



A report to support an application to remove, destroy or lop native vegetation in the **Intermediate Assessment Pathway** using the modelled condition score

This report provides information to support an application to remove native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report is not an assessment by DELWP or local council of the proposed native vegetation removal. Biodiversity information and offset requirements have been calculated using modelled condition scores contained in the *Native vegetation condition map*.

Date and time: 07 September 2019 10:58 AM

Lat./Long.: -38.3796848012727, 146.18595745203

Native vegetation report ID:

Address: 4 GILFEDDER TERRACE MIRBOO
NORTH 3871

361-20190907-001

Assessment pathway

The assessment pathway and reason for the assessment pathway

Assessment pathway	Intermediate Assessment Pathway
Extent of past plus proposed native vegetation removal	0.331 hectares
No. large trees	3 large tree(s)
Location category	Location 2 The native vegetation is in an area mapped as an Endangered Ecological Vegetation Class. Removal of less than 0.5 hectares of native vegetation will not have a significant impact on any habitat for a rare or threatened species.

Offset requirement

The offset requirement that will apply if the native vegetation is approved to be removed

Offset type	General offset
Offset amount	0.117 general habitat units
Offset attributes	
Vicinity	West Gippsland Catchment Management Authority (CMA) or South Gippsland Shire Council
Minimum strategic biodiversity value score	0.112
Large trees	3 large tree(s)



Biodiversity information about the native vegetation

Description of any past native vegetation removal

Any native vegetation that was approved to be removed, or was removed without the required approvals, on the same property or on contiguous land in the same ownership, in the five year period before the application to remove native vegetation is lodged is detailed below.

Permit/PIN number	Extent of native vegetation (hectares)
None entered	0 hectares

Description of the native vegetation proposed to be removed

Extent of all mapped native vegetation	0.331 hectares
Condition score of all mapped native vegetation	0.414
Strategic biodiversity value score of all mapped native vegetation	0.140
Extent of patches native vegetation	0.331 hectares
1	0.048 hectares
2	0.085 hectares
3	0.026 hectares
4	0.070 hectares
5	0.051 hectares
6	0.027 hectares
7	0.024 hectares
Extent of scattered trees	0 hectares
No. large trees within patches	3 large tree(s)
No. large scattered trees	0 large tree(s)
No. small scattered trees	0 small tree(s)

Additional information about trees to be removed, shown in Figure 1

Tree ID	Tree circumference (cm)	Benchmark circumference (cm)	Scattered / Patch	Tree size
D	270	283	Patch	Small
E	278	283	Patch	Small
A	312	283	Patch	Large
B	328	283	Patch	Large
C	335	283	Patch	Large



Other information

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.

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 or scattered trees, 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.

Topographical and land information

Description of the topographic and land information relating to the native vegetation to be removed, including any ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate. This may be represented in a map or plan. **This is an application requirement and your application will be incomplete without it.**

All the proposed trees to be removed, either on the two building envelopes or as part of the required defensible space, are on gently undulating land at least 30m from the road.
There are no drainage lines, water ways or steep slopes on the area to be cleared.

Avoid and minimise statement

This statement describes what has been done to avoid the removal of, and minimise impacts on the biodiversity and other values of native vegetation. **This is an application requirement and your application will be incomplete without it.**

The amount of tree removal has been minimized by:

- A) removing only patches of trees rather than free standing trees,
- B) The two building envelopes have been situated adjacent to existing cleared land,
- C) The size of the building envelopes has been kept to a minimum necessary to provided for a new home, shedding and water tanks on each,
- D) The building envelopes have been classified at BAL29 to minimize the area of defensible space required around each envelope.

Defendable space statement

Where the removal of native vegetation is to create defensible space, a written statement explaining why the removal of native vegetation is necessary. This statement must have regard to other available bushfire risk mitigation measures. This statement is not required if your application also includes an application under the Bushfire Management Overlay.

See the Bush Fire Management Statement provided.

Offset statement

An offset statement that demonstrates that an offset is available and describes how the required offset will be secured. **This is an application requirement and your application will be incomplete without it.**

The applicant has had discussions with Greg Hollis from Baw Baw Shire, who confirms that the required offsets are readily available. The offsets will be purchased after a Planning Permit has been issued. The required fee is \$130,000 per habitat unit if all trees are small by NVIM definition and \$140,000 per unit if one or more large trees are to be removed.



Next steps

Applications to remove, destroy or lop native vegetation must address all the application requirements specified in *Guidelines for the removal, destruction or lopping of native vegetation*. If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. This *Native vegetation removal report* must be submitted with your application and meets most of the application requirements. The following needs to be added as applicable.

Property Vegetation Plan

Landowners can manage native vegetation on their property in the longer term by developing a Property Vegetation Plan (PVP) and entering in to an agreement with DELWP.

If an approved PVP applies to the land, ensure the PVP is attached to the application.

Applications under Clause 52.16

An application to remove, destroy or lop native vegetation is under Clause 52.16 if a Native Vegetation Precinct Plan (NVPP) applies to the land, and the proposed native vegetation removal is not in accordance with the relevant NVPP. If this is the case, a statement that explains how the proposal responds to the NVPP considerations must be provided.

If the application is under Clause 52.16, ensure a statement that explains how the proposal responds to the NVPP considerations is attached to the application.

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Obtaining this publication does not guarantee that an application will meet the requirements of Clauses 52.16 or 52.17 of planning schemes in Victoria or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of planning schemes in Victoria.



Figure 1 – Map of native vegetation to be removed, destroyed or lopped

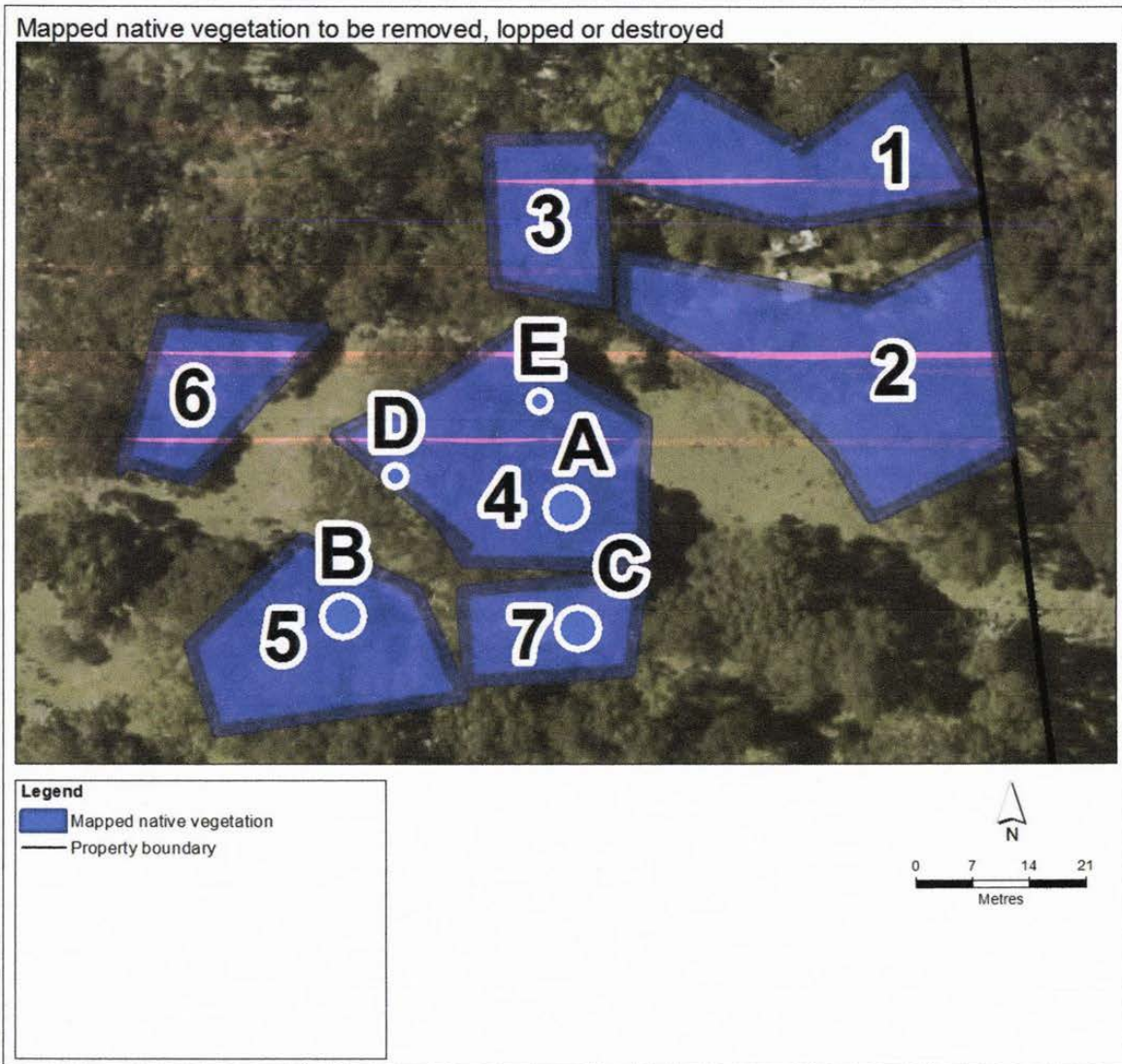


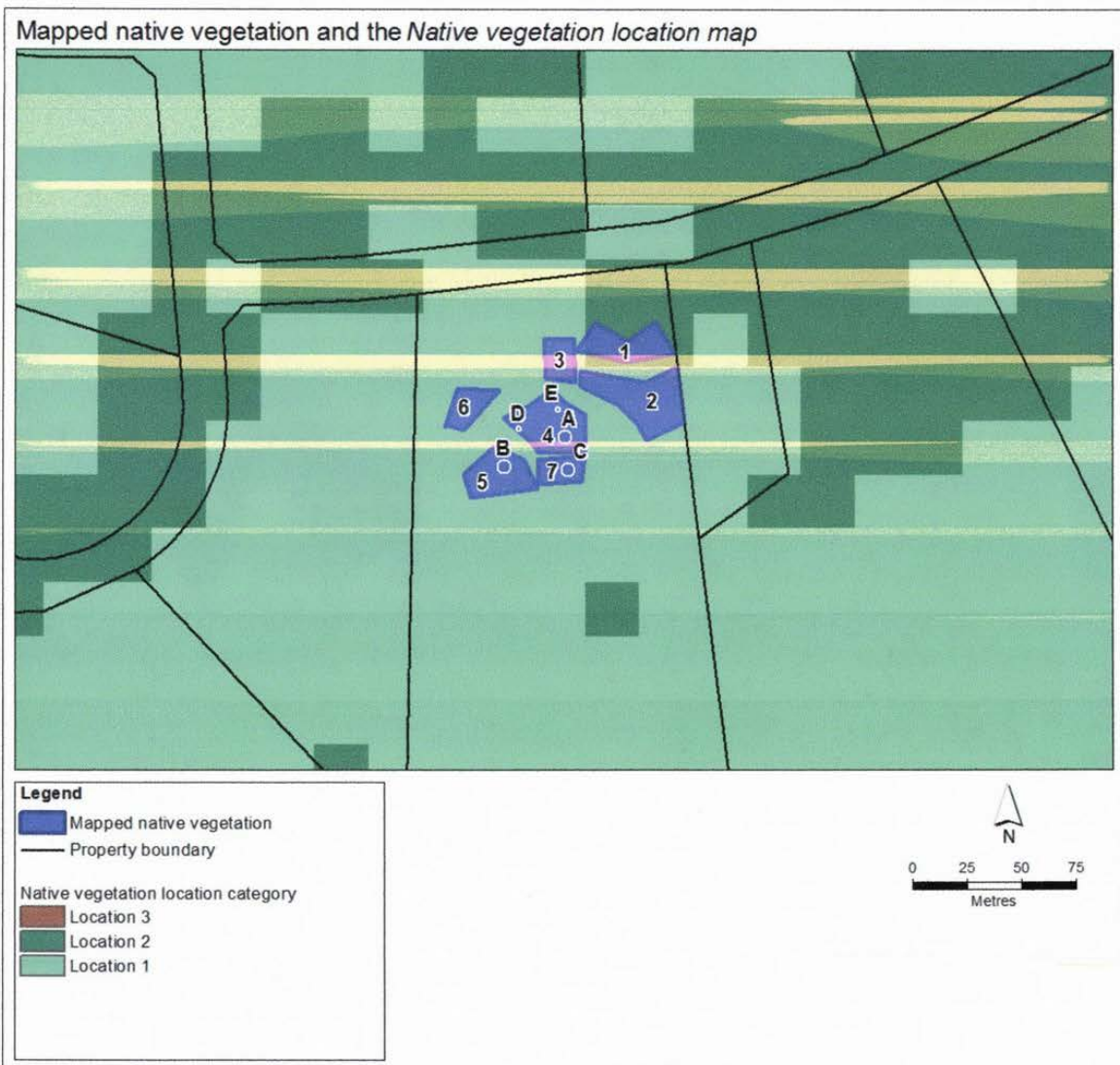


Figure 2 – Map of property in context

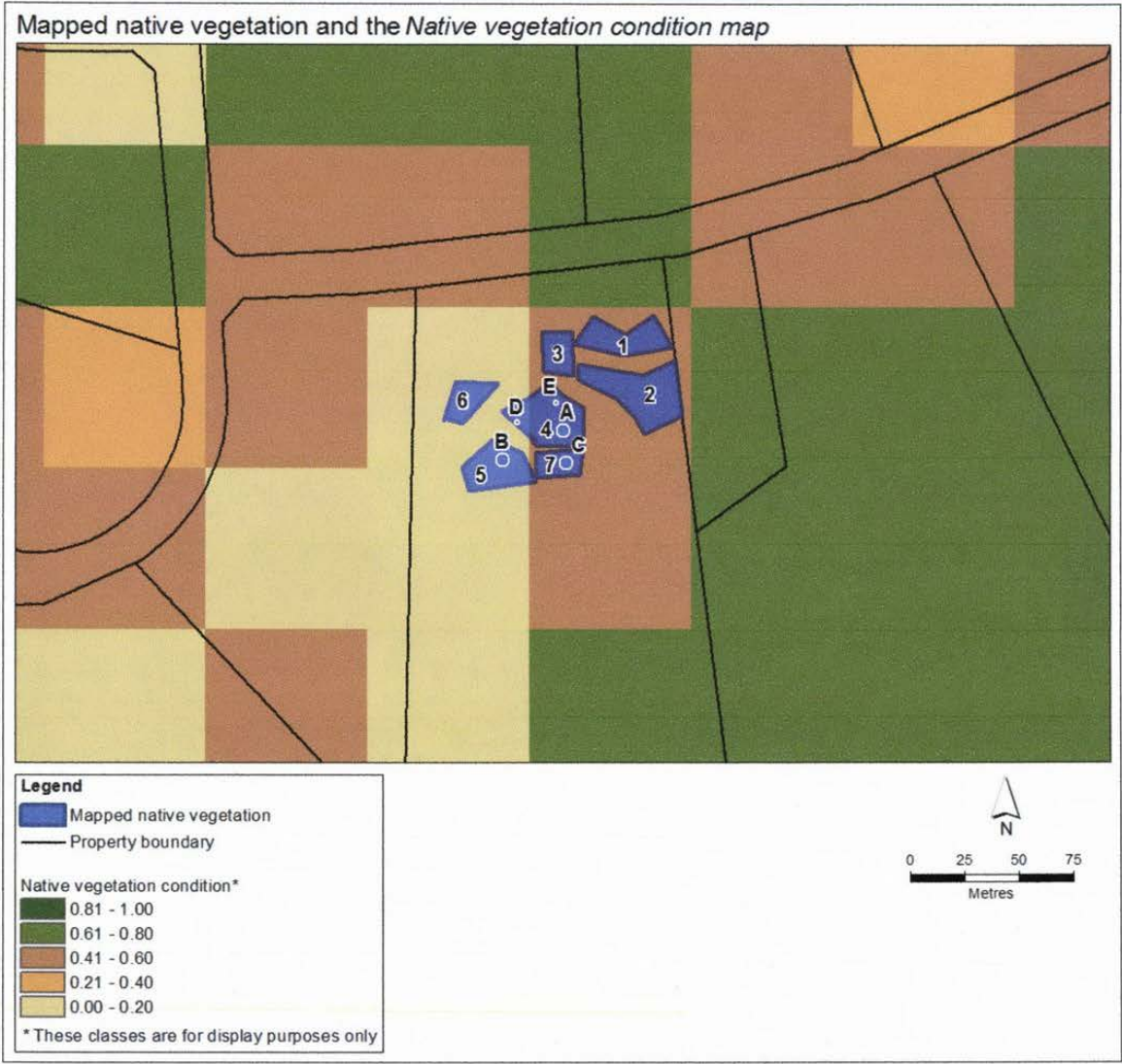


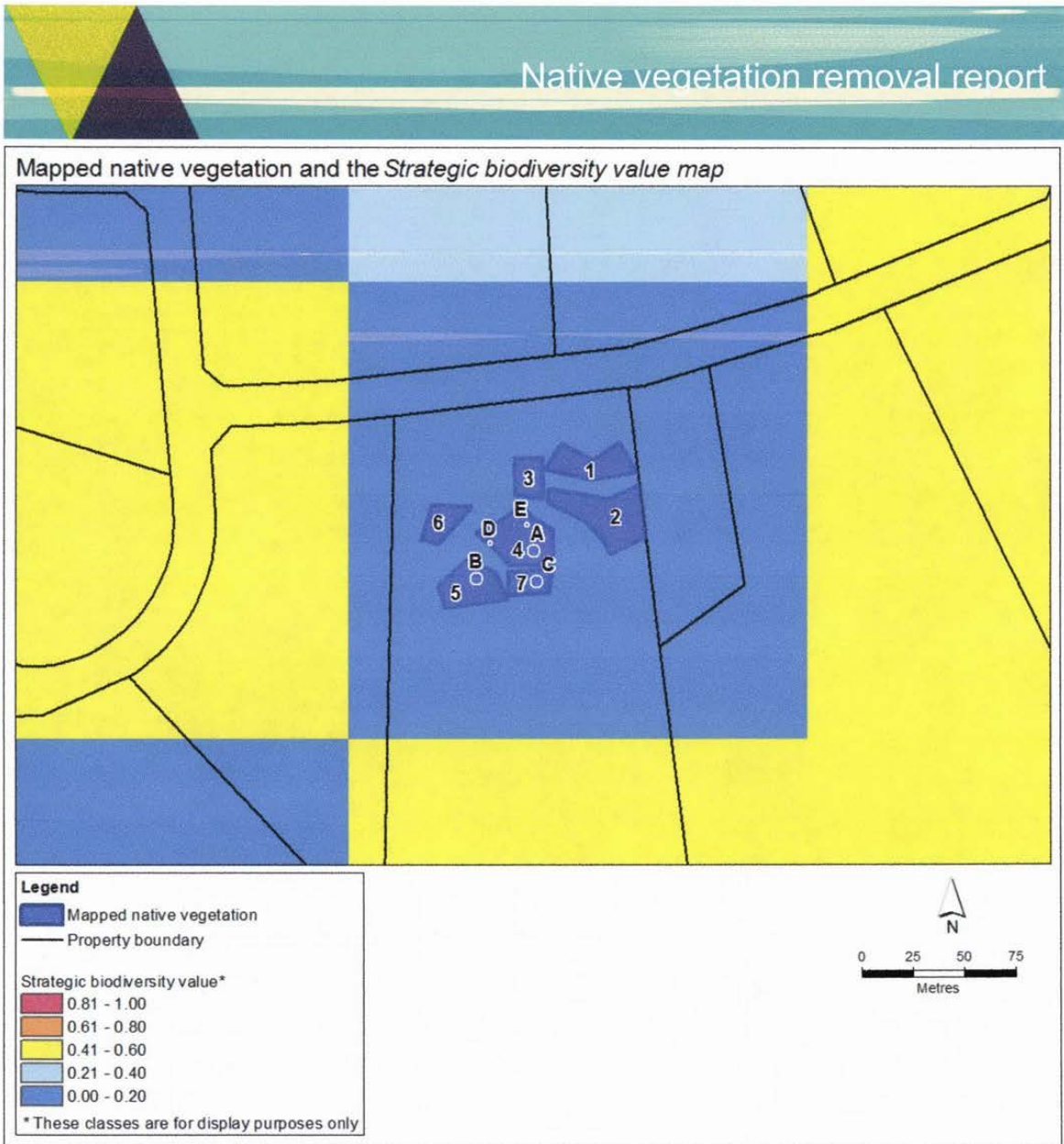


Figure 3 – Biodiversity information maps



Native vegetation removal report







Appendix 1 - Details of offset requirements

Native vegetation to be removed

Extent of all mapped native vegetation (for calculating habitat hectares)	0.331	The area of land covered by a patch of native vegetation and/or a scattered tree, measured in hectares. Where the mapped native vegetation includes scattered trees, each tree is assigned a standard extent and converted to hectares. A small scattered tree is assigned a standard extent defined by a circle with a 10 metre radius and a large scattered tree a circle with a 15 metre radius. The extent of all mapped native vegetation is an input to calculating the habitat hectares.
Condition score*	0.414	The condition score of native vegetation is a site-based measure that describes how close native vegetation is to its mature natural state. The condition score is the weighted average condition score of the mapped native vegetation calculated using the <i>Native vegetation condition map</i> .
Habitat hectares	0.137	Habitat hectares is a site-based measure that combines extent and condition of native vegetation. It is calculated by multiplying the extent of native vegetation by the condition score: Habitat hectares = extent x condition score
Strategic biodiversity value score	0.140	The strategic biodiversity value score represents the complementary contribution to Victoria's biodiversity of a location, relative to other locations across the state. This score is the weighted average strategic biodiversity value score of the mapped native vegetation calculated using the <i>Strategic biodiversity value map</i> .
General landscape factor	0.570	The general landscape factor is an adjusted strategic biodiversity value score. It has been adjusted to reduce the influence of landscape scale information on the general habitat score.
General habitat score	0.078	The general habitat score combines site-based and landscape scale information to obtain an overall measure of the biodiversity value of the native vegetation. The general habitat score is calculated as follows: General habitat score = habitat hectares x general landscape factor

* **Offset requirements for partial removal:** If your proposal is to remove parts of the native vegetation in a patch (for example only understorey plants) the condition score must be adjusted. This will require manual editing of the condition score and an update to the calculations that the native vegetation removal tool has provided: habitat hectares, general habitat score and offset amount.

Offset requirements

Offset type	General offset	A general offset is required when the removal of native vegetation does not have a significant impact on any habitat for rare or threatened species. All proposals in the Basic and Intermediate assessment pathways will only require a general offset.
Offset multiplier	1.5	This multiplier is used to address the risk that the predicted outcomes for gain will not be achieved, and therefore will not adequately compensate the biodiversity loss from the removal of native vegetation.
Offset amount (general habitat units)	0.117	The general habitat units are the amount of offset that must be secured if the application is approved. This offset requirement will be a condition to any permit or approval for the removal of native vegetation. General habitat units required = general habitat score x 1.5
Minimum strategic biodiversity value score	0.112	The offset site must have a strategic biodiversity value score of at least 80 per cent of the strategic biodiversity value score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic biodiversity value that is comparable to the native vegetation to be removed.
Vicinity	West Gippsland CMA or South Gippsland Shire Council	The offset site must be located within the same Catchment Management Authority boundary or municipal district as the native vegetation to be removed.
Large trees	3 large tree (s)	The offset site must protect at least one large tree for every large tree removed. A large tree is a native canopy tree with a Diameter at Breast Height greater than or equal to the large tree benchmark for the local Ecological Vegetation Class. A large tree can be either a large scattered tree or a large patch tree.



Keystone Alliance
Bushfire Assessments



Bushfire Management Statement Pathway 2 as in 53.02-4

A Subdivision in a Bushfire Management Overlay

PROPERTY ADDRESS: 4 GILFEDDER TERRACE MIRBOO NORTH 3871

Date: 25 August
2019 Job N°: 2457

Report prepared for
Mr. Bernhard Koolstra



Prepared By: Paul Apostolos Oikonomidis paul@keystoncalliance.com.au 0450 770 778

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PROPERTY ADDRESS: 4 GILFEDDER TERRACE MIRBOO NORTH 3871



August 19



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Appendix 1: Photos

Appendix 2: BMO vegetation management standards

Appendix 3: BMO static water supply requirements

Appendix 4: BMO access requirements

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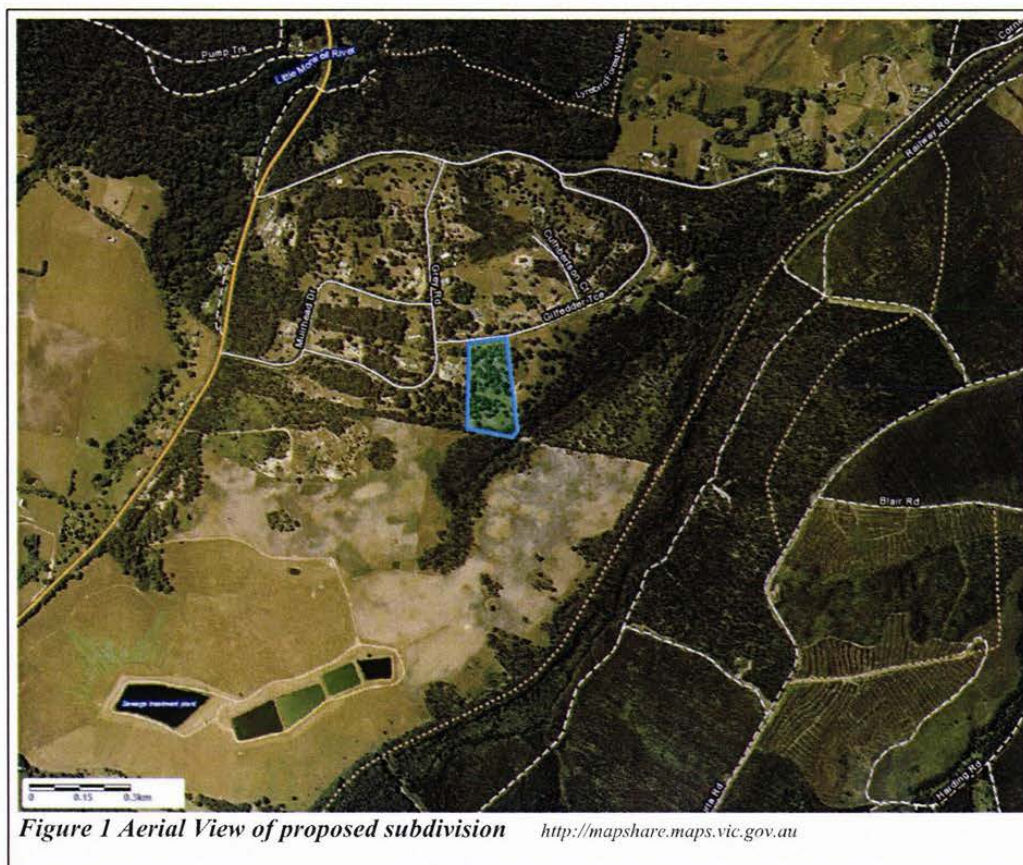
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1.0 Executive Summary

The proposal was visited on the **12th Sep. 2018** to perform a hazard assessment. The site is a lot comprising of areas of medium threat to bushfire in **Mirboo North**. The property has a total area of approximately **3.87Ha**. We are seeking development approval to subdivide the land into **two** lots. On-site and surrounding area vegetation within the 150m assessment area for each lot is classified as **woodland & low threat**. The defensible space requirements for each lot is **varies**. The area close to the site **has** bushfire history, and in the event of a bushfire, the impact to the dwelling will be from ember attack. The only & closest Neighbourhood Safe Places is at **Sandy Point**. For each lot, a **ten thousand (10,000)** litre water tank will be required for firefighting purposes. Access must meet BMO's access requirements (Appendix 4).

Aerial view of site





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2.0 Introduction

This report is supporting documentation for an application seeking Planning Permit approval to subdivide the land known as **4 GILFEDDER TERRACE MIRBOO NORTH 3871**. The proposal is to subdivide the property into three lots.

Keystone Alliance Bushfire Assessments has been engaged by; **Mr. Bernhard Koolstra** to provide a Bushfire Hazard & Landscape Assessment accompanied with a Bushfire Management Statement in accordance with the Bushfire Management Overlay 44.06 and Clause 53.02 (Bushfire Protection Planning Requirements) at which is to accompany the planning permit application lodged with **South Gippsland Shire**.

This assessment describes the subject site and surrounding area in relation to the risk associated with the Bushfire Attack Level (BAL), together with the relevant planning controls, namely, Australian Standard 3959-2009, "Construction of buildings in bushfire-prone areas."

The parcel to be developed has an **irregular** shape and an area of approx. **3.87Ha** it is located **4.0km north-east of Mirboo North** in the semi-rural area of **Mirboo North**. The subject's land **has towns water supply**, it is provided with telecommunication services, and is connected to the sealed road network. Access to the land is via **Gilfedder Terrace Fig1&2**.

The purpose of the report is to assist in a decision of issuing a planning permit to subdivide the proposed lot in a Bushfire Management Overlay.



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3.0 Site Description

3.1 Site shape, dimensions, size and planning controls	
Local government:	SOUTH GIPPSLAND
Lot and Plan Number:	Lot 15 PS302507
The shape of the site is:	Irregular
The dimensions of the site are:	Please refer to Fig2 Site Dimensions
The site has a total area of:	Approx. 3.87Ha
The zoning of the site is:	RURAL LIVING ZONE (RLZ) SCHEDULE TO THE RURAL LIVING ZONE
The overlays that apply to the site are: Affected:	BMO, & ESO5
Assessed by: Paul Apostolos Oikonomidis	

Site Dimensions





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4.0 Bushfire hazard site assessment

The proposed development has been assessed under AS 3959 – 2009 "Construction of buildings in bushfire prone areas."

A vegetation hazard assessment was carried out within a 150m radius from each proposed building envelope. Within this area our interest was directed on the type of vegetation surrounding the proposal, distance from the proposal and the effective slope it stood.

The bushfire attack level (BAL) is a means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per meter squared. The BAL is also the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.

The highest BAL determines the construction requirements for the habitable building. A reduction of one BAL level may be applied if facades of the building are shielded from the bushfire hazard, however for this site no shielding occurs. The BAL for this site has been calculated using a Forest Fire Danger Index (FFDI) of 100 and a Flame Temperature of 1090K. These parameters are in accordance with the risk parameters set in Clause 53.02.

The vegetation within the 150-metre assessment area was classified according to AS 3959:2009, Technical Guide: Planning Permit Application Bushfire Management Overlay (DELWP, 2017) and the Overall Fuel Hazard Assessment Guide (DSE, 2010).

The AS 3959:2009 approach uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas" No.7 Native Vegetation) classification system. According to this method, vegetation can be classified into seven categories. Each category indicates a fire behaviour and these categories or classifications are then used to determine bushfire intensity. Information gained from the *Ecological Vegetation Classes* (Figure 6) reinforces the vegetation classification chosen and provides an indication of connectivity within the greater landscape.



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Lot 1 assessment area within a 150m radius from the proposal



Lot 1				
Vegetation	North-East	South-West	South-East	North-West
	Low threat	Low threat	Woodland	Woodland
Distance m	N/A	N/A	30	60
Effective Slope	N/A	N/A	10° Downslope	0° flat/upslope
BAL each side	N/A	N/A	29	29
Defendable space m	N/A	N/A	26	16

A vegetation hazard assessment was carried out within a 150m radius from the proposed development. Within this area our interest was directed on the type of vegetation surrounding the dwelling, the distance and the effective slope it stood.
An assessment of the site conditions has categorized this site as **BAL-29** fire risk





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Lot 2 assessment area within a 150m radius from the proposal



Figure 4 Lot1 Assessment area

Lot 2				
Vegetation	North-East	South-West	South-East	North-West
		Low threat	Woodland	Woodland
Distance m	N/A	30	30	60
Effective Slope	N/A	10° Downslope	10° Downslope	0° flat/upslope
BAL each side	N/A	29	29	12.5
Defendable space m	N/A	26	26	33

A vegetation hazard assessment was carried out within a 150m radius from the proposed development. Within this area our interest was directed on the type of vegetation surrounding the dwelling, the distance and the effective slope it stood.
An assessment of the site conditions has categorized this site as **BAL-29** fire risk





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4.2 Vegetation

Vegetation on and around the site has been classified in accordance with the likely fire behaviour it may generate.

Woodland

Heathland ecosystems are characterised by a dense layer of small-leaved shrubs, usually 1-2 m tall, over a ground layer of sedges, coarse lilies, rope-rushes, prostrate shrubs and herbs. In most places there are occasional small, short-trunked, spreading trees, to 15m tall, which may form a sparse canopy on deeper soils. The commonest tree species is *Eucalyptus viminalis* subsp. *pryoriana* (Coast Manna Gum) in the eastern part of the range, *Eucalyptus baxteri* (Brown Stringybark), *Eucalyptus arenacea* (Wimmera Scentbark) and *Eucalyptus willisii* (Shining Peppermint) in the west and south-east, and *Eucalyptus pauciflora* (Snow Gum) along the margins in the high country. Where the soils are relatively dry the dominant shrubs are usually tea-trees (*Leptospermum*) and stunted she-oaks (*Allocasuarina*); where the soils are waterlogged, paperbarks (*Melaleuca*) and large sedges (*Gahnia*, *Lepidopserma*) form dense thickets with occasional small trees such as *Eucalyptus cephalocarpa* (Mealy Stringybark) and *Eucalyptus conspicua* (Silver Swamp Stringybark). In the high country wet heathlands are dominated by a range of heaths (*Epacris*) and rope rushes (*Restionaceae*).

Low Threat Vegetation

Excluded vegetation and non-vegetated areas

Areas of low threat vegetation and non-vegetated areas have been excluded under one or more of the following AS 3959-2009 exclusion criteria (Standards Australia, 2009):

- i. Vegetation more than 150m from the site.
- ii. Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.
- iii. Low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks'.

Grassland

All forms, including situations with shrubs and trees, if the over storey foliage cover is <10%. The understorey doesn't support a typical shrub layer, although there are often scattered shrubs in on deeper soils, in drainage lines or near rocky outcrops. The ground layer is dominated by perennial, mostly tufted or tussock-forming grasses (Kangaroo Grass, Tussock Grass, Spear Grass, Wallaby Grass, Windmill Grass) with some rhizomatous or stoloniferous species (Weeping Grass) and a few annuals (Blown Grass). In most areas the grasses are accompanied by a wide range of perennial and annual herbs (wood-sorrel, bindweed, sundew, woodruff, everlasting, bidgee-widgee, lobelia, trigger plant, blue devil), sedges (*Carex*, *Schoenus*), lilies (mat-rush, chocolate lily, milkmaids, early nancy) and small shrubs (rice-flower, sida, astroloma, peas).



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<http://maps.biodiversity.vic.gov.au>

Figure 6 EVC's groups surrounding the site

2005 EVCs by Subgroup

Lowland Forests	Plains Grasslands and Chenopod Shrublands (clay soils)
Dry Forests (exposed/lower altitude)	Salt-tolerant/Succulent Shrublands
Dry Forests (sheltered/higher altitude)	Rocky Outcrop or Escarpment Scrubs
Damp Forests	Rainforests
Wet Forests	





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5.0 Bushfire Hazard Landscape Assessment

5.1 Location description

The proposed subdivision is sited at **4km north-east** from **Mirboo North**. This site is positioned amongst residential land that is undergoing urban renewal. Some larger lifestyle neighbouring properties exist north, east and west of the site. The forested area at **Mirboo North Regional park** is to the north of the site at more than 600m. The forested area 200m in width south stretches for 1.5km from south to north east and gradually widens up to 1k.m east from the site. South of the site land in its majority is grassland apart from the vegetation being classified as Wet & Damp Forest as in the 2005 EVC's. Due to the type and extend of vegetation north of the site there is the possibility of a 2.0km fire run.

The Bushfire Planning Practice Note #65 outlines four Landscape Types. The local landscape character surrounding the property is most attributable to Landscape Type 2;

Table 1 - Landscape risk.

Broader Landscape Type 1	Broader Landscape Type 2	Broader Landscape Type 3	Broader Landscape Type 4
<ul style="list-style-type: none"> • There is little vegetation beyond 150m of the site (except grasslands and low-threat vegetation). • Extreme bushfire behaviour is not possible. • The type and extent of vegetation is unlikely to result in neighbourhood- scale destruction of property. • Immediate access is available to a place that provides shelter from bushfire. 	<ul style="list-style-type: none"> • The type and extent of vegetation located more than 150 metres from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to a site. • Bushfire can only approach from one aspect and the site is located in a suburban, township or urban area managed in a minimum fuel condition. • Access is readily available to a place that provides shelter from bushfire. This will often be the surrounding developed area. 	<ul style="list-style-type: none"> • The type and extent of vegetation located more than 150 metres from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to a site. • Bushfire can approach from more than one aspect. • The site is in an area that is not managed in a minimum fuel condition. • Access to an appropriate place that provides shelter from bushfire is not certain. 	<ul style="list-style-type: none"> • The broader landscape presents an extreme risk. • Evacuation options are limited or not available.

The main driveway access into the sites is from **Gilfedder Terrace**. This is a semi-sealed, dual carriageway, linking to **Mirboo North**. The local CFA Fire Stations at Mirboo North is located at 4.5km along **Scarlett Street, south-west** of the entrance driveway.



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Location & Landscape Assessment

The landscape risk of a site is an important consideration when mitigating bushfire hazards. The landscape risk is the combination of several elements in the surrounding landscape. These relate to the vegetation extent, the area available to a landscape bushfire, the orientation of the ridgelines and the steepness of the terrain, the accessibility to low threat areas and the quality of the road networks surrounding the site.



Map 1 Location



South Gippsland Shire contains only one designated Neighbourhood Safe Places (NSP) and its at Sandy Point Community Centre at 70km but the Mirboo North Recreation Reserve meets the criteria as a NSP at 4km



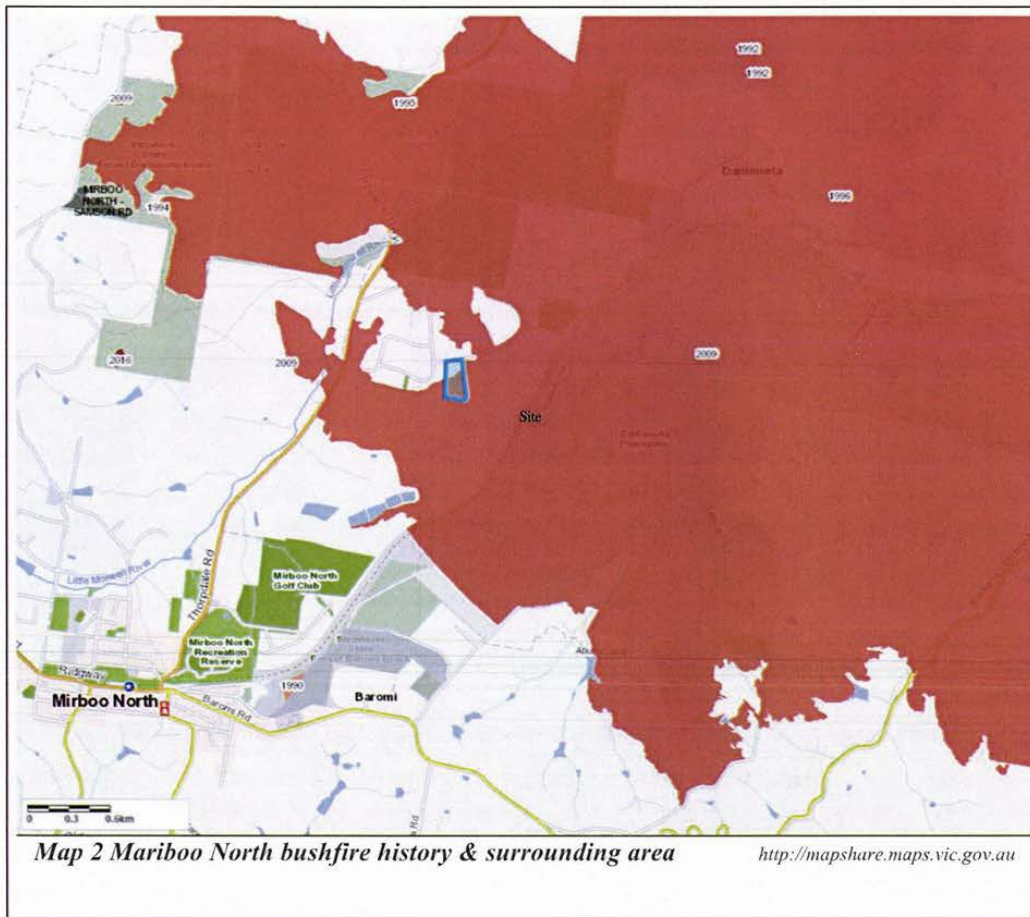


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5.2 Bushfire History

Bushland surrounding the area makes them prone to bushfires. No controlled burns have taken place since a wildfire history has been recorded in the immediate and the wider area surrounding the proposal as you can see on Map 2. The wider and immediate area has a fire history, and the publicly available dataset indicates that the site itself has experienced bushfire.





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5.3 Bushfire scenario

The most likely bushfire scenarios are those typically associated with the direction of the wind on severe or higher, fire danger days i.e. approach of bushfire from the north, northwest, west or southwest.

The development site has the potential to be impacted upon by a moderate to a high, landscape scale fire approaching from the southwest. A fire from these directions would approach through the vegetated areas of driven by hot, dry southerly or southwesterly winds commonly experienced during summer after a wind change as in the Black Saturday bushfire.

Whilst the **northern** vegetated areas may temperate the speed and intensity of the fire before it impacted the site, under the BMO conditions of low humidity, elevated temperatures and fierce winds, the development could be subjected to significant ember attack and radiant heat. The areas around the development are a considerable asset in this scenario and substantially reduces or even eliminates the threat of radiant heat.

The areas of bushland at a distance to the **north** of the site are a potential hazard to the development and could result in a high intensity fire approaching from the **north**, generating significant ember attack.

Whilst the **northern** vegetation, can cause substantial amounts of embers and burning material to be blown long distances, the development site is sufficiently setback from the hazard vegetation such that it will be able to provide appropriate defendable space, commensurate with the risk and proposed construction standard of the building.



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6.0 Bushfire Management Statement

6.1 Landscape, siting and design objectives

- Development is appropriate having regard to the nature of the bushfire risk arising from the surrounding landscape.
- Development is sited to minimise the risk from bushfire.
- Development is sited to provide safe access for vehicles, including emergency vehicles. Building design minimises vulnerability to bushfire attack.

Compliance with these objectives at Clause 53.02-4.1 is proposed via the following Approved measures.

6.1.1 Approved measure 2.1 Landscape

AM 2.1

'The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level'.

As identified in Section 5 the landscape is not one of extreme bushfire risk. Whilst a low intensity, landscape scale bushfire could impact the site, the speed and intensity of a bushfire approaching from the south, will be somewhat moderated by the pattern of development in these directions, and the mosaic of areas of low threat and/or non-vegetated. All surrounding property **north, northeast & northwest** land at a distance greater than 200m, are similar in size as subject lot. They are occupied lots, used as a place of permanent residence. There is a possibility of a fire run exceeding 2km as seen *Map 1 Location*.

It is proposed that the risk can be mitigated to an acceptable level by implementing bushfire protection measures in compliance with the BMO requirements including BAL construction standard, commensurate defensible space, provision of a water supply for firefighting, ensuring good access and egress are available for occupants and emergency services and, most importantly, management planning in the form of a Bushfire Emergency Management Plan.



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6.1.2 Approved measure 2.2 Siting

AM2.2

A building is sited to ensure the site best achieves the following:

- The maximum separation distance between the building and the bushfire hazard.
- The building is in close proximity to a public road.
- Access can be provided to the building for emergency service vehicles'.

The subdivision is sited to have maximum distance from hazard vegetation from all aspects. Sufficiently distant to achieve **BAL-29** defendable space.

The building envelopes will be sufficiently distant from hazardous vegetation such that 'Table 2' to Clause 53.02-5 setbacks are achieved (*Defendable Space Map 3*).

Each lot from the proposed subdivision has vehicular accesses from **Gilfedder Terrace**, enabling access and egress in compliance with BMO requirements for emergency vehicles and occupants/visitors.

6.1.3 Approved measure 2.3 Design

AM2.3

'A building is designed to reduce the accumulation of debris and entry of embers'.

All BAL standards above BAL-Low are deemed to satisfy the building code requirement that buildings be designed and constructed to reduce the risk of ignition from a bushfire, appropriate to the:

- (a) 'potential for ignition caused by embers, radiant heat or flame generated by a bushfire; and
- (b) intensity of the bushfire attack on the building' (*Building Code of Australia 2016*).

The design of the buildings, will aim to facilitate wind flow over the building and easy maintenance (e.g. cleaning of gutters) and avoid complex roof lines which may allow build-up of debris (e.g. accumulation of leaves and bark) and trap embers. Walls and eaves should similarly avoid or minimise reentrant corners and other features that may trap debris and embers.



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6.2 Subdivision objectives

To provide lots that are capable of being developed in accordance with the objectives of Clause 53.02.

To specify at the subdivision stage bushfire protection measures to develop a lot with a single dwelling on land zoned for residential or rural residential purposes.

To provide lots that are capable of being developed in accordance with the objectives of Clause 53.02.

To specify at the subdivision stage bushfire protection measures to develop a lot with a single dwelling on land zoned for residential or rural residential purposes.

Approved measures

AM 5.1

A building used for a dwelling (including an extension or alteration to a dwelling), a dependent person's unit, industry, office or retail premises is provided with:

- *A static water supply for firefighting and property protection purposes specified in Table 4 to Clause 53.02-5.*

The water supply may be in the same tank as other water supplies provided that a separate outlet is reserved for firefighting water supplies

The subjects land portable water supply is from water tanks. It is proposed that a minimum total capacity of 10,000-litres be provided as a dedicated static water supply for firefighting. (detail provided as Appendix 3)

- *Vehicle access that is designed and constructed as specified in Table 5 to Clause 53.02-5.*

Vehicle Access can meet approved measures AM4.1 (detail provided as Appendix 4)



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6.2.1 Defendable space

AM 5.2

An application to subdivide land zoned for residential or rural residential purposes must be accompanied by a plan that shows:

- *A building envelope for a single dwelling on each lot that complies with AM 2.2 and provides defendable space in accordance with:*
 - *Columns A or B of Table 2 to Clause 53.02-5 for a subdivision that creates 10 or more lots; or*
 - *Columns A, B or C of Table 2 to Clause 53.02-5 for a subdivision that creates less than 10 lots.*
- *Defendable space wholly contained within the boundaries of the proposed subdivision.*

Defendable space may be shared between lots within the subdivision. Defendable space for a lot may utilize communal areas, such as roads, where that land can meet the requirements for defendable space.

Bushfire hazard assessment classified vegetation is 'woodland' defendable space requirement for:

- **Lot 1** is 26m & 16m constructed to a **BAL 29** Fig7.
- **Lot 2** is 26m & 16m constructed to a **BAL 29** Fig8.

- *Vegetation management requirements, including inner zone standards (as appropriate), to implement and maintain the defendable space required under this approved measure.*

Defendable space utilizes neighbouring residential land east from the site's boundary.

Vegetation management will be provided within the subdivisions boundary as shown

below Fig7 & 8 for each lot. Defendable Space is in accordance to Clause 53.02-5 Table 2

- *Water supply and vehicle access that complies with AM 4.1.*

Water supply and vehicle access will comply with AM 4.1 as in the details provided in Appendix 3 & 4

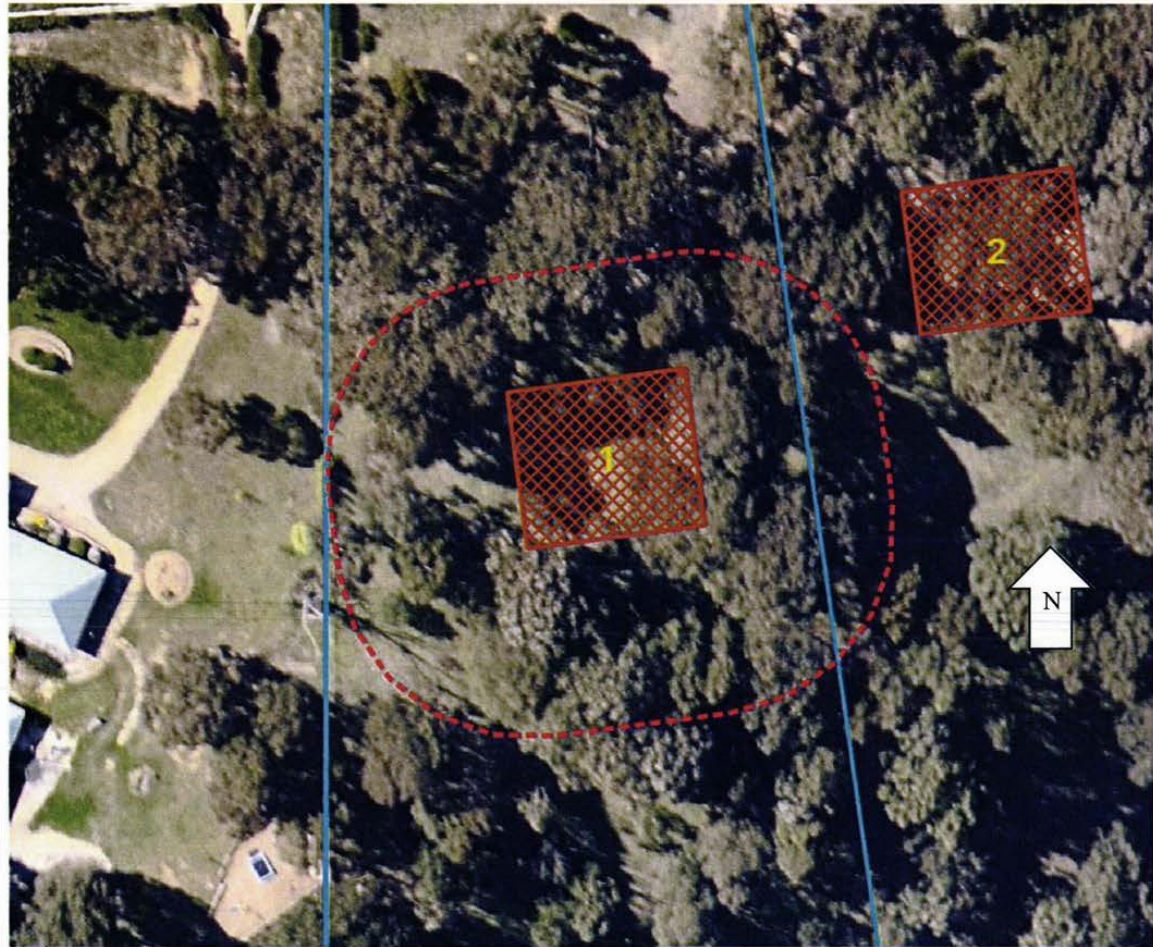


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Defendable space Lot 1

The habitable building within the building envelope will be constructed with a **BAL-29**
For classified vegetation "**woodland**" on a 10° downslope for a habitable building, constructed with a **BAL 29** the required defendable space is 29m from the edges of the building envelope or building as shown in Fig7.




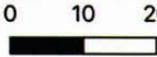




— LotBoundary
BE
DefSpace
 LOT1
 LOT1

Figure 7 Defendable Space Lot1 within Subdivisions Boundary





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Defendable space Lot 2

The habitable building within the building envelope will be constructed with a **BAL-29**
For classified vegetation "**woodland**" on a 10° downslope for a habitable building, constructed with a **BAL 29** the required defendable space is 50m from the edges of the building envelope or building as shown in Fig8.



Figure 8 Defendable Space Lot1 within utilizes eastern residential lot.



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AM 5.3

An application to subdivide land to create 10 or more lots provides a perimeter road adjoining the hazardous vegetation to support firefighting.

N/A

AM 5.4

An application to subdivide land zoned for residential or rural residential purposes must be accompanied by a plan that shows:

- *A building envelope for a single dwelling on each lot that complies with AM 2.2 and provides defensible space in accordance with:*
 - *Columns A or B of Table 2 to Clause 53.02-5 for a subdivision that creates 10 or more lots; or*
 - *Columns A, B or C of Table 2 to Clause 53.02-5 for a subdivision that creates less than 10 lots.*
- *Defensible space wholly contained within the boundaries of the proposed subdivision.*

Defensible space may be shared between lots within the subdivision. Defensible space for a lot may utilize communal areas, such as roads, where that land can meet the requirements for defensible space.

- *Vegetation management requirements, including inner zone standards (as appropriate), to implement and maintain the defensible space required under this approved measure.*
- *Water supply and vehicle access that complies with AM 4.1.*

The existing lot has an area of **3.874Ha** of land. The subdivision proposes two lots with an area for each lot; **Lot1 2,102Ha & Lot2 1.772Ha.**

The proposed subdivision will create three lots with building envelopes in all Lots.

Vegetation of the site is to be regularly maintained, in perpetuity.

The proposed subdivision will increase the current bushfire protection measures in place, thus mitigating overall risks.

If the status quo is maintained, no additional bushfire protection measures are currently enforceable under the Planning Scheme.

The subdivision approval will require implementation of Static Water Supply, dedicated for firefighting purposes. Vegetation management will be implemented; the subject land will be maintained in accordance with defensible space requirements.

Therefore, subdividing the lot increases the standards and provisions for bushfire protection.



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6.3 Water supply and access objectives

'A static water supply is provided to assist in protecting the property.

Vehicle access is designed and constructed to enhance safety in the event of a bushfire'.

These objectives can be achieved via Approved measures 4.1 (AM 4.1).

AM 4.1

A building used for a dwelling (including an extension or alteration to a dwelling), a dependant person's unit, industry, office or retail premises is provided with:

- *A static water supply for firefighting and property protection purposes specified in Table 4 to Clause 53.02-5*

The water supply may be in the same tank as other water supplies if a separate outlet is reserved for firefighting water supplies.

It is proposed that a minimum total capacity of **10,000**-litres be provided as a dedicated static water supply for firefighting (detail provided as Appendix 3).

The BMS proposes:

-Non-Combustible water tank.

-For each Lot, static water supply of 10,000 litres reserve capacity of water dedicated solely to firefighting purposes.

-Fittings to comply with CFA requirements. (Appendix4)

- *Vehicle access that is designed and constructed as specified in Table 5 to Clause 53.02-5.*

Access

All emergency access roads within the subdivision should provide access in accordance with the vehicle access design and construction specifications in Table 5 to Clause 53.02-5 (detail provided as Appendix 4).



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7.0 Overall Conclusion

The proposed development has been assessed under AS 3959 – 2009 "Construction of buildings in bushfire-prone areas". An assessment of the site conditions and adjoining property has categorised this site as "**BAL –29**" fire risk, with Sections 3 & 6 utilised for the building construction under AS3959 and is subject to the recommendations outlined above.

The proposed development has been sited and designed to avoid on and off-site constraints.

AS3959 2009' Construction of buildings in a bushfire prone area' describes ***risk category for:***

- BAL – 12.5 as: "Ember Attack"
- BAL – 19 as: "Increasing levels of Ember Attack and burning debris ignited by wind borne embers with increasing heat flux between 12.5-19KW"
- **BAL – 29 as: "Increasing levels of Ember Attack and burning debris ignited by wind borne embers with increasing heat flux between 19-29KW"**
- BAL – 40 as: "Increasing levels of Ember Attack and burning debris ignited by wind borne embers with increasing heat flux with the increased likelihood of exposure to flames.
- BAL – FZ as: Direct exposure to flames from fire front in addition to heat flux and ember attack.

The final categorization of this site is subject to the relevant fire authority (CFA) review and approval.

Overall, the proposed development meets the requirements of the BMO and Clause 52.47 – Bushfire Protection: Planning requirements.



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Appendix 1: Photos Lot 1



Photo 1 North from site Low threat managed residential



Photo 2 East from site Low threat managed residential



Photo 3 South, the site extends within property's boundary for more than 200m from the edges of the building envelopes



Photo 4 West, low threat managed residential

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Appendix 2: BMO vegetation management standards

Table 6 Vegetation management requirement

Vegetation management requirement

Defendable space is provided and is managed in accordance with the following requirements:

Grass must be short cropped and maintained during the declared fire danger period.

All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.

Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.

Plants greater than 10 centimetres in height must not be placed within 3 metres of a window or glass feature of the building.

Shrubs must not be located under the canopy of trees.

Individual and clumps of shrubs must not exceed 5 square metres in area and must be separated by at least 5 metres.

Trees must not overhang or touch any elements of the building.

The canopy of trees must be separated by at least 5 metres.

There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

Unless specified in a schedule or otherwise agreed in writing to the satisfaction of the relevant fire authority.



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Appendix 3: BMO static water supply requirements

Table 4 from Clause 52.47-3

Table 4 Water supply

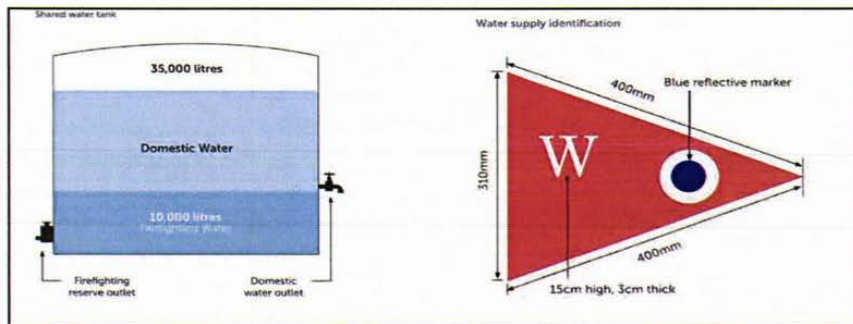
Lot sizes (square meters)	Hydrant available	Capacity (litres)	Fire authority fittings and access required
Less than 500	Not applicable	2,500	No
500-1,000	Yes	5,000	No
500-1,000	No	10,000	Yes
1,001 and above	Not applicable	10,000	Yes

Note 1: A hydrant is available if it is located within 120 metres of the rear of the building

Note 2: Fittings must be in accordance with the published requirements of the relevant fire authority.

Water tank requirements

'The water supply should be stored in an above ground water tank constructed of concrete, steel or corrugated iron. The water supply should be identified. The water supply may be provided in the same water tank as other water supplies provided they are separated with different outlets'.



CFA Fittings (CFA, 2014b)

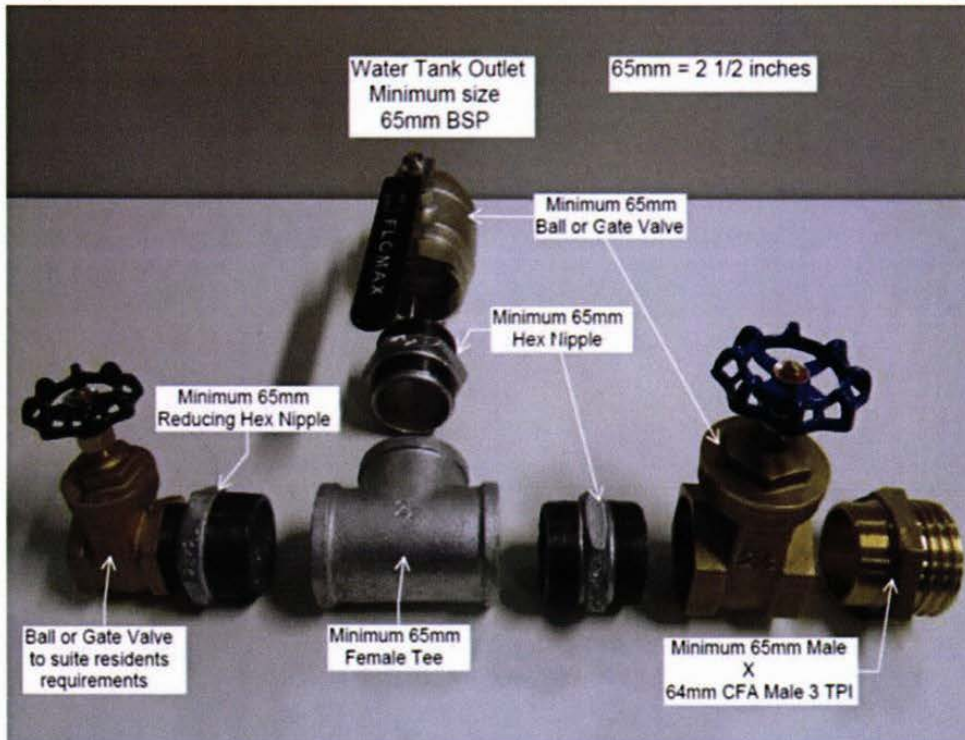
'If specified within Table 4 to Clause 52.47-3 (if fire brigade access to your water supply is required), CFA's standard BMO permit conditions require the pipe work, fittings and tank outlet to be a minimum size of 64 mm.

65 mm BSP (British Standard Pipe) is the most common size available. A 65mm fitting is equivalent to the old 2 1/2 inch. A 65 mm BSP (2 1/2 inch) fitting exceeds CFA's requirements and will therefore comply with CFA's standard permit conditions for the BMO.

The diagram below shows some common tank fittings available at most plumbing suppliers which meet the connection requirements. It includes a 65mm tank outlet, two 65 mm ball or gate valves with a 65mm male to 64 mm CFA 3 threads per inch male coupling. This is a



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special fitting which allows the CFA fire truck to connect to the water supply. An additional ball or gate valve will provide access to the water supply for the resident of the dwelling'

CFA Standard permit conditions for water supply

Conditions required for all applications

'Show [xx litres] of effective water supply for firefighting purposes which meets the following requirements:

- Is stored in an above ground water tank constructed of concrete or metal.
- All fixed above-ground water pipes and fittings required for firefighting purposes must be made of corrosive resistant metal'.

Additional conditions to apply if CFA fittings and access is required

'The water supply must also –

- Incorporate a ball or gate valve (British Standard Pipe (BSP) 65mm) and coupling (64 mm CFA 3 thread per inch male fitting).
- The outlet/s of the water tank must be within 4m of the access way and be unobstructed.
- Be readily identifiable from the building or appropriate identification signage to the satisfaction of CFA must be provided.
- Any pipework and fittings must be a minimum of 65 mm (excluding the CFA coupling)'



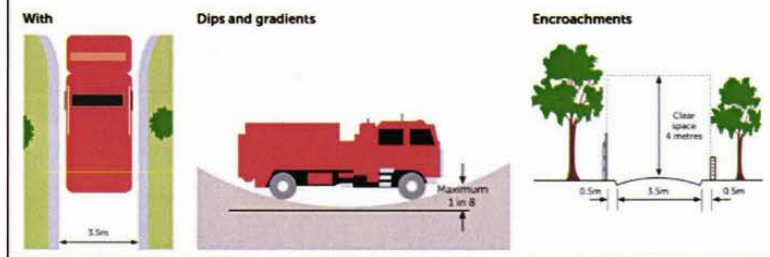
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Appendix 4: BMO access requirements

Where the length of access is greater than 30 metres the following design and construction requirements apply:

- Curves must have a minimum inner radius of 10 metres.
- The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres.
- Dips must have no more than a 1 in 8 (12.5%) (7.1°) entry and exit angle.
- A load limit of at least 15 tonnes and be of all-weather construction.
- Provide a minimum trafficable width of 3.5 metres.
- Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically.
- A cleared area of 0.5 metres is required to allow for the opening of vehicle doors along driveways.



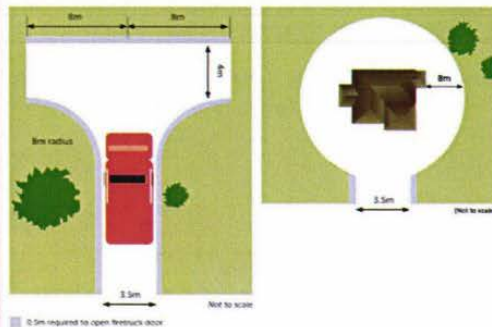
Access between 100 metres to 200 metres in length

In addition to the above:

A turning area for fire fighting vehicles must be provided close to the building by one of the following:

- a turning circle with a minimum radius of 8 metres

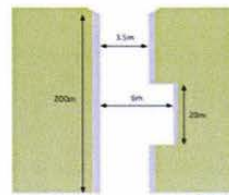
- a driveway encircling the dwelling
- other vehicle turning heads such as a T or Y head which meet the specification of Austroad Design for an 8.8 metre service vehicle.



Access greater than 200 metres in length

In addition to the above, passing bays are required at least every 200 metres that are:

- a minimum of 20 metres long
- with a minimum trafficable width of 6 metres.



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