



Bushfire Management Statement

for the proposed 15 lot subdivision of

15 Hull Road
Marysville VIC 3779

Report prepared for
Michael McNamara

February 2020

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Cover image: Looking north over the site.

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Version	Date completed	Comments	Undertaken by / Distribution
0.1	21 February 2020	Analysis, maps and report writing	JE
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1.0	24 February 2020	Bushfire Management Statement	to Client

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1 Introduction

This Bushfire Management Statement (BMS) has been prepared on behalf of Michael McNamara, to show how the 15 lot subdivision of 15 Hull Road, Marysville VIC 3779 can comply with the Victorian planning and building controls that relate to bushfire; specifically the requirements of the Bushfire Prone Area (BPA), Clause 53.02 *Bushfire Planning*, Clause 44.06 *Bushfire Management Overlay* (BMO) and Clause 13.02 *Bushfire* (Murrindindi Planning Scheme, 2018a, b and c).

The development proposal is for a 15 lot subdivision and the subsequent development of residential dwellings. The site is in a General Residential Zone and Schedule 1 (GRZ1) and covered by the BMO. Accordingly, this report demonstrates how the development responds to the subdivision objectives at Clause 53.02-4.4 (Murrindindi Planning Scheme, 2020).

In accordance with the application requirements at Clause 44.06, this report includes:

- A *Bushfire hazard site assessment*, including a plan that describes the bushfire hazard within 150m of the site in accordance with the site assessment methodology of AS 3959-2018 *Construction of buildings in bushfire-prone areas* and Clause 44.06;
- A *Bushfire hazard landscape assessment*, including a plan that describes the bushfire hazard of the general locality more than 150m from the site; and
- A *BMO compliance* section, detailing how the development responds to the bushfire risk and the requirements and objectives of Clauses 44.06 and 53.02 in the Murrindindi Planning Scheme.

This report also includes a Bushfire Management Plan (BMP) consistent with the CFA's standard permit conditions and BMP guidance (CFA, 2017).

This report has been prepared consistent with guidance provided in *Planning Applications Bushfire Management Overlay, Technical Guide* (DELWP, 2017).

1.1 Property details

Address:	15 Hull Road, Marysville VIC 3779
Property size:	1.46ha (approx.)
Local Government Area:	Murrindindi Shire Council
Zone/s	General Residential Zone and Schedule 1 (GRZ1)
Overlay/s	Bushfire Management Overlay (BMO) Vegetation Protection Overlay and Schedule 1 (VPO1)
Directory reference:	VicRoads 680 H10
Site assessment date:	03 December 2019
Assessed by:	John Eastwood

2 Bushfire hazard site assessment

2.1 Vegetation

Vegetation within the 150m assessment zone around the subdivision has been classified in accordance with the BMO/AS 3959-2018 methodology. Classified vegetation is vegetation that is deemed hazardous with regard to bushfire.

The classification system is not directly analogous to Ecological Vegetation Classes (EVCs) but uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas: No. 7 - Native Vegetation) classification system. The classification is based on the mature state of the vegetation and the likely fire behaviour that it will generate.

Directly across Kings Road from the site, the Marysville Beauty Spot Nature Walk provides access to bushland that is contiguous to the large area of forest that surrounds Marysville.

2.1.1 Forest

Treed vegetation to the south-west of the site best accords with the Forest group of AS 3959-2018. Forest vegetation comprises areas with trees 30m high or taller at maturity, typically dominated by eucalypts, with 30–70% foliage cover (may include understorey ranging from rainforest species and tree ferns to sclerophyllous low trees or shrubs). Includes pine and eucalypt plantations (Standards Australia, 2019).

2.1.2 Grassland

Vegetation to the south matches the AS 3959-2018 classification of Grassland, which is defined as all forms of vegetation (except Tussock Moorlands) including situations with shrubs and trees, if overstorey foliage cover is less than 10%. Includes pasture and cropland (Standards Australia, 2019).

Grassland is considered hazardous and therefore classifiable, when it is not managed in a minimal fuel condition. Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (e.g. short-cropped grass, to a nominal height of 100 mm) (Standards Australia, 2019). In the BMO, Grassland areas are assumed to be unmanaged and classifiable unless there is 'reasonable assurance' that they will be managed in perpetuity, in a low threat state, no more than 100mm high.

2.1.3 Modified vegetation

'Modified vegetation is vegetation that doesn't fit into the vegetation classifications in AS3959:2009 Construction of buildings in bushfire prone areas (the standard) because it:

- *has been modified, altered or is managed due to urban development, or gardening,*
- *has different fuel loads from those assumed in the standard,*
- *has limited or no understorey vegetation, or*

- *is not low-threat or low-risk vegetation as defined in the standard'* (Murrindindi Planning Scheme).

Modified vegetation may occur where fuel loads are higher than typical residential gardens and therefore the vegetation cannot be excluded as low threat. However, because of the amount of disturbance and modification that has occurred and/or the pattern and configuration of the vegetation (e.g. small, fragmented patches and/or reduced or no understorey/surface vegetation), the fuel load and anticipated fire behaviour is likely to be different from that presumed in the BMO/AS 3959-2018 methodology.

This type of vegetation may not produce a 100m wide fire front moving at a quasi-steady state rate of forward spread, as presumed in the BMO/AS 3959-2018, but may generate radiant heat and localised flame contact that needs to be fully considered (DELWP, 2017).

The vegetation in the creek corridor to the north-west of the site (see Map 1) is considered to be Modified vegetation as:

- It is a narrow (around 30-33m wide at the wider points) 'finger' of vegetation associated with the creek corridor;
- It comprises a mix of species including exotics and garden escapees, some of which are higher moisture content plants;
- It is partially managed in places as part of the back gardens of dwellings along Pack Road;
- Its orientation is such that a BMO model fire cannot approach the site as a fully developed fire with a 100m wide flame front; and
- The fuel load is unlikely to be the 35 t/ha assumed for Forest (although no fuel assessment has been conducted).

2.1.4 Excluded vegetation and non-vegetated areas

Areas of low threat vegetation and non-vegetated areas within 150m of the site can be excluded from classification in accordance with Section 2.2.3.2 of AS 3959-2018, if they comprise one or more of the following:

- 'Vegetation of any type that is more than 100m¹ from the site.*
- Single areas of vegetation less than 1 ha in area and not within 100m of other areas of vegetation being classified vegetation.*
- Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other, or of other areas of vegetation being classified vegetation.*
- Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.*
- Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.*

¹ This distance extends to 150m in BMO areas.

- vi. *Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition², mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks'* (Standards Australia, 2019).

Low-threat areas excluded from classification include the managed garden on the adjacent properties to the south-east, east and north, and along Pack Road. Non-vegetated areas include the roads, driveways and structures within the 150m site assessment zone (see Map 1).

2.2 Topography

The BMO/AS 3959-2018 methodology requires that the 'effective slope' be identified to determine the BAL and applicable defensible space or vegetation setback distances. This is the slope of land under the classified vegetation that will most significantly influence the bushfire attack on a building. Two broad types apply:

- Flat and/or Upslope - land that is flat or on which a bushfire will be burning downhill in relation to the development. Fires burning downhill (i.e. on an upslope) will generally be moving more slowly with a reduced intensity.
- Downslope - land under the classified vegetation on which a bushfire will be burning uphill in relation to the development. As the rate of spread of a bushfire burning on a downslope (i.e. burning uphill towards a development) is significantly influenced by increases in slope, downslopes are grouped into five classes in 5° increments from 0° up to 20°.

The topography on and around the site within the 150m assessment zone is relatively benign, with limited significant changes in elevation that would exacerbate the bushfire attack (see Map 1).

For the purposes of determining the BAL and defensible space, the applicable slope class is '**All upslopes or flat land**' slope category under the Forest to the south-west and the Grassland to the south.

The effective slope is not applicable to areas of modified vegetation.

² Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack, recognisable as short-cropped grass for example, to a nominal height of 100mm (Standards Australia, 2019).



Map 1 - Bushfire hazard site assessment plan.



Figure 1 - Looking north from Kings Road at modified vegetation to the north-west of the site (site is on right in image).



Figure 2 – Modified vegetation in the creek corridor to the north-west of the site, viewed from the approximate location of the proposed Lot 5.



Figure 3 – Looking south from Kings Road at Forest and Grassland beyond park access turnoff.



Figure 4 - Looking across Kings Road at Forest behind nearby dwelling. Closest part of the Forest is approximately 36m from the proposed building envelopes.



Figure 5 – Looking north from within the site, at low threat vegetation on the neighbouring property.



Figure 6 - Looking north-west along Kings Road from near Mt Kitchener Road with dwelling opposite the site on left in image.



Figure 7 – The site approximately 12 months after the 2009 Black Saturday bushfire with area now classified as Modified vegetation on left in image (Google Earth street view imagery ©Google 2020).



Figure 8 – Looking south from Kings Road approximately 12 months after the 2009 Black Saturday bushfire (Google Earth street view imagery ©Google 2020).

3 Bushfire hazard landscape assessment

3.1 Location description

The Regional Bushfire Planning Assessment – Hume Region (DPCD, 2012) identifies the Marysville township as being largely surrounded by public land, which includes areas of high and very high conservation significance. 15 Hull Road is located on the south-western edge of the Marysville urban area. Forested land is found immediately south of the site beyond Kings Road, while residential properties are located in other directions.

The site shares the overall bushfire risk to the township as a whole, that is inherent to the landscape in which Marysville is located. Extreme fire behaviour is possible and was evident in the 2009 Murrindindi Black Saturday Bushfire, which burnt through Marysville, destroying the much of the town, including the buildings previously on the site.

The surrounding landscape is characterised by extensive areas of dense bushland over steep and often extreme slopes with the possibility of long fire runs and large scale fire behaviour.

Marysville is approximately 35km from Healesville to the south-west, with the road running through the forested areas of the Black Spur, and 41km from Alexandra to the north, generally through pastoral valleys surrounded by forest, with the small towns of Buxton and Taggerty on the way. The local road network runs through extensive forested areas, with assuredly low threat areas (outside of the BPA) many kilometres away and not practically accessible.

The entire map extent of Map 2 is covered by the BPA and the BMO.

3.2 Fire history

Marysville was directly impacted in the 2009 Black Saturday bushfires with heavy loss of life and around 400 buildings destroyed, including those on the subject site and immediately to the south (see Map 2). The area was approached (approximately 12km away) by the 1983 Ash Wednesday fires but not directly impacted. Other smaller, but locally significant, fires have also occurred in the region, with several fires in 2016.

The severe fire winds and extreme fire behaviour associated with convective plumes that were evident on Black Saturday are still possible in the landscape around Marysville.

3.3 Landscape risk

Clause 13.02 of the Planning Policy Framework prioritises the protection of human life over all other policy considerations. Clause 13.02 stipulates that developments must properly assess


bushfire risk, including consideration of the hazard (and the resultant risk) beyond the site level (Murrindindi Planning Scheme, 2018).

To assist in defining this wider risk, four 'broader landscape types', representing different landscape risk levels, are described in the DELWP technical guide *Planning Applications Bushfire Management Overlay* (DELWP, 2017). These are intended to streamline decision-making and support more consistent decisions based on the landscape risk.

The four types range from low risk landscapes where there is little hazardous vegetation beyond 150m of the site and extreme bushfire behaviour is not credible, to extreme risk landscapes with limited or no evacuation options and where fire behaviour could exceed BMO presumptions.

The development site and surrounding landscape best accords with Broader Landscape Type 4 (see Table 1).

Table 1- Landscape risk typologies (from DELWP, 2017).

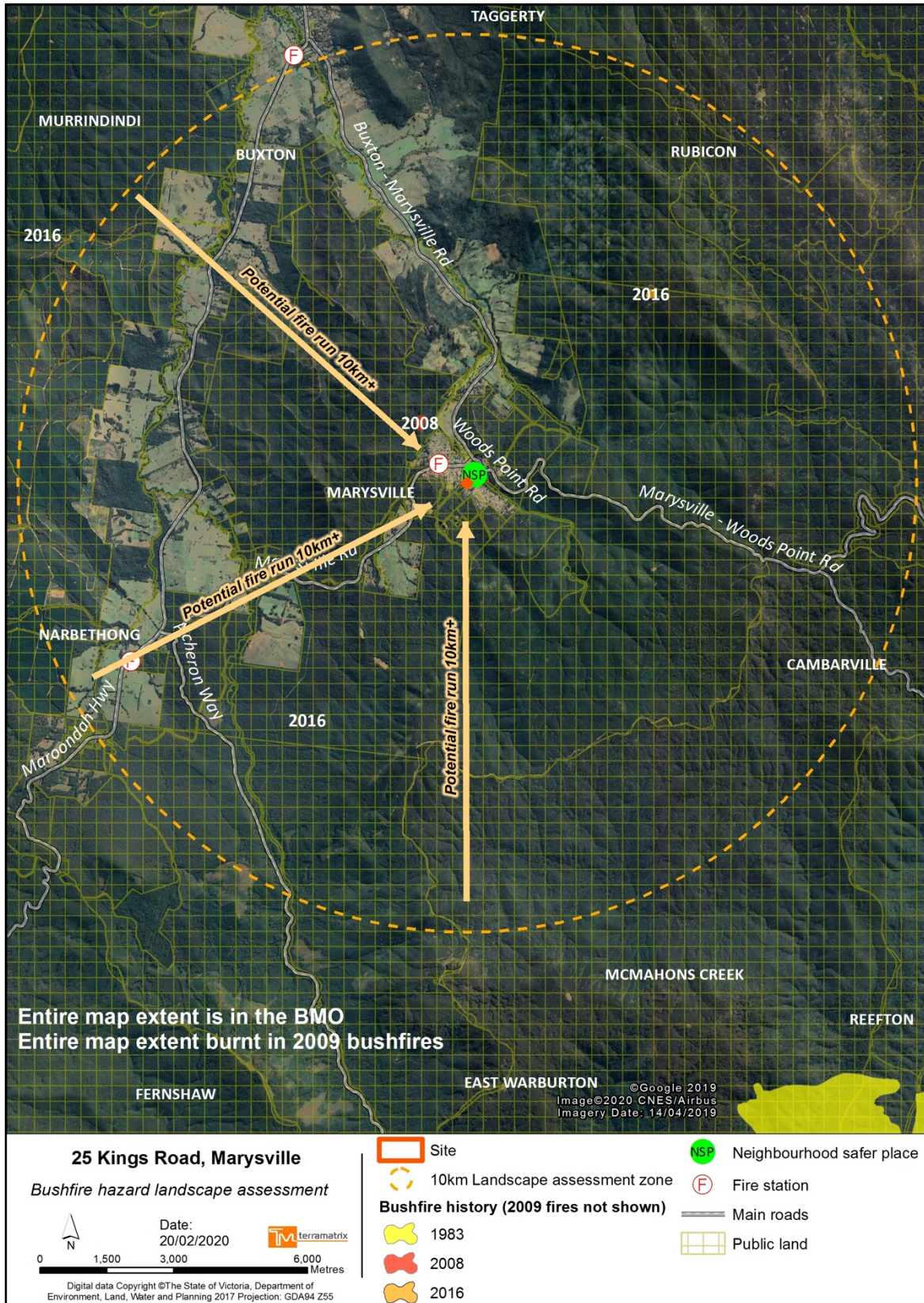
Broader Landscape Type 1	Broader Landscape Type 2	Broader Landscape Type 3	Broader Landscape Type 4
<ul style="list-style-type: none"> • There is little vegetation beyond 150 metres of the site (except grasslands and low-threat vegetation). • Extreme bushfire behaviour is not possible. • The type and 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 located 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. • Fires have hours or days to grow and develop before impacting • Evacuation options are limited or not available.
			

3.3.1 Fire scenario

In Victoria, the most likely bushfire scenarios for a large landscape fire are an approach from those directions 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 south-west (Long, 2006).

The site, and Marysville as a whole, could be approached from any direction by a large scale bushfire driven by convective winds with associated extreme fire behaviour, including wide scale ember attack and turbulent winds. The Black Saturday scenario, with an ignition to the north-west (as occurred with the Murrindindi Mill fire) and subsequent fire development to the south-east toward Marysville, could re-occur.

Comparable fires could develop in any direction and approach Marysville by the prevailing winds or under the influence of fire generated convective winds.



Map 2 - Bushfire hazard landscape assessment plan.

4 BMO compliance

This section identifies how the proposed development responds to the bushfire risk and the requirements of Clause 44.06 and associated Clause 53.02 of the Murrindindi Planning Scheme.

4.1 Clause 53.02-4.1 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’ (Murrindindi Planning Scheme, 2020).

Compliance with these objectives at Clause 53.02-4.4 is proposed via the following approved measures.

4.1.1 Approved measure 2.1 Landscape

‘The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level’ (Murrindindi Planning Scheme, 2020).

As identified in Section 3, the broader landscape is one of extreme bushfire risk. Bushfire behaviour could be beyond BMO expectations and design parameters. The topography is steep and extreme in places, however, the fuel hazard is unlikely to exceed that presumed in the BMO/AS 3959-2018 model for Forest.

However, due to several site-specific moderating factors, it is proposed that the risk can be mitigated to an acceptable level by implementing approved bushfire protection measures in compliance with the BMO requirements, including BAL construction standard, commensurate defensible space, provision of a water supply for firefighting, and ensuring good access and egress are available for occupants and emergency services.

These moderating factors include:

- The presence of Kings Road immediately to the south-west of the site, providing approximately 37m separation between the proposed dwellings and the far side of the road;
- The presence of a dwelling and associated defensible space and the park access turnoff on the far side of Kings Road, that increase the setback from the Forest;
- The Grassland area to the south associated with the former Mountain Lodge (possibly subject to an impending subdivision application, although this is not assured);

- Ongoing fire management works to the south and south-west of the site (see below);
- The Forest vegetation becomes modified vegetation to the north-east of Kings Road adjacent to the site north-western boundary; and
- Low threat vegetation of the adjacent urban area in other directions.

In addition, the public land around Marysville is subject to ongoing management. The land to the south and south-west the site is largely public land and is subject to a fuel management regime (FFMV, online; see Figure 9).

An Asset Protection Zone (APZ) occurs to the south-west and north-east of Marysville, including the public land to the south-west of the site. The Code of Practice for Fire Management on Public Land (DSE, 2012) defines this zone as:

‘Using intensive fuel treatment, the Asset Protection Zone (APZ) aims to provide the highest level of localised protection to human life and property and key community assets. The goal of fuel treatment is to reduce radiant heat and ember attack in the event of a bushfire. Fuel treatment will be carried out in the APZ through a combination of planned burning and other methods such as mowing, slashing or vegetation removal’.

A Bushfire Moderation Zone occurs to the south-east and north-west of Marysville. The Code of Practice for Fire Management on Public Land (DSE, 2012) defines this zone as:

‘This zone aims to reduce the speed and intensity of bushfires. This zone complements the APZ in that the use of planned burning in the BMZ is designed to protect nearby assets, particularly from ember spotting during a bushfire.’

Where practicable, the BMZ will aim to achieve ecological outcomes by seeking to manage for ecologically desirable fire regimes, provided bushfire protection objectives can still be met. This may include using other fuel management methods’.

Planned fuel management works around Marysville are shown on the Joint Fuel Management program for 2019-2022 on the FFMV Fire Operations Plan mapping shown as Figure 9.

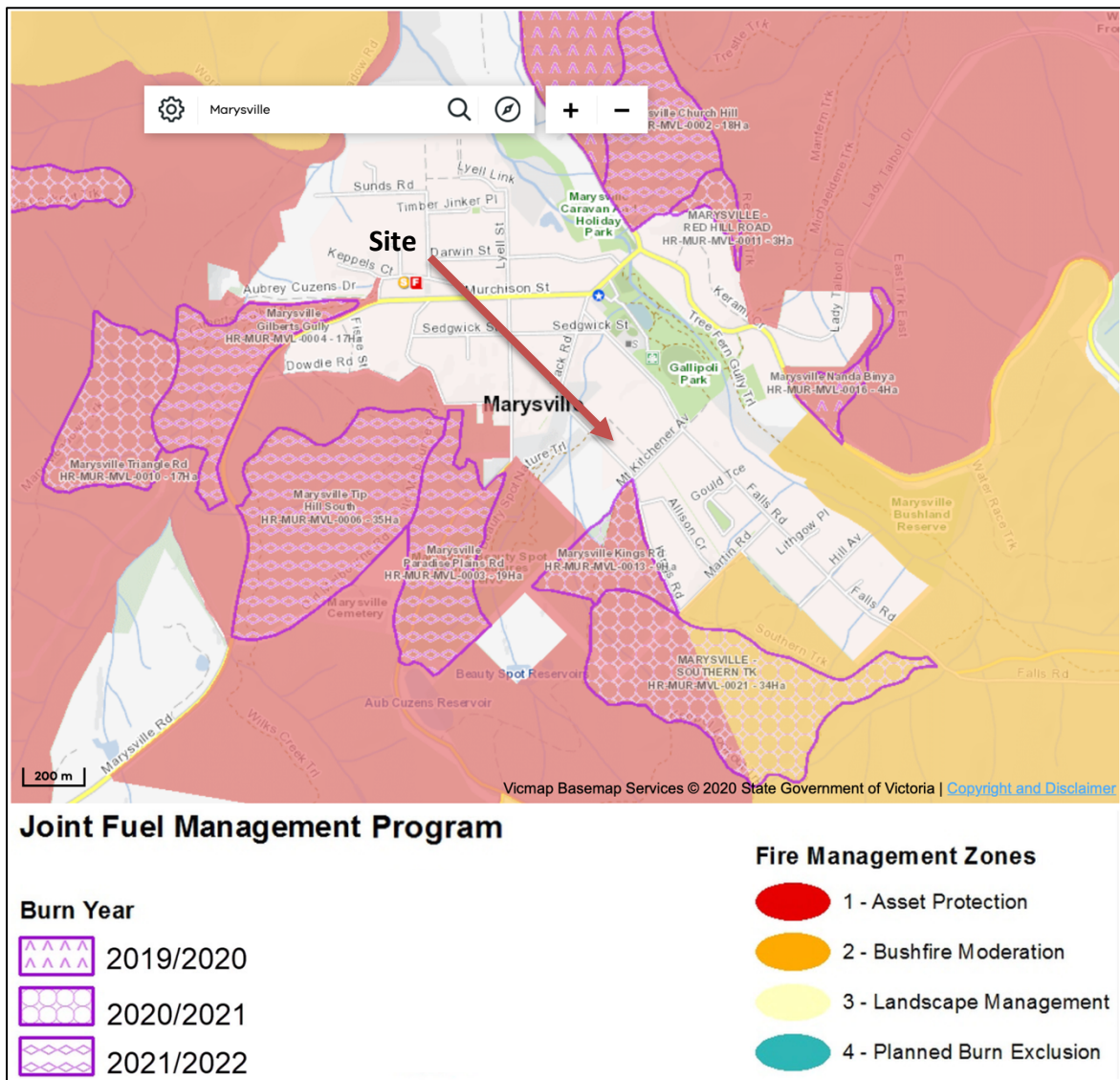


Figure 9 - Fire Management Zones in the vicinity of Marysville.

The site shares the landscape risk of the Marysville township and is immediately adjacent to the BMO Schedule 2 area (to the north-east), where a BAL-29 construction standard is required. The development of the site would contribute to the overall resilience of the township by providing an additional assured area of low threat managed vegetation on the south-west edge of the urban area.

4.1.2 Approved measure 2.2 Siting

'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' (Murrindindi Planning Scheme, 2020).

The siting and layout maximise the setback from the hazard (i.e. unmanaged vegetation) as far as practicable and achieves compliance with the BMO setback requirements for defensible space, with the incorporation of the non-vegetated area of Kings Road 20m of defensible space will be provided, and the proposed dwellings will be approximately 37m from the nearest Forest in this direction (see Map 3).

The proposed development is close to the public road, and access and egress can comply with the requirements for emergency vehicles and occupants.

4.2 53.02-4.3 Water supply and access objectives

'A static water supply is provided to assist in protecting property. Vehicle access is designed and constructed to enhance safety in the event of a bushfire' (Murrindindi Planning Scheme, 2020).

These objectives can be achieved via approved measure 4.1.

4.2.1 Approved measure 4.1

'A building used for a dwelling (including an extension or alteration to a dwelling), a dependent persons 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.*
- *Vehicle access that is designed and constructed as specified in Table 5 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' (Murrindindi Planning Scheme, 2020).

14 of the 15 lots forming the proposed subdivision are less than 1,000m² in area and will be provided with a static water supply of 5,000L. As a hydrant system will be provided within the subdivision, no emergency service access to the water supply is required.

Lot 5, in the north-west corner of the site, is greater than 1,001m² in area and will be provided with a static water supply of 10,000L for firefighting purposes only. Access to the water for the fire service will be provided in accordance with Table 5 to Clause 53.02-5 (detailed in Appendix B of this report).

Note: The siting of the static water supply on Map 3 is indicative only. The tanks can be relocated from the positions shown here, provided that the alternative location on Lot 5 complies with the requirements for access detailed at Appendix B.

All proposed dwellings are located close to the internal road to be created by the subdivision or to Kings Road, with all driveways less than 30m in length (note: access is not shown on the attached Bushfire Management Plan). All driveways will comply with the requirements of Table 5 to Clause 53.02-5 regarding construction, curves, grade, width and clearance as detailed in Appendix C.

4.3 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’ (Murrindindi Planning Scheme, 2020).

These objectives can be achieved via AM 5.5.

4.3.1 Approved measure 5.3

‘An application to subdivide land to create 10 or more lots provides a perimeter road adjoining the hazardous vegetation to support firefighting’ (Murrindindi Planning Scheme, 2018a).

No perimeter road is proposed, however, the internal road extending from Hull Road in the south-east to Kings Road in the south-west provides a setback from the Modified vegetation to the north-west for the majority of lots, with only the large Lot 5 not separated by a road. The proposed dwelling on Lot 5 is setback from the Modified vegetation to the north-west the equivalent distance as the dwellings separated by the road (16m).

Kings Road provides a pre-existing perimeter road between the development and the Forest to the south-west.

4.3.2 Approved measure 5.4

‘A subdivision manages the bushfire risk to future development from existing or proposed landscaping, public open space and communal areas’ (Murrindindi Planning Scheme, 2020).

No landscaping or communal areas are proposed.

4.3.3 Alternative measure 5.5

*‘A building envelope for a subdivision that creates 10 or more lots required under **AM 5.2** may show defendable space in accordance with Table 2 Column C and Table 6 to Clause 53.02-5 where it can be demonstrated that:*

- All other requirements of **AM 5.2** have been met.
- Less defensible space and a higher construction standard is appropriate having regard to the bushfire hazard landscape assessment' (Murrindindi Planning Scheme, 2020).

Dwellings on all lots will be built to a BAL-29 construction standard and provided with defensible space to the site boundary, with extra defensible space from Column C to Clause 53.02 provided as per the unspecified alternative measure detailed at Section 4.3.4. This amounts to 25m of defensible space in response to Forest on an effective slope in the 'All upslopes and flat land' slope category. The actual setback from the nearest part of the Forest to the south is 37m.

Although the site, and Marysville as a whole, is located in an extreme bushfire risk landscape, the separation of the proposed dwellings from the bushfire hazard to the south and west, and the other site-specific moderating factors discussed at Section 4.1.1 act to reduce the bushfire hazard to the site.

In addition, the development of the site with BAL-29 construction would contribute to the overall resilience of the township by providing an additional assured area of low threat managed vegetation on the south-west edge of the urban area.

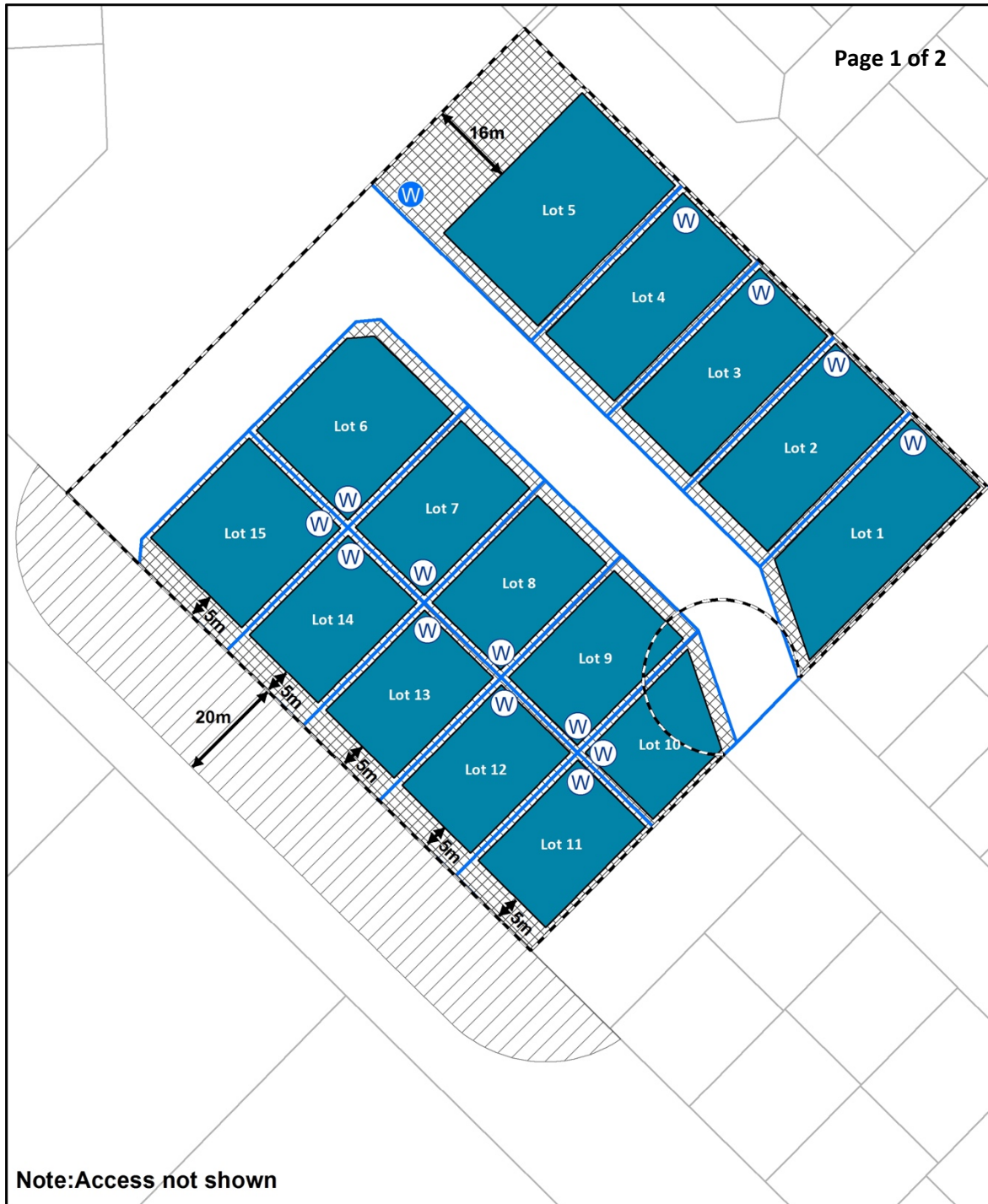
4.3.4 Unspecified alternative measure

Clause 53.02 allows for the responsible authority to consider an alternative measure where the applicable objective can be met, including '*unspecified alternative measures*' (Clause 53.02 p.1) Also, *Planning Permit Applications Bushfire Management Overlay Technical Guide* allows for '*alternative measures, whether specified in Clause 52.47 (now Clause 53.02) or not*' to satisfy the relevant bushfire protection objective (DELWP, 2017 p.8).

The use of an unspecified alternative measure in the meeting of the defensible space and construction objective is considered justified by the site-specific moderating factors listed at Section 4.1.1 and the topography, which is Upslope under the Forest south of the site.

The proposed unspecified alternative measure involves the use of the assured non-vegetated area of Kings Road in the provision of 20m of defensible space outside of the site boundary. The actual setback of the building envelopes from the nearest Forest is 37m in this direction.

In addition, in recognition of the presence of Modified vegetation in the creek corridor to the north-west, a 16m defensible space setback will be provided between the adjacent dwellings and the site boundary. This is equivalent to the defensible space required for a BAL-29 construction standard in response to Woodland on an effective slope in the 'All upslopes and flat land' slope category of AS 3959-2019 and is more than that required for Modified vegetation.

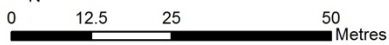


Note: Access not shown

25 Kings Road, Marysville

Bushfire hazard site assessment

Date:
20/02/2020



- Site
- Proposed subdivision
- Building envelopes
- Defendable space
- Defendable space over Kings Road
- 10,000L Static water supply indicative location
- 5,000L Static water supply indicative location
- Cadastre

Construction Standard

The dwellings on all lots must be designed and constructed to a minimum BAL-29 standard.

Water Supply

A minimum 10,000L of effective water supply for fire fighting purposes must be provided on Lot 5 in accordance with the following requirements:

- Be stored in an above ground water tank/s constructed of concrete or metal.
- Have all fixed above-ground water pipes and fittings required for fire fighting purposes made of corrosive resistant metal.
- Include a separate outlet for site occupant use.
- Be readily identifiable from the building or appropriate identification signage to the satisfaction of the CFA.
- Be located within 60 metres of the outer edge of the approved building.
- The outlet/s of the water tank/s must be within 4m of the accessway and unobstructed.
- Incorporate a separate ball or gate valve (British Standard Pipe (BSP) 65mm) and coupling (64 mm CFA 3 thread per inch male fitting).
- Any pipework and fittings must be a minimum of 65 mm (excluding the CFA coupling).

A minimum 5,000L of effective water supply for fire fighting purposes must be provided on lots 1 – 4 and 6 - 15 in accordance with the following requirements:

- Be stored in an above ground water tank/s constructed of concrete or metal.
- Have all fixed above-ground water pipes and fittings required for fire fighting purposes made of corrosive resistant metal.
- Include a separate outlet for site occupant use.

Vehicle Access

Vehicle access to the water supply outlet on Lot 5 must be provided in accordance with the following requirements:

- All-weather construction.
- A load limit of at least 15 tonnes.
- 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.
- 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 grade 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 per cent) (7.1 degrees) entry and exit angle.

Defendable Space Management

Defendable space must be provided to the property boundary and be 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 3m 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 5m² in area and must be separated by at least 5m.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5m.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

5 Conclusion

The proposed 15 lot subdivision of 15 Hull Road was assessed using the BMO site assessment methodology for compliance with Clause 13.05, Clause 44.06 and Clause 53.02 of the Murrindindi Planning Scheme.

The site is in the General Residential Zone. All applicable BMO objectives are met by complying with approved measures 2.1, 2.2, 4.1, 5.3, alternative measure 5.5, and an unspecified alternative measure.

Alternative measure 5.5 requires the consideration of the landscape scale bushfire threat to the site and the appropriateness of the adoption of a BAL-29 construction standard. The landscape risk to Marysville as a whole is extreme, however, the site-specific moderating factors discussed in this report allow for the consideration of alternative measure 5.5.

Classified Forest and Grassland pose a bushfire hazard to the south-west and south, and Modified vegetation to the north-west. However, the topography under the classified vegetation (and the site itself) is relatively flat and does not significantly contribute to the level of bushfire attack on the proposed buildings.

The current development layout can achieve defensible space/vegetation setback distances to comply with the BMO with the adoption of an unspecified alternative measure. This is based on a minimum BAL-29 construction standard for all buildings and 25m of defensible space to the south as per Tables 2 and 6 of Clause 53.02-5. The unspecified alternative measure allows for 20m of the 25m of defensible space required for BAL-29 construction, to be provided by the assuredly non-vegetated area of Kings Road and stipulates a 16m setback from the Modified vegetation to the north-west. It is anticipated that all vegetation on the site will be able to be managed in a low threat state.

Water supply and access and egress requirements can comply with BMO specifications.

The landscape risk is extreme, however the bushfire protection measures detailed in this report are considered to comply with BMO requirements. The development of the site to a BAL-29 construction standard and creation of defensible space would contribute to the overall bushfire resilience of the Marysville township by creating an assuredly low threat area on the edge of the urban area.

Please Note: The bushfire protection measures proposed in this document do not guarantee survival of the building or the occupants in the event of a bushfire. The client is strongly encouraged to develop and practice a bushfire survival plan including determining triggers for leaving early on days of severe or higher, fire danger. Information and assistance including a template for a Bushfire Survival Plan is provided on the CFA website at <<http://www.cfa.vic.gov.au/plan-prepare/>>.

6 Appendix A: BMO vegetation management standards

As per Table 6 to Clause 53.02-5:

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 otherwise specified in a schedule or otherwise agreed in writing to the satisfaction of the relevant fire authority. (Murrindindi Planning Scheme, 2018b).

7 Appendix B: BMO static water supply requirements

Table 4 from Clause 53.02-5 - Capacity, fittings and access (Murrindindi Planning Scheme, 2018a)

Capacity, fittings and access

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

Fire Authority requirements

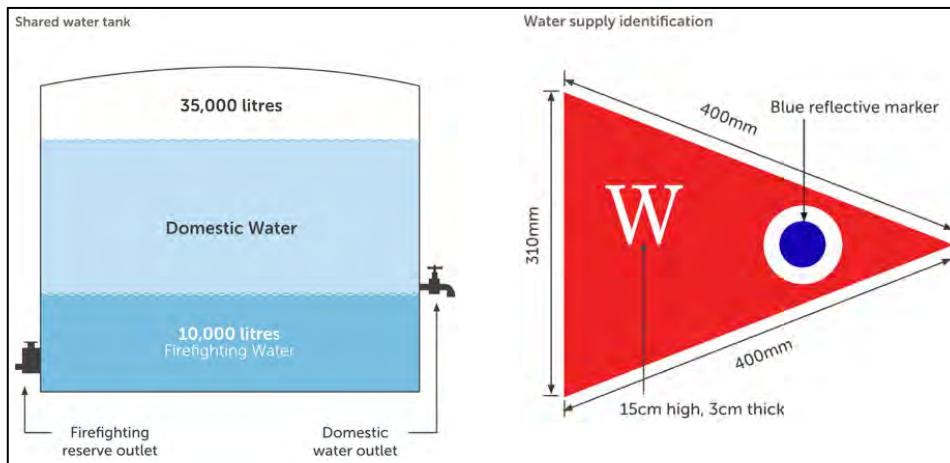
'Unless otherwise agreed in writing by the relevant fire authority, the water supply must:

- Be stored in an above ground water tank constructed of concrete or metal.*
- Have all fixed above-ground water pipes and fittings required for firefighting purposes made of corrosive resistant metal.*
- Include a separate outlet for occupant use.*

Where a 10,000L water supply is required, fire authority fittings and access must be provided as follows:

- Be readily identifiable from the building or appropriate identification signage to the satisfaction of the relevant fire authority.*
- Be located within 60m of the outer edge of the approved building.*
- The outlet/s of the water tank must be within 4m of the accessway and be unobstructed.*
- Incorporate a separate ball or gate valve (British Standard Pipe (BSP 65 millimetre) and coupling (64 millimetre CFA 3 thread per inch male fitting).*
- Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling)' (Murrindindi Planning Scheme, 2018b).*

The water supply may be provided in the same water tank as other water supplies, provided they are separated with different outlets. See figure below illustrating signage and an example of outlets where fire fighting water will be in the same tank as water for other use.



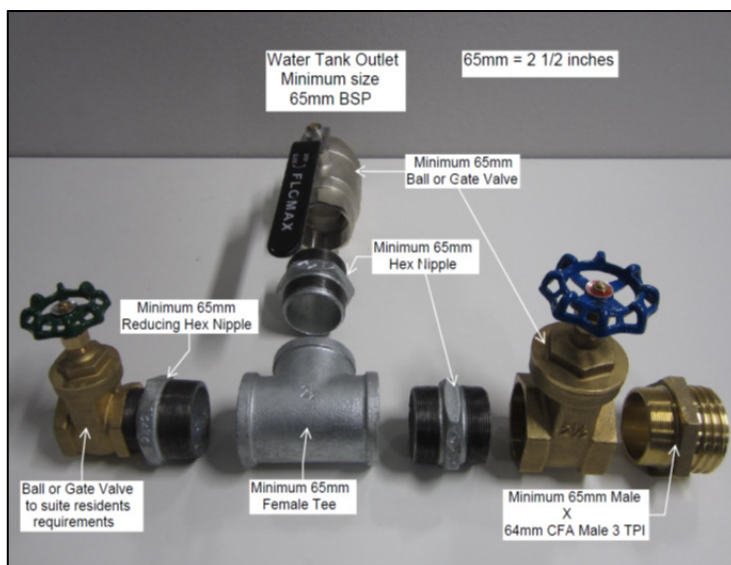
(DELWP, 2017)

CFA Fittings (CFA, 2014c)

'If specified within Table 4 to Clause 53.02-5 (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.

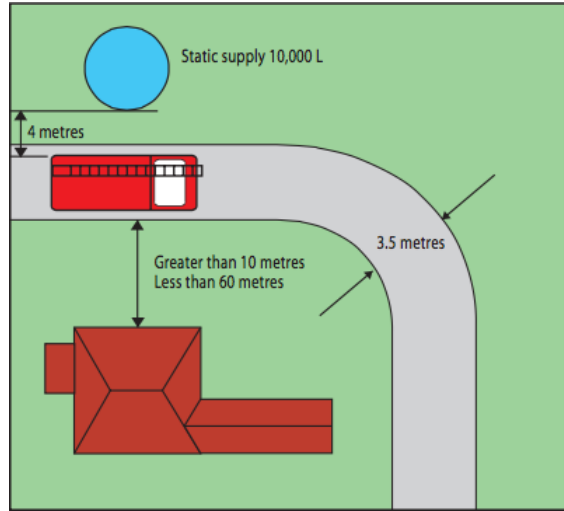
65 mm BSP (British Standard Pipe) is the most common size available. A 65 mm fitting is equivalent to the old 2 1/2 inch. A 65 mm BSP (2 1/2 inch) fitting exceeds CFA's requirements and will therefore comply with CFA's standard permit conditions for the BMO.

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



Static water supply location (CFA, 2006)

Static Water Supply Location	
Performance Requirement	CFA Standard
Static water supply is located in positions that will enable firefighters to access water safely, effectively and efficiently.	<p>The maximum distance between a static water supply outlet and the rear of a building must be no more than 60 m and no less than 10 m from the building.</p> <p>The static water supply outlet must be no more than 3 m above the static water supply base</p> <p>Fire brigade vehicles must be able to get to within 4 m of the static water supply outlet</p> <p>A safe fire truck hard standing area of 10.3 m x 5.5 m clear of obstructions is provided at least 10 m from the building (figure 4).</p>



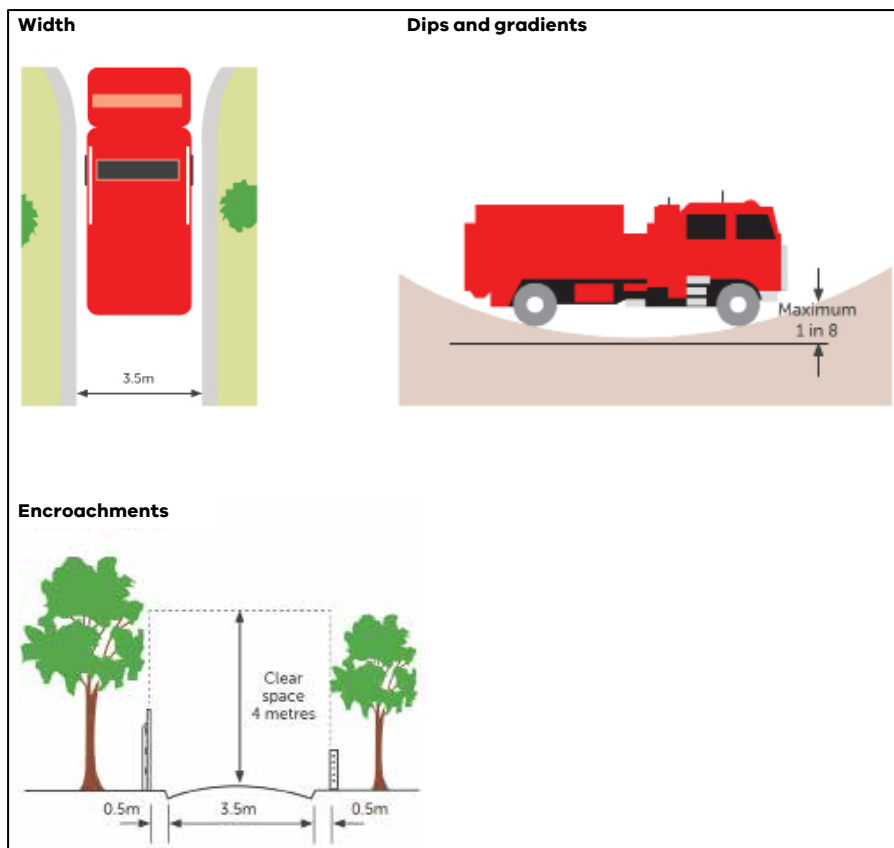
8 Appendix C: BMO access requirements

Driveways less than 30m long have no specific requirements unless access to the water supply outlet is required, in which case the following apply as appropriate.

Access between 30m and 100m in length

Where the length of access is greater than 30 metres the following design and construction requirements apply (*the length of access should be measured from a public road to either the building or the water supply outlet, whichever is longer* (Murrindindi Planning Scheme, 2018a)):

- 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.
- Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle.

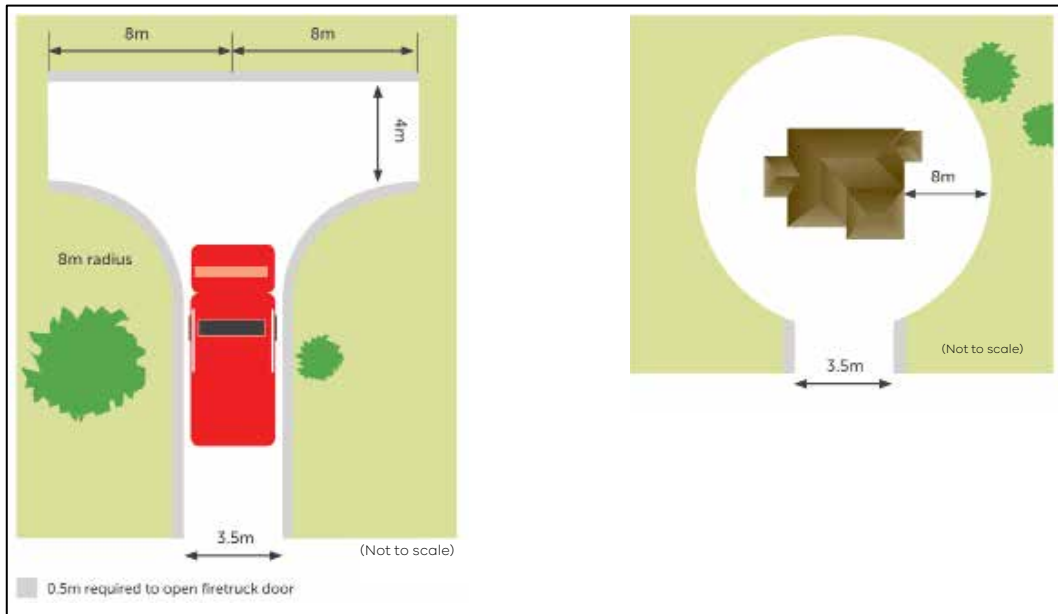


(DELWP, 2017)

Access between 100m and 200m in length

In addition to the 30m-100m requirements 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.

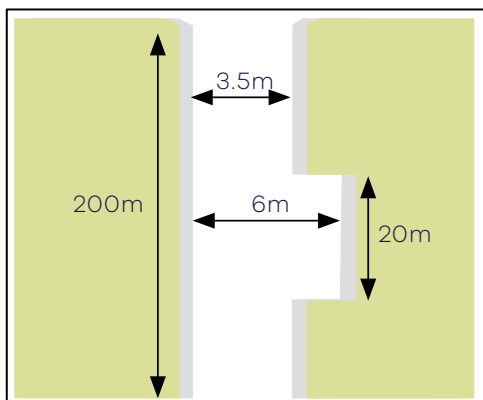


(DELWP, 2017)

Access greater than 200m in length

In addition to the requirements 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.



(DELWP, 2017)

9 References

CFA (2014) *FSG LUP 006 Tank Connections Explained, Bushfire Management Overlay*. CFA Land Use Planning Fire Services Guideline. Available at <<https://www.cfa.vic.gov.au/plan-prepare/planning-and-bushfire-management-overlay>>.

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Murrindindi Planning Scheme (2018c) *Clause 13.02 Bushfire*. Available at <<https://www.planning.vic.gov.au/schemes-and-amendments/browse-planning-schemes>>.

Murrindindi Planning Scheme (2020) *Clause 53.02-4 Bushfire Protection Objectives*. Available at <<https://www.planning.vic.gov.au/schemes-and-amendments/browse-planning-schemes>>.

Standards Australia (2019) *AS 3959-2018 Construction of buildings in bushfire-prone areas*. Incorporating amendment 1. Standards Australia, North Sydney, New South Wales.