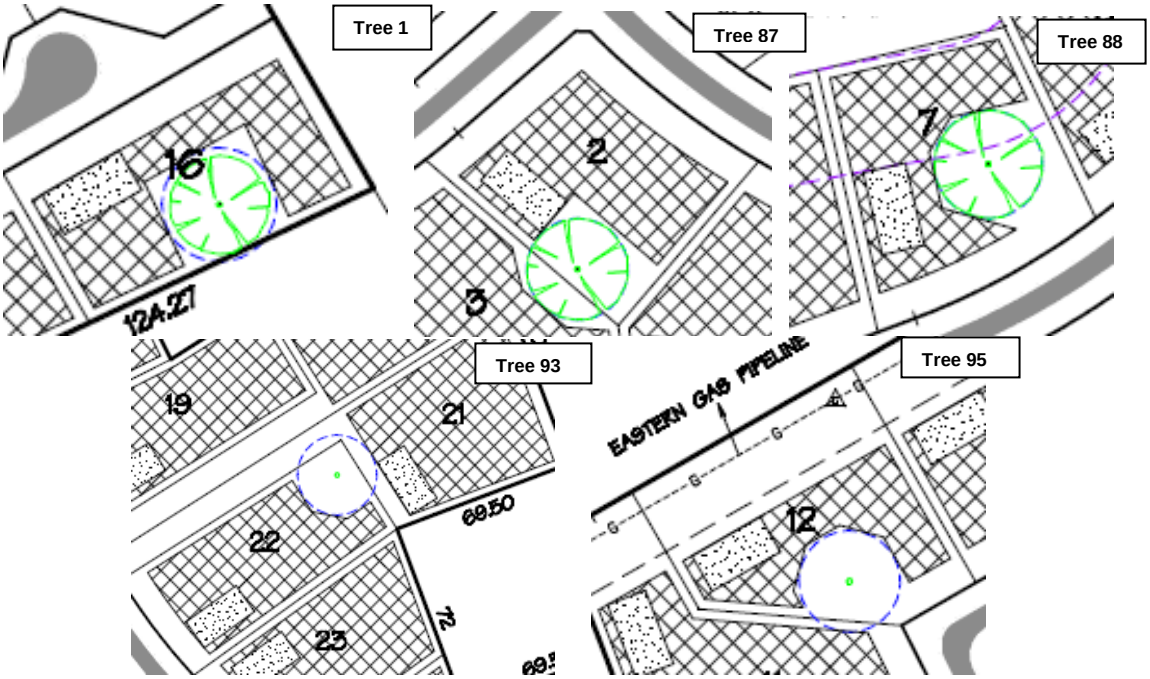
The subdivision nominates each allotment greater than 4,000m² (0.4ha) in area in direct response to the requirements of the Low Density Residential Zone which prescribes a minimum lot area of 0.4ha for land not serviced by reticulated sewer. Lot sizes greater than 0.4ha also ensure there is no consequential vegetation losses incurred as a result of site area.

Should any future owner of the proposed lots seek the removal of any further native vegetation, it would trigger further consideration under the provisions of Clause 52.17. The calculation for any offset for such removal would also need to consider cumulative impacts, if it were to occur within a five-year period.

Whilst native vegetation contained within the property boundaries consists of scatted trees, the subdivision design enables the retention of 5 large trees whilst providing sufficient area for future residential development that has regard for Tree Protection Zones (TPZ's).

Initial subdivision layouts had a more detrimental impact on the scattered trees. Work has subsequently been undertaken to adopt boundaries which gives good opportunity for most scattered trees to now be retained in conjunction with residential occupation of the land.

Design Response Plan (Nersion 2) demonstrates how the subdivision enables tree numbers 1, 87, 88, 93 & 95 to coexist with future residential development of the allotments.



Extracts from Design Response Plan (Version 2)

The Application has considered the loss of three scattered trees which are likely to be impacted as a result of the works associated with establishing the proposed road network and associated other service infrastrucure.

On balance the loss of the three trees in question is considered a reasonable response given the remainder of the scattered trees on the land will otherwise be retained and not adversely impacted by the proposal.

The geometry of the road needs to have regard to servicing requirements and landform which provides limited scope to adjust the alignment of the road to avoid impacts on trees 2, 3 & 89 without otherwise having considerable impact on the subdivision design and yield.

Ultimately the subdivision has sought to balance the anticipated residential use of the land with the environmental values of the site by avoiding the removal of any vegetation along the roadside in Bullumwaal Road and minimising the extent of loss through adoption of one intersection for vehicle access on Wy Yung – Calulu Road.

Further avoidance has been achieved through thoughtful subdivision design which facilitates the retention of numerous large trees that can coexist with the anticipated residential use. Whilst some scattered tree losses will ultimately be incurred, the extent of impact has clearly been minimised by the proposal.

The removal of a vegetation patch having an area of 0.059ha that includes 2 large trees and removal of 3 scattered trees that qualifies as an intermediate assessment pathway is considered to be appropriate having regard to the residential context of the area and inclusion of the land within the Low Density Residential Zone.

6.5 Land Adjacent to the Principal Road Network

Pursuant to Clause 52.29-2 a permit is required to subdivide land adjacent to a road in a Transport Zone 2.

The proposed subdivision has been designed with a new road to which all proposed lots can obtain access from. The new road has been incorporated into the subdivision so as to avoid landowners taking direct access from Bullumwaal Road and Wy Yung-Calulu Road.

To ensure the integrity of the principal road network is maintained it was determined that access to all lots would be provided from a new road via Wy Yung-Calulu Road rather than create an additional intersection at Bullumwaal Road.

7. Conclusion

The proposed multi-lot subdivision works (roadworks), earthworks, creation of a reserve and removal of native vegetation at 385 Bullumwaal Road, Wy Yung is considered to accord with all relevant provisions of the Low Density Residential Zone, Vegetation Protection Overlay and Erosion Management Overlay of the *East Gippsland Planning Scheme*. The proposal is consistent with the Planning Policy Framework and Municipal Planning Strategy, has been designed to complement the adjoining properties and avoid or minimise environmental impacts.

For these reasons we respectfully request that Council consider the merits of the application favourably and resolve to issue a Planning Permit.

CHRIS O'BRIEN & COMPANY PTY LTD
CONSULTING CIVIL & STRUCTURAL ENGINEERS
ACN 088 252 896

Reference No: B23145

Project No: 30323

29/01/2024

Crowther & Sadler Pty Ltd
P.O. Box 722
BAIRNSDALE VIC 3875

Email: richard@crowthersadler.com.au

Dear Richard,

RE: PROPOSED MULTI LOT RESIDENTIAL SUBDIVISION
385 BULLUMWAAL ROAD, WY YUNG. VIC

WATER ENGINEER'S CERTIFICATION OF LAND CAPABILITY ASSESSMENT AND ON SITE SOIL INVESTIGATION FOR DOMESTIC EFFLUENT DISPOSAL SEPTIC TANK SYSTEM

Further to our detailed inspection, at 10:30am on 5th April, 2023, and further investigation on the 23rd October 2023 of the above site this is to certify that Andrew John Powell, on behalf of Chris O'Brien & Company Pty Ltd, has prepared this report to document our Land Capability Assessment (LCA) and soil percolation test data together with recommendations for a specific treatment at a number of locations within the above allotment for on-site containment of domestic effluent disposal.

The purpose of this particular land capability assessment (LCA) is to investigate the above property for its capability of providing a "Land Application Area" (LAA) to each of the allotments to be created. To do this we investigated 6 separate areas on the site to determine consistency of soils and to enable us to make determinations for the whole subdivision. The location of each of the test sites is shown on our site plan Appendix 1, attached hereunder.

A soil investigation pit was hand excavated at each of the test sites, with consistent soil conditions found at all locations with just variance in depth. All sites contained soils in either category 3 or 4 in accordance with AS/NZS 1547:2012 Table E1. Photos of typical soil samples are attached to this report.

Test pit TP1 – Grey & Light grey silty loam (ZL) topsoil with coarse grass roots moderately dispersed throughout underlain brown orange grey loam (L) (250-450) underlain orange tan sandy clay loam (SCL) to at least 600mm depth at termination of test pit. (Soil category 4).
Test pit TP2 – Grey silty loam (ZL) topsoil with coarse grass roots moderately dispersed throughout underlain brown orange silty loam (ZL) (220-480) underlain orange tan sandy clay loam (SCL) to at least 600mm depth at termination of test pit. (Soil category 3).
Test pit TP3 – Grey brown silty loam (ZL) topsoil with coarse grass roots moderately dispersed throughout underlain brown grey orange silty loam (ZL) (250-500) underlain orange tan sandy clay loam (SCL) to at least 600mm depth at termination of test pit. (Soil category 3).
Test pit TP4 – Brown grey fine silty loam (ZL) topsoil with coarse grass roots moderately dispersed throughout underlain brown orange grey silty loam (ZL) (190-350) underlain orange tan sandy clay loam (SCL) to at least 600mm depth at termination of test pit. (Soil category 4).
Test pit TP5 – Brown light grey silty loam (ZL) topsoil with coarse grass roots moderately dispersed throughout underlain brown orange grey silty loam (ZL) (220-470) underlain orange tan sandy clay loam (SCL) to at least 600mm depth at termination of test pit. (Soil category 3).

All correspondence to:
P.O. Box 18
Traralgon Vic. 3844

13A Church Street
Traralgon Vic. 3844

Telephone (03) 5174 9611
Facsimile (03) 5174 0011

Test pit TP6 – Grey brown silty loam (ZL) topsoil with coarse grass roots moderately dispersed throughout underlain brown fawn grey silty loam (ZL) (180-320) underlain brown orange sandy clay loam (SCL) to at least 600mm depth at termination of test pit. (Soil category 4).

DISCUSSION

For this particular site, should soil percolation testing have been undertaken o any of the proposed allotments we would expect the percolation rate to exceed 15mm/hr and be less than 500mm/hr. in this case absorption is largely by absorption through the upper soil strata and evapo-transpiration.

PHOTOGRAPHY

Several colour photographs have been attached to the rear of this report to illustrate the subject allotment terrain and the soils found in the test pit locations. Photos demonstrate how the land is currently drained with all dams and gullies shown. It is obvious, by observation of the photographs, the soil type and the reasonable sloping terrain available for disposal, that standard absorption trenches can be used on this site, with varying lengths dependant on the soil category found at the test pit location. The location of the existing water courses does pose a restriction for lots 6 -9 of the proposed subdivision. Recommendations for this are also included as a 60m minimum setback from the water course is required. If this setback is not achievable then secondary treatment will be required.

DAILY FLOW & SEPTIC TANK CAPACITY

- It is anticipated that a dwelling will be constructed on all of the allotments. For the purposes of this report we have allowed for a four (4) bedrooms and as a consequence the estimated daily flow in accordance with EPA Publication 891.4 July 2016: Code of Practice – Onsite Wastewater Management: Table 4 (dwelling installed with full water-reduction fixtures and fittings) and AS/NZS 1547:2012 Table H1

  =(2 + 3 x 1)150
  =750 L/day (Town Reticulated Water Supply)

- Minimum septic tank capacity (C) in accordance with AS/NZS 1547:2012 Table J1

  =3000 litres (Minimum Volume)

750 L/day is used throughout the rest of this report to determine the size of the treatment area required for site specific treatment for on-site containment of domestic effluent disposal.

STANDARD ABSORPTION TRENCH AND SUB SURFACE DRIP IRRIGATION BED – DESIGN AREA SIZING IN ACCORDANCE WITH AS/NZS 1547:2012 AND EPA PUBLICATION 891.4: JULY 2016

Reference is made to the Australian Standard code AS/NZS 1547:2012 "On site Domestic-wastewater Management" Appendix L and Appendix M. Refer table L1 for Absorption Trench design and table M1 for Sub-Surface Drip Irrigation design, whereby the soils examined on site may be classified as a Soil Category 4: Clay loams (weakly structured) at test pits 1-3 & 9, the Design Irrigation Rate (DIR) for primary treated effluent is approx. 6mm/day and for secondary treated effluent is approx. 3.5mm/day. Soil Category 3: loams (weakly structured) at test pits 4-7, the Design Irrigation Rate (DIR) for primary treated effluent is approx. 10mm/day and secondary treated effluent approx. 4mm/day. Noteworthy is that the EPA "Guidelines for Environmental Management" – Code of Practice Onsite Wastewater Management: Appendix A – Table 9: Soil Categories and Recommended Maximum Design Loading/Irrigation Rates (DLR/DIR) for "Land Application Systems" makes direct reference to Tables L1 and M1 in AS/NZS 1547:2012 and therefore the exact same DIR is recommended by the EPA. A water balance analysis is attached to determine the irrigation area required if secondary treatment is required and a drip irrigation system is adopted for disposal of waste water to land.

LENGTH REQUIRED FOR TRENCH BED SYSTEM

The appropriate absorption bed length for a trench system has been determined using formula from Appendix L with the bed length L = Q / (DLRxW). A conservative DIR of between 6.0L/m2/day and 10L/m2/day is being adopted depending on the soil category on each allotment. Based on a Q of 750L/day and adopting a preferred trench width of 1000mm the total length of trench bed required for category 3 soils 75m and category 4 soils 125m. An LCA will need to be completed on each individual allotment to determine the soil category. A final layout of the treatment system is to be completed when a septic tank permit is applied for.

AREA REQUIRED FOR IRRIGATION BED SYSTEM

The appropriate absorption bed area for a subsoil irrigation system has been determined with a water balance analysis. A conservative DIR of between 3.5L/m2/day and 4L/m2/day is being adopted depending on the soil category on each allotment. Based on a Q of 750L/day area required for category 3 soils is 240m2 and category 4 soils is 280m2. An LCA will need to be completed on each individual allotment to determine the soil category. A final layout of the treatment system is to be completed when a septic tank permit is applied for. The area for treatment can be reduced with bedrooms less than 4 proposed.

SAND FILTER

In conjunction with the sub-surface irrigation bed system a sand filter is required. The sand filter will need to be at least 15sq.m in surface area and 1400-1500mm in depth. A Single Pass Sand Filter is recommended.(Refer "Domestic Wastewater Management Technical Guidelines" issued by Baw Baw Shire Council – March 2007 Edition).

RESERVE AREA NOT REQUIRED

The allocation of a reserve area is not thought to be necessary for the allotments on this site, however significant area is available should the installed trench bed or sub-surface irrigation system fail. The design parameters used to determine the required size of the Land Application Area (LAA) have been suitably conservative. The soil is not sodic nor saline.

PREPARATION OF THE SITE PRIOR TO COMMENCEMENT

The area upon which the absorption trench bed or sub-surface drip irrigation is proposed for construction shall be protected from stormwater overland flow by establishing a shallow open earth vee-drain across the upstream sides of the LAA (effluent disposal field) curtailing around the ends – if required.

SUMMARY & CONDITIONS

Based on our results above it is our professional opinion that the allotments created are suitable for on-site domestic waste water treatment. For secondary treatment using a drip irrigation system a water balance was completed and a land application area (LAA) of 280sq.m for category 4 soils and 240sq.m for category 3 soils is required. Secondary treatment of wastewater will be required if the minimum setback of 60m to the natural watercourse is not achievable. It is our professional opinion that based on the soils found during our soil investigation that provided a 60m setback from the existing natural water course is achievable allotments created on the proposed subdivision are suitable for treatment using absorption trenches with 1000mm wide trench to be used and it should be at least 125m in length for category 4 soils and 75m in length for category 3 soils which will be environmentally adequate and consistent with the above recommendations.

Based on the land capability assessment results, it is our opinion that the soil type and profile on this site are suitable for disposal of wastewater on site, using primary treatment only. 1000mm wide x 400mm depth trenches are to be used.

For secondary treatment it is professional opinion that the soil type and profile on this site are suitable for disposal of wastewater on site, by the use of a sand filter producing min. 20/30 grade effluent and an on-site disposal system using sub-surface drip irrigation such as Geoflow wastewater or Netafirm disposal system. Based on a four bedroom residence the length of drip irrigation pipe will be 340m for category 3 soils and 395m for category 4 soils.

From the test results it can be seen that based on a four (**4**) bedroom dwelling being constructed on any of the allotments for primary treatment requires a disposal bed length of about **125m** (minimum) for category 4 soils and **75m** (minimum) for category 3 soils for a standard absorption trench bed system and for secondary treatment requires a disposal bed area of **280sq.m** (minimum) for category 4 soils and **240sq.m** (minimum) for category 2 soils.

Siting of the proposed wastewater disposal field envelope will need to be determined when a LCA is completed for the individual allotment. The following factors shall be considered when positioning the proposed wastewater disposal field.

1) Standard siting guidelines as per the requirements of the East Gippsland Shire Council (EGSC) guidelines.

2) At least 3.0m for secondary or 6m for primary treated effluent (subject to agreement between EGSC and COB & Co. prior to commencement) up-slope and 1.5m for secondary and 3m for primary treated effluent down-slope of any title boundary/road reserve or building.

The following additional conditions shall be observed in addition to those set out by the local Council.

1. For primary treatment the system has been designed on a standard 1000mm wide x 400mm deep trench system. Trenches are to be installed at 3m maximum centres.
2. For secondary treatment the quality of wastewater used for sub-surface drip irrigation bed system must comply with the following limits.

Biochemical Oxegen Demand	Max: 20mg/l
Suspended Solids	Max: 30mg/l
Faecal coliforms	Max: 10 organisms per 100ml
Free chlorine	Max: 2mg/l Min 0.5mg/l

3. The system has been designed on a standard 600mm wide by 400mm layout (waste flow pipes are installed at 600mm centres with emitters spaced at 400mm along the waste flow pipes). The emitters are rated at 2.3l/hr.
4. Gypsum is to be added to the bottom of trenches at a rate of 1kg/m2 – for absorption trenches only.
5. The disposal field shall be sown with lawn grasses as soon as possible on completion of works. This will stabilize the soil and allow for the vegetation to take up the wastewater.
6. Only water from the septic tank is permitted to enter the disposal system. Stormwater run-off shall be prevented from entering the trench bed system area. We suggest an open earth vee-drain be constructed to 100mm depth along the high side of any proposed LAA or other approved method as approved by the Design Engineer.
7. Vehicles or heavy equipment shall not be permitted on the disposal field as damage to the disposal system may result.
8. Spikes, tent pegs, garden stakes etc. shall not be driven into the ground in the disposal field as damage to the disposal system may result.
9. An ongoing maintenance program shall be instigated to ensure that the disposal system is properly maintained and works effectively.

CONCLUSION

Following the Land Capability Assessment on this site it is professional opinion that all allotments on the proposed subdivision are suitable for on-site wastewater disposal utilizing a standard absorption trench bed system which is highly unlikely to cause detriment to the environment. The only variance to this is lots 5 - 8 which will require secondary treatment due to their proximity to the existing natural water course.

Adequate maintenance and checking of the proposed system should be established as part of the Council Permit Application approvals process.

Yours faithfully,

Andrew Powell Assoc.Dip (Civil)
for CHRIS O'BRIEN & COMPANY PTY LTD

LAND CAPABILITY ASSESSMENT AND SOIL PERCOLATION TESTING

Land Features	Land Capability Class Rating					Site Rating
	Very Good(1)	**Good(2)**	**Fair(3)**	**Poor(4)**	**Very Poor(5)**	
General Characteristics						
Site Drainage	No visible signs of dampness	Moist soil, but no standing water in soil pit		Visible signs of dampness, such as moisture tolerant plants	Water ponding on surface	**1**
Runoff	None	Low	Moderate	High, need for diversionary structures	Very high, diversion not practical	**2**
Flood Levels	Never		<1 in 100	>1 in 100 and <1 in 20	<1 in 20	**1**
Proximity to watercourses	>60m				<60m	**1 & 5**
Slope%	0-2	2-8	8-12	12-20	>20	**2 & 3**
Landslip	No actual or potential failure		Low potential for failure	High potential for failure	Present or past failure	**1**
Groundwater (seasonal watertable depth(m))	>5	5-2.5	2.5-2.0	2.0-1.5	<1.5	**1**
Rock outcrop (% of land surface containing rocks >200mm)	0	<10%	10-20%	20-50%	>50%	**1**
Erosion potential	No erosion potential	Minor	Moderate	High	Severe erosion potential	**1**
Exposure	High sun and wind exposure		Moderate	Low sun and wind exposure		**1**
Landform	Hill crests, convex side slopes and plains		Concave sideslopes and footslopes		Floodplains and incised channels	**1**
Vegetation type	Turf or pasture				Dense forest with little undergrowth	**1**
Average Rainfall (mm/year)	<450	450-650	650-750	750-1000	>1000	**3**
Pan Evaporation (mm/yr)	<1500	1250-1500	1000-1250		<1000	**2**

Soil profile charecteristics

Soil permeability category	2 and 3	4		5	1 and 6	**1 & 2**
Profile depth	>2m	1.5m-2m	1.5m-1m	1.0m-0.5m	<0.5m	**2**
Presence of mottling	None				Extensive	**1**

Coarse fragments (%)	<10	10-20	20-40		>40	1
pH	6-8		4.5-6		<4.5, >8	Not measured
Emerson aggregate	4 ,6 ,8	5	7	2, 3	1	**1**
Electrical conductivity (Ece)(Ds/m)	<0.3	0.3-0.8	0.8-2	2-4	>4	Not measured
Sodicity ESP%	<3		6-8	8-14	>14	**3**

INSTALLATION CONDITIONS

All installations shall comply with the AS/NZS 1547:2012 the, EPA Code of Practice – Septic Tanks 1996, the Victorian Water Supply and Sewerage Plumbing Regulations 1986 and AS 3500 National Plumbing and Drainage Code.

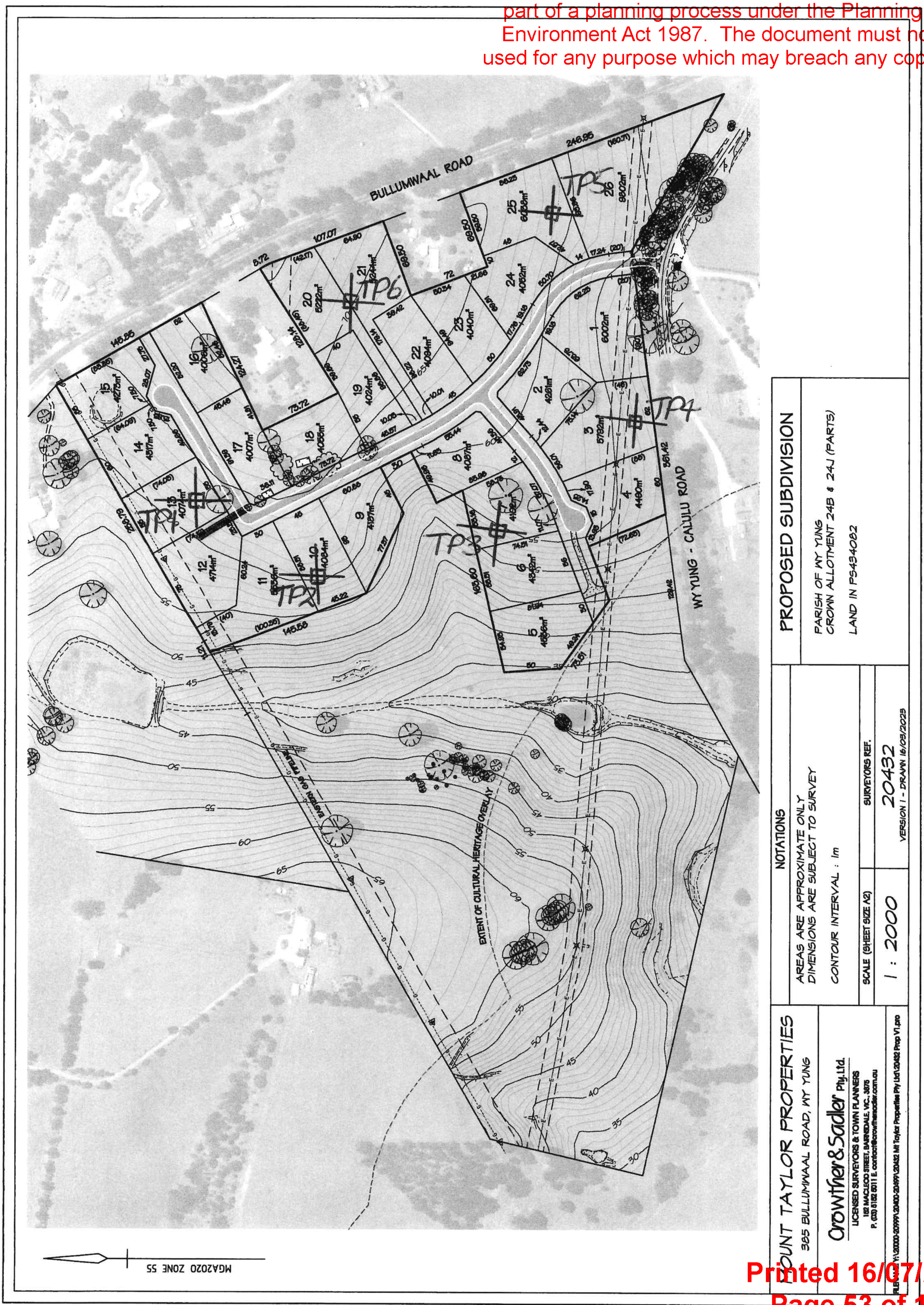
No septic tank or sand filter shall be installed closer than 1.5m to the foundations of any house, building or the boundary of the allotment.

Inlets and outlets of the septic tank must be baffled to avoid disturbing the contents of the septic tank.

Inspection openings of the septic tank shall be brought up to and permanently marked at surface level. Inspection openings shall be fitted with childproof airtight covers which are capable of being readily removed and replaced by one adult. Access opening covers shall not be cemented or otherwise fixed in position so as to be incapable of being readily removed for inspection purposes.

Food waste disposal units are not recommended for use with septic tank systems. **If used in household situation, a minimum extra allowance of 25% shall be made for additional sludge storage.**

Spa baths over 200 litre capacity are not to be connected to the primary septic tank but must be taken into account for effluent disposal calculations.



Nominated Area Water Balance For Soil Category 3 – Secondary Treatment

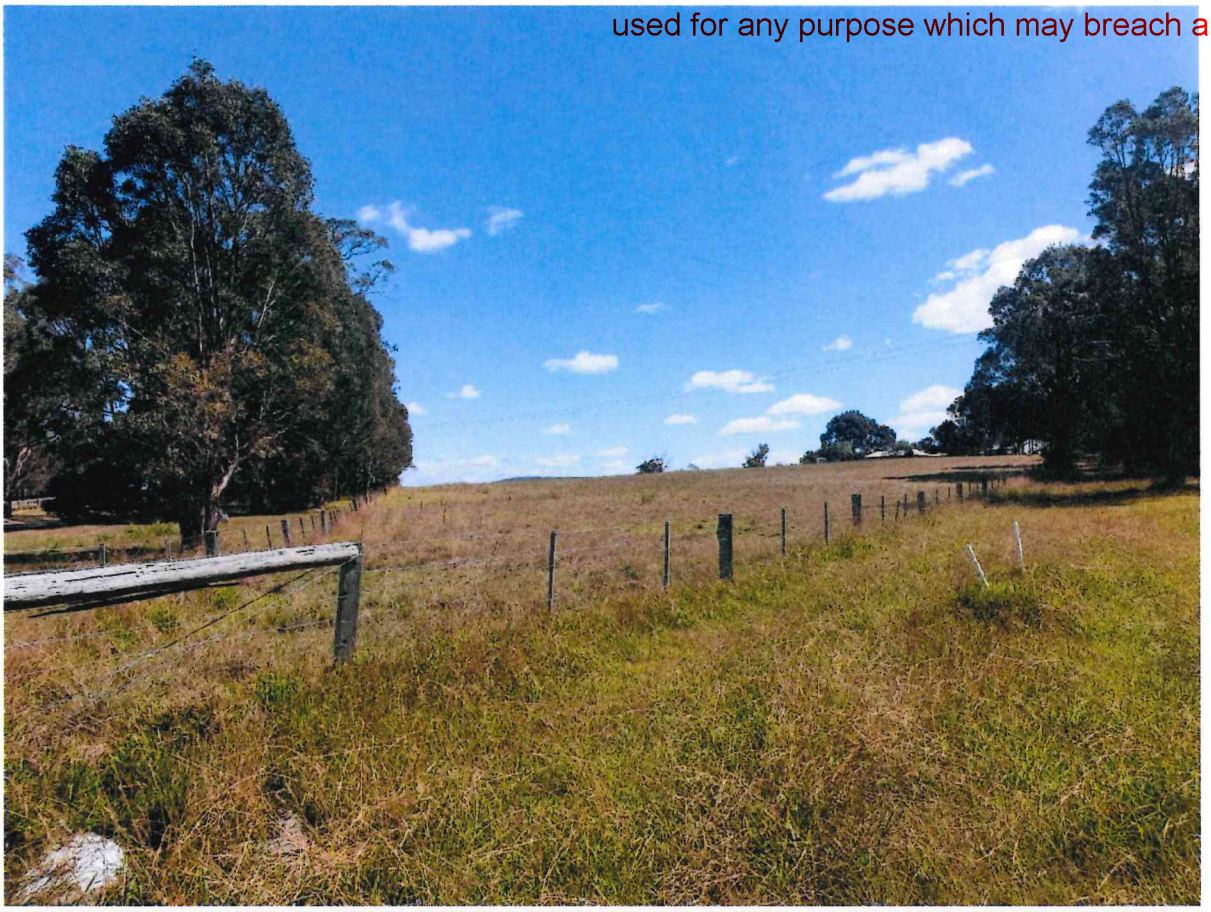
Site Address:	385 Bullumwaal Road, Wy Yung			
Notes:	**MAV Model LCA**			
Input Data				**Notes**
Design Wastewater Flow	Q	750	L/day	Based on 4 bedrooms (5 persons) @ 150L/p/day From EPA Publication 891.4 – July 2016
Design DIR	DIR	4	mm/day	Assumes loamy soils without impeded vertical drainage, refer Table 5.1 A4 AS/NZS 1547:2012
Nominated Land Application Area	L	240	Sq.m	Used for iterative purposes (if desired) to determine storage requirements for nominated areas
Crop Factor	C	0.6-0.85	unitless	Estimates evapotranspiration as a fraction of pan evaporation, varies with season and crop type
Retained Rainfall	Rf	0.8	unitless	Proportion of rainfall that remains on site and infiltrates allowing for any runoff
Rainfall Data	Bairnsdale Station 085279 mean monthly			
Evaporation Data	East Sale Station 085072 mean monthly			

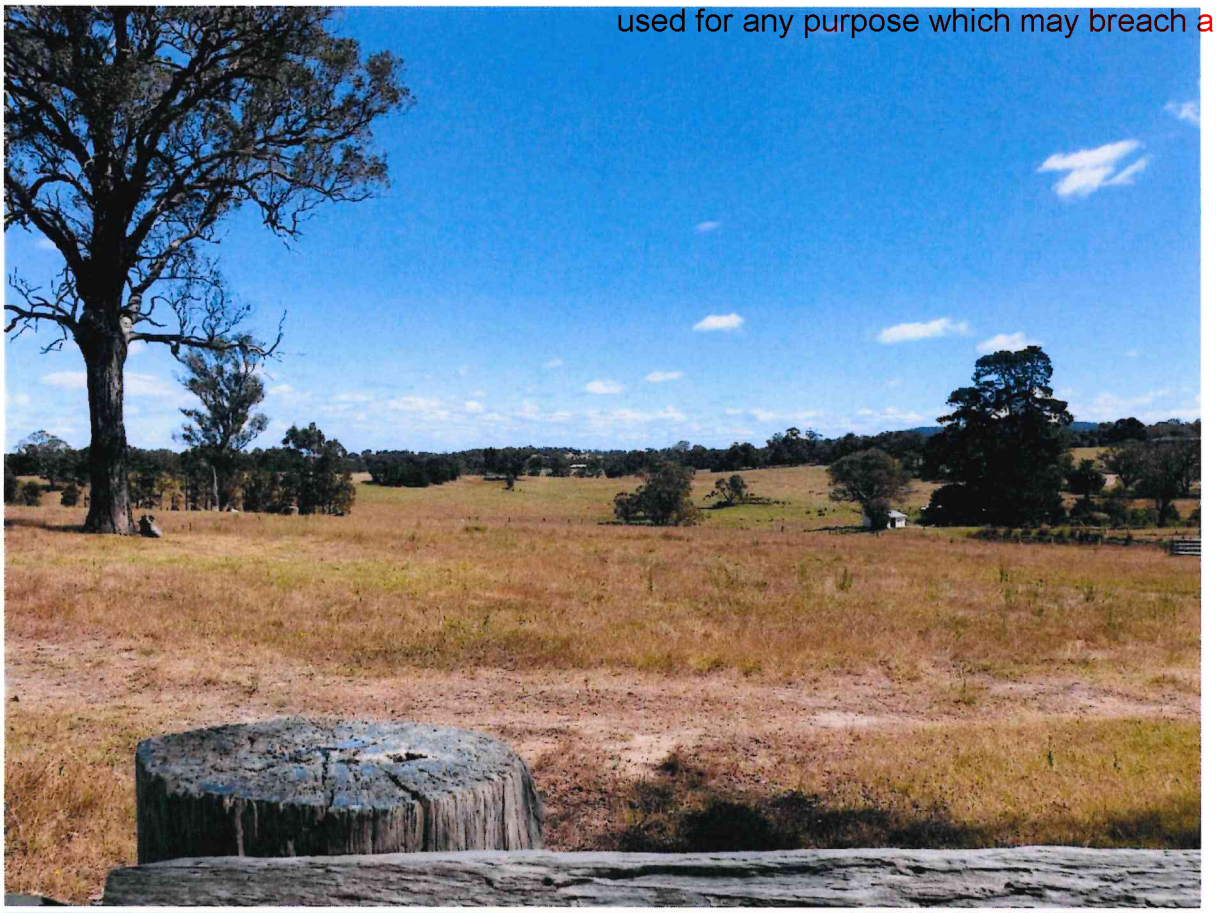
Parameters	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D	\	Days	31	28	31	30	31	30	31	31	30	31	30	31	**365**
Rainfall	R	\	mm/month	49.7	46.1	46.5	56.5	44.0	62.7	48.2	36.0	50.2	59.9	77.4	60.4	636.9
Evaporation	E	\	mm/month	201.5	162.4	136.4	84.0	52.7	42.0	46.5	68.2	93.0	124.0	153.0	186.0	1349.7
Crop Factor	C			0.85	0.85	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.85	0.85	
OUTPUTS																
Evapotranspiration	ET	E x C	mm/month	171.28	138.04	95.48	58.8	31.62	25.2	27.9	40.92	65.1	86.8	130.05	158.1	1029.3
Percolation	B	DIR)xD	mm/month	124	112	124	120	124	120	124	124	120	124	120	124	1460
Outputs		ET+B	mm/month	295.28	250.04	219.48	178.8	155.62	145.2	151.9	164.92	185.1	210.8	250.05	282.1	2489.3
INPUTS																
Retained Rainfall	RR	RxRf	mm/month	39.76	36.88	37.2	45.2	35.2	50.16	38.56	28.8	40.16	47.92	61.92	48.32	510.1
Effluent Irrigation	W	(QxD)/L	mm/month	96.88	87.5	96.88	93.75	96.88	93.75	96.88	96.88	93.75	96.88	93.75	96.88	1140.66
Inputs		RR + W	mm/month	136.64	124.38	134.08	138.95	122.08	143.91	135.44	115.68	133.91	144.8	155.67	145.2	1650.76
LAND AREA FOR ZERO STORAGE																
Maximum effluent Application for Zero Storage	X	(ET+B)-RR	mm/month	255.52	213.16	182.28	133.6	120.42	95.04	113.34	136.12	144.94	162.88	188.13	233.78	
Effluent Produced	Y	Q*D	L/month	23250	21000	23250	22500	23250	22500	23250	23250	22500	23250	22500	23250	
Maximum area required for zero storage		Y/X	Sq.m	90.99	98.52	127.55	168.41	193.07	236.74	205.14	170.81	155.24	142.74	119.6	99.45	
LAND AREA REQUIRED FOR ZERO STORAGE			Sq.m	91	99	128	169	193	237	206	171	156	143	120	100	
MINIMUM AREA REQUIRED FOR ZERO STORAGE m2				**240**	This is based on the worst months of the year, so the balance overestimates the area/storage requirements and is hence conservative for all other months.											

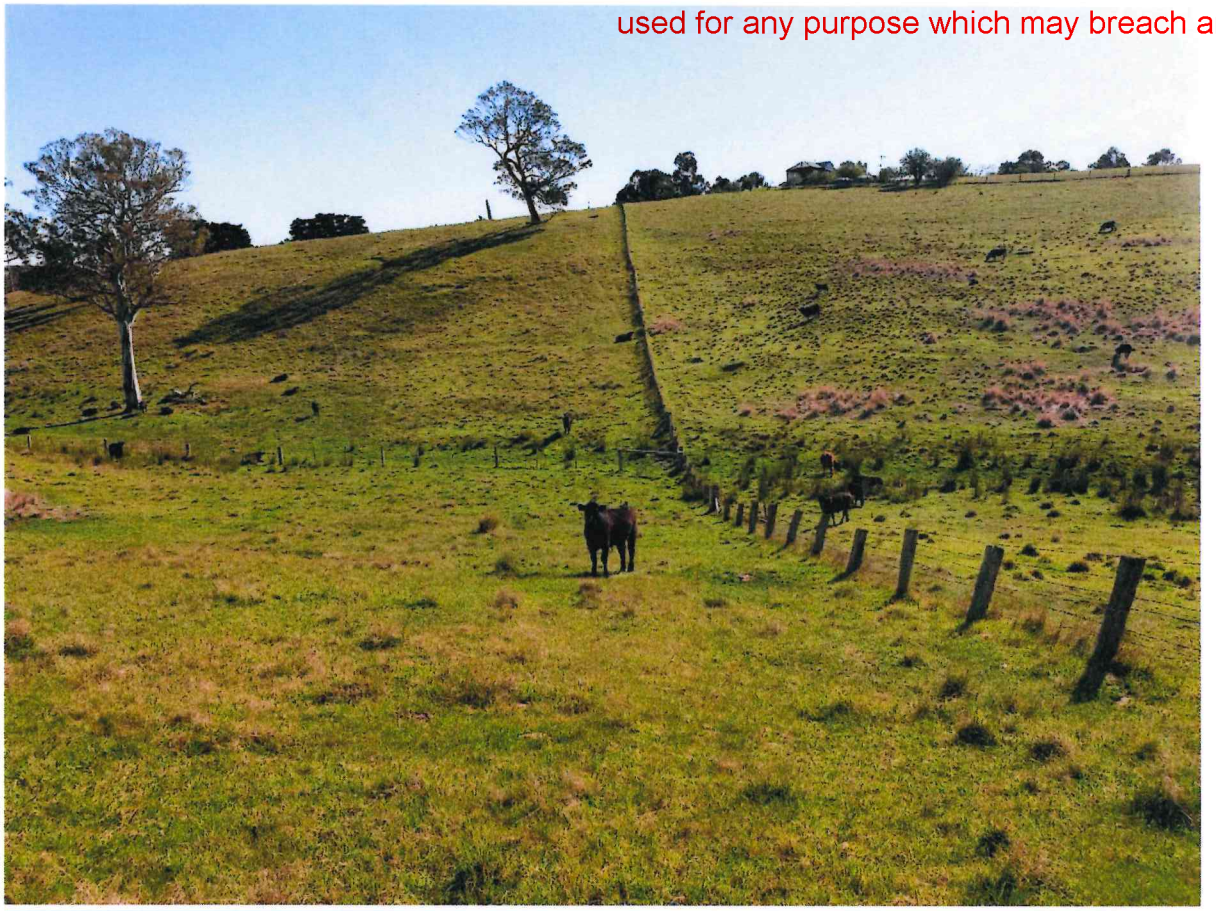
Nominated Area Water Balance For Soil Category 4 – Secondary Treatment

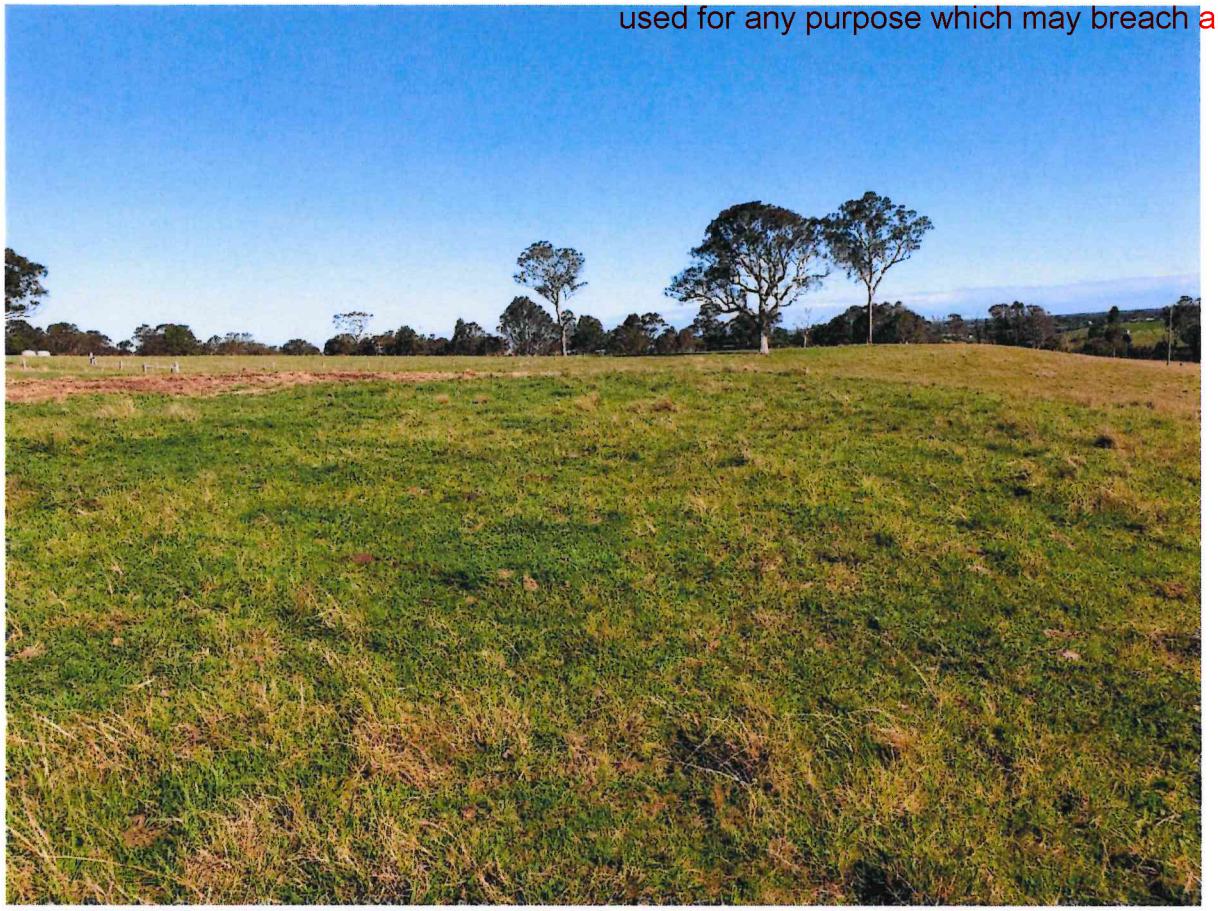
Site Address:	385 Bullumwaal Road, Wy Yung			
Notes:	**MAV Model LCA**			
Input Data				**Notes**
Design Wastewater Flow	Q	750	L/day	Based on 4 bedrooms (5 persons) @ 150L/p/day From EPA Publication 891.4 – July 2016
Design DIR	DIR	3.5	mm/day	Assumes clay loam soils without impeded vertical drainage, refer Table 5.1 A4 AS/NZS 1547:2012
Nominated Land Application Area	L	280	Sq.m	Used for iterative purposes (if desired) to determine storage requirements for nominated areas
Crop Factor	C	0.6-0.85	unitless	Estimates evapotranspiration as a fraction of pan evaporation, varies with season and crop type
Retained Rainfall	Rf	0.8	unitless	Proportion of rainfall that remains on site and infiltrates allowing for any runoff
Rainfall Data	Bairnsdale Station 085279 mean monthly			
Evaporation Data	East Sale Station 085072 mean monthly			

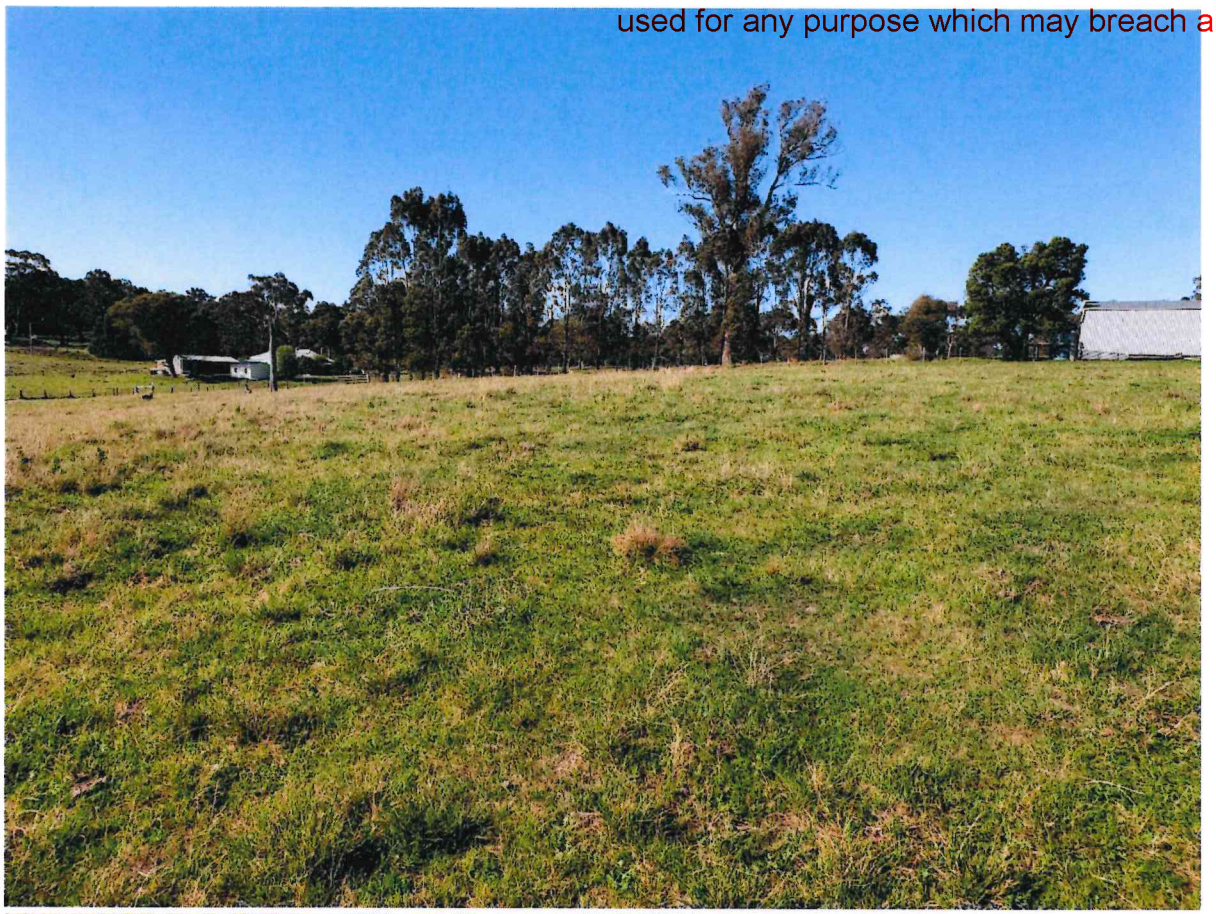
Parameters	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D	\	Days	31	28	31	30	31	30	31	31	30	31	30	31	**365**
Rainfall	R	\	mm/month	49.7	46.1	46.5	56.5	44.0	62.7	48.2	36.0	50.2	59.9	77.4	60.4	636.9
Evaporation	E	\	mm/month	201.5	162.4	136.4	84.0	52.7	42.0	46.5	68.2	93.0	124.0	153.0	186.0	1349.7
Crop Factor	C			0.85	0.85	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.85	0.85	
OUTPUTS																
Evapotranspiration	ET	E x C	mm/month	171.28	138.04	95.48	58.8	31.62	25.2	27.9	40.92	65.1	86.8	130.05	158.1	1029.3
Percolation	B	DIR)xD	mm/month	108.5	98	108.5	105	108.5	105	108.5	108.5	105	108.5	105	108.5	1277.5
Outputs		ET+B	mm/month	279.78	236.04	203.98	163.8	140.12	130.2	136.4	149.42	170.1	195.3	235.05	266.6	2306.8
INPUTS																
Retained Rainfall	RR	RxRf	mm/month	39.76	36.88	37.2	45.2	35.2	50.16	38.56	28.8	40.16	47.92	61.92	48.32	510.1
Effluent Irrigation	W	(QxD)/L	mm/month	83.04	75	83.04	80.36	83.04	80.36	83.04	83.04	80.36	83.04	80.36	83.04	977.72
Inputs		RR + W	mm/month	122.8	111.88	120.24	125.56	118.24	130.52	121.6	111.84	120.52	130.96	142.28	131.36	1487.82
LAND AREA FOR ZERO STORAGE																
Maximum effluent Application for Zero Storage	X	(ET+B)-RR	mm/month	240.02	199.16	166.78	118.6	104.92	80.04	97.84	120.62	129.94	147.38	173.13	218.28	
Effluent Produced	Y	Q*D	L/month	23250	21000	23250	22500	23250	22500	23250	23250	22500	23250	22500	23250	
Maximum area required for zero storage		Y/X	Sq.m	96.87	105.44	139.41	189.71	221.6	280.11	237.63	192.75	173.16	157.76	129.96	106.51	
LAND AREA REQUIRED FOR ZERO STORAGE			Sq.m	97	106	140	190	222	280	238	193	174	158	130	107	
MINIMUM AREA REQUIRED FOR ZERO STORAGE m2				**280**	This is based on the worst months of the year, so the balance overestimates the area/storage requirements and is hence conservative for all other months.											

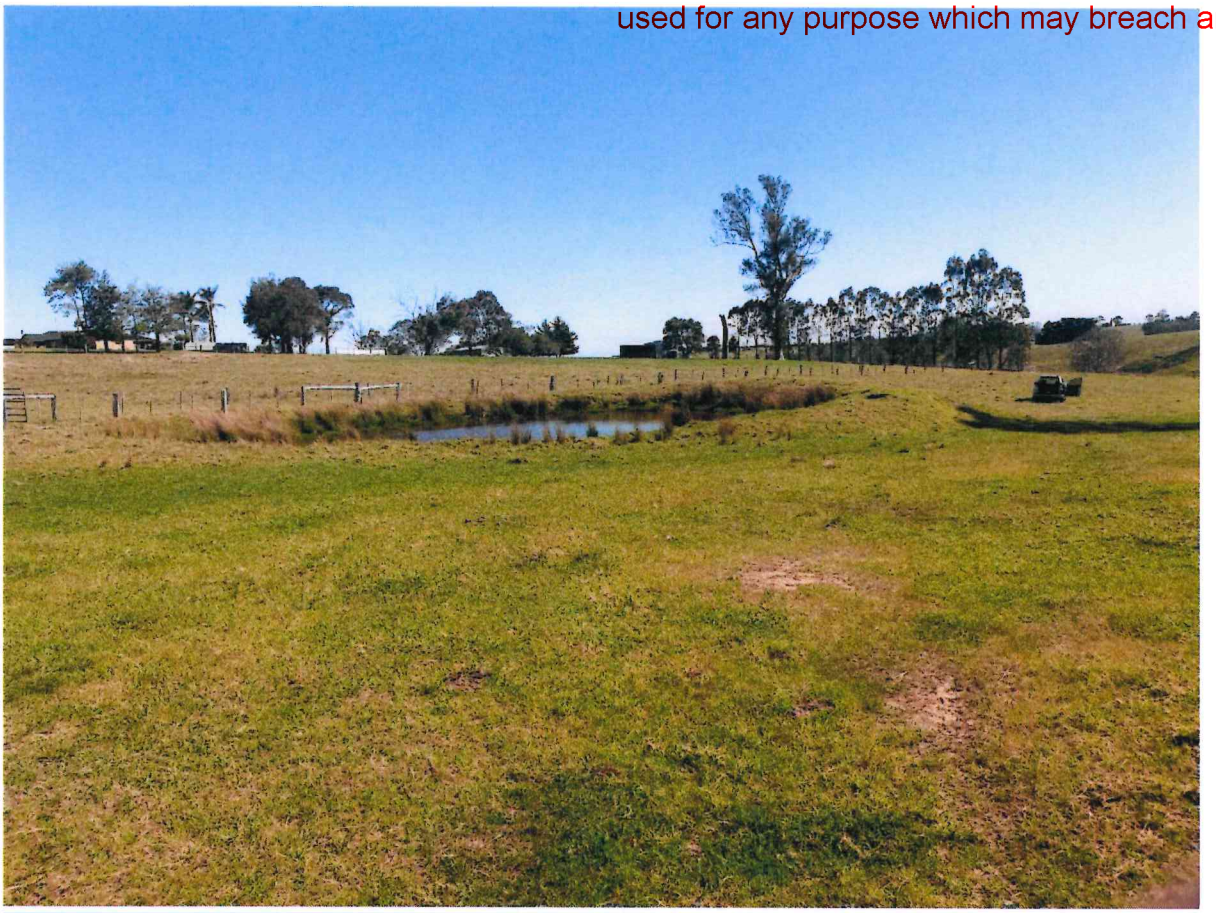












385 Bullumwaal Road, Wy Yung

Transport Impact Assessment

230154TIA001B.docx

27 March 2024

onemile**grid**

ABN: 79 168 115 679

(03) 9939 8250
Wurundjeri Woiworung Country
56 Down Street
COLLINGWOOD, VIC 3066
www.onemilegrid.com.au

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Prepared by	SF	**Reviewed by**	JS

one*mile****grid*** *operates from Wurundjeri Woiworung Country of the Kulin nation. We acknowledge and extend our appreciation to the Wurundjeri People, the Traditional Owners of the land. We pay our respects to leaders and Elders past, present and emerging for they hold the memories, the traditions, the culture, and the hopes of all Wurundjeri Peoples.*

CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

onemile**grid** has been requested by Crowther & Sadler PTY LTD to undertake a Transport Impact Assessment of the proposed residential subdivision at 385 Bullumwaal Road, Wy Yung.

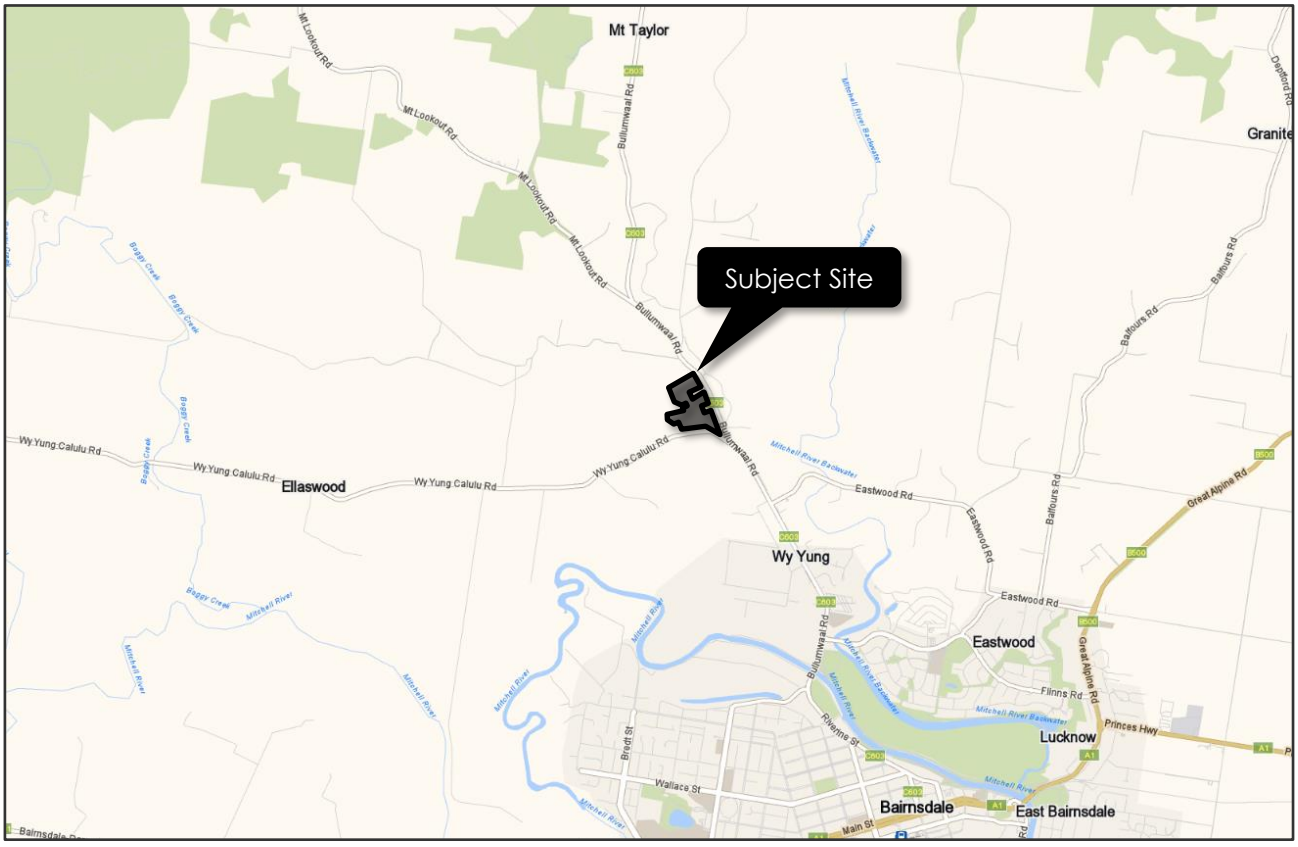
As part of this assessment the subject site has been inspected with due consideration of the development proposal, traffic data has been sourced, and relevant background information has been reviewed.

2 EXISTING CONDITIONS

2.1 Site Location

The subject site is addressed as 385 Bullumwaal Road, Wy Yung, and is located 4.1 km northwest from Bairnsdale in the northwest corner of the Bullumwaal Road / Wy Yung-Calulu Road intersection, as shown in Figure 1 below.

Figure 1 Site Location



Copyright Where Is

The site has intermitted frontages to Bullumwaal Road along the eastern boundary of the site for an accumulative length of 499 metres and Wy Yung-Calulu Road along southern boundary the site for 392 metres whilst occupying a total site area of 13.99 hectares.

The subject sire is largely vacant with no formal vehicle access points provided along either road frontage. There are two existing residential properties located along the Bullumwaal Road frontage between the north and south boundaries of the subject site.

Land use in the immediate vicinity of the site is largely low-density residential and agricultural in nature.

An aerial view of the subject site is provided in Figure 2 below, noting that the aerial for the northern portion of the site is of poor quality.

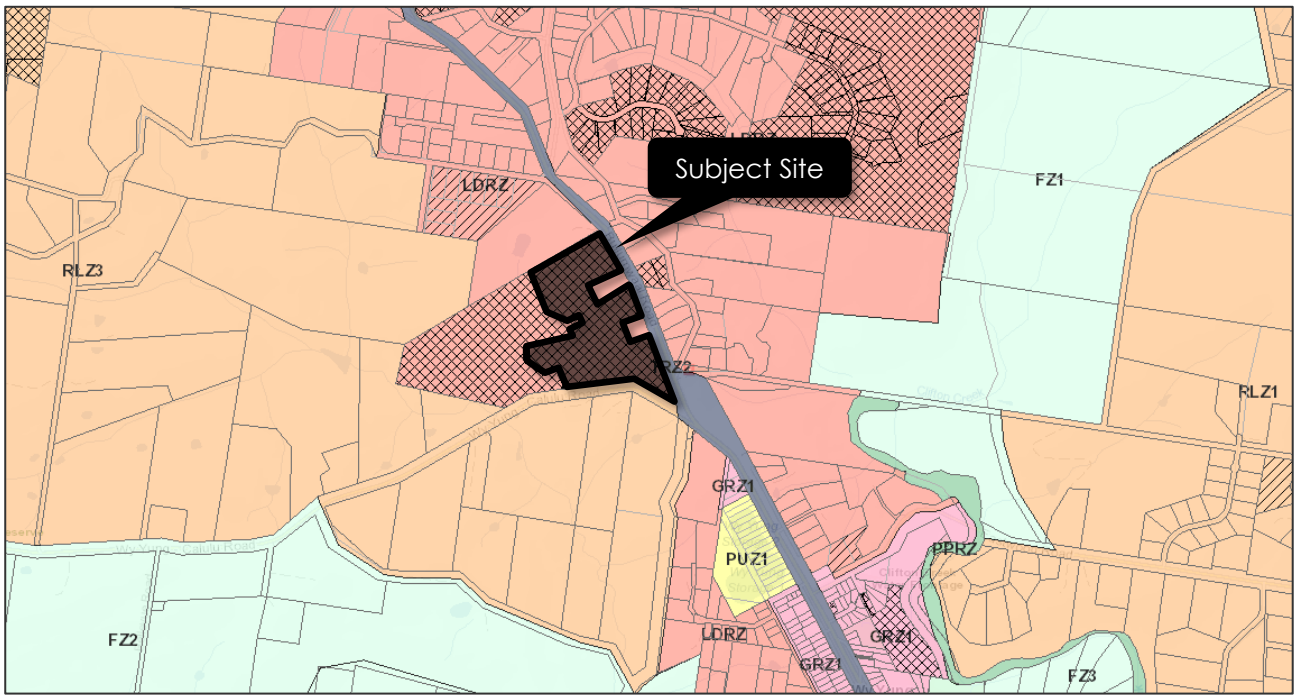
Figure 2 Site Context (Monday 12 February 2024)

Copyright Nearmap

2.2 Planning Zones and Overlays

It is shown in Figure 3 that the site is located within a Low Density Residential Zone (LDRZ) whilst intermittently abutting Bullumwaal Road, which is within a Transport Zone (TRZ2), designating the Principal Road Network.

Figure 3 Planning Scheme Zones



2.3 Road Network

2.3.1 Bullumwaal Road

Bullumwaal Road is an arterial road generally aligned north-south, which transitions into Riverine Street to the south in Bairnsdale and Mt Baldhead Road to the north in Bullumwaal.

Bullumwaal Road provides a traffic lane in each direction adjacent the site with grassed/gravelled shoulders on both sides of the road.

The default rural 100 km/h speed limit applies to Bullumwaal Road in the vicinity of the site.

The cross-section of Bullumwaal Road at the frontage of the site is shown in Figure 4 below.

Figure 4 Bullumwaal Road Cross-Section

2.3.2 Wy Yung-Calulu Road

Wy Yung-Calulu Road is a local road generally aligned east-west, running between Bullumwaal Road in the west, and Rodericks Road to the west.

Wy Yung-Calulu Road comprises a 6 m wide sealed carriageway providing a single traffic lane in each direction adjacent to the site whilst further east (near the intersection with Bullumwaal Road) transitions into a divided concreted carriageway.

The default rural 100 km/h speed limit applies to Wy Yung-Calulu Road in the vicinity of the site. Furthermore, there is a bend in the road along the site frontage that is provided 60 km/h advisory speed limit signage as well as a series of advisory chevron arrow signs (6 total) to instruct drivers to the direction of the bend.

The cross-section of Wy Yung-Calulu Road at the frontage of the site is shown in Figure 5 below.

Figure 5 Wy Yung-Calulu Road Cross-Section

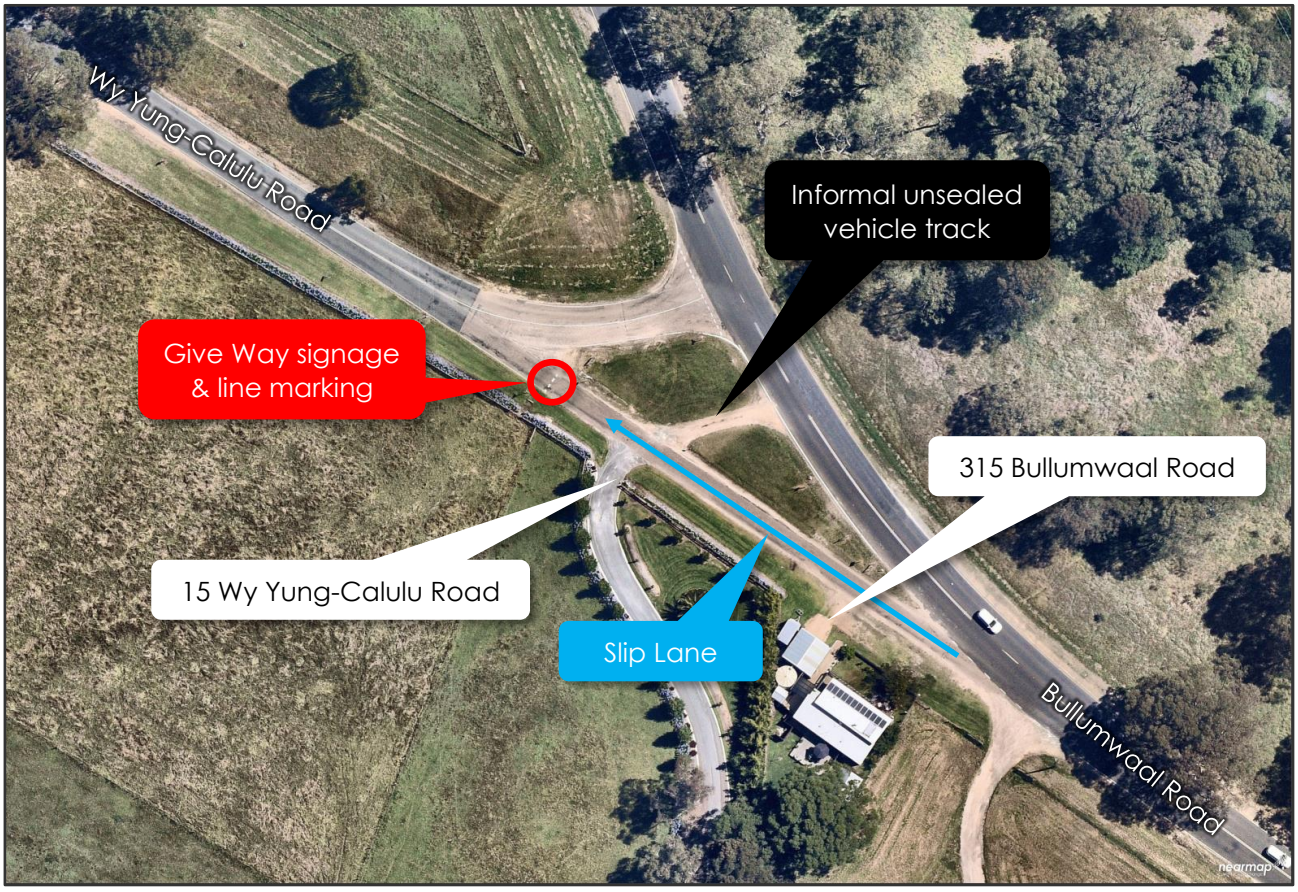
2.3.3 Bullumwaal Road / Wy Yung-Calulu Road intersection

Bullumwaal Road / Wy Yung-Calulu Road intersection is a T-intersection located on the southeast corner of the subject site, with Bullumwaal Road operating as the major road and Wy Yung-Calulu Road operating as the intersecting minor road. The southern Bullumwaal Road leg of the intersection contains a high-angle left turn slip lane to Wy Yung-Calulu Road, with site access to properties at 315 Bullumwaal Road & 15 Wy Yung-Calulu Road provided off the slip lane. The vehicles along the slip lane are required to give way to vehicles that have turned right in to Wy Yung-Calulu Road from Bullumwaal Road.

It is worth noting that an informal unseal track has formed through the grassed area between the slip lane and Bullumwaal Road, presumably as a result of vehicles departing the property at 15 Wy Yung-Calulu Road.

An aerial view of the configuration of the Bullumwaal Road / Wy Yung-Calulu Road intersection is shown in Figure 6.

Figure 6 Bullumwaal Road / Wy Yung-Calulu Road intersection



Copyright Nearmap

2.4 Traffic Volumes

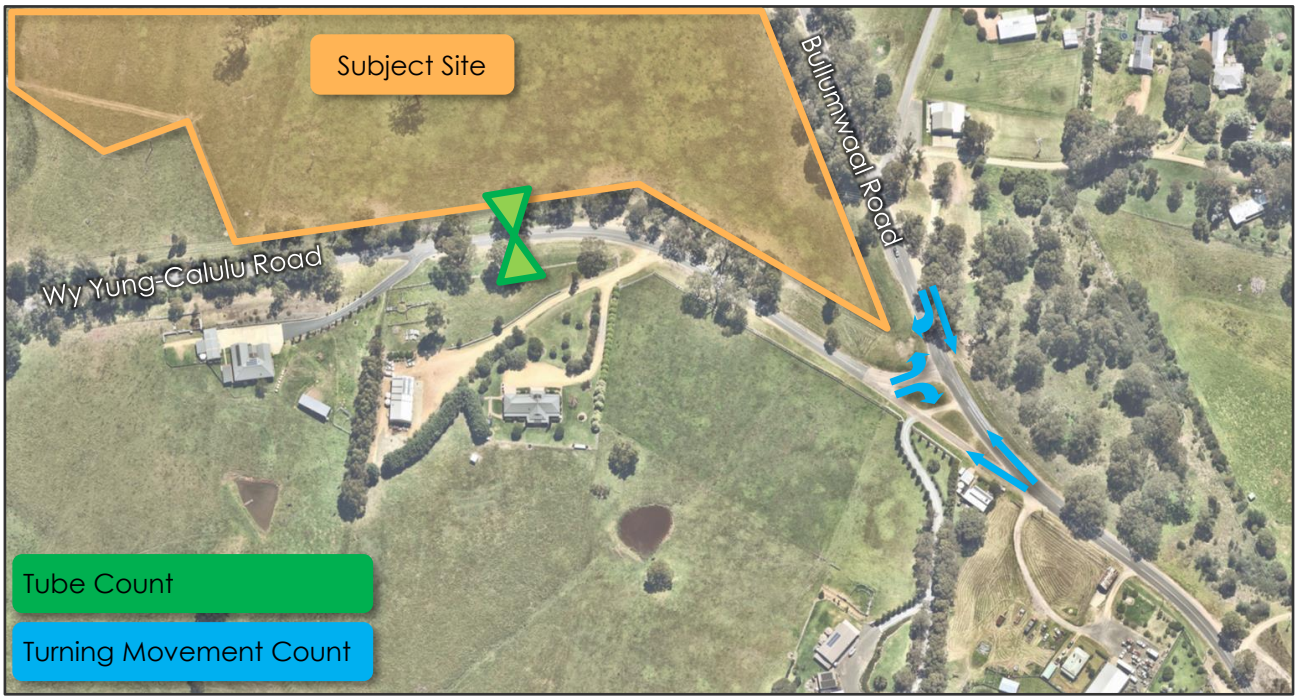
Traffic volume surveys were undertaken by Trans Traffic Survey on behalf of **one**mile**grid** at the intersection of Bullumwaal Road and Wy Yung-Calulu Road, during the following periods:

- Thursday 21st February 2024, between 6am – 10am, and 3pm – 7pm; and
- Saturday 24th February 2024, between 10am – 2pm.

In addition, traffic volume, speed and classification surveys (via tube counter) were undertaken by Trans Traffic Survey on behalf of **one**mile**grid** on Wy Yung-Calulu Road adjacent the site, for a four-day period from Wednesday 21st February 2024 to Saturday 24th February 2024 inclusive.

A view of the locations of the traffic surveys with respect to the subject site is shown in Figure 7 below.

Figure 7 Traffic Survey Locations



The peak hour turning movement results of the Wednesday and Saturday surveys are shown in Figure 8, whilst the tube count surveys results are summarised in Table 1.

Figure 8 Existing Traffic Volumes – Wed 21 Feb 2024 / Sat 24 Feb 2024

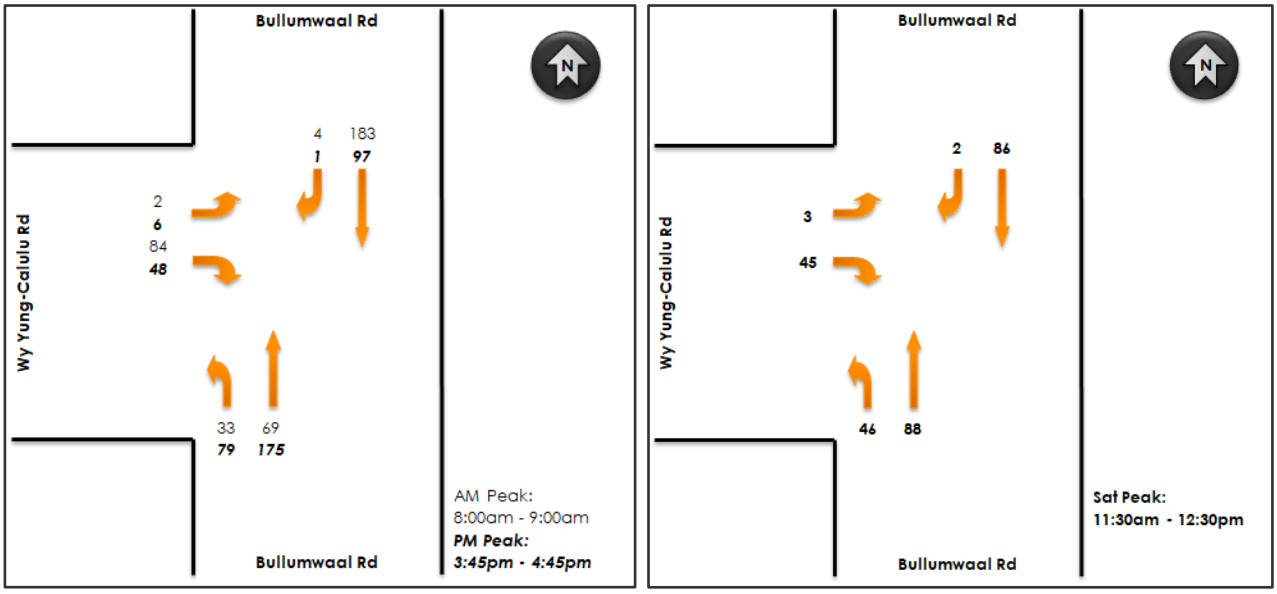


Table 1 Traffic Volume and Speed Surveys – Wy Yung-Calulu Road

Traffic Data			*Direction of Travel*		
			Both directions	*Westbound*	*Eastbound*
Traffic Volume (vpd)		Weekday Average	1,194	604	509
		7-Day Average	1,118	566	552
Peak Hour	Weekday AM	8am – 9am	120	38	82
	Weekday PM	4pm – 5pm	128	72	56
	Saturday	12pm – 1pm	92	48	44
Speed (km/h)		85th Percentile	82.0	84.8	79.9
		Average	74.7	76.9	72.8
Classification (%)		Light Vehicles up to 5.5 m	92.3%	92.2%	92.6%

To assess the current operation of the existing the Bullumwaal Road and Wy Yung-Calulu Road intersection, the intersection survey volumes shown in Figure 8 have been input into SIDRA Intersection, a traffic modelling software package.

The SIDRA Intersection software package has been developed to provide information on the capacity of an intersection with regard to a number of parameters. Those parameters considered relevant are, Degree of Saturation (DoS), 95th Percentile Queue, and Average Delay as described in Table 2.

Table 2 SIDRA Intersection Parameters

Parameter	Description
Degree of Saturation (DoS)	The DoS represents the ratio of the traffic volume making a particular movement compared to the maximum capacity for that particular movement. The value of the DoS has a corresponding rating depending on the ratio as shown below. **Degree of Saturation** / **Rating** Up to 0.60 – Excellent 0.61 – 0.70 – Very Good 0.71 – 0.80 – Good 0.81 – 0.90 – Fair 0.91 – 1.00 – Poor Above 1.00 – Very Poor It is noted that whilst the range of 0.91 – 1.00 is rated as 'poor', it is acceptable for critical movements at an intersection to be operating within this range during high peak periods, reflecting actual conditions in a significant number of suburban signalised intersections.
Average Delay (seconds)	Average delay is the time delay that can be expected for all vehicles undertaking a particular movement in seconds. This includes time taken to accelerate or decelerate, time taken to undertake the manoeuvre, and delay at a hold line or stop line.
95th Percentile (95%ile) Queue	95%ile queue represents the maximum queue length in metres that can be expected in 95% of observed queue lengths in the peak hour.

The results of the existing conditions analysis are provided in Table 3 below.

Table 3 Bullumwaal Road / Wy Yung-Calulu Road – Existing Conditions

Approach	Rating	Degree of Saturation	Avg. Delay (sec)	Queue (m)
AM Peak (8:00am – 9:00pm)				
Bullumwaal Road (S)	Excellent	0.04	2	1
Bullumwaal Road (N)	Excellent	0.11	0	0
Wy Yung-Calulu	Excellent	0.09	6	2
PM Peak (3:45pm – 4:45pm)				
Bullumwaal Road (S)	Excellent	0.10	2	2
Bullumwaal Road (N)	Excellent	0.06	0	0
Wy Yung-Calulu	Excellent	0.06	6	1
Saturday Peak (11:30am – 12:30pm)				
Bullumwaal Road (S)	Excellent	0.05	2	1
Bullumwaal Road (N)	Excellent	0.05	0	0
Wy Yung-Calulu	Excellent	0.05	6	1

As outlined above, the Bullumwaal Road and Wy Yung-Calulu Road intersection is currently operating under excellent conditions during both the morning and afternoon weekday peak hours as well as in the Saturday peak hour, with minimal queues and delays experienced by motorists.

3 DEVELOPMENT PROPOSAL

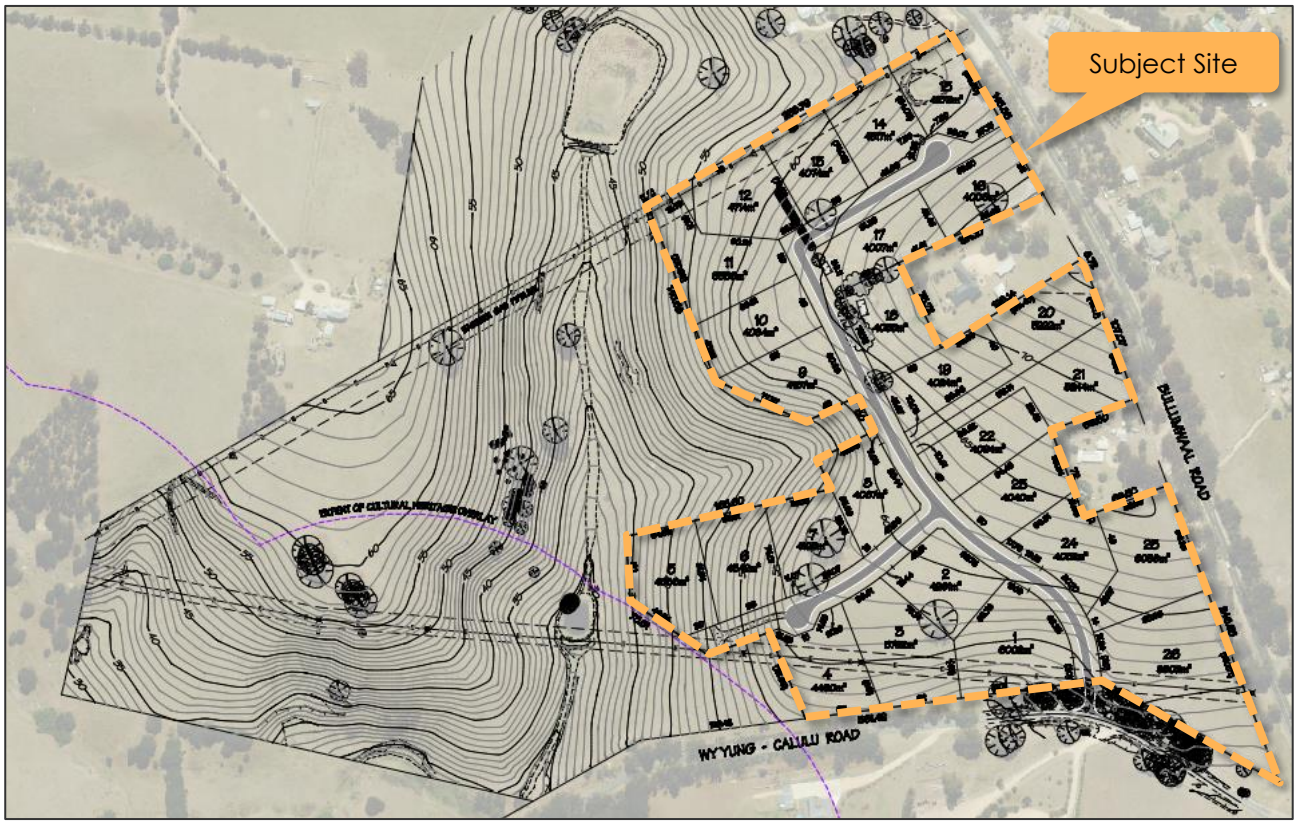
3.1 General

Based on the plans prepared by Crowther & Sadler PTY LTD (dated 16 March 2023), it is proposed to develop the subject site for the purposes of a residential subdivision comprising 26 low-density residential lots.

All lots are to be access via the proposed internal road network connecting to a single access point via Wy Yung-Calulu Road along the southern boundary of the site.

A view of the proposed residential subdivision layout is shown in Figure 9 below.

Figure 9 Proposed Residential Subdivision Layout



3.2 Internal Road Network

The residential subdivision will be serviced by a proposed internal road network consistent with that identified within the Infrastructure Design Manual (DIM).

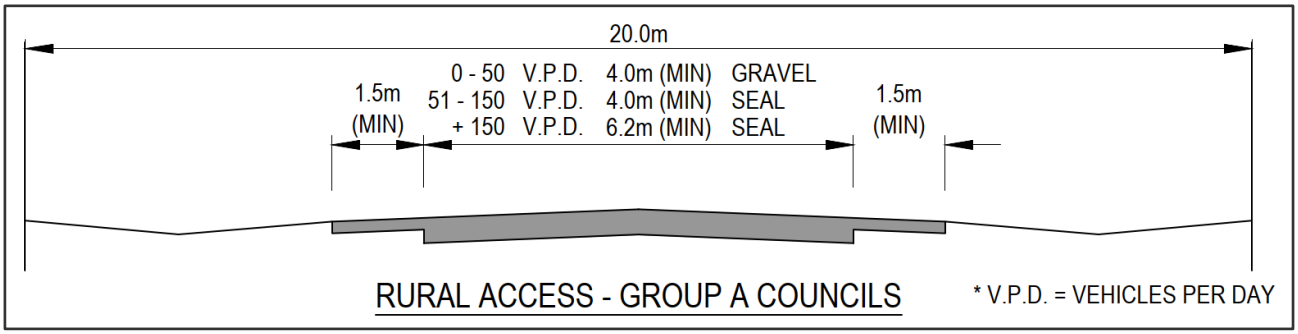
The internal road network has been designed as a 20-metre-wide Rural Access Road and is provided centrally within the residential subdivision. The internal road network terminates in two locations, to the north and to the west, and terminates in the form of a court bowl.

A shared driveway arrangement is located at the end of the western court bowl, servicing vehicle access to lots 5 and 6.

The proposed road characteristics of the 20 metre wide Rural Access Road will comprise of a 6.2 m minimum wide road seal and 1.5 metre minimum shoulder width (based on Group A Councils, which include East Gippsland Shirt Council). The court bowls are designed with a minimum road reservation of 28-metres and a radius of 10-metres in accordance with the IDM.

A view of the proposed Rural Access Road is shown in Figure 10 below.

Figure 10 Rural Access Road – IDM



3.3 Site Access

It is proposed to provide vehicle access to the site via a standard T-intersection along the southern boundary of the site via Wy Yung-Calulu Road.

A concept design for the proposed site access intersection is attached Appendix A, demonstrating the implementation of a basic left and right turn treatments. The appropriateness of the intersection location and design treatment is outlined in Section 4.3 and 5.6 respectively.

4 RESIDENTIAL SUBDIVISION DESIGN ASSESSMENT

4.1 Infrastructure Design Manual

The Infrastructure Design Manual (IDM) is a document prepared by numerous Victorian rural and regional Councils, providing a set of consistent requirements and standards for the design and development of infrastructure.

The manual provides cross-sectional requirements for rural and urban roads, with the relevant requirements to the subject site reproduced in Table 4 below.

Table 4 IDM Road Cross-Sectional Requirements – Rural Roads

Road Type	*Max. Traffic Volumes (veh/day)*	*Minimum Reserve Width*	*Minimum Seal Width*	*Minimum Shoulder Width*
Rural Living Access Road	1,000	20.0 m	6.2 m	1.5 m

The proposed road cross-sections are designed in accordance with the requirements for a Rural Living Access Road and are therefore considered to be acceptable.

4.2 Service Vehicle Turnaround

Court bowls at the end of the two dead-ends within the subdivision have been designed with a 10 metre-radius, in accordance with the IDM standards to ensure waste collection and emergency services vehicles can turn around and are considered acceptable.

4.3 Site Access – Sight Distance Assessment

4.3.1 General

The *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* includes requirements for the Safe Intersection Sight Distance (SISD) which is the minimum sight distance which should be provided on the major road to any intersection, and the Minimum Gap Sight Distance (MGSD) which is the minimum sight distance that allows vehicles sufficient time to execute crossing or turning manoeuvres at any intersection.

Whilst the speed limit of Wy Yung-Calulu Road is technically 100 km/h, there are several factors to consider when determining the design speed to be utilised for the sight distance assessment.

Firstly, the location of the proposed site access road is within a bend along Wy Yung-Calulu Road which is provides advisory signage for 60 km/h. As such, it is not expected that vehicles would be traveling at or near the default speed limit of 100 km/h when approaching the proposed access road location in either direction.

Secondly, the position of the nearby intersection with Bullumwaal Road (approx. 200 m east) means that vehicles have a limited opportunity to reach the default speed limit at the proposed site access road when travelling west and are likely to be slowing down as they approach the intersection when travelling east.

Lastly, as outlined in Section 2.4, current speed surveys (February 2024) reveal that the average and 85th percentile speed of vehicles travelling in both directions along Wy Yung-Calulu Road at the proposed site access road location was 74.7 and 82.0 km/h respectively – far below the default speed limit of 100 km/h.

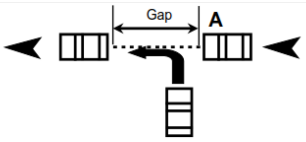
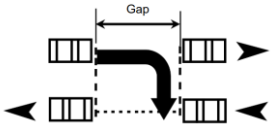
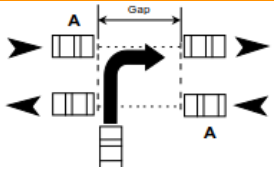
To align with the recorded speed limits at the proposed site access road location, sight distance requirements will be undertaken for an 80km/h design speed.

The SISD for 80km/h design speed is listed within *Table 3.2 of Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* as 181 metres (2 second reaction time). The SISD provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road (subject site access) moving into a collision situation and to decelerate to a stop before reaching the collision point. For comparative purposes, the SISD for a 70km/h road is 151 metres (2 second reaction time).

The MGSD provides sufficient critical acceptance gap times for drivers to execute various manoeuvres into, from and across various through carriageway widths for both one-way and two-way traffic.

The critical acceptance gaps and follow-up head ways (that inform the MGSD) are listed within *Table 3.4 of Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* reproduced below in Table 5.

Table 5 Critical Acceptance Gaps and Follow-Up Headways

Movement	*Diagram*	*Description*	T_a	T_f
Left-hand turn out		Not interfering with A Requiring A to slow	14-40 sec 5 sec	2-3 sec 2-3 sec
Right-hand turn in		Across one lane	4 sec	2 sec
Right-hand turn out		Across one lane	5 sec	3 sec

Note: t_a = critical acceptance gap and t_f = follow up headway

For the left-turn and right-turn manoeuvre out of the site, the site access requires a MGSD of 111 metres in both directions, whilst the right turn into the site requires 89 metres based on an 85th percentile speed of 80km/h.

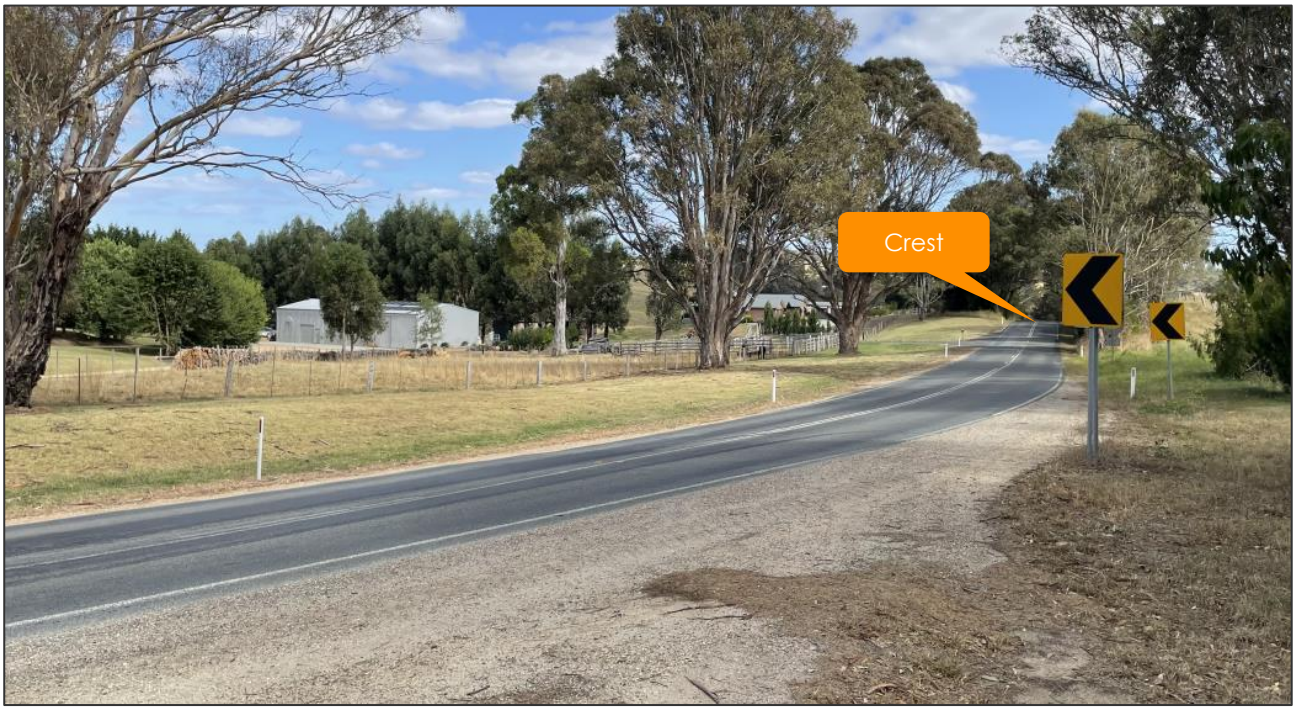
4.3.2 Site Inspection

onemile**grid** undertook a site inspection on Monday 20 March 2023 to assess the sight distance at the proposed site access road location along Wy Yung-Calulu Road.

To provide context, photos from the site inspection are provided in Figure 11 and Figure 12 below. The photos were taken looking east and west along Wy Yung-Calulu Road at the proposed site access road location respectively.

Figure 11 Looking East from Proposed Site Access Road

Figure 12 Looking West from Proposed Site Access Road

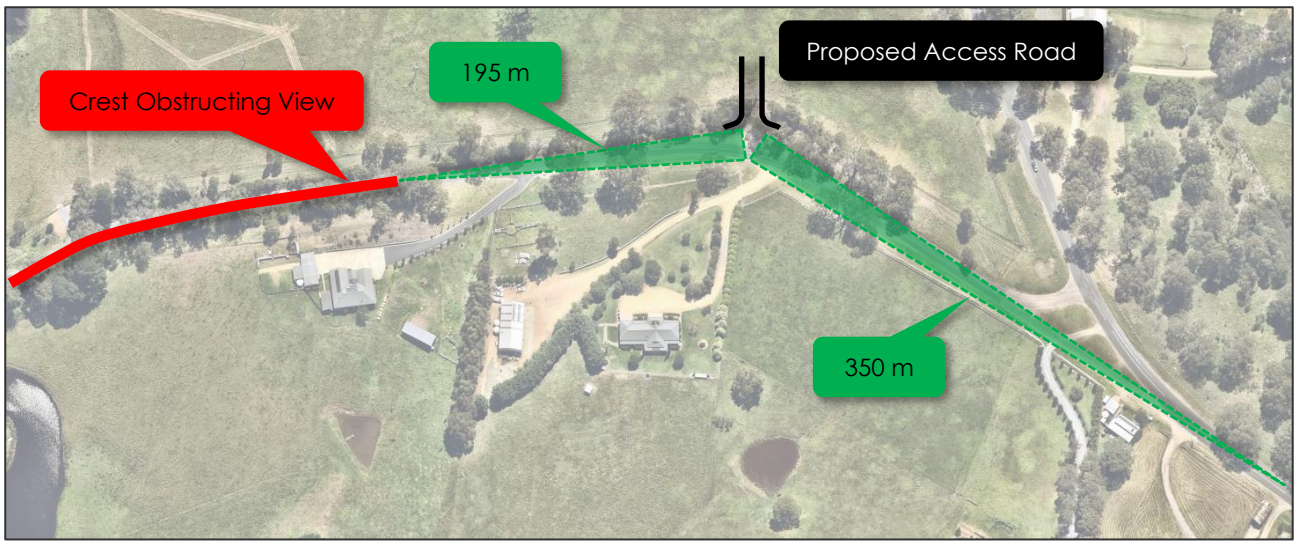


As shown in Figure 11 above, the east sight lines are generally unimpeded by crests, dips or bends in the road, with Bullumwaal Road heading south visible from the proposed site access road location. However, Figure 12 shows that the west sight lines are limited by a crest along the Wy Yung-Calulu Road.

The site inspection also revealed that the proposed location for the access road, being at the centre of the bend in Wy Yung-Calulu Road, was the best location to ensure the maximum sight distance was achieved in both directions.

The available site distance is indicated demonstrated in Figure 13, with the obstruction of the crest to the west also demonstrated.

Figure 13 Available Sight Distance



As shown above, sight distances in both directions for both access options are in excess of 181m – the Austroads SISD for 80km/h design speed (2 second reaction time). Therefore, based on the assessment above, it is considered there is satisfactory sight distance for an access road to be provided at the proposed location.

5 TRAFFIC

5.1 Traffic Generation

Surveys undertaken by **one**mile**grid** and other traffic engineering firms at residential dwellings have shown that the daily traffic generation rates vary depending on the size, location and type of the dwelling, the parking provision and proximity to local facilities and public transport.

It is generally accepted that single dwellings on a lot in outer suburban areas may generate traffic at up to 10 vehicle trips per day, whilst in areas with good public transport, and for higher density dwellings, lower traffic generation rates are often recorded.

Considering the size of the lots proposed, and the relative lack of alternative public transport options and other services, it is anticipated that the proposed development may generate up to 10 vehicle trips per lot per day, with 10% of trips occurring during the peak hours.

Application of the traffic generation rates above to the proposed 26 residential lots, it is expected the subject site will generate in the order of approximately 260 vehicle trips per day, inclusive of the 26 vehicles trips generated in the morning, afternoon and Saturday peak hours.

Traffic volumes generated by residential developments are typically in nature. The majority of movements AM peak hour occur in the outbound direction, the majority of movements in the PM peak hour occurring in the inbound direction and generally evenly split between inbound and outbound movements occurring during the Saturday peak hour.

For the purposes of this assessment, the following directional splits will be adopted:

- Weekday AM peak hour 30% inbound / 70% outbound
- Weekday PM peak hour 60% inbound / 40% outbound
- Saturday peak hour 50% inbound / 50% outbound

Based on the above adopted traffic generation rates and directional splits, the anticipated traffic generated by the proposed residential subdivision is detailed in Table 6 below.

Table 6 Anticipated Traffic Generation

Period	*Inbound*	*Outbound*	*Total*
Weekday AM Peak Hour	8	18	26
Weekday PM Peak Hour	16	10	26
Saturday Peak Hour	13	13	26
Daily	**130**	**130**	**260**

5.2 Traffic Distribution

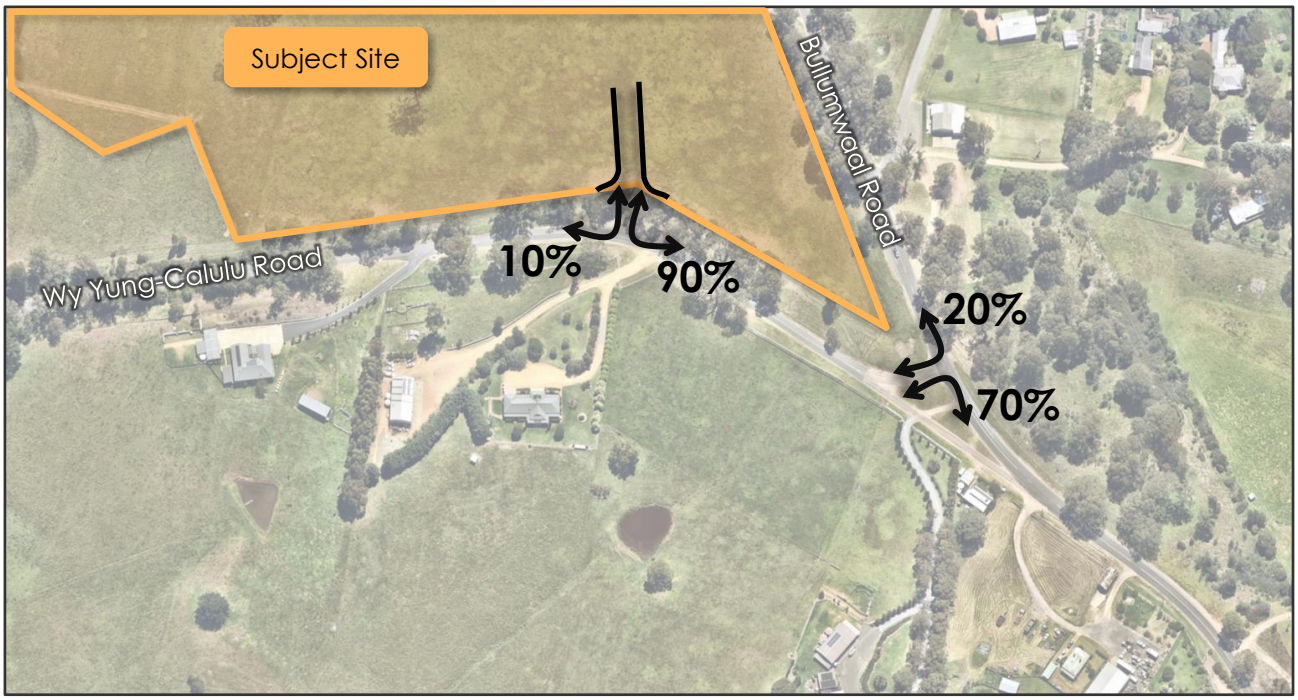
Having regard to the site's locality, it is not anticipated that many vehicles will arrive and/or depart the site to the west. For the purposes of a conservative assessment, it is assumed that 90% of vehicles will access the site in the peak hour from the east via the Bullumwaal Road / Wy Yung & Bairnsdale intersection whilst the remaining 10% will originate via the west.

Further to the above, based on the exisitng traffic volumes at the Wy Yung-Calulu Road / Bullumwaal Road intersection as well as general surrounding destinations, it is anticipated that the 90% of traffic accessing the site to the east will be split into the following:

- 70% will be from the south (towards Wy Yung & Bairnsdale); and
- 20% will be from the north (towards Mt Taylor).

Based on the above, the ultimate anticipated traffic distribution via the subject site is shown in Figure 14 below.

Figure 14 Traffic Distribution



5.3 Generated Traffic Volumes

Based on the above, the following traffic volumes shown in Figure 15 and Figure 16 are expected to be generated by the proposed development at the proposed site access intersection and Bullumwaal Road / Wy Yung-Calulu Road intersection for both weekday peak periods and Saturday peak hour respectively.

Figure 15 Generated Traffic Volumes (Weekday Peak Periods)

Figure 16 Generated Traffic Volumes (Saturday Peak Period)

5.4 Resultant Future Traffic Volumes

Based on the above, the future intersection volumes at the site access intersection and Bullumwaal Road / Wy Yung-Calulu Road can be calculated by combining the existing traffic volumes and the traffic volumes anticipated to be generated by the proposed development.

The resultant weekday peak periods and Saturday peak hour are shown in Figure 17 and Figure 18 respectively.

Figure 17 Future Traffic Volumes (Weekday Peak Periods)

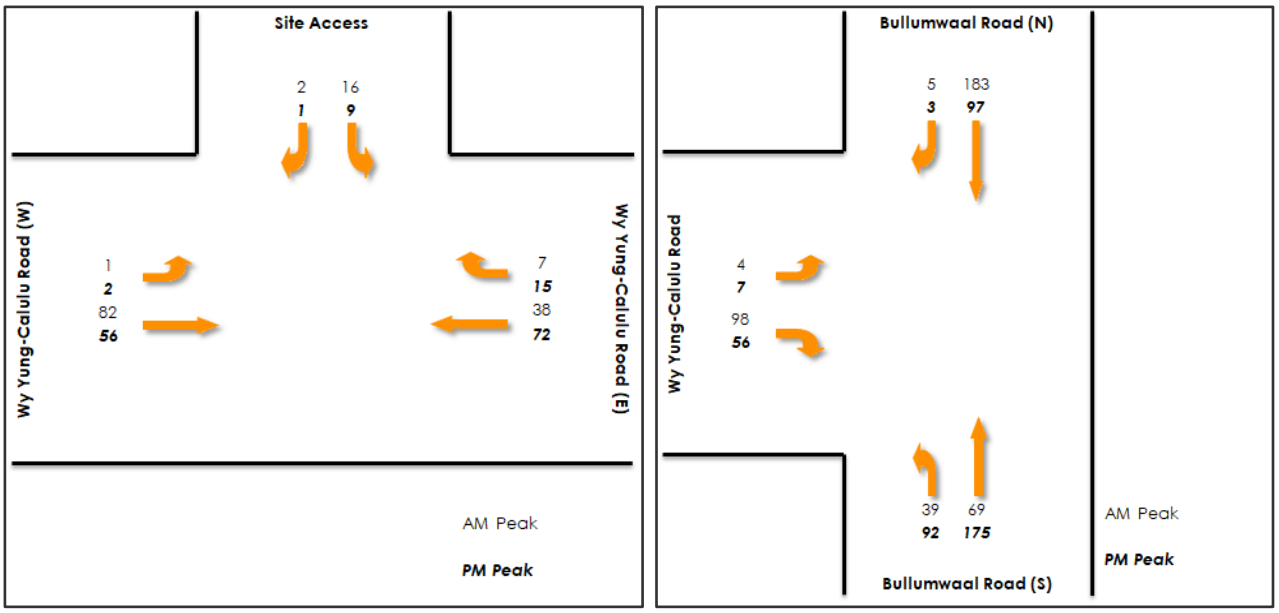


Figure 18 Future Traffic Volumes (Saturday Peak Period)

5.5 Traffic Impact

Reviewing the volumes above, it is noted that a maximum of 26 vehicle movements per hour are expected for the site access road, equivalent to one vehicle trip every two minutes. Even when focussed into one access point, the traffic volumes generated by the proposed development are very low and are expected to be easily absorbed into the surrounding road network.

Regardless, to assess the future operation of the Bullumwaal Road and Wy Yung-Calulu Road intersection, the traffic volumes have been input into SIDRA Intersection.

A comparison of the analysis between the existing and post development conditions is provided in Table 7 below.

Table 7 Bullumwaal Rd / Wy Yung-Calulu Rd – Existing / Post Development Conditions

Approach	Existing Conditions				Post Development Conidiations			
	Rating	DoS	Avg. Delay (sec)	Queue (m)	Rating	DoS	Avg. Delay (sec)	Queue (m)
AM Peak (8:00am – 9:00pm)								
Bullumwaal Road (S)	Excellent	0.04	2	1	Excellent	0.04	2	1
Bullumwaal Road (N)	Excellent	0.11	0	0	Excellent	0.11	0	0
Wy Yung-Calulu	Excellent	0.09	6	2	Excellent	0.11	6	3
PM Peak (3:45pm – 4:45pm)								
Bullumwaal Road (S)	Excellent	0.10	2	2	Excellent	0.10	2	2
Bullumwaal Road (N)	Excellent	0.06	0	0	Excellent	0.06	0	0
Wy Yung-Calulu	Excellent	0.06	6	1	Excellent	0.07	6	2
SAT Peak (11:30am – 12:30pm)								
Bullumwaal Road (S)	Excellent	0.05	2	1	Excellent	0.05	2	1
Bullumwaal Road (N)	Excellent	0.05	0	0	Excellent	0.05	0	0
Wy Yung-Calulu	Excellent	0.05	6	1	Excellent	0.06	6	1

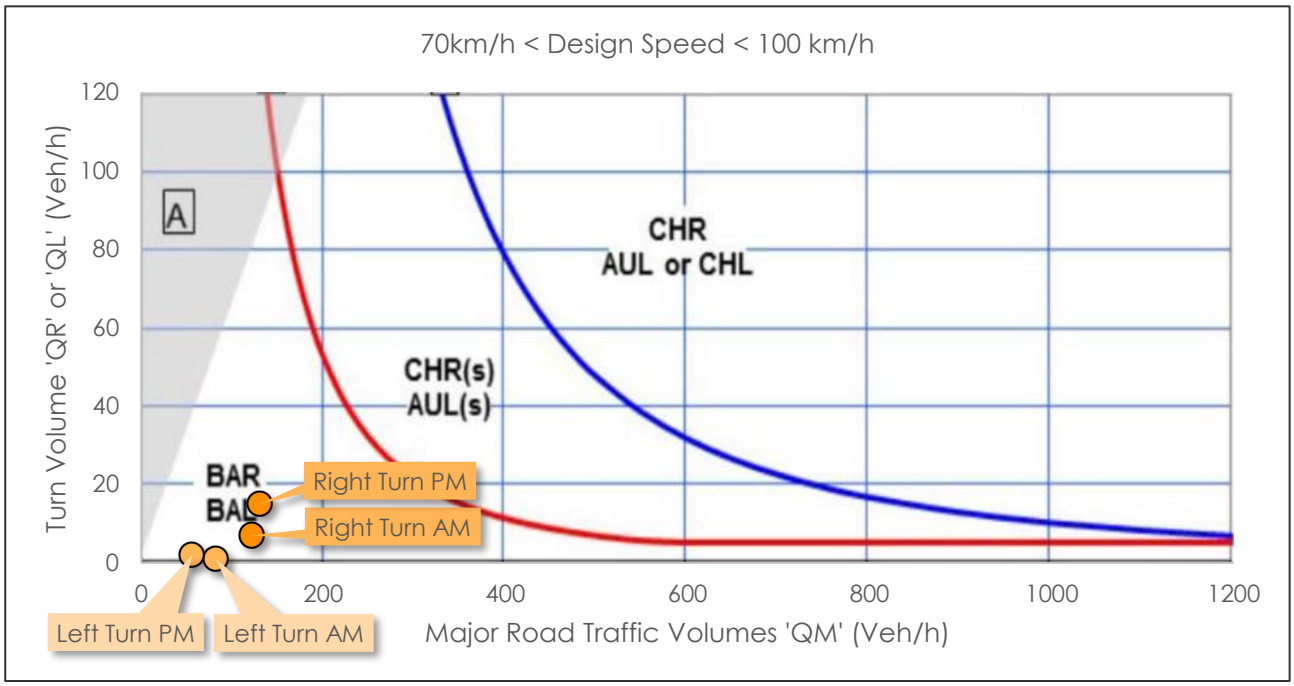
As shown above, the Bullumwaal Road and Wy Yung-Calulu Road intersection will continue to operate under excellent conditions post-development of the subject site during both the morning and afternoon weekday peak hours and also the Saturday peak period, with minimal queues and delays experienced by motorists.

5.6 Site Access – Austroads Turn Lane Warrants

In determining an appropriate intersection configuration, the anticipated post-development peak hour volumes were assessed against the turn lane treatment warrants specified in the *Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings*.

As detailed in Section 4.3, an assessment based on a design speed limit of 80 km/h will also be adopted for the following turn lane warrant assessment. Therefore, based on the anticipated post-development traffic volumes (as shown in Section 5.4) and the adopted design speed of 80 km/h, the turn lane requirements for the site access and Wy Yung-Calulu Road intersection for the weekday peak periods (worst case scenario) is demonstrated in Figure 19 below.

Figure 19 Austroads Turn Treatment Warrant

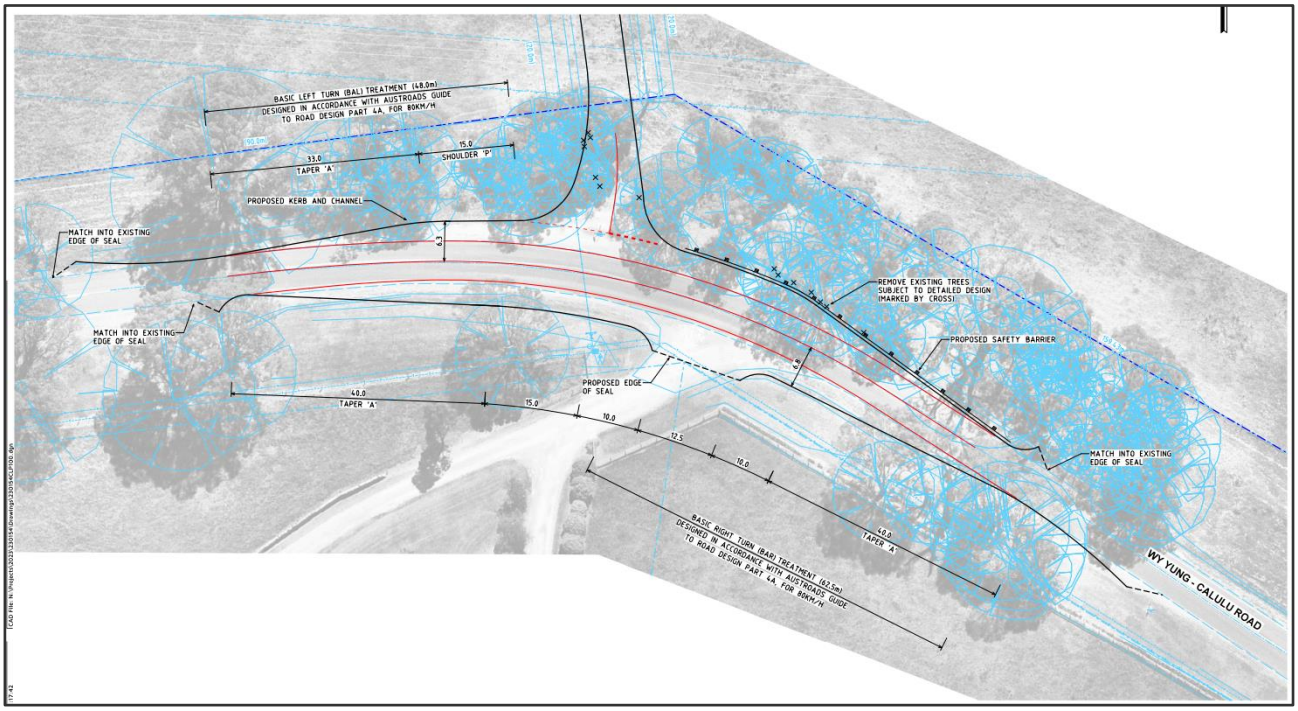


As identified in the figure above, the anticipated turning movements at the site access indicate that a basic left turn treatment (BAL) and a basic right turn treatment (BAR) would be required.

onemile**grid** have prepared a Concept Layout Plan in accordance with *Austroads Guide to Road Design Part 4A* of a basic left turn lane treatment (BAL) and a basic right turn lane treatment.

A view of the proposed site access intersection and associated turn lane treatments implemented is provided in Figure 20 below.

Figure 20 Site Access / Wy Yung-Calulu Road Intersection



In addition to the proposed turn lane treatments, safety barriers are to be provide along the northern side of Wy Yung-Calulu Road to the east of the access intersection.

The concept layout plan and the associated swept path diagrams are provided in Appendix A and Appendix B respectively.

6 CONCLUSIONS

it is proposed to develop the eastern subject site for the purposes of a residential subdivision comprising 26 low-density residential lots.

Considering the analysis presented above, it is concluded that:

- The majority of the subdivision road network has been designed in accordance with Infrastructure Design Manual and is considered appropriate;
- The anticipated traffic volumes generated by the proposed development is not expected to have an impact on the operation of the Bullumwaal Road / Wy Yung-Calulu Road intersection and the surrounding road;
- A Concept Layout Plan has been prepared by **one**mile**grid** demonstrating the introduction of a basic right turn lane treatment and left turn lane treatment for the proposed site access intersection with Wy Yung-Calulu Road; and
- There are no traffic engineering reasons which would preclude a permit from being issued for this proposal.

Appendix A Concept Layout Plan – Site Access

N

BASIC LEFT TURN (BAL) TREATMENT (48.0m)
DESIGNED IN ACCORDANCE WITH AUSTROADS GUIDE
TO ROAD DESIGN PART 4A, FOR 80KM/H

(90.0m)

33.0
TAPER 'A'

15.0
SHOULDER 'P'

PROPOSED KERB AND CHANNEL

MATCH INTO EXISTING
EDGE OF SEAL

6.3

MATCH INTO EXISTING
EDGE OF SEAL

40.0
TAPER 'A'

15.0

10.0

12.5

10.0

40.0
TAPER 'A'

BASIC RIGHT TURN (BAR) TREATMENT (62.5m)
DESIGNED IN ACCORDANCE WITH AUSTROADS GUIDE
TO ROAD DESIGN PART 4A, FOR 80KM/H

PROPOSED EDGE
OF SEAL

6.8

REMOVE EXISTING TREES
SUBJECT TO DETAILED DESIGN
(MARKED BY CROSS)

PROPOSED SAFETY BARRIER

MATCH INTO EXISTING
EDGE OF SEAL

WY YUNG - CALULU ROAD

CAD File: N:\Projects\2023\23015A\Drawings\230154CLP100.dgn

Date Plotted: 12-03-2024 11:17:42

onemilegrid operates from Wurundjeri Woiwurung Country of the Kulin nation.
We acknowledge and extend our appreciation to the Wurundjeri People, the Traditional Owners of the land.
We pay our respects to leaders and Elders past, present and emerging for they hold the memories,
the traditions, the culture, and the hopes of all Wurundjeri Peoples.

Aerial Photography
Aerial photography provided by Nearmap

onemilegrid
Wurundjeri Woiwurung Country
56 Down Street, Collingwood, VIC 3066
Email:info@onemilegrid.com.au Web:www.onemilegrid.com.au
Phone (03) 9939 8250

Scale
1:500 @ A3
0 2.5 5 10

Drawing Title
385 BULLUMWAAL ROAD, WY YUNG
BASIC RIGHT AND LEFT TURN LANE
CONCEPT LAYOUT PLAN

Designed	Approved	Melway Ref
JPB	SF	NA

Project Number	Drawing Number	Revision
230154	CLP100	A

Appendix B Swept Path Assessment – Site Access

N

BASIC LEFT TURN (BAL) TREATMENT (48.0m)
DESIGNED IN ACCORDANCE WITH AUSTROADS GUIDE
TO ROAD DESIGN PART 4A, FOR 80KM/H

33.0
TAPER 'A'

15.0
SHOULDER 'P'

(90.0m)

(20.0m)

PROPOSED KERB AND CHANNEL

MATCH INTO EXISTING
EDGE OF SEAL

6.3

SU TRUCK
AUSTROADS 2013 (AU)

REMOVE EXISTING TREES
SUBJECT TO DETAILED DESIGN
(MARKED BY CROSS)

PROPOSED SAFETY BARRIER

6.8

MATCH INTO EXISTING
EDGE OF SEAL

PROPOSED EDGE
OF SEAL

40.0
TAPER 'A'

15.0

10.0

12.5

10.0

40.0
TAPER 'A'

BASIC RIGHT TURN (BAR) TREATMENT (62.5m)
DESIGNED IN ACCORDANCE WITH AUSTROADS GUIDE
TO ROAD DESIGN PART 4A, FOR 80KM/H

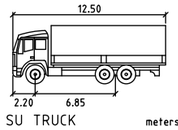
WY YUNG - CALULU ROAD

CAD File: N:\Projects\2023\23015A\Drawings\230154SPA100.dgn

Date Plotted: 25-03-20249:36:17 AM

SWEPT PATH LEGEND

- — — — — DESIGN VEHICLE SWEPT PATHS SHOWN DASHED
- - - - - - - - 300mm CLEARANCE ENVELOPE SHOWN DOTTED



SU TRUCK	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

onemilegrid
Wurundjeri Woiworung Country
56 Down Street, Collingwood, VIC 3066
Email:info@onemilegrid.com.au Web:www.onemilegrid.com.au
Phone (03) 9939 8250

Scale 1:500 @ A3 (0, 2.5, 5, 10)

Drawing Title
385 BULLUMWAAL ROAD, WY YUNG
VEHICLE SITE ACCESS
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
JPB	SF	NA

Project Number	Drawing Number	Revision
230154	SPA100	A

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We acknowledge and extend our appreciation to the Wurundjeri People, the Traditional Owners of the land.
We pay our respects to leaders and Elders past, present and emerging for they hold the memories, the traditions, the culture, and the hopes of all Wurundjeri Peoples.*

Aerial Photography
Aerial photography provided by Nearmap

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 17/04/2024 01:25 **Report ID: 23814**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.075	0.54	5	CMA	East Gippsland

Details of available native vegetation credits on 17 April 2024 01:25

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-2323	6.019	86	East Gippsland	East Gippsland Shire	Yes	Yes	No	Bio Offsets, Ethos, VegLink
BBA-2843	15.103	903	East Gippsland	East Gippsland Shire	Yes	Yes	No	VegLink
VC_CFL-3720_01	1.876	244	East Gippsland	East Gippsland Shire	Yes	Yes	No	Contact NVOR
VC_CFL-3767_01	21.920	1600	East Gippsland	East Gippsland Shire	Yes	Yes	No	Ethos, VegLink

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no potential sites listed in the Native Vegetation Credit Register that meet your offset requirements.

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@delwp.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

For more information contact the DEECA Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

Native Vegetation Removal Report

NVRR ID: 319_20240417_WYX

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines). This report **is not an assessment by DEECA** of the proposed native vegetation removal. Offset requirements have been calculated using modelled condition scores.

Report details

Date created: 17/04/2024

Local Government Area: EAST GIPPSLAND SHIRE

Registered Aboriginal Party: Gunaikurnai

Coordinates: 147.60649, -37.79338

Address: 385 BULLUMWAAL ROAD WY YUNG 3875

Summary of native vegetation to be removed

Assessment pathway	**Intermediate Assessment Pathway**		
Location category	**Location 1** The native vegetation extent map indicates that this area is not typically characterised as supporting native vegetation. It does not meet the criteria to be classified as Location Category 2 or 3. The removal of less than 0.5 hectares of native vegetation in this area will not require a Species Offset.		
Total extent including past and proposed removal (ha) *Includes endangered EVCs (ha): 0*	**0.217**	*Extent of past removal (ha)*	*0*
		Extent of proposed removal - Patches (ha)	*0.059*
		Extent of proposed removal - Scattered Trees (ha)	*0.159*
No. Large Trees proposed to be removed	**5**	*No. Large Patch Trees*	*2*
		No. Large Scattered Trees	*3*
No. Small Scattered Trees	0		

Offset requirements if approval is granted

Any approval granted will include a condition to secure an offset, before the removal of native vegetation, that meets the following requirements:

General Offset amount [1]	**0.075 General Habitat Units**
Minimum strategic biodiversity value score [2]	0.54
Large Trees	5
Vicinity	East Gippsland CMA or EAST GIPPSLAND SHIRE LGA

NB: values within tables in this document may not add to the totals shown above due to rounding

The availability of third-party offset credits can be checked using the Native Vegetation Credit Register (NVCR) Search Tool - https://nvcr.delwp.vic.gov.au

1. The General Offset amount required is the sum of all General Habitat Units in Appendix 1.
2. Minimum strategic biodiversity value score is 80 per cent of the weighted average score across habitat zones where a General Offset is required.

Application requirements

Applications to remove, destroy or lop native vegetation must include all the below information. If an appropriate response has not been provided the application is not complete.

Application Requirement 1 - Native vegetation removal information

If the native vegetation removal is mapped correctly, the information presented in this Native Vegetation Removal Report addresses Application Requirement 1.

Application Requirement 2 - Topographical and land information

This statement describes the topographical and land features in the vicinity of the proposed works, including the location and extent of any ridges, hilltops, wetlands and waterways, slopes of more than 20% gradient, low-lying areas, saline discharge areas or areas of erosion.

Application Requirement 3 - Photographs of the native vegetation to be removed

Application Requirement 3 is not addressed in this Native Vegetation Removal Report. All applications must include recent, timestamped photos of each Patch, Large Patch Tree and Scattered Tree which has been mapped in this report.

Application Requirement 4 - Past removal

If past removal has been considered correctly, the information presented in this Native Vegetation Removal Report addresses Application Requirement 4.

Application Requirement 5 - Avoid and minimise statement

This statement describes what has been done to avoid and minimise impacts on native vegetation and associated biodiversity values.

Application Requirement 6 - Property Vegetation Plan

This requirement only applies if an approved Property Vegetation Plan (PVP) applies to the property
Does a PVP apply to the proposal?

Application Requirement 7 - Defendable space statement

Where the removal of native vegetation is to create defendable space, this statement:

- Describes the bushfire threat; and

- Describes how other bushfire risk mitigation measures were considered to reduce the amount of native vegetation proposed for removal (this can also be part of the avoid and minimise statement).

This statement is not required if, the proposed defendable space is within the Bushfire Management Overlay (BMO), and in accordance with the 'Exemption to create defendable space for a dwelling under Clause 44.06 of local planning schemes' in Clause 52.12-5.

Application Requirement 8 - Native Vegetation Precinct Plan

This requirement is only applicable if you are removing native vegetation from within an area covered by a Native Vegetation Precinct Plan (NVPP), and the proposed removal is not identified as 'to be removed' within the NVPP.
Does an NVPP apply to the proposal?

Application Requirement 9 - Offset statement

This statement demonstrates that an offset is available and describes how the required offset will be secured. The Applicant's Guide provides information relating to this requirement.

Next steps

Applications to remove, destroy or lop native vegetation must address all the application requirements specified in the Guidelines. If you wish to remove the mapped native vegetation you are required to apply for approval from the responsible authority (e.g. local Council). This Native vegetation removal report must be submitted with your application and meets most of the application requirements. The following requirements need to be addressed, as applicable.

Application Requirement 3 - Photographs of the native vegetation to be removed

Recent, dated photographs of the native vegetation to be removed **must be provided** with the application. All photographs must be clear, show whether the vegetation is a Patch of native vegetation, Patch Tree or Scattered Tree, and identify any Large Trees. If the area of native vegetation to be removed is large, provide photos that are indicative of the native vegetation.

Ensure photographs are attached to the application. If appropriate photographs have not been provided the application is not complete.

Application Requirement 6 - Property Vegetation Plan

If a PVP is applicable, it must be provided with the application.

Appendix 1: Description of native vegetation to be removed

General Habitat Units for each zone (Patch, Scattered Tree or Patch Tree) are calculated by the following equation in accordance with the Guidelines.

General Habitat Units = extent without overlap x condition score x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The General Offset amount required is the sum of all General Habitat Units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant			Information calculated by NVR Map							
Zone	**Type**	**DBH (cm)**	**EVC code (modelled)**	**Bioregional conservation status**	**Large Tree(s)**	**Condition score (modelled)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**General Habitat Units**
1	Patch	-	GipP0151	Vulnerable	2	0.473	0.059	0.059	0.543	0.032
B	Scattered Tree	300	EGL_0877	Depleted	1	0.200	0.070	0.044	0.828	0.012
G	Scattered Tree	300	GipP0151	Vulnerable	1	0.200	0.070	0.070	0.770	0.019
M	Scattered Tree	300	EGL_0877	Depleted	1	0.200	0.070	0.044	0.547	0.010

Appendix 2: Images of mapped native vegetation

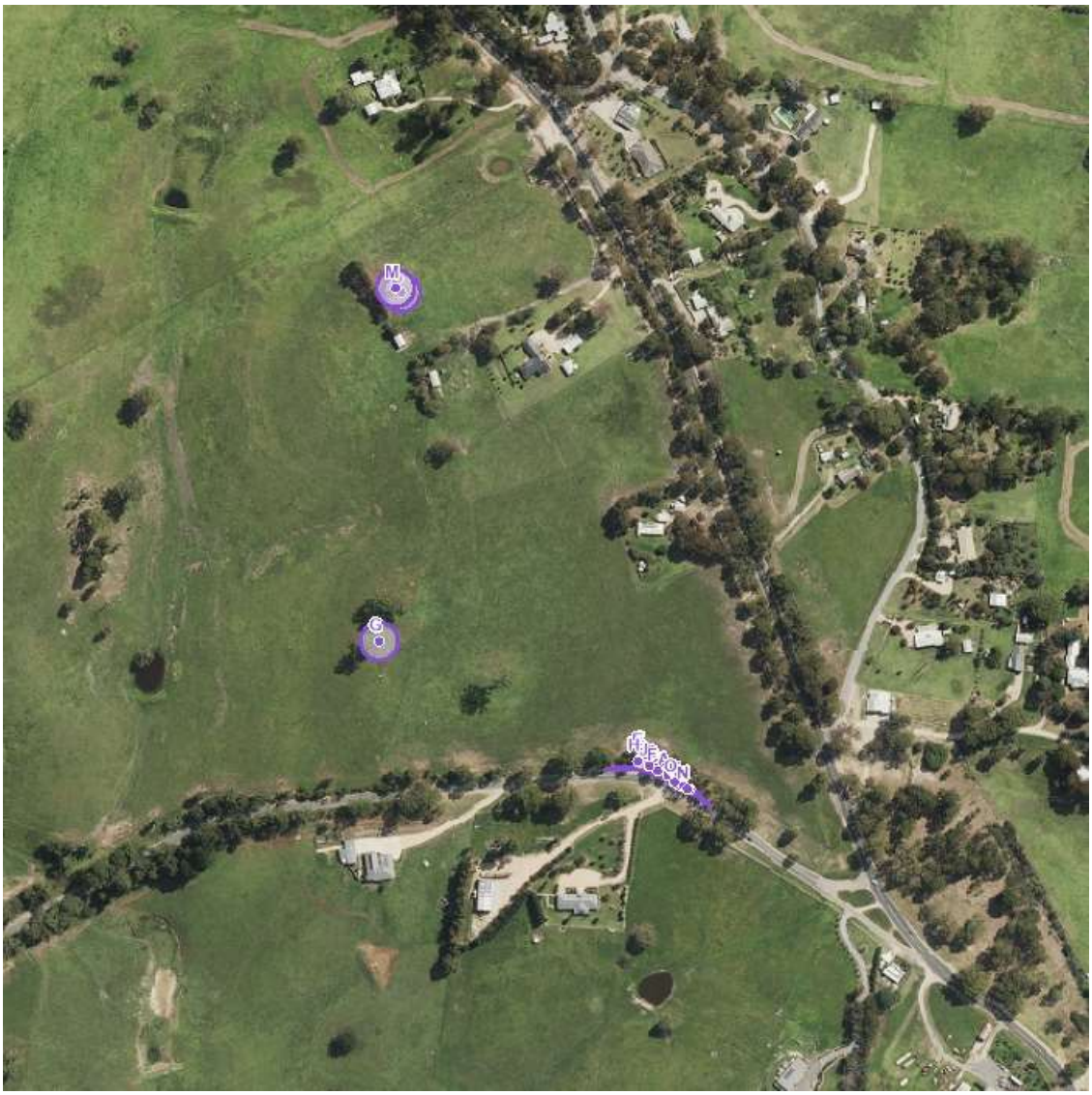
1. Property in context

Proposed Removal
Property Boundaries

N

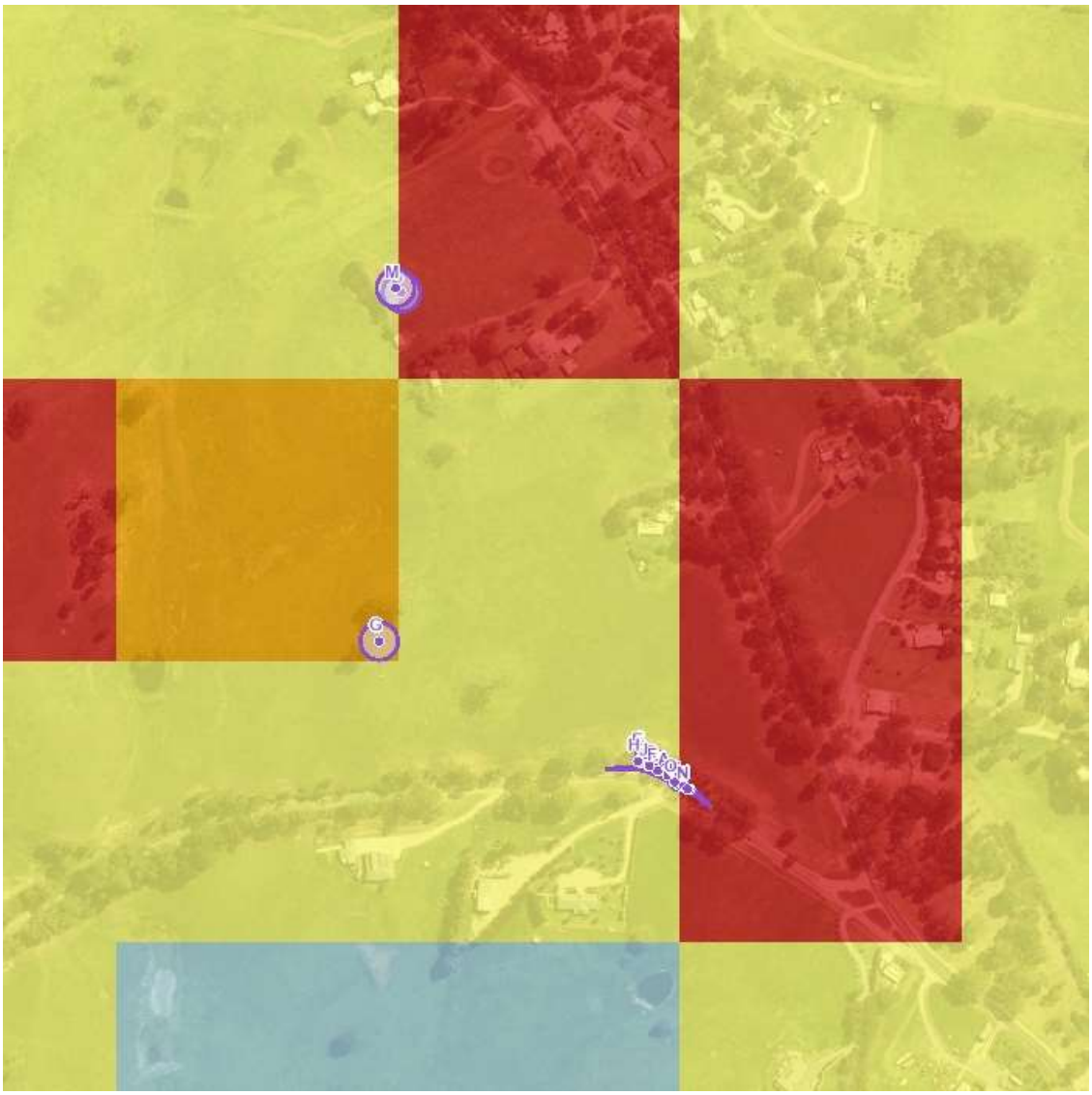
250 m

2. Aerial photograph showing mapped native vegetation

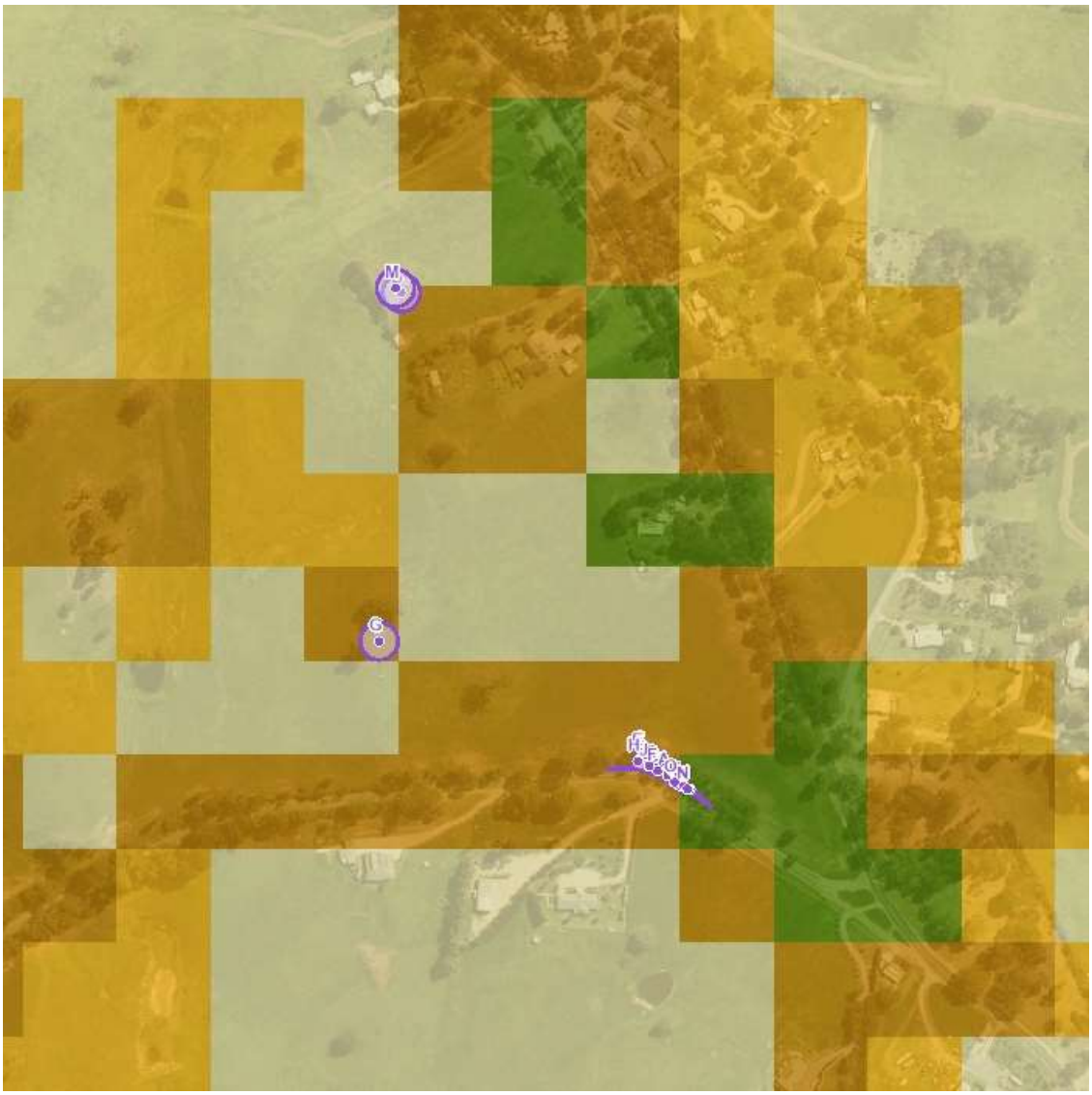


3. Location Risk Map

4. Strategic Biodiversity Value Score Map



5. Condition Score Map



6. Endangered EVCs

Not Applicable

Crowther & Sadler Pty. Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
A.B.N. 24 006 331 184
152 Railway St,
PO Box 722,
Bairnsdale, VIC 3875
P: 5152 5011
F: 5152 5705
E: contact@crowthersadler.com.au

Bushfire Hazard Assessment

Multi Lot Subdivision, Works (Roadworks), Earthworks & Vegetation Removal
385 Bullumwaal Road, Wy Yung
Reference – 20432

April 2024

1. Introduction

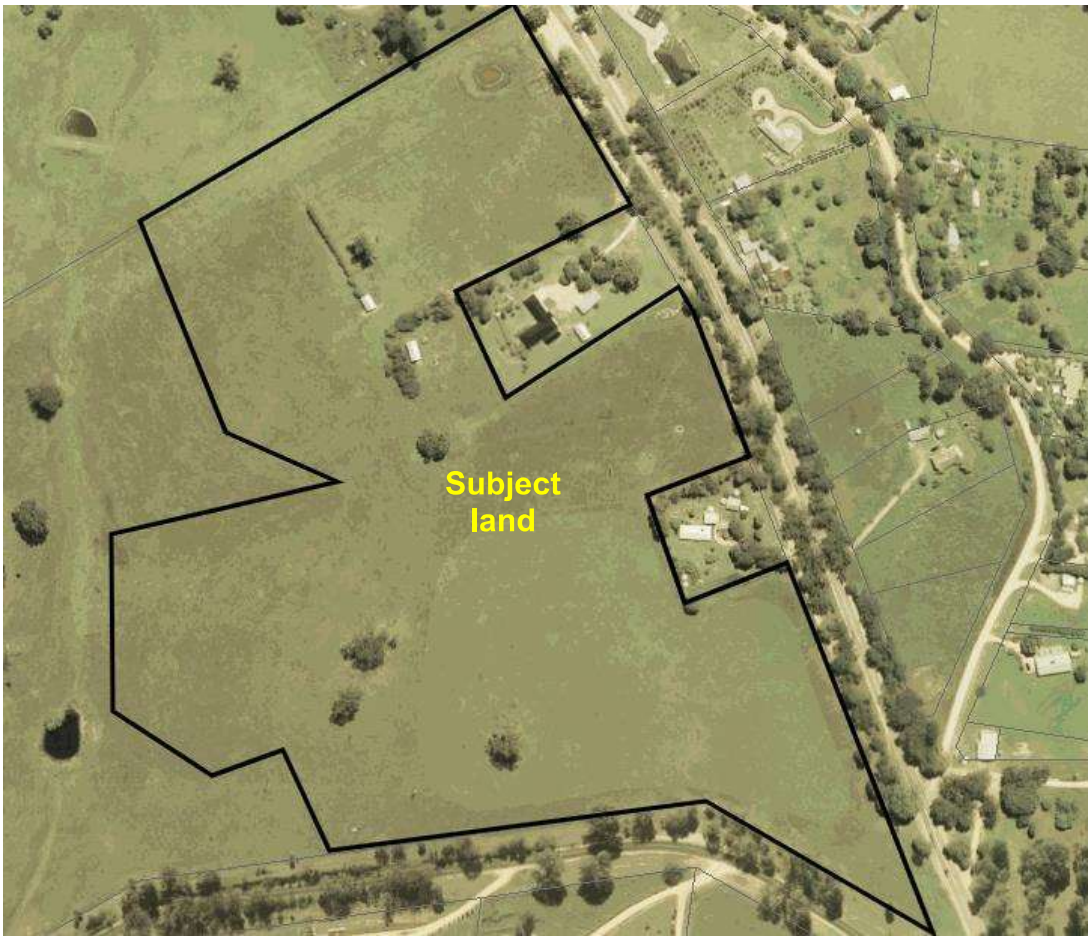
This report has been prepared to identify bushfire hazard and to provide a risk assessment relating to the proposal for Multi Lot Subdivision, Works (Roadworks), Earthworks and Vegetation Removal at 385 Bullumwaal Road, Wy Yung.

The purpose of this report is to:

- Respond to State Planning Policy at Clause 13.02-1S relating to Bushfire Planning.
- Identify vegetation, topographic and climatic conditions that create a bushfire hazard.
- Provide an assessment of the bushfire hazard on the basis of landscape conditions, local conditions, neighbourhood conditions and conditions of the subject land.
- Respond to the identified bushfire hazard, including proposed bushfire protection measures and demonstrate how the protection of human life has been prioritized.

2. Locality & Site Description

The subject land is formally described as Lot 2 on PS434082A and is approximately 15.02ha in area being a large parcel of land contained within the Low Density Residential Zone.

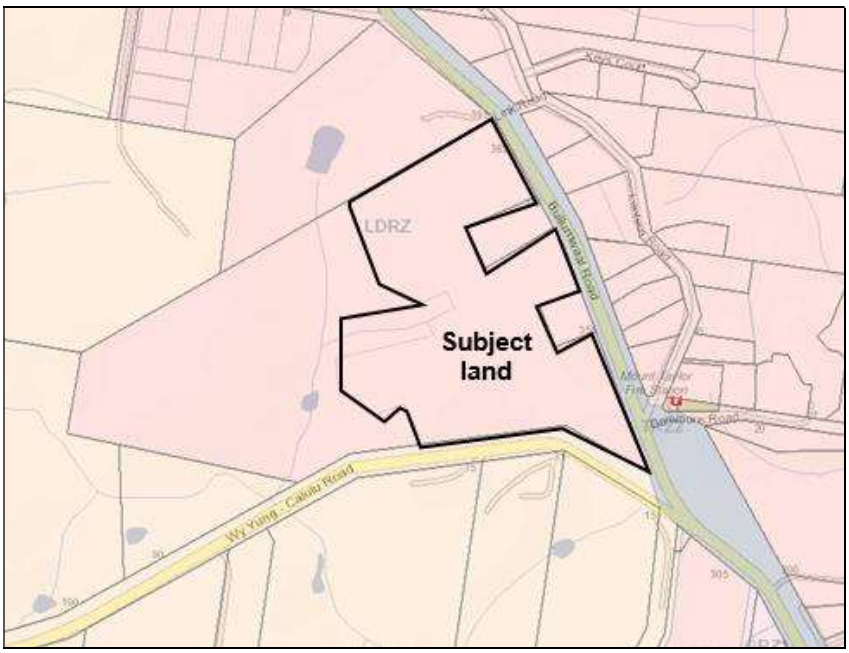


Aerial view of subject land and surrounds – Source: VicPlan

The property is undulating in nature with the eastern portion of the site generally being higher in elevation than the western and southern sections of the property. The majority of the property comprises of pastoral grasses with some scattered trees. The adjoining road reserves, however, are generally quite well vegetated and comprise a mixture of established trees with limited understorey.

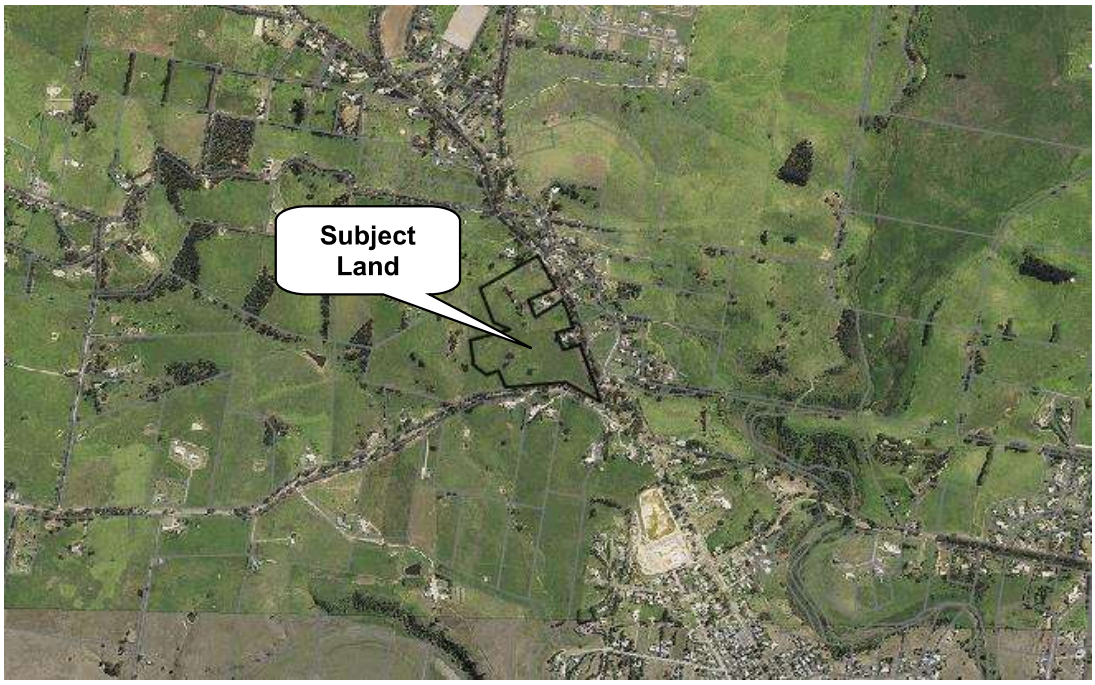
View north across subject land from south-east corner

The subject land is located within an existing rural residential precinct with surrounding properties directly to the north, south and east being contained within the Low Density Residential Zone and properties to the immediate west within the Rural Living Zone – Schedule 3.



Planning scheme zone mapping (Source: VicPlan)

Whilst the majority of the properties within the immediate precinct comprise of residential development there are also some larger cleared paddocks. There are some patches of remnant vegetation scattered throughout the wider landscape however the predominant classifiable vegetation surrounding the subject land is grassland.



Aerial view of subejct land and surrounding precinct – Source: LASSI SPEAR (DELWP)

3. State Planning Policy Assessment

Objective

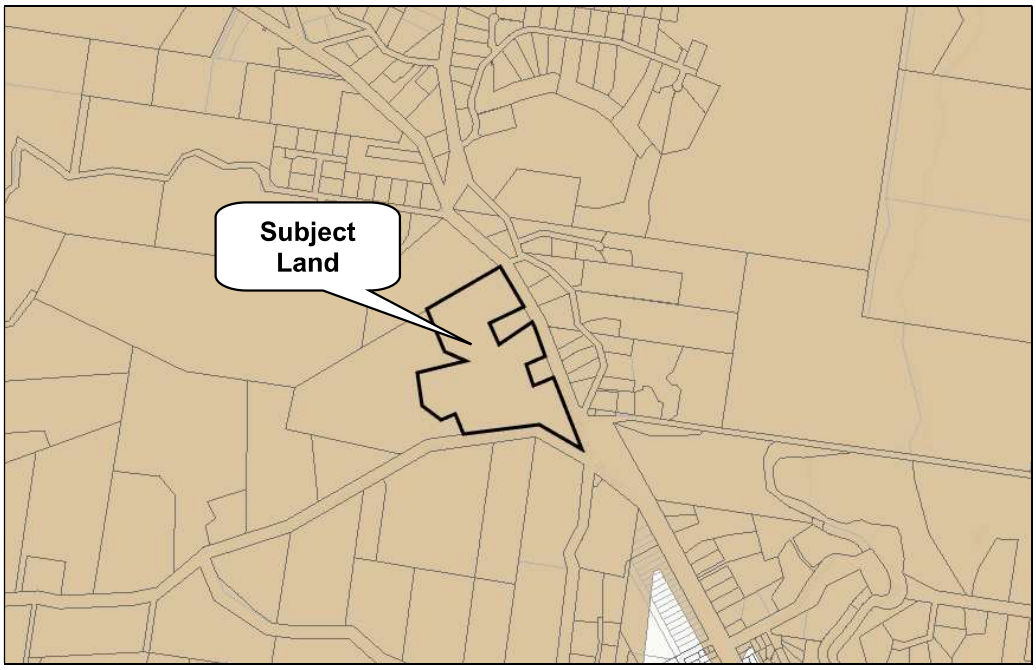
Clause 13.02-1S of State Planning Policy seeks *'to strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritizes the protection of human life'.*

Policy Application

The Bushfire Planning Policy at Clause 13.02-1S is to be applied to all planning and decision making under the *Planning & Environment Act 1987* relating to land that is:

- Within a designated bushfire prone area;
- Subject to a Bushfire Management Overlay; or
- Proposed to be used or developed in a way that may create a bushfire hazard.

Whilst the subject land is not contained within the Bushfire Management Overlay the Policy does need to be considered a subdivision that creates more than 10 lots given the site is within a designated Bushfire Prone Area.

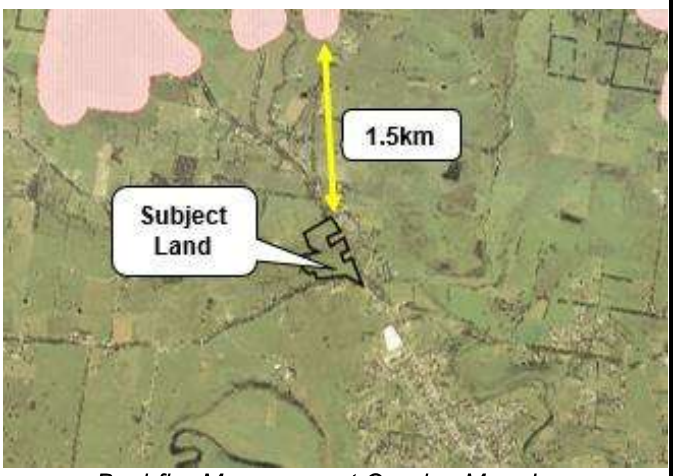


Designaged Bushfire Prone Mapping – Source: VicPlan

4. Strategies

The following tables outline the various Strategies to be implemented under the provisions of Clause 13.02-1S relating to Bushire Planning and also provides responses specific to the proposal at hand.

Protection of Human Life	
Strategy	**Response**
Prioritising the protection of human life over all other Policy Considerations	The nomination of the proposed subdivision in this location is considered to ensure protection of human life. • The subject land is not contained in the Bushfire Management Overlay. • The site is located within an existing rural residential precinct which is located only a short drive north from the main township of Bairnsdale. • Whilst the subject land and adjoining properties are undulating in nature, they are not steep and do not generate hazardous fire runs. • Surrounding properties contain rural residential development and cleared grassland and do not provide a severe fire threat.
Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.	The subject land is considered to be a low risk location given its close proximity to the main township area of Bairnsdale and the surrounding conditions. Vehicle access from the subject land to the main township area of Bairnsdale is provided on good quality sealed bitumen roads which do not traverse through any extensive vegetated areas. Being within close proximity to the township area with good access enhances the protection of human life from the bushfire risk.
Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.	Although the subject land is not contained within the Bushfire Management Overlay, the subdivision has been designed having regard for the needs of future development in accordance with Australian Standard AS3959-2018. Given the inclusion of the subject land within a declared Bushfire Prone Area, a Bushfire Attack Level (BAL) will need to be established for future dwellings on each of the allotments. The subdivision has been designed to ensure that each allotment has the potential to provide for future residential development that can achieve the lowest applicable BAL-12.5 rating. The Building Envelopes shown on the Design Response Plan demonstrate that future development can achieve separation distances consistent with Table 2.4 of AS 3959:2018 to achieve BAL-12.5.

Bushfire Hazard Identification & Assessment	
Strategy	**Response**
Identify bushfire hazard and undertake appropriate risk assessment by:	
Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard	The Planning Application triggers consideration of the proposal under Clause 13.02-1S of the East Gippsland Planning Scheme despite the site not being contained in the Bushfire Management Overlay. The need to consider the requirements of Australian Standard AS3959 is triggered through Clause 13.02-1S, as the subject land is within a Bushfire Prone area. The Application has therefore considered the methodology (Method 1) and controls of Australian Standard AS3959 as part of the assessment.
Considering the best available information about bushfire hazard including the map of designated bushfire prone areas prepared under Building Act 1993 or regulations made under that Act.	As triggered by the provisions of Clause 13.02-1S of the *East Gippsland Planning Scheme* the proposal responds to the provisions of Australian Standard AS 3959, as the subject land is within a Bushfire Prone area. This report demonstrates that future development on each of the proposed allotments is able to achieve sufficient setbacks from classifiable vegetation to meet the requirements of Table 2.4.2 of Australian Standard AS3959.
Applying the Bushire Management Overlay to areas where the extent of vegetation can create an extreme bushfire hazard.	The subject land is not within the Bushfire Management Overlay. The nearest Bushfire Management Overlay mapping is approximately 1.5km to the north. The omission of the site from the Bushfire Management Overlay highlights that the site is not at severe risk from bushfire.  *Bushfire Management Overlay Mapping*

Considering and assessing the bushfire hazard on the basis of: **-Landscape Conditions (Meaning conditions in the landscape within 20km (& potentially up to 75km) of a site).** **-Local Conditions (Meaning conditions in the area within approximately 1km of a site).** **-Neighbourhood conditions (Meaning conditions in the area within 400m of a site.** **-The site for the development.**	Refer to section 6 of this report which includes an assessment of the proposal against the landscape conditions, local conditions, neighbourhood conditions and site circumstances.
Consulting with emergency management agencies and the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.	The Planning Application for the subdivision will not need to be formally referred to the Country Fire Authority for a review of the response to the surrounding bushfire hazard however the Responsible Authority will need to be satisfied that the proposal adequately addresses Clause 13.02-1S. The application will nonetheless be referred to the CFA as the proposed subdivision will create a road. The CFA may provide comment in response to the bushfire assessment.
Ensuring that strategic planning documents, planning scheme amendments, planning permit applications and development plan approvals properly assess bushfire risk and include appropriate bushfire protection measures.	This report demonstrates that the proposal has adequate consideration and regard to bushfire risk. Appropriate bushfire mitigation measures can be achieved by adoption of appropriate setbacks from classifiable vegetation and boundaries as demonstrated through the Building Envelopes shown on the Design Response Plan.
Not approving development where a landowner or proponent has not satisfactorily demonstrated that the relevant policies have been addressed, performance measures satisfied or bushfire protection measures can be adequately implemented.	This report demonstrates that the proposal responds satisfactorily to the provisions of Clause 13.02-1S.

Settlement Planning	
Strategy	**Response**
Plan to strengthen the resilience of settlements and communities and prioritise protection of human life by:	
Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metre under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).	The proposed subdivision layout has been designed to ensure each of the proposed allotments can accommodate future development to BAL12.5 based on assessment under Australian Standard AS 3959. Whilst each Lot is capable of accommodating a dwelling with BAL-12.5 future owners may choose to construct a dwelling to a higher BAL rating. The omission of the subject land from the Bushfire Management Overlay provides certainty that the subject land is not a high risk bushfire location. Providing residential development in this location is considered appropriate and will not result in any adverse bushfire risk or risk to life and property.
Ensuring the availability of, and safe access to, areas assesses as a BAL-Low rating under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009) where human life can be protected from the effects of bushfire.	The subject land is located only a short drive from the centre of Bairnsdale that offers a safe refuge from bushfire. Access to Bairnsdale is facilitated by a good quality sealed road network that does not traverse through any extensively vegetated areas.
Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.	The bushfire risk will not increase as a result of the proposed multi lot subdivision and vegetation removal. If anything, the establishment of residential development on the land will provide additional protection to existing and future development, as there will be ongoing management and maintenance of the land.
Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reducing bushfire risk overall.	There will be no net increase in risk resulting from the proposal, as there is the ability to implement appropriate bushfire protection measures. A demonstrational Building Envelope has been nominated for each of the proposed lots, that demonstrates how future residential development can be achieved whilst being adequately setback from classifiable vegetation to achieve BAL-12.5. If future dwellings are contained within the Building Envelopes as nominated, the minimum construction standard for a dwellings will be BAL-12.5, The subdivision has also been designed in a manner which will ensure that future development will have convenient access to the existing road network without traversing a bushfire hazard.

Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behavior it will produce at a landscape, settlement, local, neighbourhood and site scale including the potential for neighbourhood-scale destruction.	Although the site is not considered to be at high risk from bushfire, which is evident through the omission of the Bushfire Management Overlay mapping, there is a risk from bushfire which is evident by the inclusion of the locality within a declared Bushfire Prone Area. The greatest fire threat is from the north of the subject land where the terrain becomes steeper and vegetated with forest. This main threat is provided several kilometres away. Further information on the bushfire behaviour at a landscape, local, neighbourhood and site level is provided at section 6 of this Report.
Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.	The subject land is already contained within an existing rural residential precinct and is zoned for low density residential development.
Not approving any strategic planning document, local planning policy, or planning scheme amendment that will result in the introduction or intensification of development in an area that has, or will on completion have, more than BAL 12.5 rating under AS3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).	This report is being prepared in support of an application for Planning Permit which is able to be approved given future dwellings can achieved a minimum construction standard BAL-12.5.

Areas of Biodiversity Conservation Value	
Strategy	**Response**
Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that area important areas of biodiversity.	The proposed scheme of subdivision has been carefully designed having regard for the vegetated context of the adjoining road network and scattered trees on site. This has been achieved by: • Nominating the proposed intersection in a suitable location which minimises impacts to native vegetation whilst providing convenient and safe access. • Use of internal road network, which will avoid the need for any new access points direct to allotments through the vegetated road reserves. • Designing allotments to ensure future development can coexist with existing scattered trees. The subdivision has also been designed to ensure future development responds to site constraints by being adequately setback from the existing watercourse, gas pipeline and powerline easement.
Use & Development Control in Bushfire Prone Area	

Strategy	Response
When assessing a Planning Permit Application for the uses and development:	
Consider the risk of bushfire to people, property and community infrastructure.	Whilst the Application seeks approval for subdivision of the land, it results in the expectation that the allotments will be utilised for residential development. Establishment of future residential development in this location is most appropriate having regard for the surrounding residential use, proximity to town and the separation from the stepper terrain and larger areas of forest in the wider landscape. The allotments as proposed will ultimately provide protection to one another by altering the grassland environment to a managed low threat state.
Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.	Each of the Lots have been designed to ensure appropriate separation can be achieved from classifiable vegetation to achieve BAL-12.5. It is acknowledged however that in practice development is likely to exceed the construction requirements for BAL-12.5 thereby enhancing protection and resilience from fire. The residential size of the allotments will result in ongoing management and maintenance by future owners with allotments accommodating adequate area for future development to achieve BAL-12.5.
Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts.	The proposed allotments provide sufficient separation from classifiable vegetation to accommodate residential development that can achieve BAL-12.5. The subdivision has also been designed to ensure future development can be adequately offset from the existing watercourse and enable retention of scattered trees thereby ensuring biodiversity impacts are limited.

5. Policy Guidelines

Policy Guidelines & Documents	Response
The following must be considered as relevant:	
Any applicable approved state, regional and municipal fire prevention plan.	The Municipal Fire Prevention Plan has been considered. See section 6.7 of this report.
AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009)	Australian Standard AS3959 has been used as part of this assessment to classify slope and vegetation to determine BAL-12.5 requirements for each lot.
Building in bushfire-prone areas – CSIRO & Standards Australia (SAA HB36-1993, 1993).	This is the handbook to Australian Standard AS 3959 and is not relevant to this proposal.
Any bushfire prone area map prepared under the Building Act 1993 or regulations made under that Act.	The current Bushfire Prone Area mapping has been considered as part of this report. The subject land is within a declared Bushfire Prone Area.

6. Bushfire Risk

Under Clause 13.02-1S relating to Bushfire Planning triggers the need to consider and assess the bushfire hazard on the basis of:

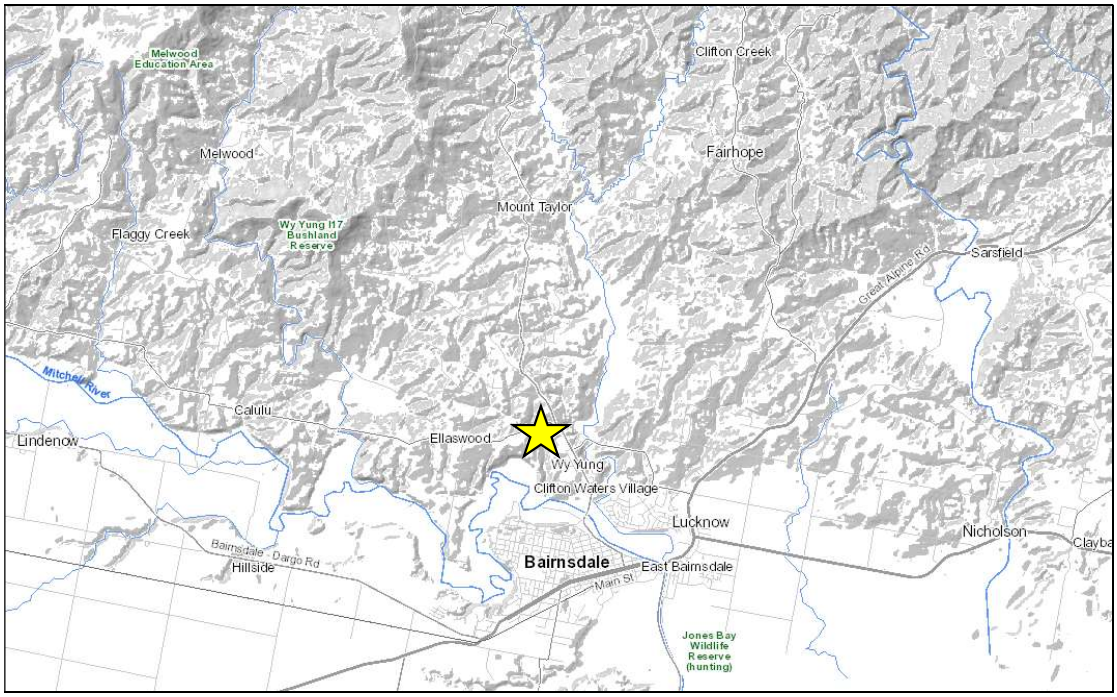
- Landscape conditions
- Local conditions
- Neighbourhood conditions &
- The site for the development

6.1 Landscape Conditions

When considering and assessing the bushfire hazard the landscape risk needs to be taken into consideration which includes the extent of vegetation cover, the area available to a landscape bushfire, terrain and accessibility to low threat areas.

Under Clause 13.02-1S pertaining to Bushfire Planning 'landscape conditions' means the conditions in the landscape within 20km (and potentially up to 75km) of a site.

Landscape Conditions within 20km of the subject land – Source: Google Earth



Terrain – Source: NatureKit (DELWP)

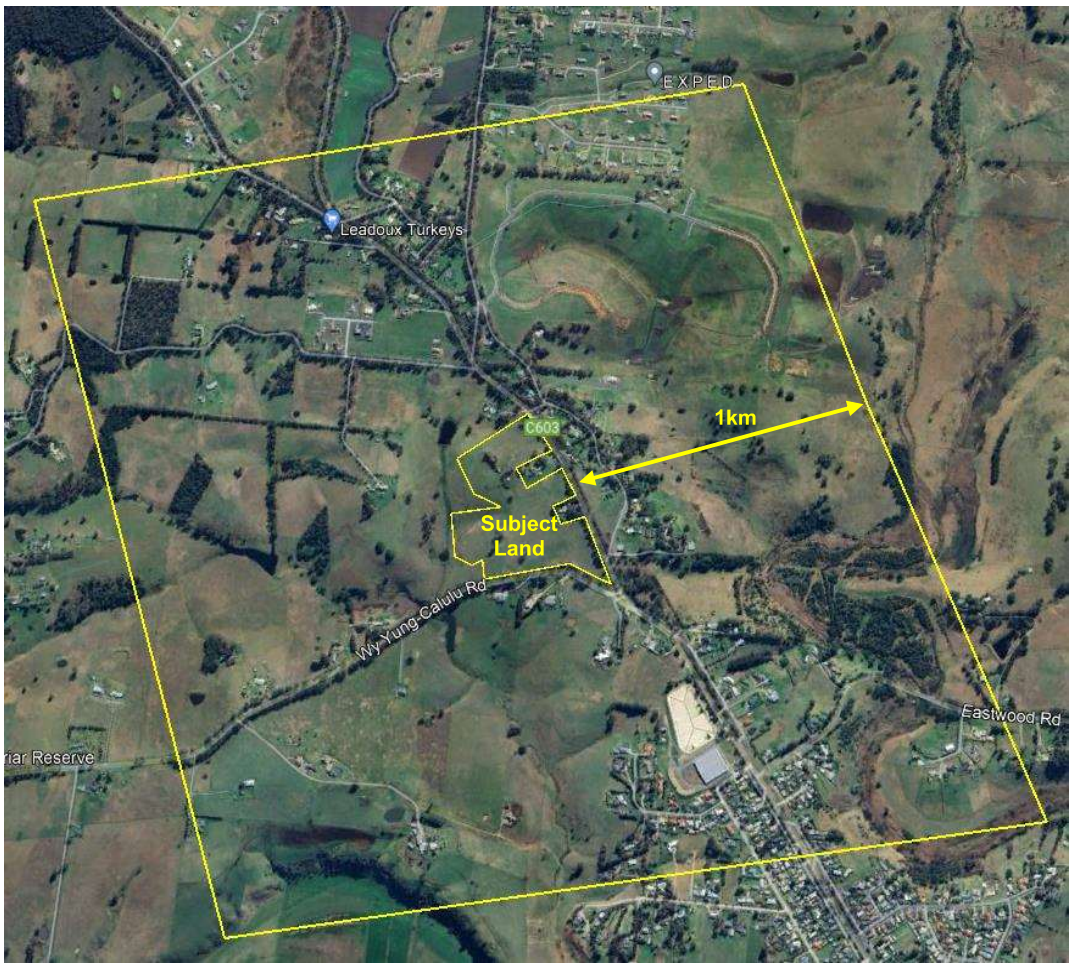
The key features within the 20km assessment area surrounding the subject land include:

- Large areas of residential and rural residential development, particularly to the south and to the east of the property.
- Large areas of grassland coverage throughout most of the assessment area, much of which is utilized for grazing activities.
- The most northern portion of the 20km assessment area contains forested areas which are connected to a larger expanse of forested Crown land which provides a threat from bushfire.
- Whilst the terrain within most of the assessment area is flat or mildly undulating, the land within the northern extent of the assessment area is much steeper incorporating large hills and small mountains.
- The land between the subject land and the township area of Bairnsdale to the south is not vegetated and is easily accessed by a good quality sealed road network.

The subject land is located on the northern periphery of the township area of Bairnsdale and is surrounded by rural residential and grazing properties. The vegetation within the wider landscape is mostly representative of grassland which generally provides a lower risk to bushfire.

6.2 Local Conditions

Under Clause 13.02-1S pertaining to Bushfire Planning 'local conditions' means conditions in the area within approximately 1km of a site.



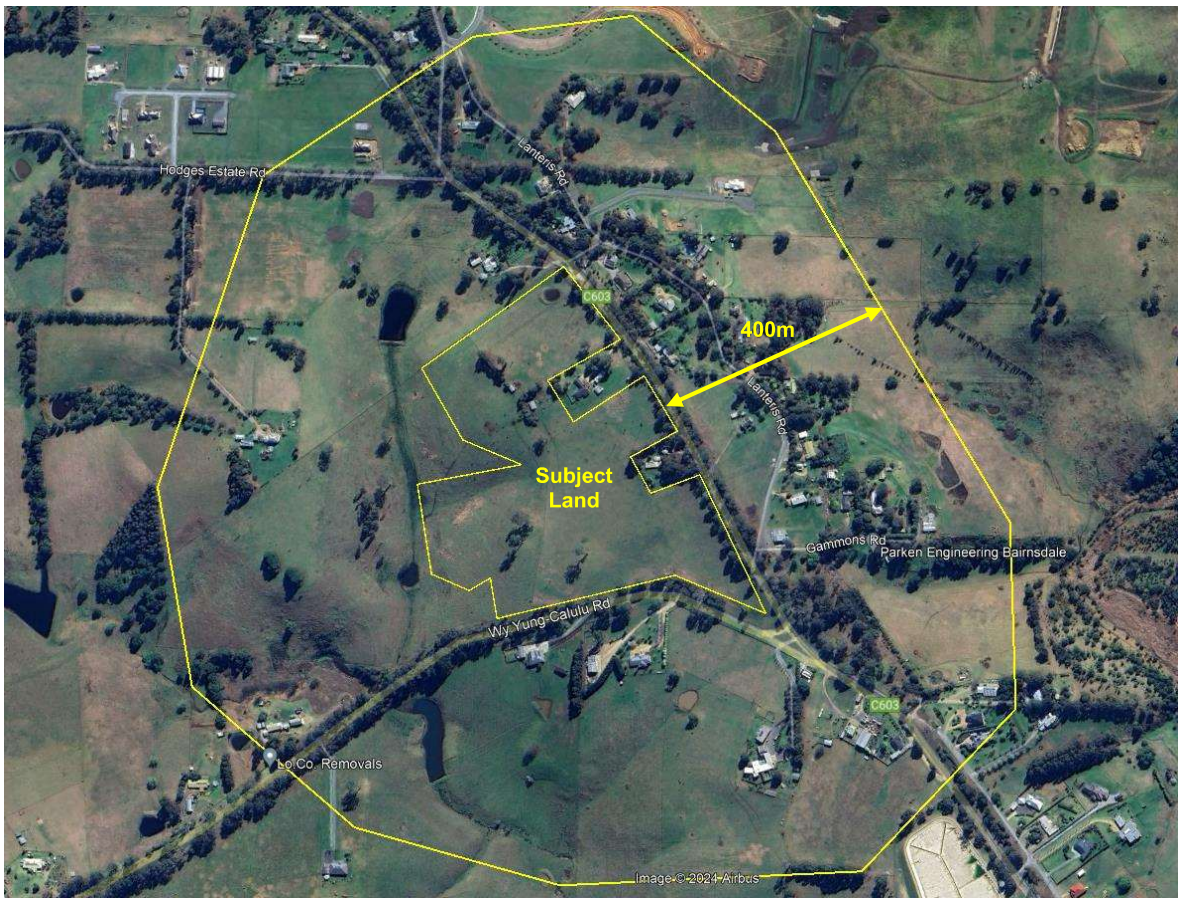
Local conditions within 1km of the subejct land – Source: Google Earth

The key features within the 1km assessment area surrounding the subject land include:

- Land in all directions is best described as grassland however there is some roadside vegetation present.
- The vast majority of properties within the assessment area are rural residential however there are also some grazing properties present.
- Bullumwaal Road which is contained within the Transport Zone 2 dissects the assessment area in a north south direction.
- The landform is undulating in nature however does not comprise steep slopes.

6.3 Neighbourhood Conditions

Under Clause 13.02-1S pertaining to Bushfire Planning 'neighbourhood conditions' mean conditions in the area within 400 metes of a site.



Neighbourhood conditions within the 400m assessment area of the subejct land
Source: Google Earth

The key features within the 400m assessment area surrounding the subject land include:

- Presence of numerous residential and rural residential style properties. These properties generally present a low threat vegetation classification.
- The predominate vegetation classification in all directions is best described as grassland.
- There is some established vegetation provided within the road reserves adjoining the existing well established road network.
- The landform is undulating however is not steep.

6.4 Bushfire Scenarios

Bushfire from the North

The most likely bushfire scenario for this site will be for a fire approaching from the north given the presence of the forested area in the broader landscape. Such a fire would have the potential for long fire runs through the forested areas and through the buffering grassland areas.

The change from the steeper terrain and forested areas further to the north in the broader context to a more undulating landscape which is predominately grassland benefits the subject land and aids with reducing the intensity of bushfire approaching the subject land.

Localized Grass Fires

From the remaining aspects there is a threat from more localized grassland fires however the terrain is not considered steep, and the fire threat can be mitigated by appropriate setbacks.

6.5 Bushfire Hazard Site Assessment

The vegetation on the subject land and the immediately surrounding area has been classified in accordance with Table 2.3 of Australian Standard AS 3959, consistent with Clause 13.02-1S of the *East Gippsland Planning Scheme.*

Aerial view of subject land and immediate surrounds – Source: VicPlan

Exclusions & Low Threat Vegetation

Existing residential development is established to the east and to the south of the subject land which is generally well managed and maintained. These areas contain minimal vegetation, which is less than 1ha in area and not within other areas of classifiable vegetation and has therefore been assessed as low threat.

View of existing managed property to the south of Wy Yung – Calulu Road

Mature trees flank the adjoining road reserves to the south and west of the site. The width of vegetation on either side of the road is less than 25m and contains minimal understory. The extent of vegetation within the adjoining road reserves would not substantially alter the bushfire hazard generated from surrounding grassland.

View north along Bullumwaal Road – Source: Google earth

Grassland Classification

The majority of the subject land has a vegetation classification of grassland given the presence of grass with the minimal number of scattered canopy trees. The surrounding properties to the northwest, south and to the west are also best described as grassland.

Looking in a south westerly direction across the subject land at vegetation with 'grassland' classification

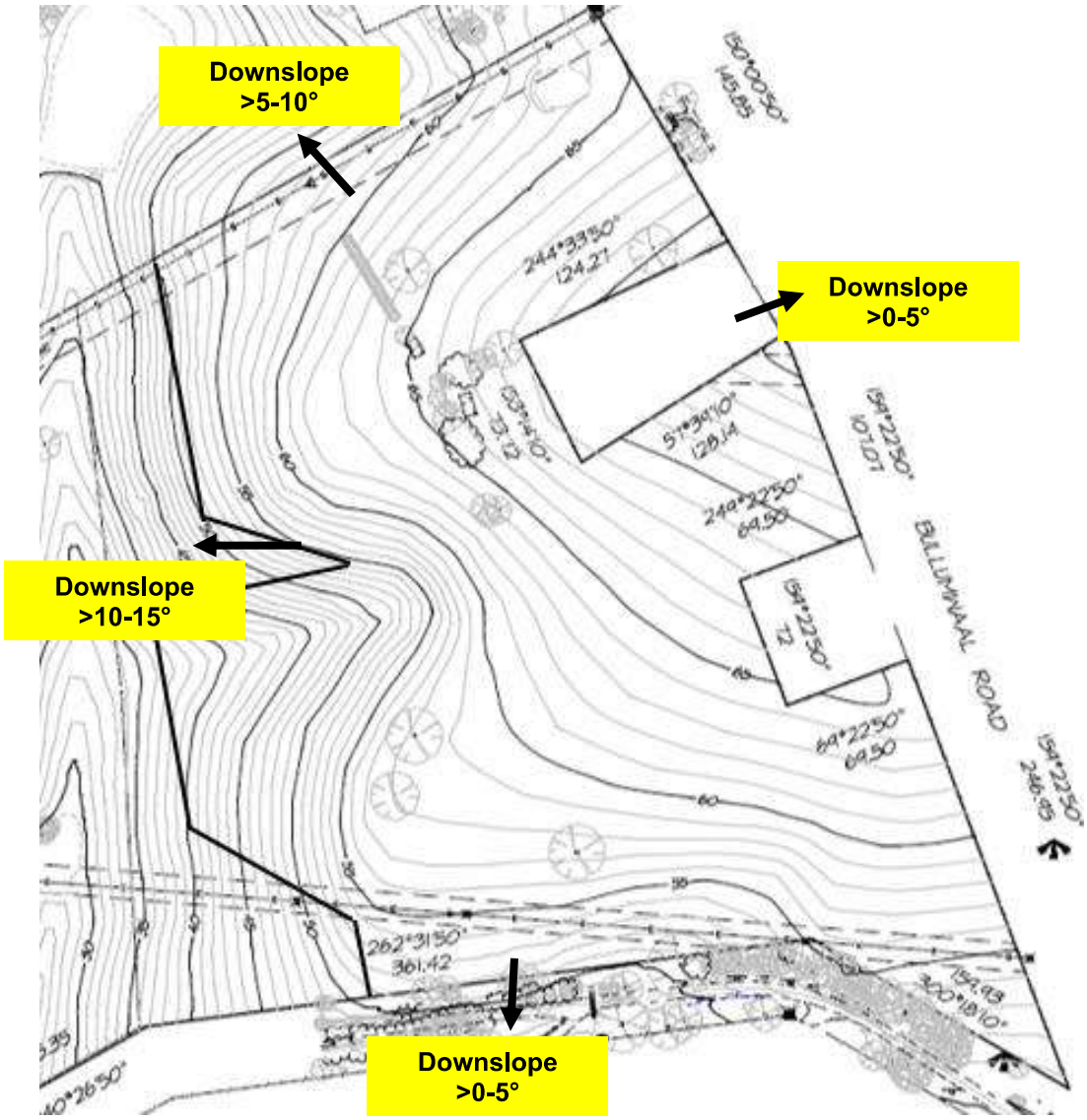
The subject land in its current format is identified as being 'grassland' however this environment will be modified through the establishment of residential allotments into the future which will ultimately result in a low threat environment.

It is also acknowledged that that there are four vacant allotments opposite the subject land on the eastern side of Bullumwaal Road which have recently been created. Whilst these allotments currently contain well managed grassland, there is an expectation that they will be developed for residential purposes which will provide for a low threat environment.

Land on the corner of Bullumwal Road and Lanteri's Road – Source: Google Earth

Topography

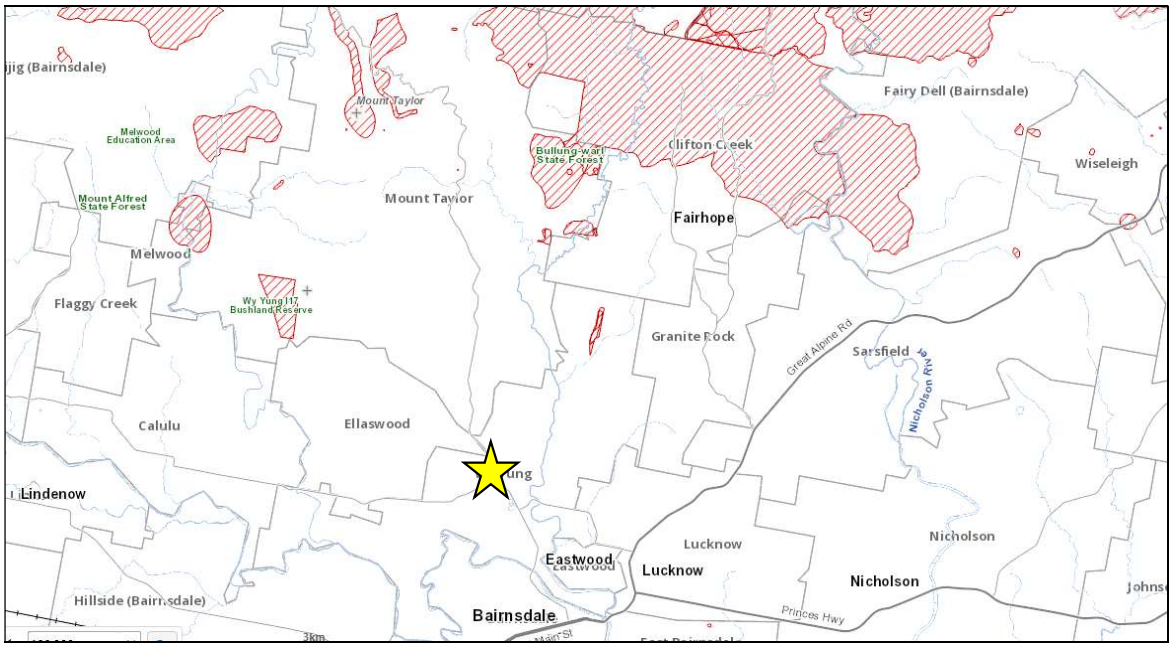
The subject land and surrounding area is not considered to be steep, however it is undulating in nature. The plan below provides contour detail across the site.



Extract of Feature Plan showing contours at 0.1m intervals

6.6 Other Bushfire Matters

Although there is some record of fire history within the wider landscape since the 1970's, there has been no record of bushfire history on the subject land or generally within the Wy Yung rural residential area.



Bushfires 1970- Present – Source: Nature Kit (DELWP)

6.7 Municipal Fire Management Plan

The East Gippsland Fire Management Plan (2017-2020) recognizes that bushfire poses a serious threat to life and property within East Gippsland and identifies the need for integrated bushfire management strategies to mitigate the risk.

The Plan identifies *Bairnsdale Interface, Wy Yung* (VFRR Asset ID 19020) as a human settlement – residential area with a risk rating for bushfire of 'high' as the likely bushfire scenario is for direct flame attack (grass and bushfire) from all directions with smoke impact and ember attack.

There are several existing treatments identified within the Plan which are being undertaken across the Municipality such as community education, burn programs, patrol/inspection, powerline clearance and liaison with FRV and CFA.

6.8 Surrounding Road Network

The subject land has frontage to Bullumwaal Road to the east and to Wy Yung - Calulu Road to the south. Both of these roads are good quality sealed bitumen roads however Bullumwaal Road is classified as being Transport Zone 2 as it is the main collector road in and out of the Wy Yung precinct to the nearby township area of Bairnsdale.

Whilst the road reserves adjoining both of these roads are generally well vegetated, the road network provides for safe egress and access south to Bairnsdale that is not within a declared Bushfire Prone Area and does not traverse through any extensive vegetated areas or steep terrain.

7. Response & Mitigation Measures

The proposed subdivision and removal of vegetation is considered to respond positively to the bushfire risk of the area:

1. The subdivision has been designed to ensure that each of the proposed allotments can accommodate future low density residential development that can achieve BAL-12.5. This is demonstrated through the nomination of Building Envelopes which provide adequate setback from the classifiable vegetation.
    - As the roadside vegetation provided within Bullumwaal Road and Wy Yung – Calulu Road has been classified as ‘excludable’ the higher order vegetation classification of ‘grassland’ has been used when considering setbacks for Building Envelopes for allotments fronting existing roads.
    - The Land to the south and to the east is provided on a downslope >0-5° triggering a minimum separation distance of 22.0 metres having regard for the grassland classification.
    - The Building Envelopes for Lots 15, 16, 20, 21, 25 & 26 have all been designed with a setback of 22.0 metres from Bullumwaal Road ensuring the minimum separation distance can be easily achieved. It is acknowledged that presence of the road pavement further enhances the separation from classifiable vegetation.
    - Whilst the higher order vegetation classification of ‘grassland’ has been used to the east it is acknowledged that the grassland area is likely to ultimately become ‘low threat’ as land opposite the subject land on the eastern side of Bullumwaal Road has recently been subdivided for residential purposes.
    - The vegetation classification on the southern side of Wy Yung – Calulu Road opposite proposed Lots 1, 3 & 4 is on a downslope >0-5° however the vegetation is identified as ‘low threat’ avoiding the need for a minimum separation distance to be established.

- The vegetation classification on the southern side of Wy Yung – Calulu Road opposite proposed Lot 26 is on a downslope >0-5° and requires a minimum separation distance of 22.0 meters from the vegetation with a grassland classification. This septation distance can be easily achieved having regard for the presence of the road pavement however in reality the separation distance will be further enhanced given the presence of the existing powerline easement.
- As the vegetation to the west of the subject land comprises grassland on a downslope >10-15° the Building Envelopes for proposed Lots 4 – 11 (inclusive) has been nominated a minimum of 28.0 metres from the western property boundary.
- As the vegetation to the north of the subject land comprises grassland on a downslope >5-10° the Building Envelopes for proposed lots 11-15 (inclusive) have been nominated a minimum of 25.0 metres from the northern property boundary.

	North	South	East	West
Slope	Downslope >5-10°	Downslope >0-5°	Downslope >0-5°	Downslope >10-15°
Veg Type	Grassland	Grassland	Grassland	Grassland
Separation Distance*	25m	22m	22m	28m

** Separation distances derived from Table 2.4 AS3959:2018*

2. The intended residential use of the land will ultimately enhance the management and maintenance across the land thereby reducing fuel loads and enhancing protection to life and property.

8. Concluding Remarks

In summary the proposed multi lot subdivision and vegetation removal at 385 Bullumwaal Road, Wy Yung has considered the bushfire controls under the *East Gippsland Planning Scheme* and will not result in any adverse outcomes with respect to bushfire risk as appropriate bushfire mitigation measures can be put in place.

Crowther & Sadler Pty Ltd
April 2024

Proposed Multi lot residential subdivision
385 Bullumwaal Road, Wy Yung

Town Planning Report -
Stormwater Management Strategy

Prepared for:
Mt Taylor Properties

Prepared by:
Crossco Consulting Pty Ltd
PO Box 858
Bairnsdale Vic 3875

Document revision

Version	Date	Prepared by	Comments
FINAL	09/04/2024	Crossco	Distributed to C&S & Client
FINAL 01	12/04/2024	Crossco	Update layout, review comments. Distributed to C&S & Client

Notice:

This Stormwater Management Strategy:

1. ***Has been prepared by Crossco Consulting Pty Ltd for MtTaylor Properties.***
2. ***Is for the use of mt Taylor Properties in seeking planning approval for the proposed subdivision at 385 Bullumwaal Road, Wy Yung.***
3. ***Is for the use of East Gippsland Shire in assessing any planning application submitted by Mt Taylor Properties or on their behalf by Crowther & Sadler Pty Ltd for the proposed development of 385 Bullumwaal Road, Wy Yung.***

Abbreviations, Descriptions and Definitions

The following table lists some common abbreviations and drainage system descriptions and their definitions which may be referred to in this report.

Abbreviation / Descriptions	Definition
AHD - Australian Height Datum	Common base for all survey levels in Australia. Height in metres above mean sea level.
ARI - Average Recurrence Interval.	The average length of time in years between two floods of a given size or larger. A 100 Year ARI event has a 1 in 100 chances of occurring in any one year.
AEP – Annual Exceedance Probability	The chance of a storm (flow) of that magnitude (or larger) occurring in a given year. $\boldsymbol{AEP = 1 - e^{(\frac{-1}{ARI})}}$. i.e. 18.13% AEP = 5 Year ARI
BPEMG	Best Practice Environmental Management Guidelines. See CSIRO (1999)
EY – Exceedances per year	The amount of times a storm (flow) of that magnitude is expected to be exceeded per year. i.e. 4 EY = 3 Month ARI
m^3/s -cubic metre/second	Unit of discharge usually referring to a design flood flow along a stormwater conveyance system
MUSIC	Hydrologic computer program used to calculate stormwater pollutant generation in a catchment and the amount of treatment which can be attributed to the WSUD elements placed in that catchment
MWC / MW	Melbourne Water Corporation
Retarding basin	A flood storage dam which is normally empty. May contain a lake or wetland in its base
NWL - Normal Water Level	Water level of a wetland or pond defined by the lowest invert level of the outlet structure
NSL – Natural Surface Level	The surface level of the natural (existing) surface before works.
RORB	Hydrologic computer program used to calculate the design flood flow (in m^3/s) along a stormwater conveyance system (e.g. waterway)
Sedimentation basin (Sediment pond)	A pond that is used to remove coarse sediments from inflowing water mainly by settlement processes.
TED	The top level of water stored for treatment within a wetland before bypass occurs
TSS	Total Suspended Solids – a term for a particular stormwater pollutant parameter
TP	Total Phosphorus – a term for a particular stormwater pollutant parameter
TN	Total Nitrogen – a term for a particular stormwater pollutant parameter
WSUD - Water Sensitive Urban Design	Term used to describe the design of drainage systems used to: ○ Convey stormwater safely ○ Retain stormwater pollutants ○ Enhance local ecology ○ Enhance the local landscape and social amenity of built areas
Wetland	WSUD element which is used to collect TSS, TP and TN. Usually incorporated at normal water level (NWL) below which the system is designed as shallow marsh, marsh, deep marsh and open water areas.

Table of Contents

Figures

1. Background

Crossco Consulting Pty Ltd has been engaged by Mt Taylor Properties and instructed by *Crowther & Sadler, Town Planners & Licensed Surveyors* to prepare a Stormwater Management Plan (SMP) which will form part of the documentation required lodge an application for a planning permit (by Others) to be submitted to East Gippsland Shire Council (EGSC) to subdivide land at 385 Bullumwaal Road, Wy Yung, being Lot 1 on PS921657H (the Site) shown on Figure 1.

The Site is subject to the East Gippsland Shire Planning Scheme and is zoned LDRZ (Low Density Residential Zone), and various overlays apply to part or all of the site including:

- EMO (Erosion Management Overlay)

The whole of the site is mapped in a "designated bushfire prone area".

Refer to Planning Property report for 385 Bullumwaal Road at Appendix 1.

A separate Traffic Management report has been prepared by Others – detail regarding roads and intersections are outside the Scope of this report.

A separate Geotechnical Report has been prepared by Others and is outside the Scope of this report. It is understood the findings conclude that there are no geotechnical reasons why the site cannot be developed.

This report and attached Crossco Drawings (Appendix 4) are based on the following information provided to Crossco:

- Site Feature & Re-establishment survey by Crowther & Sadler at Appendix 2.
- Proposed subdivision layout plan by Crowther & Sadler (20432, V2 drawn 10/04/2024) at Appendix 3.

2. Purpose

This SWMS is prepared to meet the expected requirements of the EGSC and the East Gippsland Catchment Management Authority (EGCMA) in regard to Water Sensitive Urban Design (WSUD) and drainage infrastructure.
As such this SWMS:

- Provides discussion in regard to flood retardation requirements of development of the subject site,
- The concept design of major pipe alignments, overland flow paths,
- Water sensitive urban design assets or measures to meet current Best Practice Environmental Guidelines,
- MUSIC modelling of Water Sensitive Urban Design initiatives,
- Development of a SWMS plan (concept design plans) to clearly show:
    - Encumbered space (gas easement to the north),
    - Site constraints and features,

- How the drainage system concept designs can be realistically incorporated into the site proposals.

This SWMS has been prepared understanding that diligent site assessment is required at the SWMS/concept design stage to ensure any proposed assets can physically work. The SWMS/concept design stage of a project is the most important stage of a project, because, done well, it can stop inappropriate incorporation of assets in the future, while ensuring all EGSC and EGCMA requirements are met going forward.

3. Proposal

385 Bullumwaal Road (the site) is proposed to be developed for residential purposes, consistent with the LDRZ of the site.

The proposed subdivision (refer to Appendix 3) creates:

- 26 residential lots, and
- road reserve and municipal reserve (drainage).

In addition to roads & drains and stormwater management infrastructure, the proposed development provides for the following services which will all be constructed underground:

- Watermain
- Electricity
- Communications

The Crossco drawings at Appendix 4 indicatively show the above services. These are included to demonstrate that the stormwater management strategy considers the provision of utilities.

Road and intersection layout / design has been prepared by Others.

Refer to the Town Planning report for further details.

4. Site Overview

4.1 Property Details

Figure 1: Site Parcel (source: Lassi)

385 Bullumwaal Road is shown on Figure 1, and is the subject of a two lot subdivision (PS 921657H).

The site of this subject multi-lot residential subdivisional proposal is the land shown at Figure 1 as Lot 1 on PS 921657H.

4.2 Site Location

The site is located toward the north of Bairnsdale, immediately to the north-west of the Bullumwaal Road and Wy Yung – Calulu Roads.

Land to the north (LDRZ) and west (LDRZ) is developing for residential purposes with existing drainage and stormwater management generally open road side drainage and tanks on allotments.

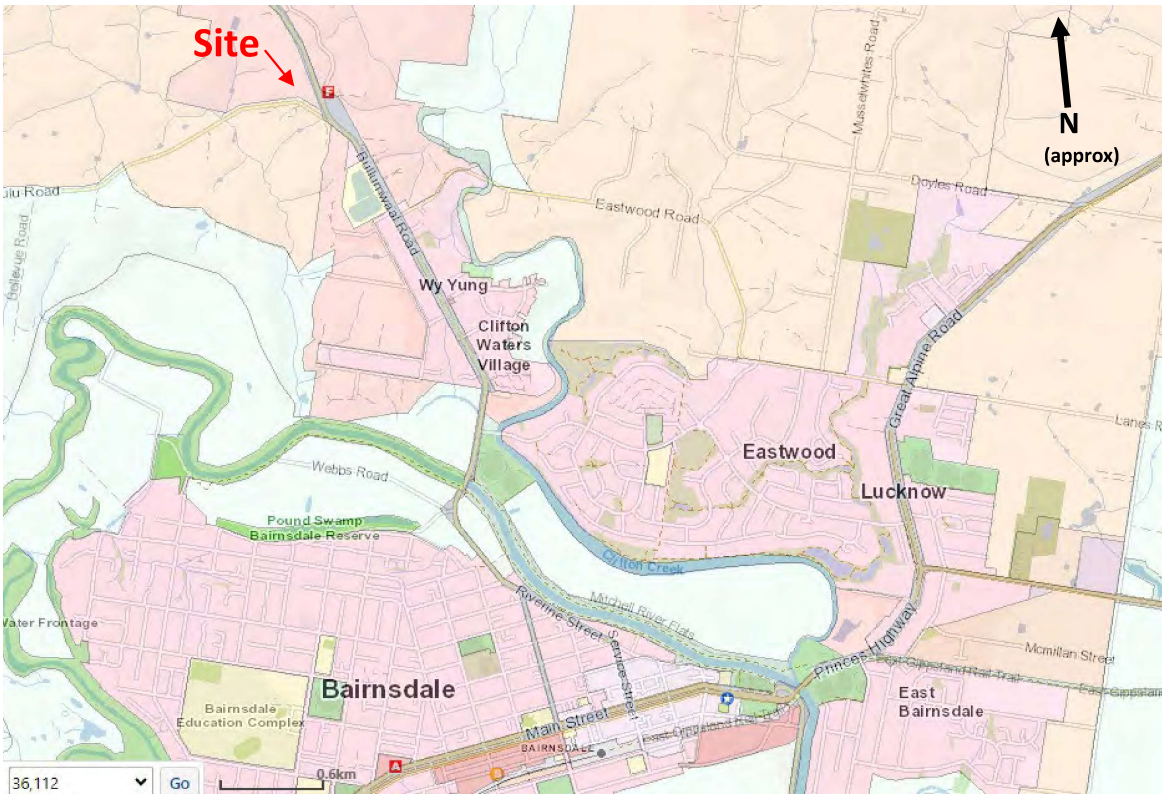


Figure 2: Locality Plan

Figure 2 provides an overview of the location of the site in relation to other land zoned for residential development. The waterways and waterbodies (including dams) in proximity to the site are also shown.

Figure 3 and Figure 4 show the site in the context of the abutting land and road infrastructure.

Figure 3: Aerial Overview

Figure 4: Site Aerial

4.3 Description

The site consists of rolling hills and is current occupied by buildings associated with the property's current primary production / farm use.

At the time the site was inspected:

- the site was stocked.
- grass cover was good with no apparent soil instability on the site. Figure 5 shows typical cover on the site.
- Figure 6 shown the minor drainage line that drains to the west.

Figure 5: Grass Cover

Figure 6: Dam

The maximum elevation at the site is approximately 75m AHD and the minimum is approximately 35m AHD (refer to Appendix 2 Feature Survey).

Slopes across the site vary as indicated in Figure 7.

Figure 7: Indicative Site Slope and Direction of Fall

There is a declared waterway mapped on the site (refer to Figure 8).

The mapped waterway on the abutting property to the west of the site is also shown on Figure 8.

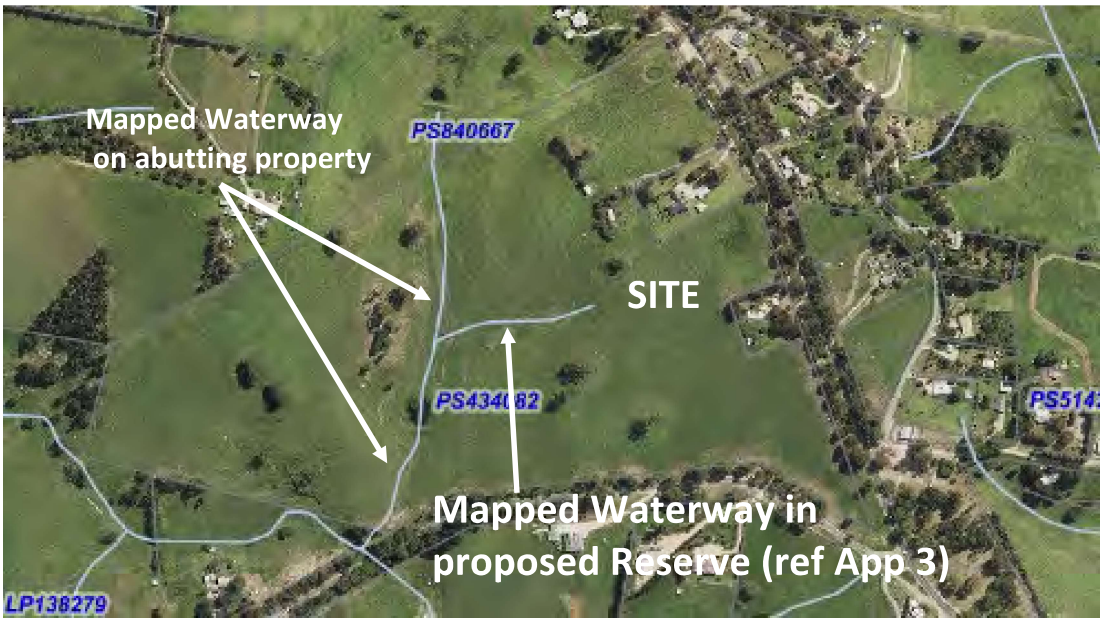


Figure 8: Site and Mapped Waterways
Source : https://mapshare.vic.gov.au/vicplan/

5. Reference Materials

5.1 Background Reports, Information and Designs

The formulation of the proposals herein has utilised information from the following sources relating to designs, studies and/or current works in the catchments/sites surrounding the Subject Site. Information obtained from each source below is described in more detail in subsequent parts of this report where required.

- Site survey information by Crowther & Sadler
- Proposed subdivisional layout by Crowther & Sadler (20432, V2 drawn 10/04/2024)
- Local Government Infrastructure Design Association Infrastructure Design Manual, Version 5.4, September 2022.
- Melbourne Water "MUSIC" (Model for Urban Stormwater Improvement Conceptualisation) Guideline, May 2022 (WMC MUSIC Guidelines).

6. Project Objectives

6.1 Flood Storage Requirements

Commonly, to meet the requirements of the Local Government Infrastructure Design Association (LGIDA) Infrastructure Design Manual (IDM) flood retardation is required for new developments. Section 18.1 of the IDM states that:

> *To protect property and Infrastructure from flooding occurring from a nominated rainfall event by the provision of retarding basins.*

Retardation has been proposed in accordance with the IDM. It is noted that the site outfalls to a gully on the property to the west, which passes under the Wy Yung – Calulu Road via an existing culvert and into a farm dam. Downstream infrastructure has been considered in the preparation of this SWMS.

6.2 Regional Flood Protection and Climate Change Implications

The site is not subject to flooding and allotments have been located in the order of 5m – 10m elevation above the base of the gully / waterway to the west.

➔ It is recommended that proposed Lot 5 have a building envelope to the high side of the lot, and a floor level that provides command of the proposed house drain.

Climate change implications have been considered consistent with ARR 2019.

6.3 WSUD Objectives

Clause 56.07-4 of the Victorian State Planning provisions states that urban stormwater management systems must be designed to meet current best practice management performance objectives for stormwater quality management as defined in the Best Practice Environmental Management Guidelines (**BPEMG**).

The BPEMG objectives for environmental management of stormwater are:

Total Suspended Solids (**TSS**)	80% retention of the typical urban annual load
Total Phosphorus (**TP**)	45% retention of the typical urban annual load
Total Nitrogen (**TN**)	45% retention of the typical urban annual load
Litter	70% retention of typical urban annual load
Flows	Maintain discharges for the 1.5-year Average Recurrence Interval (**ARI**) event at pre-development levels

6.4 Ecological Considerations

Consistent with the proposed subdivisional layout it is assumed that, as far as possible, all existing trees and vegetated areas will be retained.
Ecological assessments are by Others and will inform minimum required setbacks and limits of works as design solutions are further developed and refined. There is an existing waterway within the site that will need to be considered during the detail design phase to limit the works in accordance with a ecological assessment.

6.5 Maintenance Requirements

The concept design presented herein allow enough space to ensure all WSUD and drainage assets are accessible for maintenance and provide appropriate maintenance provisions, including but not limited to:

- Mowable grassed batters (maximum of 1V:5H or 20% or 11.3°)
- Provisions for low flow diversion in times of maintenance
- Space provision for appropriate maintenance access tracks

A maintenance track is indicated (subject to further design iterations) on the drawings (refer to Appendix 4) to service the proposed Detention Basin, Gross Pollutant Trap and Proprietary System.

7. SWMS Description

7.1 System Design Criteria

In accordance with the Infrastructure Design Manual (IDM), the proposed development is to be design based on:

- Design Storm Event
  - Minor Systems 20% AEP
  - Major Systems 1% AEP
- Runoff Coefficient
  - Rural Residential Road Reserves - 0.6
  - Rural Residential Area – Lot areas >4,000m2 to 1Ha – 0.3
  - Public Open Spaces – 0.1 (ref: MWC MUSIC guidelines)

- Provision of Stormwater Treatment
  - 80% Retention of the typical Urban annual load for Total Suspend Solids (TSS)
  - 45% Retention of the typical Urban annual load for Total Phosphorus (TP)
  - 45% Retention of the typical Urban annual load for Total Nitrogen (TN)
  - 70% Retention of the typical Urban annual load for Gross Pollutants

7.2 Assumptions & Design Development

1. Further subdivision has not been allowed for and is considered that any future development within reason will need to be addressed at the time of developing unless the relevant and most up to date standards do not require it.
2. Modelling assumes the development only to a standard rural residential density use (runoff coefficient 0.3 (MWC MUSIC Guidelines) consistent with the existing zoning.
3. Development should meet (Where possible) the requirements of the Urban Stormwater Best Practice Environmental Management Guidelines 1999 and the Water Sensitive Urban Design Engineering Procedures 2005.
4. There is adequate space available for Water Sensitive Urban Design (WSUD) assets which will be gifted to and maintained by EGSC after acceptance.
5. Drainage pipe assets in areas where overland flow path enters an adjacent property is to be sized accordingly to ensure the 1% AEP gap flows are no higher than the existing 1% AEP flows.
6. EGSC's preference is to minimise future maintenance costs incurred by the municipality.
7. Drainage and WSUD assets are to have appropriate maintenance requirements met such as access paths, asset requirements ie. maintenance schedules and checklists and so on.

It is noted that an alternative stormwater management design was initially prepared but was abandoned due to the maintenance burden placed on the municipality and extent of excavation required to construct on a slope. This proposal required a larger area of drainage Reserve and a treatment train comprising: sediment basin, bioretention basins, constructed wetland and raingarden. The adopted solution proposes treatment via infiltration systems on each lot, GPT and proprietary system.

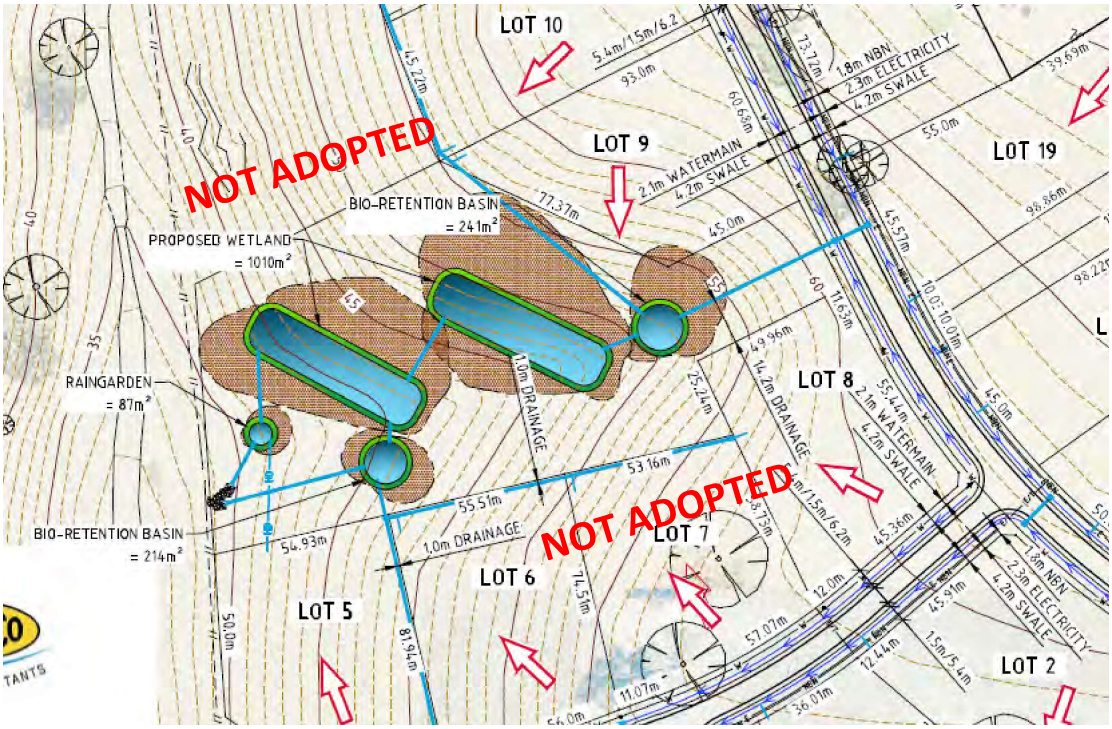


Figure 9: Alternative Concept Design (not adopted)

7.3 Catchment Management

7.3.1 Catchment Area

The site is located on the northwest side of the Bullumwaal Road & Wy Yung-Calulu Road intersection with properties bordering the site on the west and northern boundaries.

The site's natural relief results in the total site catchment discharging directly to the existing waterway within the abutting property to the west.

7.3.2 Sub-Catchments and Outfalls

The subject site has been divided into three (3) sub catchments with 1 proposed outfall.

Crossco Drawings 2879/001-002 at Appendix 4 shows the sub catchments, indicated by the "direction of flow" arrows shown on the drawings.

As far as possible the 20% AEP pipe network has been formulated to discharges to the outfall. This "internal drainage configuration" is crucial to the strategy, both in mitigating off site impacts, and in maximising the treatment efficiency of the Gross pollutant trap, secondary proprietary system and retarding basin.

7.4 Stormwater Quality

WSUD infrastructure proposed for the site include a combination of rainwater tanks for reuse and detention (however reuse has only been modelled), Gross Pollutant Traps and Proprietary systems. The location of the proposed assets is detailed on Crossco Drawings 2879/001-002 at Appendix 4.

Roadway stormwater will be collected via table drain along with 20% AEP pipe network.

Stormwater generated from roof areas on allotments is to be collected in rainwater tanks on each lot and used for domestic reuse in dwellings (eg. toilet, laundry and irrigation).

7.4.1 Rainwater Tanks

Rainwater tanks provide benefit by reducing the quantity of stormwater entering waterways at the same point in time. This is achieved by collecting, storing and reusing stormwater runoff from roofed surfaces. Collected stormwater can be reused to flush toilets, wash clothes, water gardens and other outside activities which can significantly reduce demand for potable water.

This domestic usage of stormwater reduces strain on stormwater drainage network, drinking water network and reduces stormwater runoff and flood peaks.

Figure 9 shows an example of a general arrangement promoted by Melbourne Water for reuse of stormwater. No disinfection of stormwater at dwellings is proposed in the subject proposal.

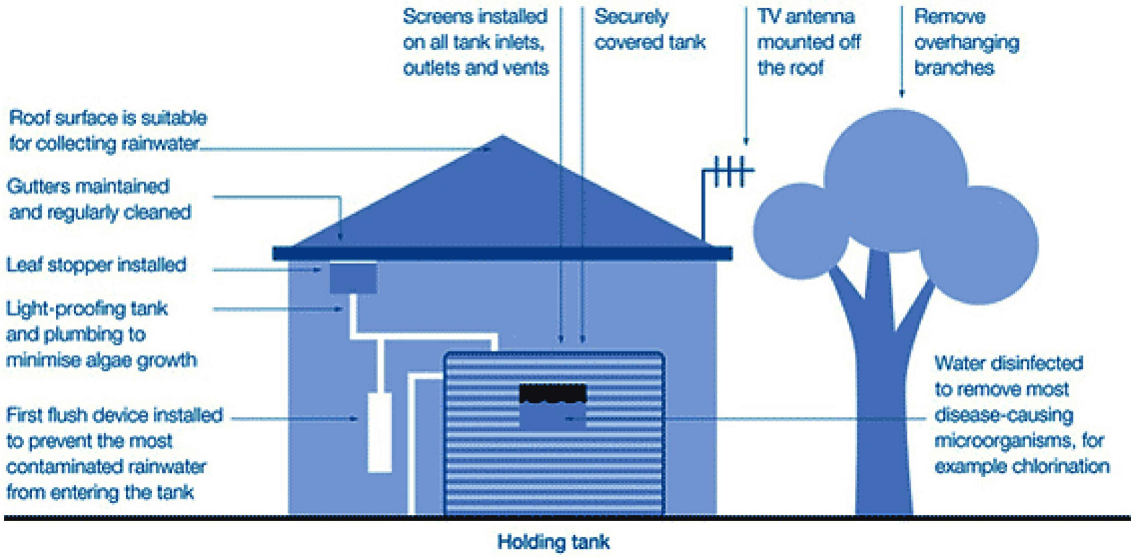


Figure 10: Melbourne Water Rainwater Tank Detail

Rainwater tank demands are generally assumed as per the MWC MUSIC Guidelines as per the assumptions detailed in Appendix 5.

7.4.2 Gross Pollutant Traps

Gross Pollutant traps are structures that trap solid waste such as little and coarse sediment through a physical process. Typically, a gross pollutant trap is the primary treatment as it provides a physical screen, rapid sedimentation, and separation process for contaminants.

There are a wide variety of Gross Pollutant traps which all have a similar function which is to trap litter and sediment above 5mm in sizes which then allows this litter and sediment to be removed from the water system. This process allows large pollutants to be removed allowing for the downstream treatment of stormwater to be more effective.

Figure 11 provides an example of a Gross Pollutant Trap – Atlan Vortceptor.

Figure 11: Gross Pollutant Trap – Atlan Vortceptor

Gross Pollutant Traps are defined as GP01 & GP02 as per the Crossco Site Drainage Plan.

Concept design sizes are as detailed in Appendix 5. In general, the Gross Pollutant traps will be position at the end of each respective outfall prior to the secondary system. The finalisation of the location and design (including design invert levels, etc) will be further refined and documented during the detail design phase of the road & drainage network.

7.4.3 Proprietary Secondary Systems

Water Sensitive Urban Design proprietary systems are manufactured items that have been designed to reduce the footprint of WSUD and provide an ease of maintenance to asset owners. There are many proprietary systems around which mostly work as specialised filtration systems.

Figure 12 provides an example of a Proprietary secondary system – Atlan Flow Filter.

Figure 12: Secondary Proprietary System – Atlan Flow Filter

Secondary Proprietary systems are defined as PR1 & PR2 as per the Crossco Site Drainage Plan.

Concept design sizes are as detailed in Appendix 5. In general, the secondary proprietary system will be position at the end of each respective outfall proceeding the Gross Pollutant Trap. The finalisation of the location and design (including design invert levels, etc) will be further refined and documented during the detail design phase of the road & drainage network.

7.4.4 Bioretention System

Bioretention systems are also known as raingardens. Bioretention systems promote the filtration of stormwater through a means of a vegetated filter media and improve stormwater quality by filtering the stormwater to remove pollutants such as phosphorous and nitrogen. Bioretention systems can also assist with water quality control and increase amenity as they can be integrated into landscape design and become key elements for mass planting. There is also a benefit to wildlife by enhancing the existing ecosystem.
Figure 13 provides a schematic example of a typical bioretention system.

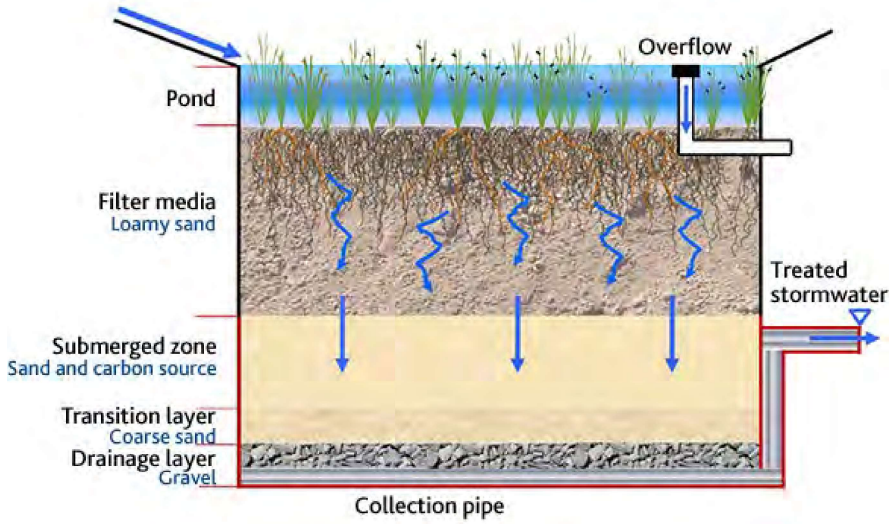


Figure 13: Bioretention System – Typical

The Bioretention system is situated within the proposed retarding basin as per the Crossco Site Drainage Plan.

Concept design size (being filter base areas) are detailed in Appendix 4. In general, the bioretention system will sit in the base of the retarding basin and will treat low flows in the retarding basin. Preliminary site assessment indicates that there is enough space and fall available to accommodate this simple bioretention.

The extent of the bioretention system and finalisation of geometric design (including design invert levels etc (configured to accommodate upstream inverts levels and downstream pipe outfalls (or similar) to the existing watercourse) will be further refined and documented during the detailed design phase.

7.5 Stormwater Detention

7.5.1 Detention Basin

Detention basins or Retarding basins or Dry detention basins are low-lying areas of land, which allow for stormwater to be temporarily stored during heavy rain. Most basins are grassy areas that can also provide a space for recreational purposes for the community during dry times.

During large storm events, the retarding basin will fill and hold back the stormwater to reduce flood risk to downstream and surrounding areas. The basin flow is restricted by a means of an orifice to limit the speed of the outflow to pre-development flow. The stormwater is temporarily held and slowly released for approximately 24 hours. During this time, the recreational areas may be affected. Please see figure 11 which shows how the retarding basin works before and after a rain event.

Figure 14: Dry Detention Basin - Typical Arrangement

The dry detention basin is governed by the size of the orifice which is calculated at the time of detail design. This orifice limits the outflow of water for the basin with the available storage upstream of this orifice equal to or greater than the 1% AEP flood storage. A typical arrangement of a retarding basin is provided below in figure 12.

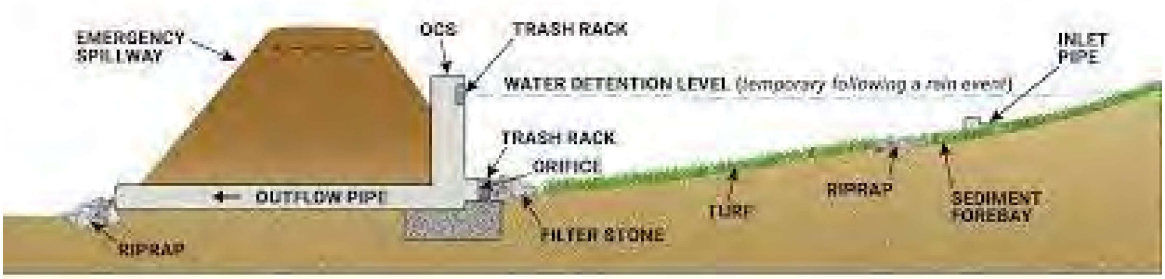


Figure 15: Dry Detention Basin - Typical Arrangement

The one Retarding basin this strategy is defined as RB01, as per the Crossco Site Drainage Plan.

The concept design capacities are as detailed in Appendix 5.

The preliminary site assessment indicates that there is enough space available to accommodate this asset (and maintenance access track), within a proposed reserve to the south of the stage 2 development. Batters or other means of battering (i.e Gabions) may be required given the very steep nature of the proposed reserve area.

The finalisation of geometric design (including all design levels and extents) will be further refined and documented during the functional and detailed design phase of the project. This includes checking the requirements of the Infrastructure Design Manual (IDM) are adhered to going forward.

7.6 Proposed Treatment

As detailed in Appendix 5 MUSIC Modelling has been undertaken to determine a practical WSUD Treatment train for the proposed development.
In summary the treatment train comprises:

- Rainwater Tanks
  The proposed rainwater tanks will be connected to all dwelling roofs and be plumbed into the proposed dwelling for laundry and toilet flushing reuse.
- Gross Pollutant Traps
  Following on from the road & drainage network at each respective outfall location, a gross pollutant trap should be positioned to allow for efficient use and allow for access for maintenance purposes. In this concept an Atlan - Vortceptor - SVO.360 has been proposed at each outfall.
- Secondary Proprietary System
  Following on from the road & drainage network as well as the Gross Pollutant Trap (Primary Treatment) at each respective outfall location, a gross pollutant trap should be positioned to allow for efficient use and allow for access for maintenance purposes. In this concept an Atlan - Flow Filter SHS.3500/25has been proposed at each outfall.
- Detention/Retarding Basin
  The development site requires approximately 1116m^3 of flood storage for the 1% AEP storm event. The area shown is a guide only of the size required to accommodate the 1% AEP storage. Further details including orifice design will need to be undertaken during detail design. This dry retarding basin will be a significant benefit to the stormwater strategy and to the neighbouring waterway and downstream properties.

All infrastructure will be funded by the developer a become assets gifted to EGSC and constructed on land to be Reserves in EGSC ownership (refer to proposed plan of subdivision by Others, and subdivisional layout at Appendix 3).

The MUSIC Model assumptions, descriptions and results are detailed in Appendix 5.

7.7 Sub catchment outfalls and treatment summary

Sub catchments (indicated by arrows on Crossco Drawing 2879/001-002 at Appendix 4) with stormwater generated in each sub catchment being treated and out falling via the proposed retention basin to the gully / waterway to the west.

8. Environmental Management

Construction of stormwater infrastructure outlined in this report will require management to ensure there is no off-site impact.

Poor sediment control and litter management practices during construction can result in public nuisance, drainage blockages and off-site pollution. In particular sediment entering the drainage system has a negative impact on the performance of stormwater treatment and conveyance by depositing sediment (in pits, pipes, swales, basins etc) which impairs the designed performance of the system. Sediment discharged off-site has negative ecological impacts including: smothering, reducing sunlight penetration and increasing nutrient loads and other pollutants.

Examples of poor environmental management practices and off-site impacts are shown at Figure 16 and Figure 17 below, and in all examples compliance with EPA Publication 1834 would have mitigated the negative off-site impacts.

Figure 16: Off-site Sediment Examples

Figure 17: Building Materials - off-site impact

Non-compliant environmental management practices during the building construction phase impairs the design capacity and performance of drainage and stormwater management infrastructure. Compliance with EPA publication 1834 through ***all*** phases of construction works is strongly recommended. The publication cover page and excerpt of table of contents is included at Figure 19.

Contents

Figure 18: EPA Publication 1834 cover & ToC excerpt

9. Conclusion and Recommendations

This report presents the concept design of infrastructure required to service the proposed development including WSUD elements that meet best practice treatment of stormwater generated before discharging to Wy Yung-Calulu Road and drainage and WSUD elements have been designed with preliminary grading (slope) and geometry considered. The level of detail supporting the design work represented in the drawings at Appendix 4 is not 2-dimensional.

Notwithstanding the above, all elements designed are **CONCEPT** designs only. Consistent with standard design practice, the concept design requires further development (into a functional and then detailed design) as the project becomes further advanced.

As design development advances the following is recommended:

- Consideration of staging (if proposed).
- Geotechnical site assessment suitable for road pavement design, construction of detention basin, and associated stormwater outfalls.

Stormwater generated at the proposed development can be managed to meet best practice requirements.

Any approval should be conditional upon and allow:

- dwelling floor level at Lot 5 must command house drain as shown on the drawings.
- progressive development of design.
- staged delivery of infrastructure (if staged plan of subdivision proposed).
- all stages of infrastructure construction (including dwellings) to comply with EPA publication 1834.

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MIEAust CPEng NER

10/04/2024

Appendix

Appendix 1 – Property Reports

PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

From www.planning.vic.gov.au at 08 February 2024 05:40 PM

PROPERTY DETAILS

Address:	**385 BULLUMWAAL ROAD WY YUNG 3875**
Lot and Plan Number:	**Lot 2 PS434082**
Standard Parcel Identifier (SPI):	**2\PS434082**
Local Government Area (Council):	**EAST GIPPSLAND** www.eastgippsland.vic.gov.au
Council Property Number:	**78365**
Planning Scheme:	**East Gippsland** Planning Scheme - East Gippsland
Directory Reference:	**Vicroads 84 B6**

UTILITIES

Rural Water Corporation:	**Southern Rural Water**
Urban Water Corporation:	**East Gippsland Water**
Melbourne Water:	**Outside drainage boundary**
Power Distributor:	**AUSNET**

STATE ELECTORATES

Legislative Council:	**EASTERN VICTORIA**
Legislative Assembly:	**GIPPSLAND EAST**

OTHER

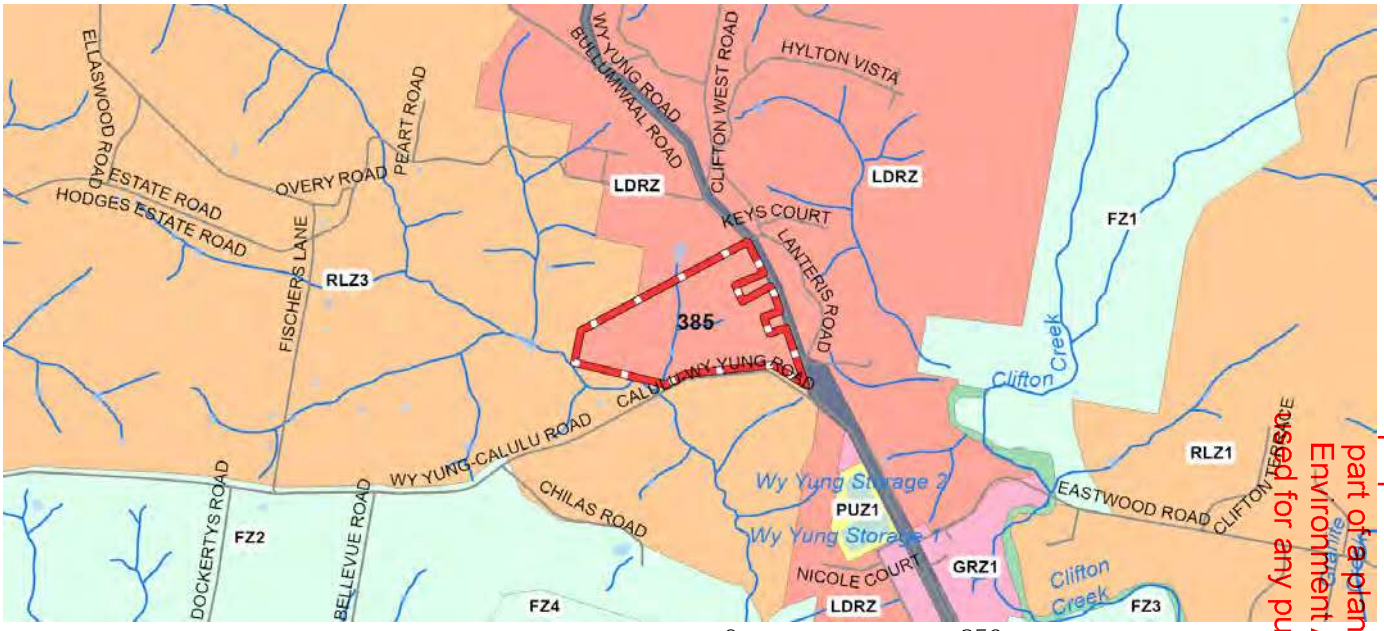
Registered Aboriginal Party:	**Gunaikurnai Land and Waters Aboriginal Corporation**

View location in VicPlan

Planning Zones

LOW DENSITY RESIDENTIAL ZONE (LDRZ)

SCHEDULE TO THE LOW DENSITY RESIDENTIAL ZONE (LDRZ)



FZ - Farming
GRZ - General Residential
LDRZ - Low Density Residential
PPRZ - Public Park and Recreation
PUZ1 - Public Use-Service and Utility
RLZ - Rural Living
TRZ2 - Principal Road Network
Water area
Water course

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

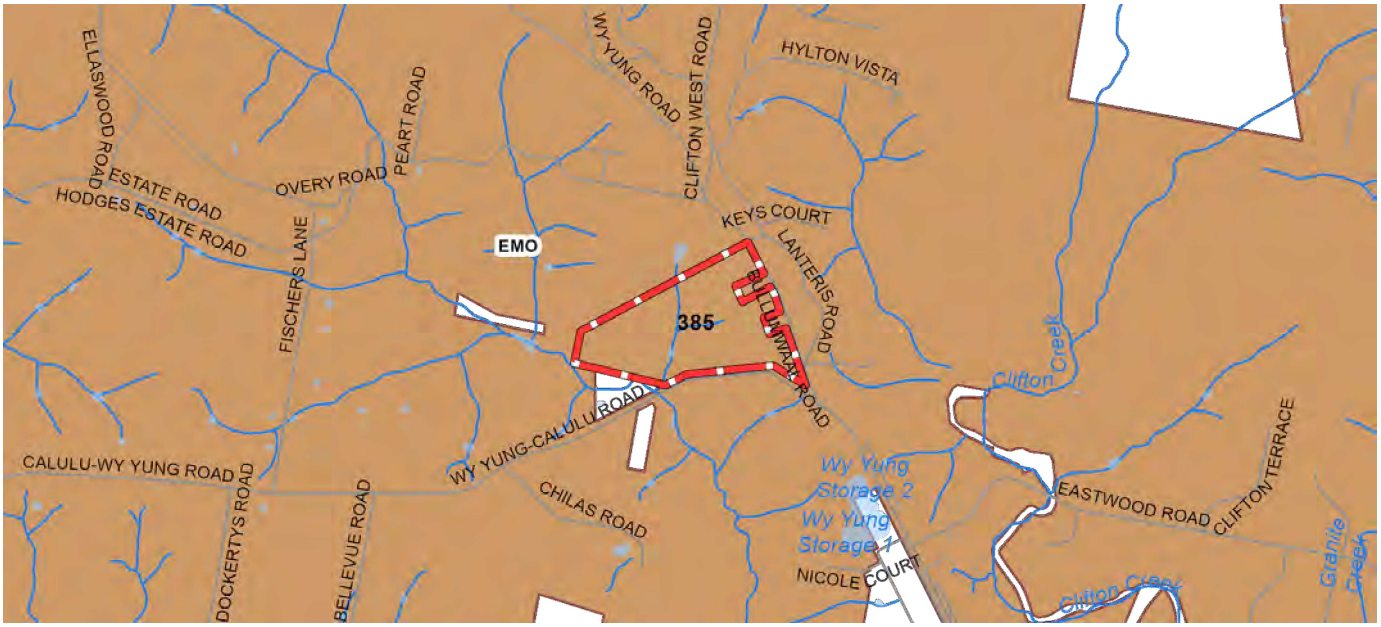
PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

Planning Overlays

EROSION MANAGEMENT OVERLAY (EMO)

EROSION MANAGEMENT OVERLAY SCHEDULE (EMO)

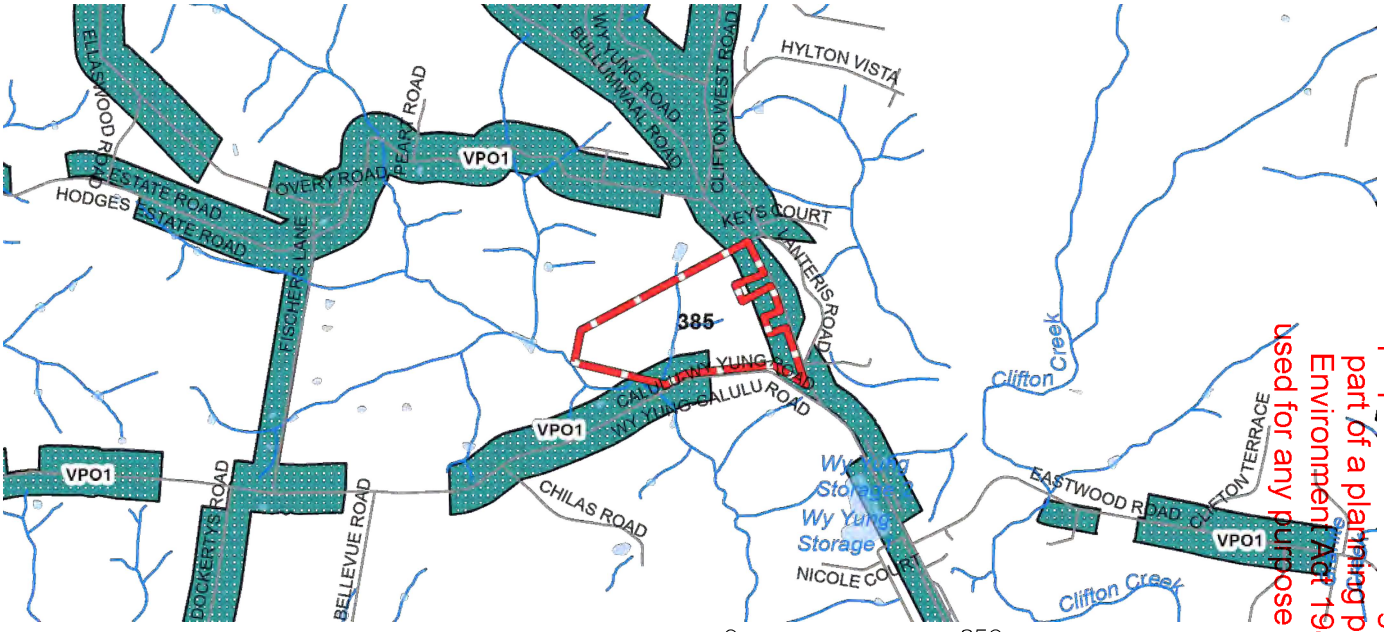


EMO - Erosion Management Overlay | Water area | Water course

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

VEGETATION PROTECTION OVERLAY (VPO)

VEGETATION PROTECTION OVERLAY - SCHEDULE 1 (VPO1)



VPO - Vegetation Protection Overlay | Water area | Water course

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

PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

Planning Overlays

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

BUSHFIRE MANAGEMENT OVERLAY (BMO)

ENVIRONMENTAL SIGNIFICANCE OVERLAY (ESO)

LAND SUBJECT TO INUNDATION OVERLAY (LSIO)

BMO - Bushfire Management Overlay | **ESO - Environmental Significance Overlay** | **LSIO - Land Subject to Inundation Overlay**

Water area | **Water course**

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

PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

Areas of Aboriginal Cultural Heritage Sensitivity

All or part of this property is an 'area of cultural heritage sensitivity'.

'Areas of cultural heritage sensitivity' are defined under the Aboriginal Heritage Regulations 2018, and include registered Aboriginal cultural heritage places and land form types that are generally regarded as more likely to contain Aboriginal cultural heritage.

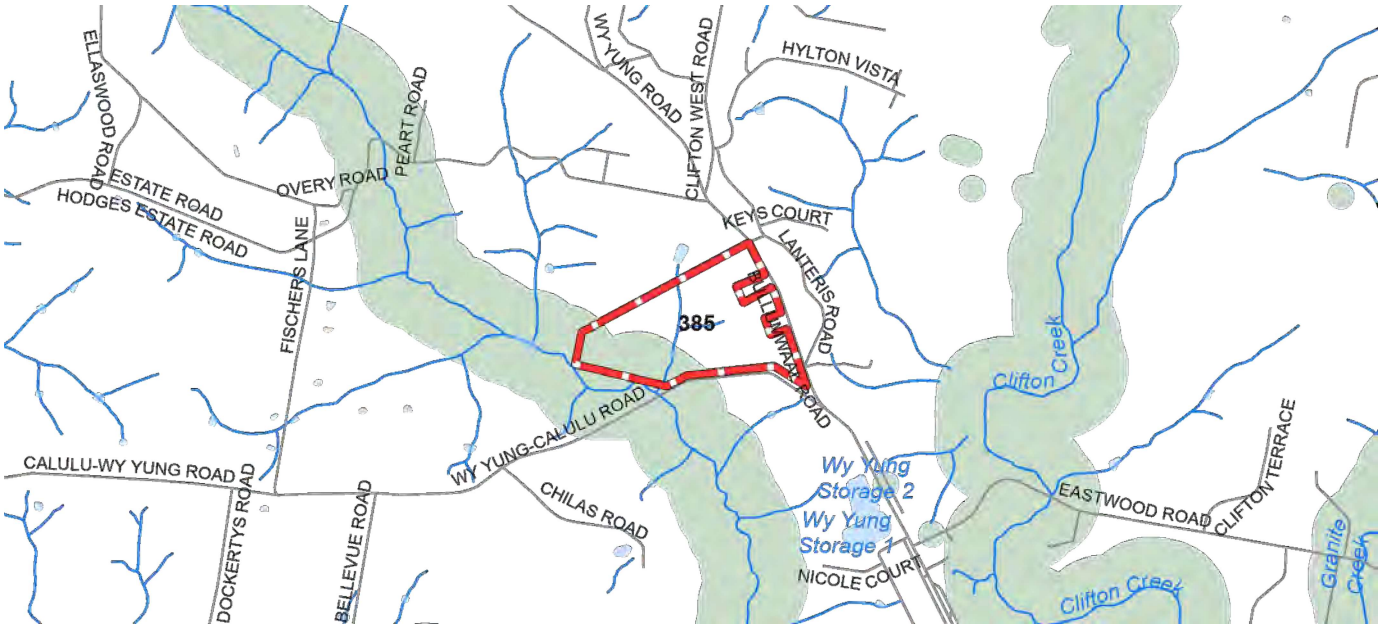
Under the Aboriginal Heritage Regulations 2018, 'areas of cultural heritage sensitivity' are one part of a two part trigger which require a 'cultural heritage management plan' be prepared where a listed 'high impact activity' is proposed.

If a significant land use change is proposed (for example, a subdivision into 3 or more lots), a cultural heritage management plan may be triggered. One or two dwellings, works ancillary to a dwelling, services to a dwelling, alteration of buildings and minor works are examples of works exempt from this requirement.

Under the Aboriginal Heritage Act 2006, where a cultural heritage management plan is required, planning permits, licences and work authorities cannot be issued unless the cultural heritage management plan has been approved for the activity.

For further information about whether a Cultural Heritage Management Plan is required go to http://www.aav.nrms.net.au/aavQuestion1.aspx

More information, including links to both the Aboriginal Heritage Act 2006 and the Aboriginal Heritage Regulations 2018, can also be found here – https://www.aboriginalvictoria.vic.gov.au/aboriginal-heritage-legislation



PLANNING PROPERTY REPORT

Environment, Land, Water and Planning

Further Planning Information

Planning scheme data last updated on 7 December 2023.

A **planning scheme** sets out policies and requirements for the use, development and protection of land. This report provides information about the zone and overlay provisions that apply to the selected land. Information about the State and local policy, particular, general and operational provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting https://www.planning.vic.gov.au

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the ***Planning and Environment Act 1987.*** It does not include information about exhibited planning scheme amendments, or zonings that may abut the land. To obtain a Planning Certificate go to Titles and Property Certificates at Landata - https://www.landata.vic.gov.au

For details of surrounding properties, use this service to get the Reports for properties of interest.

To view planning zones, overlay and heritage information in an interactive format visit https://mapshare.maps.vic.gov.au/vicplan

For other information about planning in Victoria visit https://www.planning.vic.gov.au

PLANNING PROPERTY REPORT

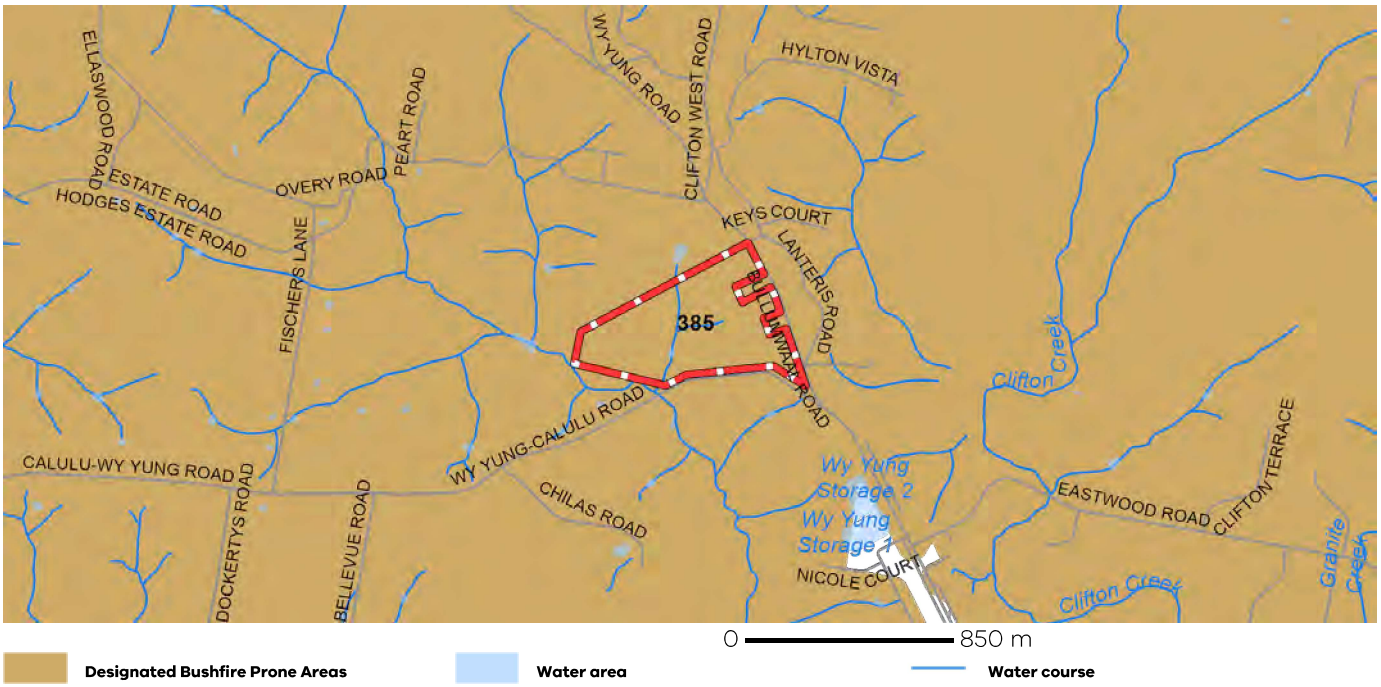
Environment, Land, Water and Planning

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.

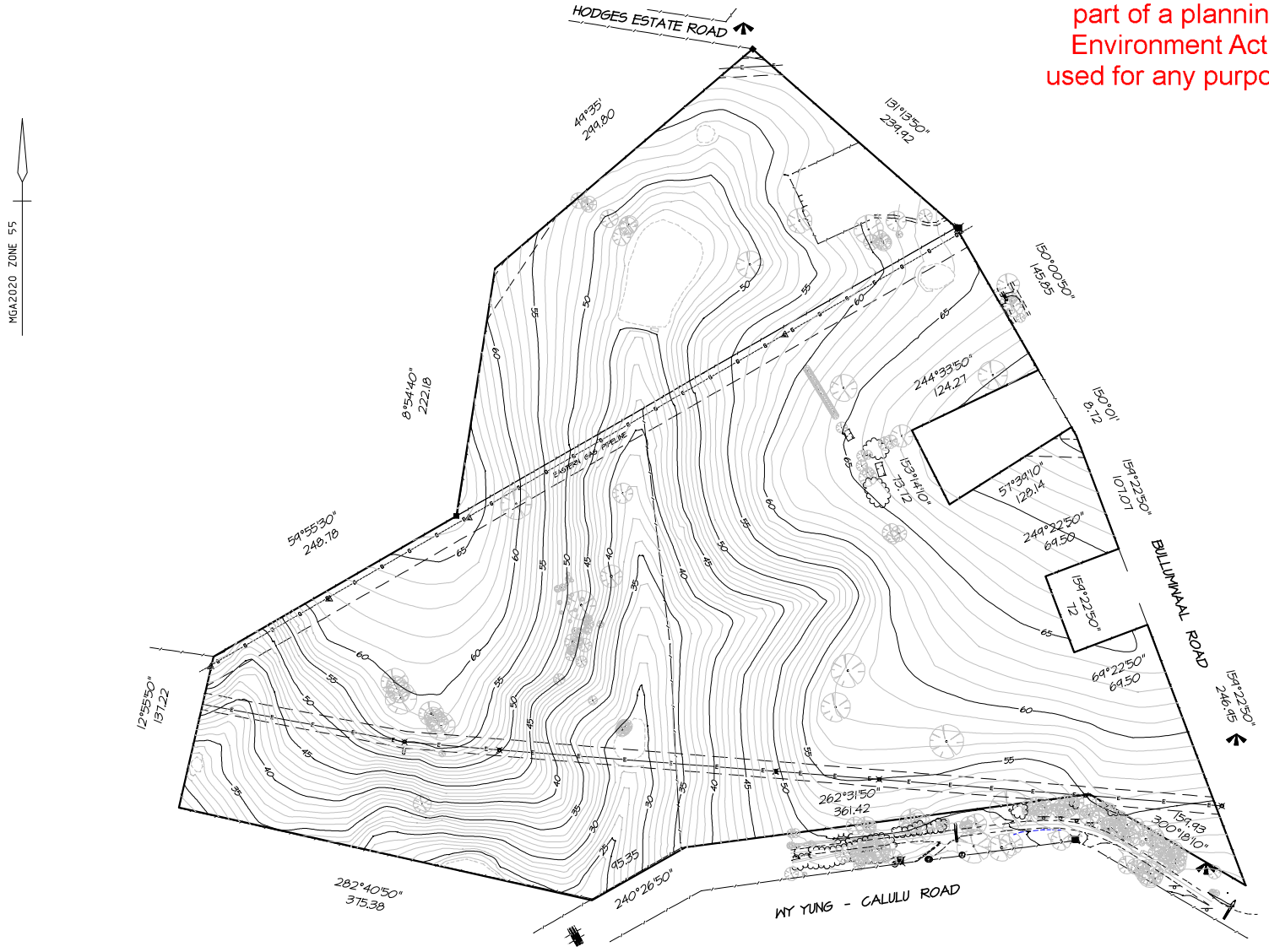
Native Vegetation

Native plants that are indigenous to the region 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 Information Management system https://nvim.delwp.vic.gov.au/ 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)

Appendix 2 – Feature Survey & Contours



WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

NOTATIONS

RE-ESTABLISHMENT DATUM VIDE PS840667

HEIGHTS ARE TO AHD - DATUM VIDE GPSNET
CONTOUR INTERVAL : 1m

DATE OF SURVEY : 12/9/2022

Legend of Features
- Electricity Pit
- Stop Valve
- Telecom Pit
- Electricity Pole
- Light Pole
- Sewerage Manhole
- Water Meter
- Fire Plug
- Tap

Crowther & Sadler Pty.Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
102 MACLEOD STREET, BAIRNSDALE, VIC., 3875
TELEPHONE (03) 5152 5011

SURVEYORS REF. 19495

SCALE @ A1 1 : 2000

CAD FILENAME: \\Casserver\shared folders\Company\Data\Jobs\19000-19999\19400-19499\19495 Mallison\19495 FEATURES v2.prp

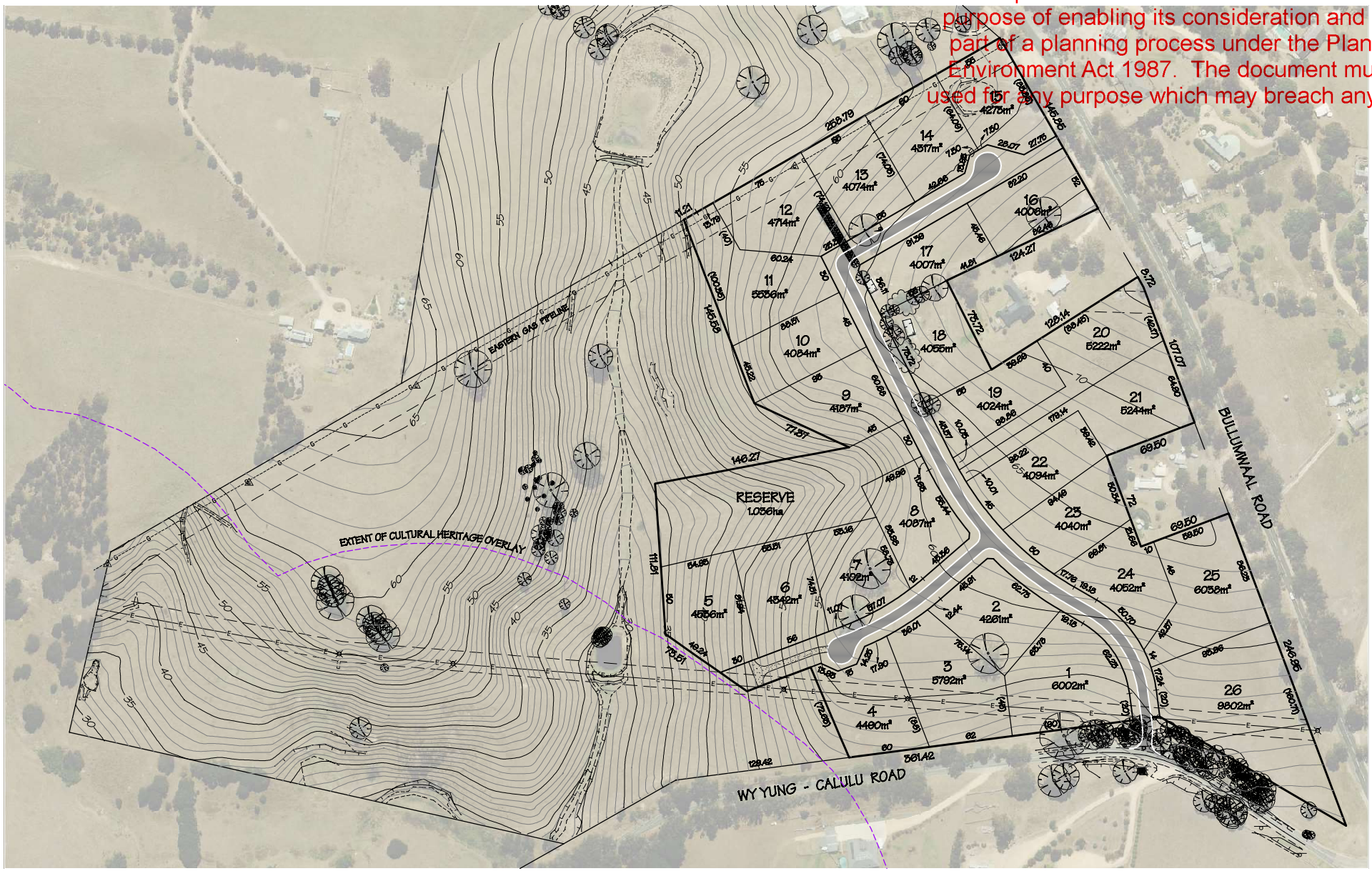
PLAN OF RE-ESTABLISHMENT & FEATURES

PARISH OF WY YUNG
CROWN ALLOTMENT 24B & 24J (PARTS)

LOT 2 - PS434082
LOT 1 - PS840667

MACK INVESTMENTS PTY LTD
385 BU[illegible] WY YUNG

Appendix 3 – Subdivisional Layout (V1)



MOUNT TAYLOR PROPERTIES 385 BULLUMWAAL ROAD, WY YUNG	NOTATIONS AREAS ARE APPROXIMATE ONLY DIMENSIONS ARE SUBJECT TO SURVEY CONTOUR INTERVAL : 1m	PROPOSED SUBDIVISION PARISH OF WY YUNG CROWN ALLOTMENT 24B & 24J (PARTS) LAND IN PS434082
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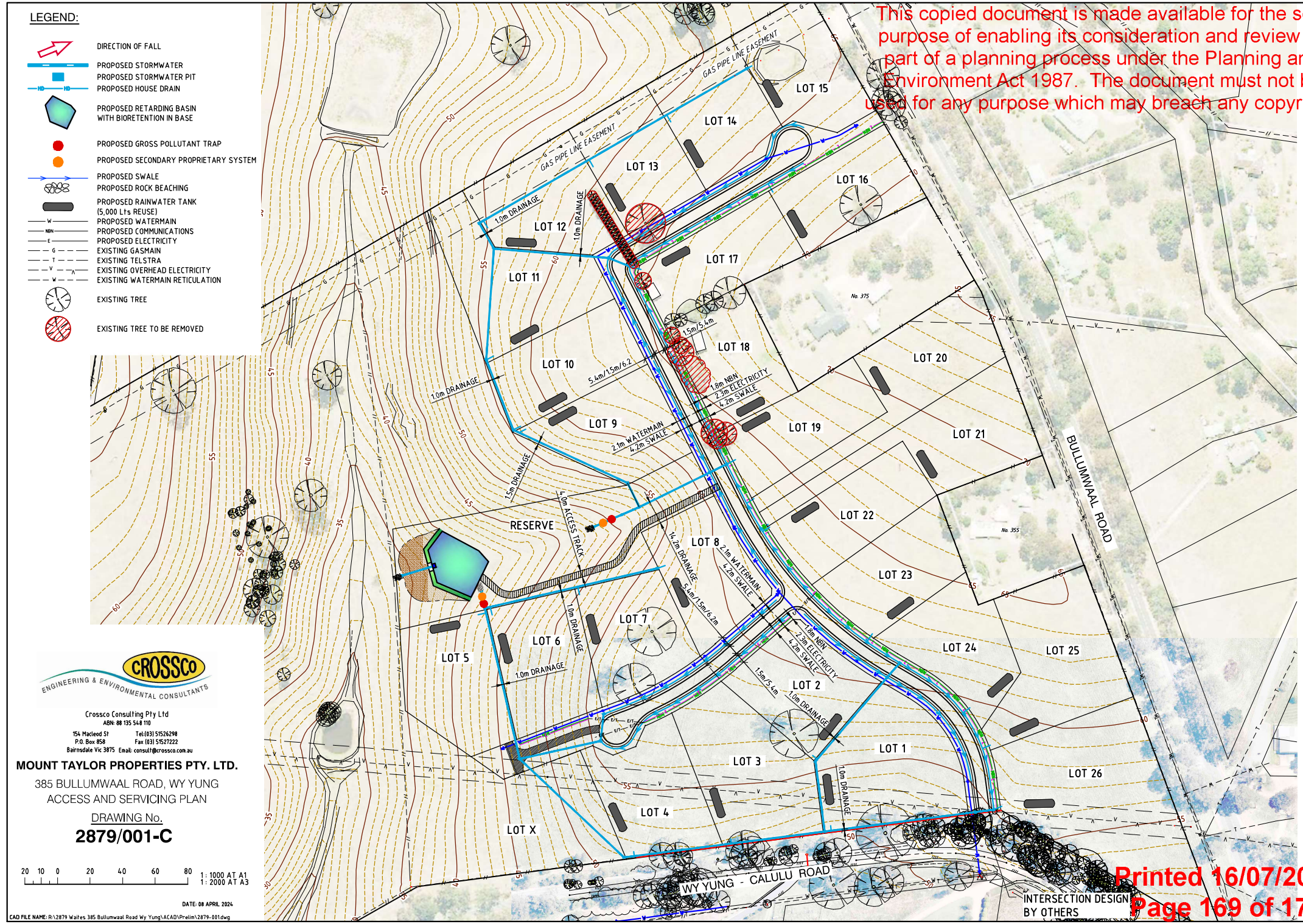
FILENAME: Y:\20000-20999\20400-20499\20432 Mt Taylor Properties Pty Ltd\20432 Prop V2.pro		

Appendix 4 – Crossco Drawings

2879/001 Access & Servicing Plan

2879/002 Site Drainage Plan



CROSSCO ENGINEERING & ENVIRONMENTAL CONSULTANTS

Crossco Consulting Pty Ltd
ABN: 88 135 548 110
154 Macleod St Tel:(03) 51526298
P.O. Box 858 Fax (03) 51527222
Bairnsdale Vic 3875 Email: consult@crossco.com.au

MOUNT TAYLOR PROPERTIES PTY. LTD.

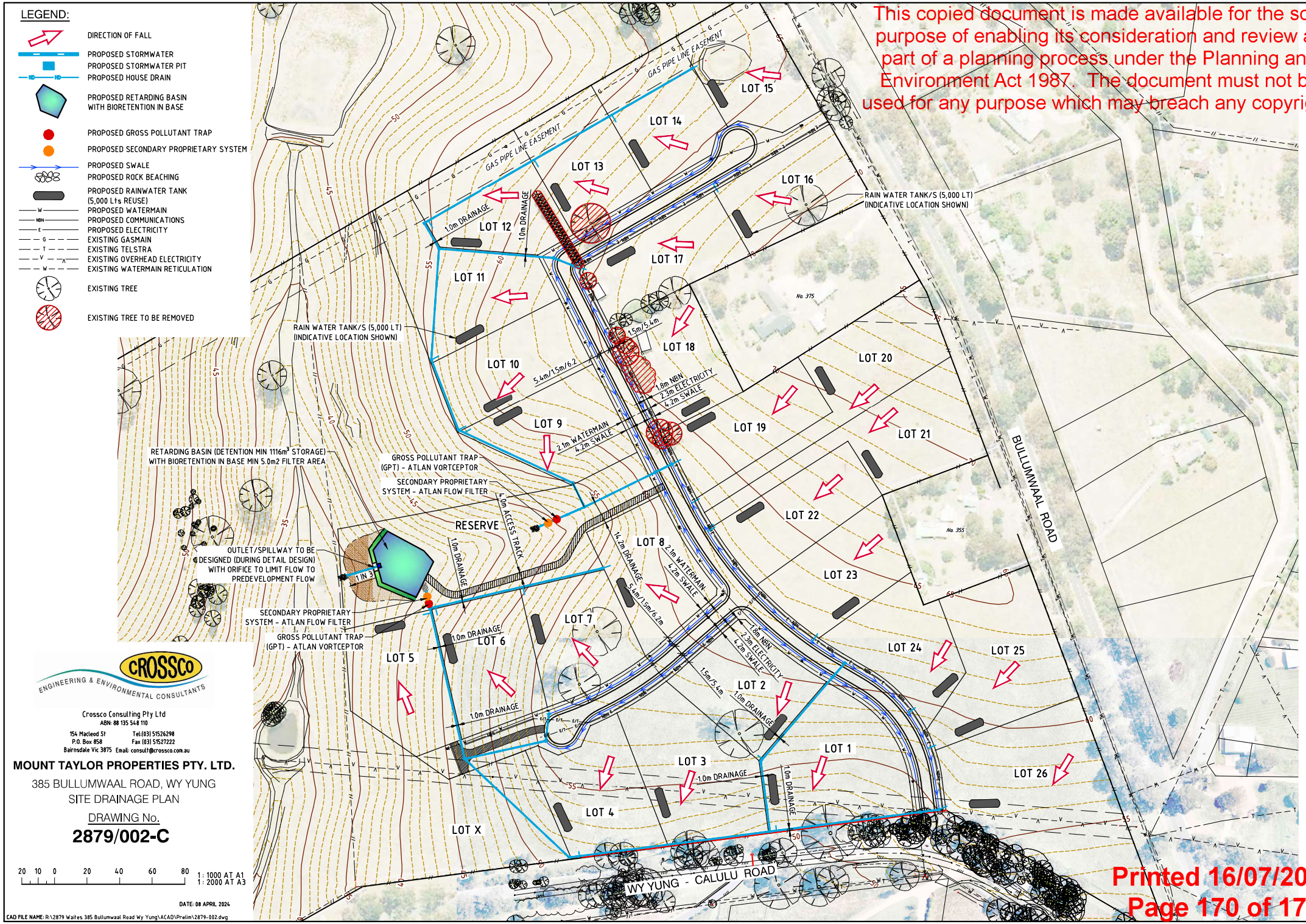
385 BULLUMWAAL ROAD, WY YUNG
ACCESS AND SERVICING PLAN

DRAWING No.
2879/001-C

20 10 0 20 40 60 80 1: 1000 AT A1
1: 2000 AT A3

DATE: 08 APRIL 2024

CAD FILE NAME: R:\2879 Waites 385 Bullumwaal Road Wy Yung\ACAD\Prelim\2879-001.dwg



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MOUNT TAYLOR PROPERTIES PTY. LTD.

385 BULLUMWAAL ROAD, WY YUNG
SITE DRAINAGE PLAN

DRAWING No.
2879/002-C

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1: 1000 AT A1
1: 2000 AT A3

DATE: 08 APRIL 2024

CAD FILE NAME: R:\2879 Waites 385 Bullumwaal Road Wy Yung\ACAD\Prelim\2879-002.dwg

Appendix 5 MUSIC Modelling

MUSIC modelling was completed to assess the stormwater pollutant retention benefits of the drainage strategy.

MODEL DEVLEOPMENT

Catchments

The proposed WSUD Strategy comprises of 1 outfall provided for all four sub-catchments – refer to Crossco Drawing 2879/001-002 at Appendix 4).

Catchments have been split (via surface types) as detailed in Table A.5.2. At this stage, it is assumed that every lot will have a 250m2 roof. As such, each sub catchment has then been further delineated to define (with consideration of the overall fraction imperviousness detailed in Table A.5.1) into:

- Impervious roof areas discharging to stormwater harvesting tanks.
- Impervious areas not discharging to tanks, and
- Pervious areas.

Given the lack of available data, the Melbourne water corporation MUSIC tool guidelines surface zonings and pervious soil storage parameters have been utilised.

Table A.5.1 Combined MUSIC Catchments

Catchment	Area (ha)[1,2]	F_{imp} (%)	No Lots[3]
A	6.6	40%	10
B	3.2	40%	6
C	4.4	40%	9
D	0.5	30%	1
Total	**14.6**		26

1 - Minor (pipe system) Catchment
2 - Accounts for stage 2 development **only**. No allowance has been made for existing properties that are contributing to the catchment.
3 - Assumes no further subdividing

Table A.5.2 Split MUSIC Catchments

Catchment	Area (ha)	F_{imp}
A_Roof	0.25	100%
A_Other_Imp	2.39	100%
A_Perv	3.96	0%
B_Roof	0.15	100%
B_Other_Imp	1.12	100%
B_Perv	1.90	0%
C_Roof	0.23	100%
C_Other_Imp	1.54	100%
C_Perv	2.64	0%
D_Roof	0.03	100%
D_Other_Imp	0.11	100%
D_Perv	0.32	0%

Climate Data

Six minute Dandenong rainfall and evaporation data (1/1/1967 – 31/12/1976, Mean annual rainfall (MAR) = 773mm/yr, evaporation = 1027mm/yr) was used in the analysis. This is the Melbourne Water data set areas for southeast Melbourne and West Gippsland for the rainfall band of 750mm-850mm.

Hydrologic Routing

No routing has been utilised with the MUSIC modelling undertaken.

Treatment Elements

The WSUD Initiatives proposed are as detailed in this report and the Crossco Site Drainage Plan. Table A.5.3 below details the WSUD Assets modelled.

Table A.5.3 Major WSUD Element Parameter

WSUD Element	Element Type	Design Parameters
Tanks for Toilet Flushing, Laundry and Garden	Tanks for Stormwater harvesting	5,000 litre tanks on each lot. - 2,000t for reuse
GP1	Gross Pollutant Trap	Atlan - Vortceptor - SVO.360
GP2	Gross Pollutant Trap	Atlan - Vortceptor - SVO.360
PR1	Proprietary System	Atlan - Flow Filter SHS.3500/25
PR2	Proprietary System	Atlan - Flow Filter SHS.3500/25
BIO1	Bioretention System	Bioretention system in base of Retarding Basin - 5m2 Filter Area, 0.3m EDD, 0.5m Filter Depth, Base not lined, Vegetated with effective plants

5kl rainwater tanks collecting stormwater from the roofs within the development are proposed within this SWMS as detailed in Table A.5.4. The Tanks are intended to be utilised for Toilet, laundry and garden use within all new dwellings. Utilized the 2021 census (to give an expected 2.5 people per dwelling in Wy Yung), and the typical toilet and laundry demands quoted in the Melbourne Water Corporation draft MUSIC Guidelines.

- 20 litres/per person/per day for toilet demand and
- 80 litres/day per household for laundry demand and
- 30 litres/day per household for Irrigation demand.

Table A.5.4 Tank Modelling Assumptions

Tanks	Roofs	Equivalent Tank Size (kL)	Toilet use (kL/yr)	Laundry Use (kL/yr)	Garden Use (kL/yr)	Total Demand (kL/yr)
A_Tanks	10	20	160.6	292	109.5	562.1
B_Tanks	6	12	96.4	175.2	65.7	337.3
C_Tanks	9	18	144.5	262.8	98.55	505.9
D_Tanks	1	2	16.1	29.2	10.95	56.2

The MUSIC model is detailed in Figure A.5.1 Below

Figure A.5.1 MUSIC model

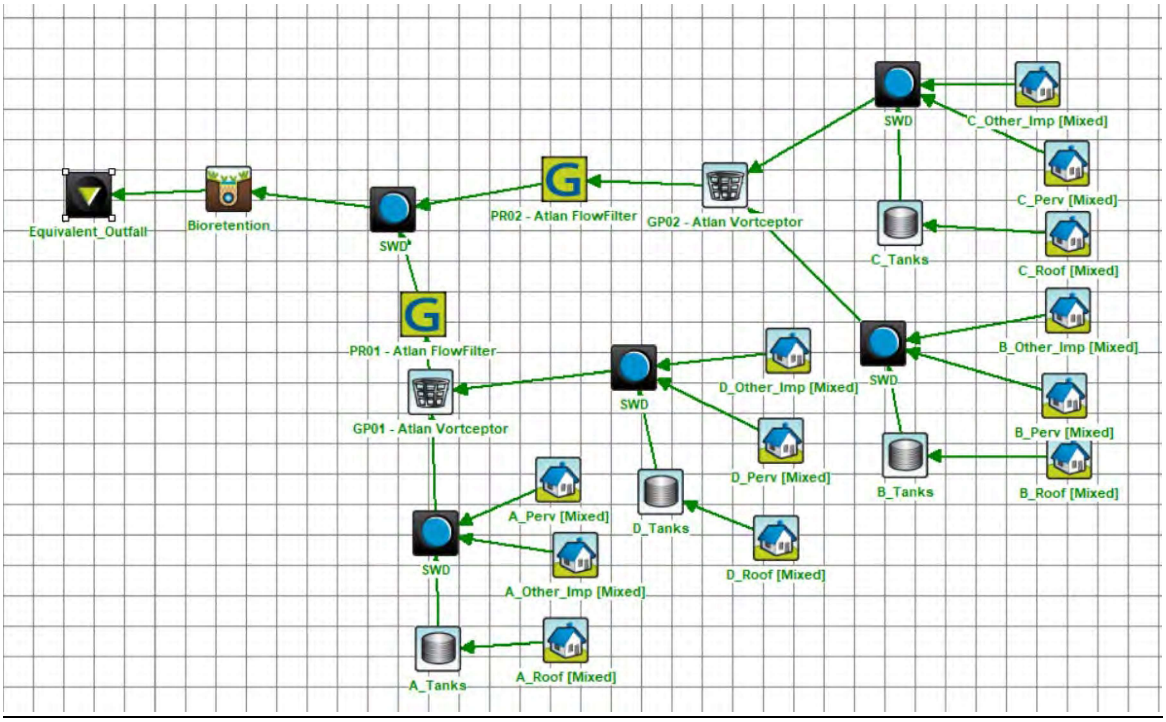


Table A.5.5 MUSIC Results

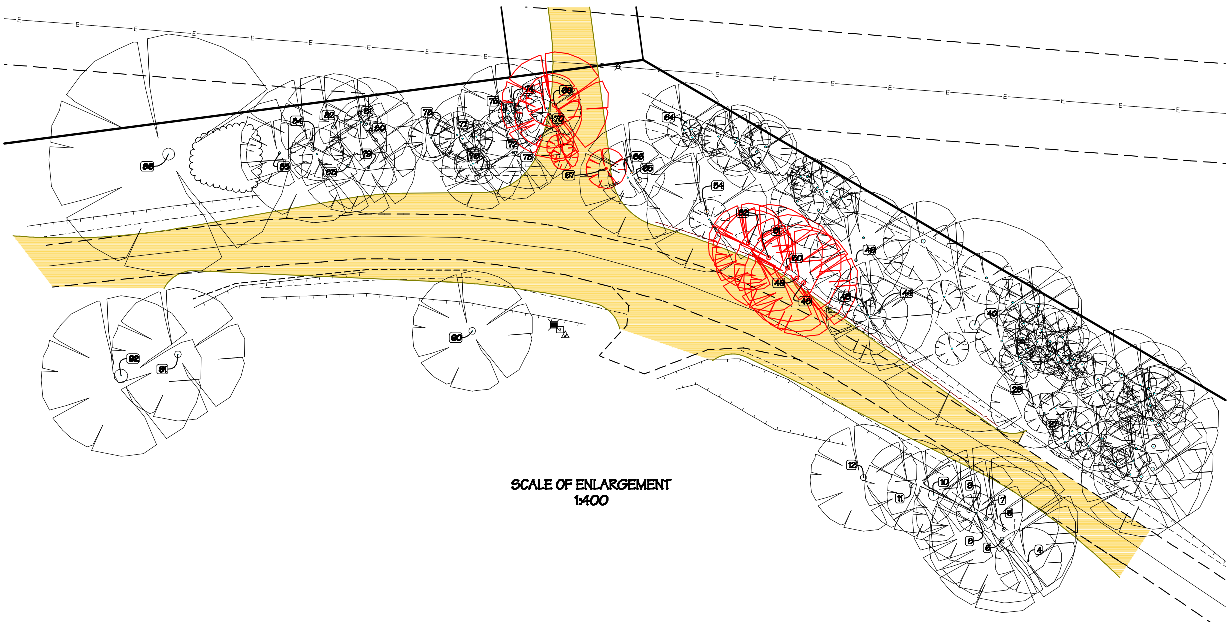
Pollutant:	Total Loads generated	Total Loads Retained	% Retention	Best Practice
Flow (ML/yr)	53.6	51.7	3.5%	
Total Suspended Solids (kg/yr)	8,280	618	92.5%	≥80%
Total Phosphorus (kg/yr)	18.7	5.4	71.1%	≥45%
Total Nitrogen (kg/yr)	144.0	78.4	45.6%	≥45%
Gross Pollutants (kg/yr)	1,510	0	100.0%	≥70%

As detailed above, on a catchment scale, the proposed WSUD initiatives detailed and show on Crossco Drawing 2879/002 at Appendix 4 are meeting best practice requirements of 80% retention of TSS, 45% retention of TP and 45% retention of TN.

END OF DOCUMENT

MGA2020 ZONE 55

SEE ENLARGEMENT



SCALE OF ENLARGEMENT
1:400

- TREE TO BE RETAINED
- TREE TO BE REMOVED
- LIMIT OF WORKS

MOUNT TAYLOR PROPERTIES 385 BULLUMWAAL ROAD, WY YUNG	NOTATIONS AREAS ARE APPROXIMATE ONLY DIMENSIONS ARE SUBJECT TO SURVEY	
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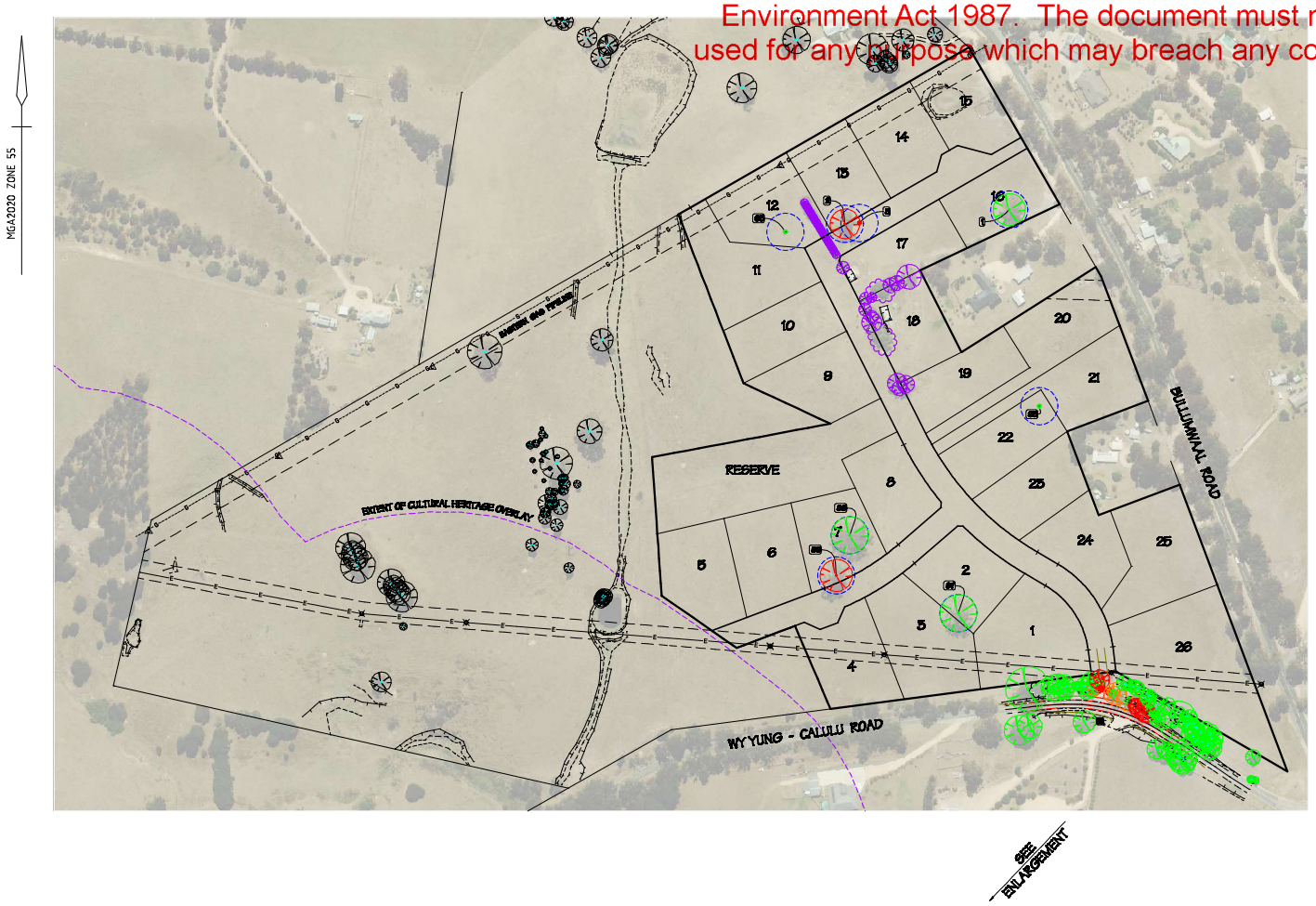
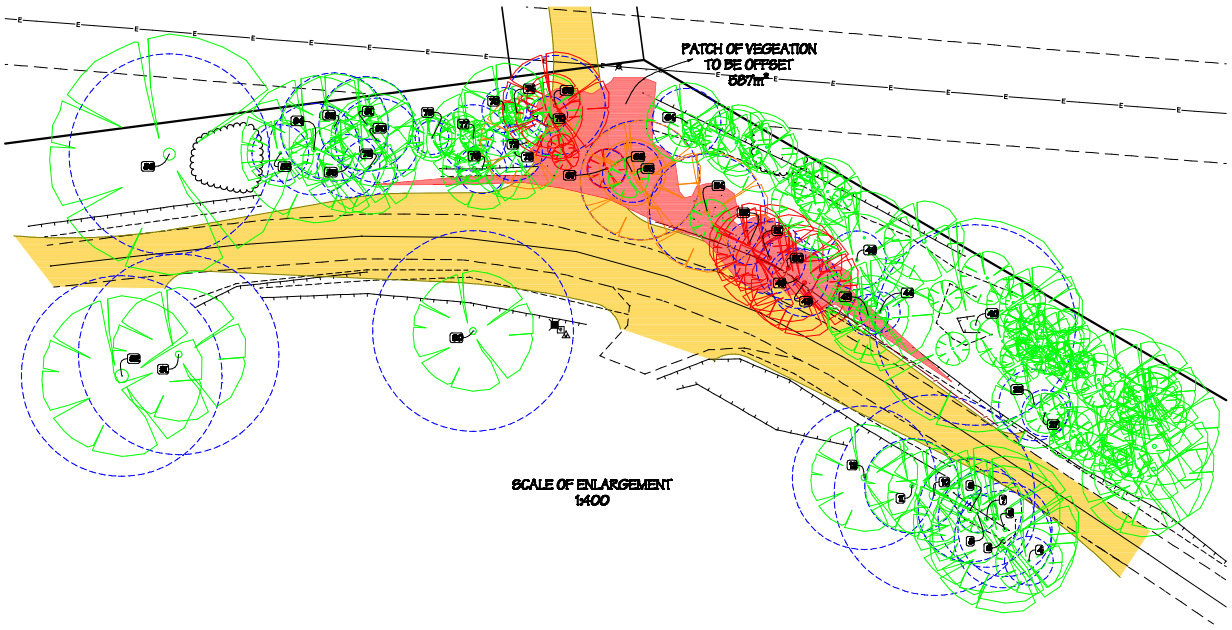
FILENAME: Y:\20000-20999\20400-20499\20432 Mt Taylor Properties Pty Ltd\20432 Veg Removal V1.pro		

PLAN OF VEGETATION REMOVAL

PARISH OF WY YUNG
CROWN ALLOTMENT 24B & 24C (PARTS)
LAND IN PS434082





- TREE PROTECTION ZONE
- TREE TO BE RETAINED
- TREE ASSUMED LOST (>10% TPZ IMPACTED)
- TREE TO BE REMOVED (DIRECTLY IMPACTED)
- PLANTED VEGETATION TO BE REMOVED
- PATCH OF VEGETATION TO BE OFFSET
- PROPOSED SAFETY BARRIER
- LIMIT OF WORKS

MOUNT TAYLOR PROPERTIES
385 BULLUMWAAL ROAD, WY YUNG

Crowther & Sadler Pty Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
1 MACLEOD STREET, BAIRNSDALE, VIC., 3875
P. (03) 5152 5011 E. central@crowthersadler.com.au

NOTATIONS
AREAS ARE APPROXIMATE ONLY
DIMENSIONS ARE SUBJECT TO SURVEY

SCALE (SHEET SIZE A1)	SURVEYORS REF.
1 : 400	20432

VERSION 1 - DRAWN 16/04/2024

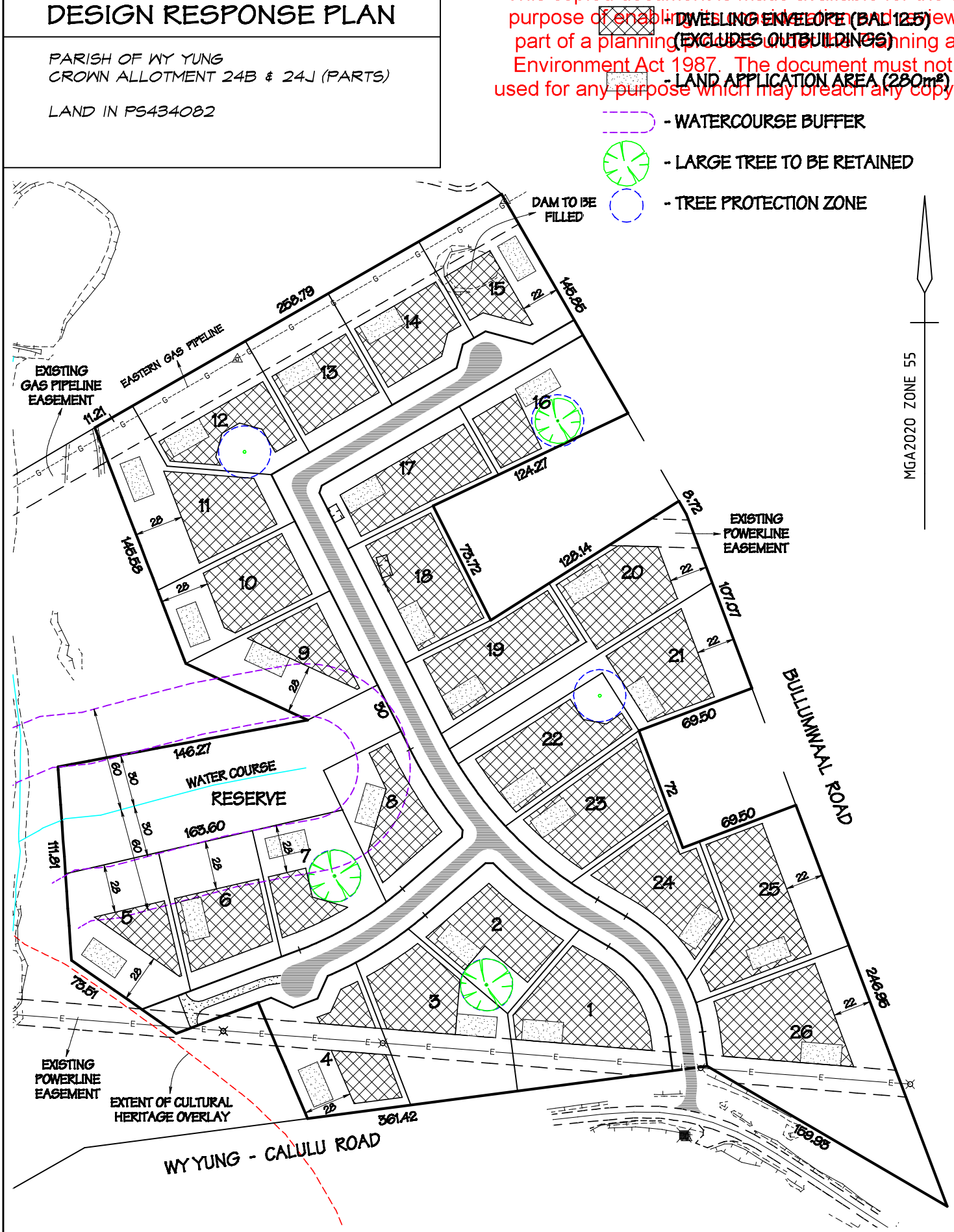
PLAN OF VEGETATION

PARISH OF WY YUNG
CROWN ALLOTMENT 24B & 24A (PT) SEC 2
LAND IN PS434062

DESIGN RESPONSE PLAN

PARISH OF WY YUNG
CROWN ALLOTMENT 24B & 24J (PARTS)

LAND IN PS434082



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MOUNT TAYLOR PROPERTIES
385 BULLUMWAAL ROAD, WY YUNG

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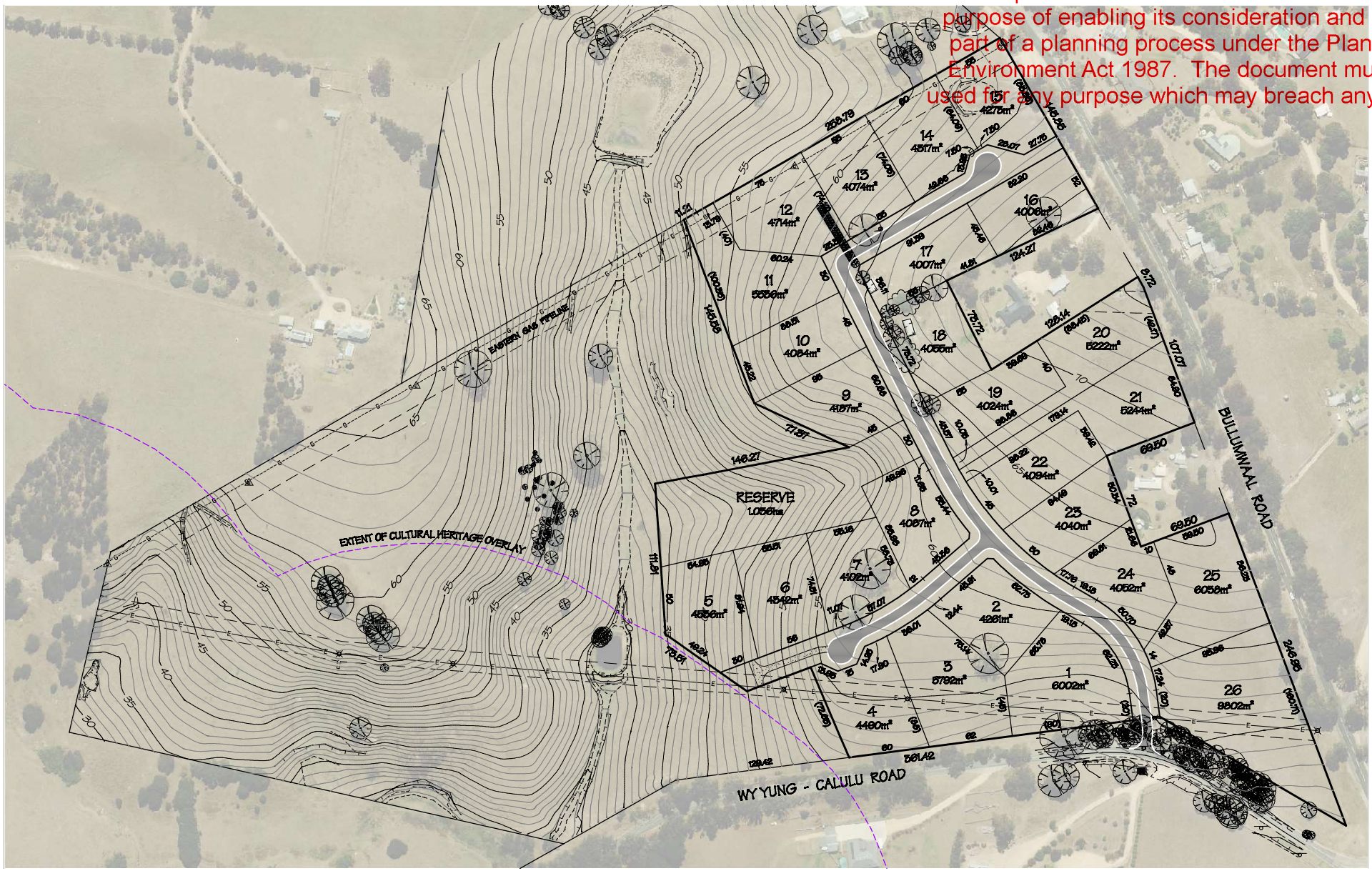
VERSION 3 - DRAWN 30/04/2024



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