



PLANNING FOR BUSHFIRE VICTORIA



**GUIDELINES FOR MEETING VICTORIA'S
BUSHFIRE PLANNING REQUIREMENTS**

FOREWORD

Land use planning plays a central role in building community resilience and safety. Indeed, one of the key findings of the 2009 Victorian Bushfires Royal Commission (VBRC) was the need for planning to prioritise human life over all other policy objectives. This priority was enshrined in Victoria's Planning Provisions through Planning Scheme Amendment VC83.

The Bushfire Management Overlay (BMO) identifies Victoria's areas of highest bushfire risk. *Planning for Bushfire Victoria* provides a guide to developing permit applications triggered by the BMO. These guidelines outline how the bushfire protection measures within the Victoria Planning Provisions should be met. They incorporate a reasonable and necessary set of steps designed to ensure that the siting and layout of development reduces the risk to life, property and community infrastructure from bushfire. Both the Victoria Planning Provisions and the BMO are administered by the Department of Planning and Community Development (DPCD).

History has shown just how effective bushfire protection measures are when they are cemented in planning schemes and adopted at large. Each new home sited and built according to these measures makes our communities that much more resilient.

Planning for Bushfire Victoria explains the bushfire planning provisions in detail and describes how to apply them when completing or assessing a planning permit application in the BMO. While many of the provisions are technical in nature, they are also common sense and proven to work. This document provides applicants and authorities with a planning blueprint to help manage bushfire risk and, ultimately, protect lives and property.



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Chief Officer

Table of contents

INTRODUCTION	02
SECTION ONE BUSHFIRE RISK & HOUSE LOSS	05
SECTION TWO BUILDING & WORKS	15
SECTION THREE SUBDIVISIONS	37
FURTHER RESOURCES	46

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Planning for Bushfire Victoria: Version 2. Published November 2012

INTRODUCTION

ABOUT THIS PUBLICATION

Planning for Bushfire Victoria has been designed to support the implementation of the Bushfire Management Overlay (BMO).

This resource was developed to provide clear guidance to planning permit applicants, the Responsible Authority and Referral Authorities. *Planning for Bushfire Victoria* supports CFA's decision-making process as a referral authority under the *Planning and Environment Act 1987* and Victoria's planning system.

It is available online to ensure that, any required changes or amendments can be readily made to keep the document up to date. It is important to regularly check the CFA website to ensure the most up to date version of this document is being used. Please refer to the inside cover of this publication for the version reference number. Links to the practice notes, fact sheets and templates have been included so all relevant information is available.

The Victoria Planning Provisions and the BMO are administered by the Department of Planning and Community Development (DPCD).

HOW TO USE THIS PUBLICATION

Planning for Bushfire Victoria explains the bushfire planning provisions in detail and describes how to apply these when completing or assessing a planning permit application in the BMO.

Section 1: Bushfire risk and house loss

outlines background information and bushfire behaviour, with particular relevance to house loss in a bushfire. It looks at the strategies available to mitigate bushfire risk and identifies those that are implemented by the planning scheme.

Section 2: Buildings and works

explains how the bushfire protection requirements of Clause 52.47 of the planning scheme apply. It contains a series of 'Guidelines' for each of the objectives for buildings and works. These include the planning policy, 'Meeting the objective' and, where relevant, frequently asked questions.

Section 3: Subdivisions

contains information relevant to subdivisions in the BMO.

Section 4: Further resources

provides a list of references and a bibliography.



BACKGROUND INFORMATION

2009 VICTORIAN BUSHFIRES ROYAL COMMISSION

The 2009 Victorian Bushfires Royal Commission (VBRC) was established in response to the bushfires that devastated parts of Victoria in 2009. The bushfires of 7 February 2009 resulted in the loss of 173 lives, over 2000 homes being destroyed and 430,000 hectares of land burnt.

The VBRC conducted an extensive investigation into the preparation, causes, response and impact of the 2009 bushfires. It concentrated on gaining an understanding of what took place and how the risks of such a disaster recurring might be reduced.

One of the key findings of the VBRC was the need to prioritise the protection of human life over all other policy objectives. Planning Scheme Amendment VC83 introduced the new bushfire planning provisions. The resulting changes to the planning system are designed to reflect this new priority as well as the shared responsibility of governments, fire agencies, communities and individuals for minimising the potential for a tragedy on the scale of February 2009 happening again.

In its final report the VBRC included a number of recommendations relating specifically to planning and bushfire. Recommendations 39 and 40 are of particular relevance:

Recommendation 39

"The State amend the Victoria Planning Provisions relating to bushfire to ensure that the provisions give policy priority to the protection of human life, adopt a clear objective of substantially restricting development in the areas of highest bushfire risk – giving due consideration to biodiversity conservation – and provide clear guidance for decision makers. The amendments should take account of the conclusions reached by the Commission and do the following:

- *outline the State's objectives for managing bushfire risk through land-use planning in an amended state planning policy for bushfire, as set out in Clause 15.07 (now Clause 13.05) of the Victoria Planning Provisions*
- *allow municipal councils to include a minimum lot size for use of land for a dwelling, both with and without a permit, in a schedule to each of the Rural Living Zone, Green Wedge Zone, Green Wedge A Zone, Rural Conservation Zone, Farming Zone and Rural Activity Zone.*
- *amend Clause 44.06 of the Victoria Planning Provisions to provide a comprehensive Bushfire-prone Overlay provision."*

Recommendation 40

"The Country Fire Authority amend its guidelines for assessing permit applications for dwellings, non-dwellings and subdivisions in the Bushfire-prone Overlay in order to accommodate the amendments to the Wildfire Management Overlay (now BMO) that are implemented as a result of recommendation 39 and make the guidelines available to municipal councils and the public. The revised guidelines should do the following:

- *substantially restrict new developments and subdivisions in those areas of highest risk in the Bushfire-prone Overlay (now BMO)*
- *set out the CFA's guidelines for assessing permit applications for dwellings, non-dwellings and subdivisions – including the minimum defendable space requirements for different risk levels*
- *clarify that the CFA will approve new developments and subdivisions only if the recommended bushfire protection measures – including the minimum defendable space – can be created and maintained on a continuing basis*
- *emphasise the need for enduring permit conditions – in particular, conditions for the creation and maintenance of minimum defendable space to be maintained for the life of the development."*

For further information see DPCD Fact Sheet 'Planning and building for bushfire protection' and DPCD Advisory Note 40 'Bushfire planning provisions.'

Planning for Bushfire Victoria provides a comprehensive resource incorporating information relevant to all planning permit applications involving the BMO.

One of the key findings of the VBRC was the need to prioritise the protection of human life over all other policy objectives.

GLOSSARY

Land use definitions can be found at Clause 74 of the planning scheme.

Alternative method

The Appendix B process from AS 3959-2009 *Construction of buildings in bushfire prone areas* for demonstrating how the standards for defendable space and construction requirements have been met.

Alternative solution

An alternative solution applies in particular circumstances as set out in Mandatory Standard BF6.3 of Clause 52.47-6 of planning schemes. An alternative solution is a proposal by the applicant that demonstrates how additional bushfire protection measures have been used to mitigate the bushfire risk of a particular site. An alternative method may form part of an alternative solution.

BMO

Clause 44.06 *Bushfire Management Overlay*.

BAL (Bushfire Attack Level)

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 square metre, which is the basis for establishing the requirements for construction to improve protection of building elements from attack by a bushfire (AS 3959-2009).

BAL ratings

Used as the basis for establishing the requirements for construction to improve protection of a (proposed) building from bushfire attack. There are 6 BAL ratings; low, 12.5, 19, 29, 40 and FZ.

Bushfire Management Statement

A document prepared by or on behalf of the permit applicant and used to determine if the requirements of the Bushfire Management Overlay have been met and whether a planning permit should be granted.

Bushfire Site Assessment

An assessment of the bushfire exposure to a site based on slope, vegetation and the type of development proposed. A Bushfire Site Assessment is required by Clause 52.47-6 of planning schemes and used to determine the requirements for defendable space and building construction for development in the BMO.

Defendable space

An area of land around a building where vegetation is modified and managed to reduce the effects of flame contact and radiant heat associated with a bushfire. Defendable space generally comprises an inner and outer zone.

Fire Resistance Level (FRL)

Has the same meaning as the National Construction Code Australia.

Inner zone

An area immediately surrounding a (proposed) building where fuel is managed to a minimum condition. The inner protection zone aims to:

- reduce radiant heat on a building through the reduction of fire intensity to a level where the building is unlikely to be ignited during the passage of a fire
- eliminate direct flame contact of the building from the outer protection zone or the unmodified vegetation
- reduce ember attack on the building by reducing the amount of potential fire brands (embers).

Outer zone

An area around the building between the inner zone and the unmodified vegetation that substantially decreases the intensity of an approaching fire and restricts the pathway to crown fuels. Fuel is managed to:

- moderate fire behaviour coming from the unmodified fuel
- reduce radiant heat on the (proposed) building and to draw fire out of the canopy to a level where the building is unlikely to be subject to flame contact, excessive radiant heat and ember attack arising from fire brands.

Classified vegetation

The vegetation that presents a bushfire hazard within 150 metres of the development and is classified in accordance with Clause 2.2.3 of AS 3959-2009.

Effective slope

The slope under the classified vegetation in relation to the (proposed) building.

Excludable vegetation

Vegetation that does not need to be classified as part of the Bushfire Site Assessment. It may include 'low threat' and 'non-vegetated' areas as defined by Section 2 of AS 3959-2009.

Relevant fire authority

The relevant fire authority within the Bushfire Management Overlay will generally be the CFA. However, there are small areas where the MFB or DSE will be the relevant fire authority. DSE are responsible for fire management on public land including National and State parks and forests. MFB cover the metropolitan area of Melbourne. A map of the CFA/MFB border is available on the CFA website.

Steady State Fuel Load

The amount of available fire fuel when the fuel bed is in equilibrium and the rate of accumulation is equal to the rate of decomposition.

NB: Terms that are defined in AS 3959-2009 or the planning scheme have the same definition in this document.

SECTION ONE

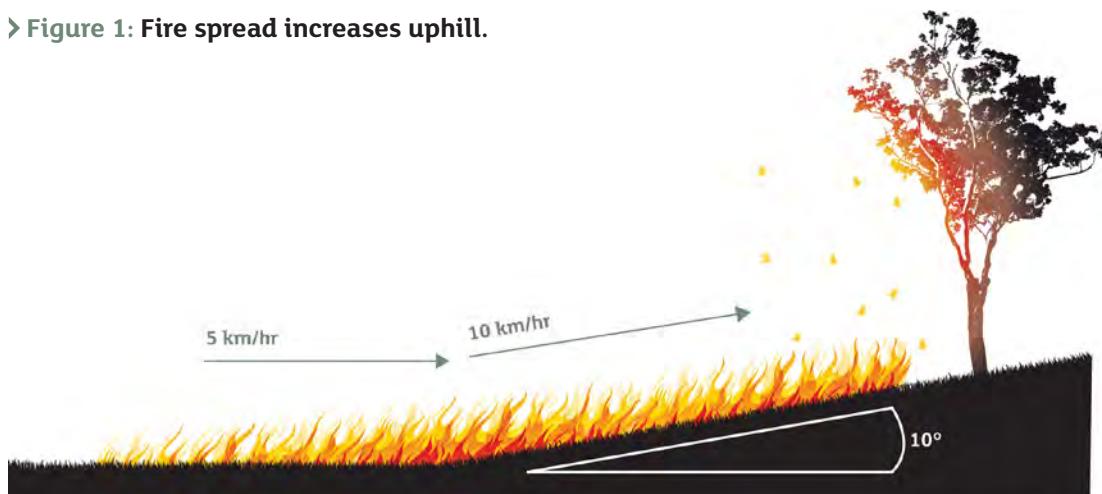
BUSHFIRE RISK & HOUSE LOSS

BUSHFIRE BEHAVIOUR

Understanding how a bushfire behaves and destroys buildings is important when planning and designing new development. *Section 2* goes into detail about bushfire protection measures that are used in combination to help minimise the impact of bushfire risk on new developments. These bushfire protection measures aim to mitigate the effects of ember attack, radiant heat and direct flame contact. It is therefore important to understand bushfire behaviour in order to effectively implement the bushfire protection measures of Clause 44.06 and 52.47 of the planning scheme.

There are three major factors that influence bushfire behaviour: topography, weather conditions and vegetation. Weather conditions are considered in the underlying modelling process for determining defendable space. Topography and vegetation are assessed as part of the Bushfire Site Assessment.

► **Figure 1: Fire spread increases uphill.**



WEATHER

Bushfires are unpredictable and vary greatly according to weather conditions. Bushfire weather conditions are largely determined by temperature, humidity, wind and atmospheric conditions, as well as drought conditions or the amount of rain. Hot, dry and windy days provide ideal conditions for a bushfire. A string of hot days dries out vegetation, making it easier to burn. This can be made even worse by underlying dry conditions. In summer, these are common weather conditions that increase the flammability of vegetation. The drier the vegetation, the easier it will burn.

Low humidity and high temperatures, which are fuelled by hot winds, also dry out vegetation, allowing it to readily ignite.

A simple measure of weather conditions is the Forest Fire Danger Index (FFDI) and the Grassland Fire Danger Index (GFDI). These are used to help determine the fire danger rating.

TOPOGRAPHY

Topography (or slope) influences the rate of spread and intensity of a fire. Fire burns faster uphill – as the slope increases so does the speed of the fire and its intensity. When burning up a slope, flames and radiant heat preheat the vegetation ahead of the fire, drying it out and making it easier to burn.

As a general rule, for every 10° slope, the fire will double its speed. For example, if a fire is travelling at 5 km per hour along flat ground and it hits a 10° slope, it will double in speed, travelling up the hill at 10 km per hour.

Fires tend to move more slowly as the slope decreases. The flames reach less fuel, and less radiant heat preheats the vegetation in front of the fire. For every 10° of downhill slope, the fire will halve its speed.

► **Figure 2: The FFDI and GFDI are used to help determine the Fire Danger Rating.**



WIND

Wind influences the:

- speed at which a fire spreads
- direction in which a fire travels and the size of the fire front
- intensity of a fire – wind provides more oxygen and pre-heating of fuels
- likelihood of 'spot fires' from burning pieces of bark, twigs and leaves (embers) carried ahead of the main fire.

A change in wind direction is one of the most dangerous influences on fire behaviour. Many people who die in bushfires get caught during or after a wind change.

In Victoria, hot, dry winds typically come from the north and north-west and are often followed by a south-west wind change. In this situation the side of the fire can quickly become a much larger fire front.

VEGETATION

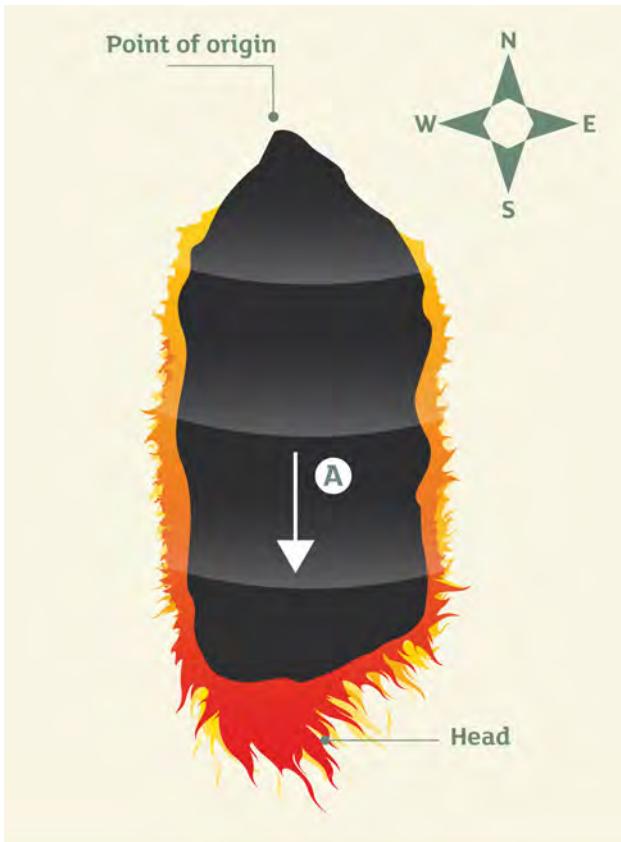
Vegetation is the primary source of fuel for a bushfire. The amount of fuel available to a bushfire and where a building is located can directly impact on its survival. Within a property, vegetation management and the placement of other flammable objects such as fencing and sheds around a building can determine how much fuel is available to a bushfire.

The amount, type and arrangement of vegetation affect how easily a bushfire will spread throughout a garden.

Fine fuels such as leaf litter readily dry out, ignite and can be carried as embers. Shrubs, vines and other elevated fuels can act as ladder fuels, allowing fire to climb into the canopies of trees, significantly increasing bushfire intensity. Breaking up the continuity of the vegetation can limit the spread of fire within a garden or defendable space.

There are no 'fireproof' plants. All plants can burn under the right conditions – typically in extreme fire weather following extended drought. For more information about plant flammability and how to choose plants with low flammability see CFA's *Landscaping for Bushfire* publication, available at cfa.vic.gov.au/plants.

➢ Figure 3: Fire spread and wind change in a bushfire.



A Fire being blown by a northerly wind



B Southwesterly wind change

C The eastern flank becomes a much larger fire front.

HOW BUSHFIRE DESTROYS HOUSES

Research into the impacts of bushfires in Australia indicates that approximately 85% of house loss occurs within 100 metres of bushland. Given the pattern of development in Victoria and the proximity of much of this development to the bush, mitigating the effects of bushfire on a building is essential. It is important to appreciate how houses are destroyed in a bushfire so that appropriate bushfire protection measures can be developed and implemented to maximise the safety of new developments.

Bushfires can vary in intensity and scale across the landscape. As the events of Black Saturday illustrate, bushfires can be devastating and lead to long-running fires which are difficult to suppress.

Building survival is influenced by many interacting factors. The four main ways buildings are destroyed during a bushfire are:

- ember attack
- radiant heat
- direct flame contact
- fire-driven wind.

EMBER ATTACK

Ember attack is the most common way that houses catch fire during a bushfire. Research conducted after major fires indicates that up to 80% of house losses are due to ember attack. Ember attack occurs when small burning twigs, leaves and bark are carried by the wind, landing in and around a building.

Embers can enter gaps as small as 1.8 millimetres, igniting timber and other materials in a building. They can also ignite flammable materials in the garden, such as leaf litter, dead plants, outdoor furniture, fencing and sheds. Ember attack can happen before, during and after a bushfire and is often characterised by the slow onset of a house burning before becoming fully engulfed in fire.

The planning system addresses ember attack through the requirement of construction standards, defendable space and vegetation management.

RADIANT HEAT

Radiant heat is the heat created from combustion during a bushfire. It can:

- ignite surfaces without direct flame contact or ember attack, due to the heat being received from the fire
- dry out vegetation ahead of the bushfire so that it burns more readily
- crack and break windows, allowing embers to enter a building
- distort and melt materials such as plastic.

Radiant heat is the most common cause of death in bushfires. Table 1 on the next page highlights the effects of radiant heat on people and structures. The figures prescribed for building construction in the BMO; the Bushfire Attack Level (BAL), relate to the amount of radiant heat the building may be exposed to with the particular construction details for each BAL intended to reduce the risk of ignition while the fire front passes. For example, a building exposed to between 19 and 29kW/m² of radiant heat is built to BAL-29 to reduce the chance of ignition.

Research into the impacts of bushfires in Australia indicates that approximately 85% of house loss occurs within 100 metres of bushland.

Heat energy is transferred from a bushfire in three main ways: radiation (or radiant heat), convection and conduction. Radiant heat accounts for around 20% of the energy emitted from burning fuel in a bushfire. Within the planning provisions, defendable space and building construction are used to help mitigate the effects of radiant heat on a building during a bushfire. In most instances this will be sufficient to address the hazard. However, in complex landscapes where the topography includes steep slopes, the remaining energy transfer becomes important. As the landscape becomes more complex, risk mitigation should consider the potential effects of large convection columns, including the impact of damaging wind and flying debris.

Table 1: The effects of radiant heat

Radiant heat flux kW/m ²	Observed effect
1	Maximum for indefinite skin exposure
3	Hazardous conditions, firefighters expected to operate for a short period (10 minutes)
4.7	Extreme conditions, firefighters in protective clothing will feel pain after 60 seconds of exposure
6.4	Pain after 8 seconds of skin exposure
7	Likely to be fatal to unprotected person after exposure for several minutes
10	Critical conditions, firefighters not expected to operate in these conditions although they may be encountered. Considered to be life threatening in less than 60 seconds in protective equipment. Fabrics inside a building could ignite spontaneously with long exposure.
12.5 (BAL-12.5)	Volatiles from wood may be ignited by pilot after prolonged exposure. Standard float glass could fail during the passage of a bushfire.
16	Blistering of skin after 5 seconds
19 (BAL-19)	Screened float glass could fail during the passage of a bushfire.
29 (BAL-29)	Ignition of most timbers without piloted ignition (3 minutes of exposure) during the passage of a bushfire. Toughened glass could fail.
40+	Flame zone – exposure to direct flame contact from fire front.

Source: Information collated from NSW Rural Fire Service 'Planning for Bushfire Protection' (2006) and Drysdale 'An introduction to fire dynamics' (1998).

Conduction

Conduction occurs when heat is transferred through a solid object from a region of higher temperature to a region of lower temperature. In a bushfire, conduction refers to the movement of heat through the fuel itself, for example burning logs and other heavy fuels. Conduction is more significant to heat transfer in a building fire. The transfer of heat from a bushfire front through conduction is negligible.

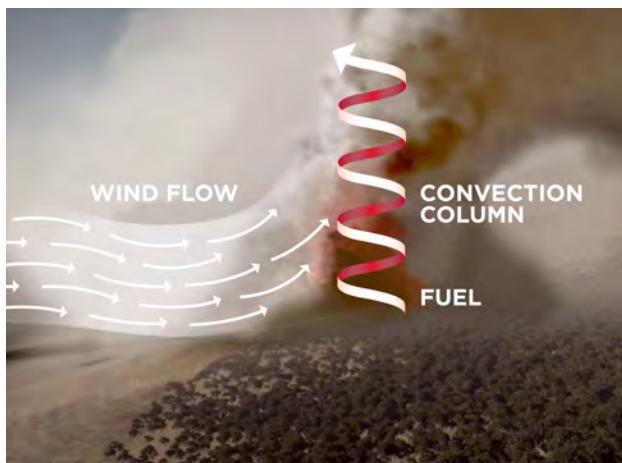
Convection

Convection is the transfer of heat through the movement of heated air. Combustion in a fire heats the air, causing it to rise because it is hotter than the surrounding air. As the hot air mixes with the cooler surrounding air it gradually loses this heat. As a fire gains intensity, the air above it is heated to an even greater temperature, so the air rises faster. Cooler air must move in towards the fire at the ground level to replace this heated air. This air is known as indraught wind.

Most of the heat transferred from a bushfire is from convection currents of hot air. This process forms a convection column of rising hot air and a smoke plume above the fire.

The convection column can carry ash, embers and pieces of burning fuel, as well as preheating the vegetation above the fire (higher shrub layers and tree canopies). Large convection columns can produce severe weather events including cyclonic wind and lightning. As convective heat generally travels upwards, its effect on a building is usually negligible when compared to radiant heat. However, for a building located on a steep slope, the impact of convective heat may be significant, making this an extremely dangerous location to develop.

› Figure 4: Convection column.



PROTECTING BUILDINGS AND COMMUNITIES FROM BUSHFIRE

Protecting buildings and communities from bushfire requires a holistic approach to risk management. Many strategies are implemented to enhance community protection from bushfire. These include:

- › avoiding exposure to the bushfire hazard
- › design and siting controls on development
- › mitigating the risk by reducing the hazard or ignition source
- › providing an engineering or construction solution suitable to the risk
- › community education targeted to the characteristics of the community affected by bushfire
- › having firefighting resources available
- › having suitable access and egress
- › emergency planning arrangements to provide options that take into account the characteristics of occupants and their facilities
- › ongoing maintenance of these measures.

The effectiveness of these strategies relies on them operating in conjunction. However, not all of these strategies are implemented by the planning system.

The planning system promotes strategic planning and works to avoid risk. This is the most effective mitigation strategy and is given effect through Clause 13.05 of planning schemes. The planning system alleviates the impact of bushfire by prioritising human life and protecting property and community infrastructure. It does this through the bushfire protection measures of the BMO and Clause 52.47 of the planning scheme.

The bushfire protection measures will be discussed in Section 2 and include:

- › choosing the appropriate site
- › defendable space and vegetation management
- › construction requirements
- › water and access.

CHOOSING THE APPROPRIATE SITE

Siting a building or settlement away from the bushfire hazard is the most effective way to minimise bushfire risk. Locating a building to avoid the hazard and minimise the impacts of a bushfire are the primary objectives of the new bushfire planning provisions. For more information about appropriate siting of buildings see page 17.

DEFENDABLE SPACE AND VEGETATION MANAGEMENT

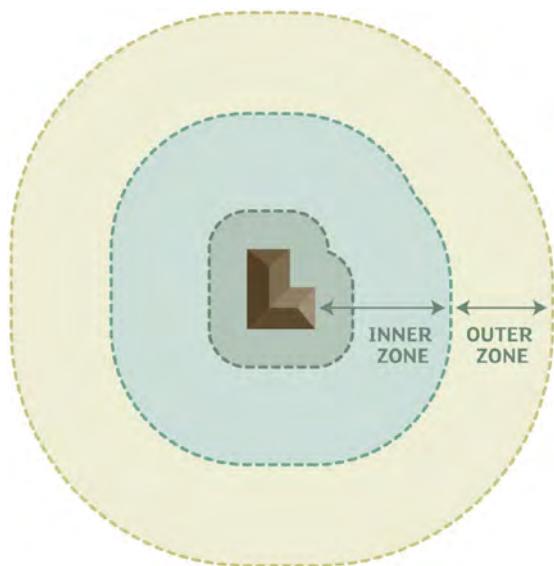
Defendable space is defined in Clause 72 of planning schemes as an area of land around a building where vegetation is modified and managed to reduce the effects of flame contact and radiant heat associated with a bushfire.

Defendable space is one of the most important aspects of preparing properties for bushfire. It provides separation between the building and the bushfire hazard. The greater the separation from the bushfire hazard, the lower the risk.

Defendable space breaks up continuity and reduces the amount of fuel available to a bushfire. It generally comprises an inner and outer zone with the purposes of preventing direct flame contact on a building, minimising ember attack from within the garden and reducing the effects of radiant heat. It needs careful garden design that considers the location of all flammable objects.

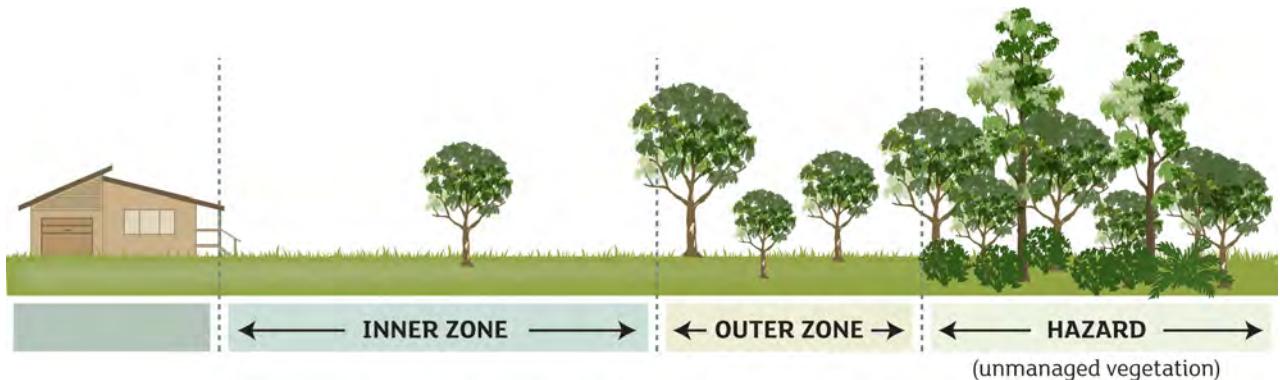
Defendable space prescribes different levels of vegetation management for the inner and outer zones (these are detailed on page 22) and requires regular maintenance.

► **Figure 5: Inner and outer zones maintain the same proportion from every point around a house.**



- **Within 10 metres** avoid flammable objects near vulnerable parts of the building.
- **Inner zone** – An area immediately surrounding a (proposed) building where fuel is managed to a minimum condition.
- **Outer zone** – An area around the building between the inner zone and the unmodified vegetation that substantially decreases the intensity of an approaching fire and restricts the pathway to canopy fuels.

► **Figure 6: Cross section of inner and outer zones.**



CONSTRUCTION REQUIREMENTS

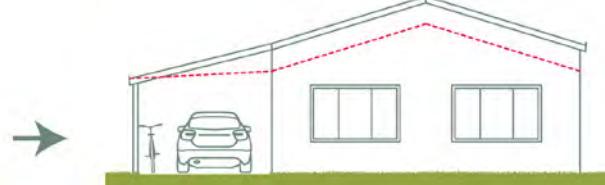
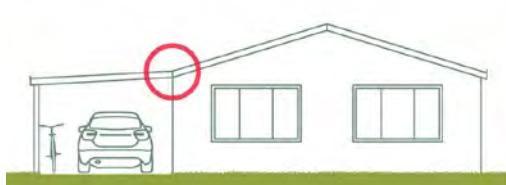
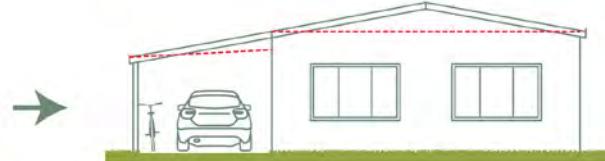
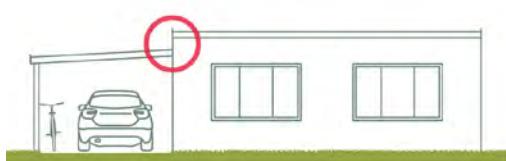
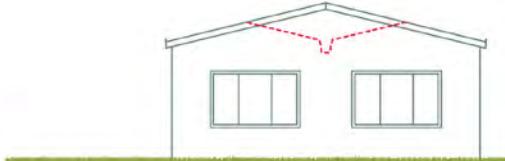
Amongst other things, building construction and design can be used to minimise the impacts of ember attack and radiant heat on a building. Construction requirements for buildings are expressed as a BAL as prescribed in Australian Standard 3959-2009 *Construction of buildings in bushfire-prone areas* (AS 3959-2009). The materials and design of a building can be used to prevent the accumulation of debris and entry

➤ **Figure 7: Complex roof designs can be improved to reduce the accumulation of debris and entry of embers.**

Existing Complex Roof Design



Improved Roof Design



➤ **Figure 8: Complex house design where embers can lodge.**

Minimise vulnerability to ember attack

Building design should minimise ember hazards.

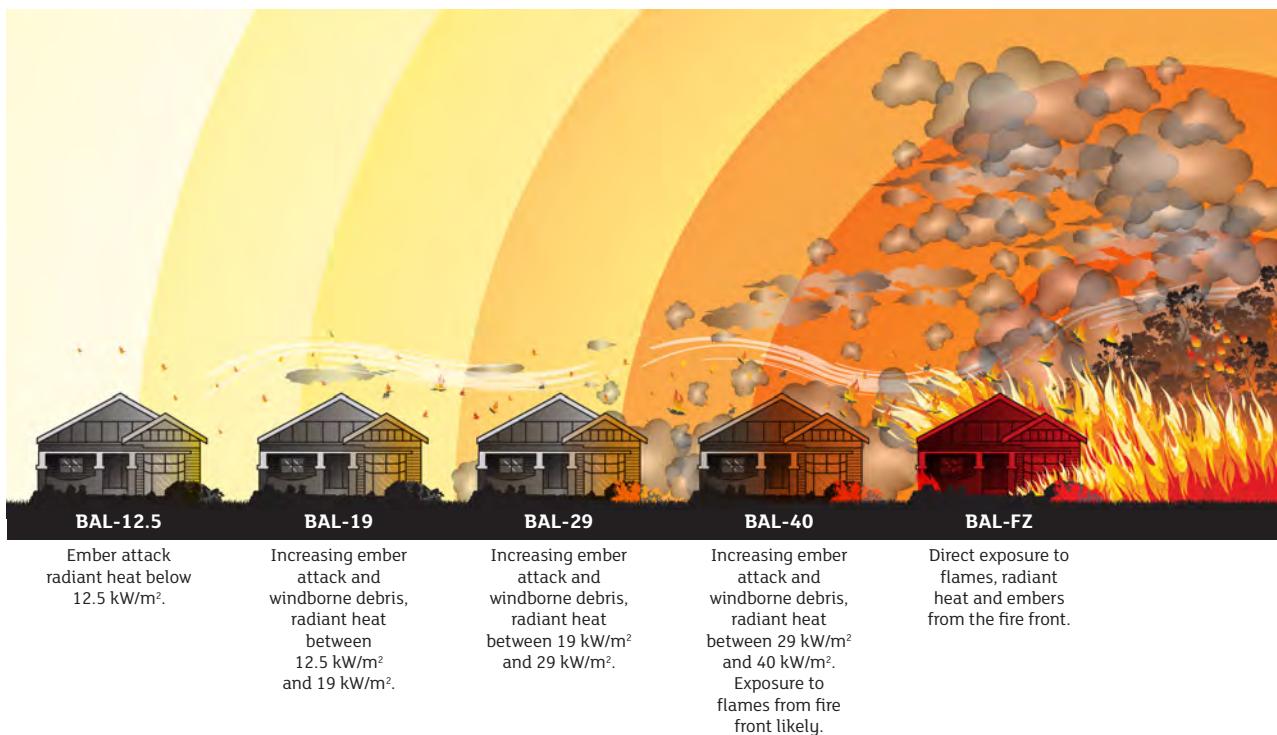
Ember Hazards

- Re-entrant corners
- Complex roof lines
- Gaps between building materials (walls & roof)
- Unenclosed underfloor space



› Figure 9: BAL construction levels respond to different levels of risk.

withstand different levels of bushfire attack, as illustrated below.



LEAVING EARLY

While appropriate water supply, access, building construction and general property maintenance are all important, on Severe, Extreme and Code Red days leaving early is always the safest option. For further information about preparing a Bushfire Survival Plan and information about fire danger ratings and warnings, see the CFA website cfa.vic.gov.au.

CLAUSE 52.47 BUSHFIRE PROTECTION: PLANNING REQUIREMENTS

The requirements for new development in the BMO are set out in the planning scheme at Clause 52.47 *Bushfire protection: planning requirements*. This includes detailed objectives, standards, mandatory standards and decision guidelines that planning permit applications need to comply with. Where a schedule to the BMO includes different standards, then these standards will apply.

New development must meet all relevant objectives of planning schemes to:

- strengthens community resilience to bushfire
- ensures consideration of the location, design and construction of development and the implementation of bushfire protection measures in areas of bushfire hazard
- ensures development does not proceed unless the risk to life and property from bushfire can be reduced to an acceptable level.

Clause 52.47 of planning schemes describe the desired outcome to be achieved in the completed development. Objectives cannot be ‘traded off’. Deciding if an objective has been met requires forming a judgement about whether the proposed development will achieve the desired outcome described in the objective. If council, in consultation with the relevant fire authority, decides that the outcome will not be achieved, either the design will need to be changed or the application refused. In deciding whether the development meets the objectives, council must consider the standards, mandatory standards and decision guidelines.

A standard contains the preferred measures of meeting an objective and in most instances should be met. Mandatory standards contain the required approach to a particular matter. Only the mandatory standard can be used to meet the objective. The mandatory standards are BF5, BF6.1, BF6.3, BF7.1, BF8.1, BF9 and BF10. The mandatory standards and standards of Clause 52.47 are shown overleaf.

Decision guidelines must be considered and set out matters that will help decide if the objective and standards have been met.

For further information see, DPCD Practice Note 65 'Bushfire Management Overlay and bushfire protection: planning requirements.'

The Department of Planning and Community Development has produced example and template Bushfire Management Statements, which should be used when preparing permit applications in the BMO. The template clearly sets out the requirements and provides a suitable format for the Bushfire Management Statement.

[Template Bushfire Management Statement](#).

[Example Bushfire Management Statement](#).

The next section (*Building & Works*) provides further guidance on how to meet the objectives of Clause 52.47 of the planning scheme for buildings and works. Guidance for subdivisions is provided in *Section 3*. The operation of these provisions is laid out in Figure 10.

While appropriate water supply, access, building construction and general property maintenance are all important, on Severe, Extreme and Code Red days leaving early is always the safest option.

FAQs

The defendable space and construction requirements state the minimum standards. Is there anything else I can do to enhance my level of protection from bushfire?

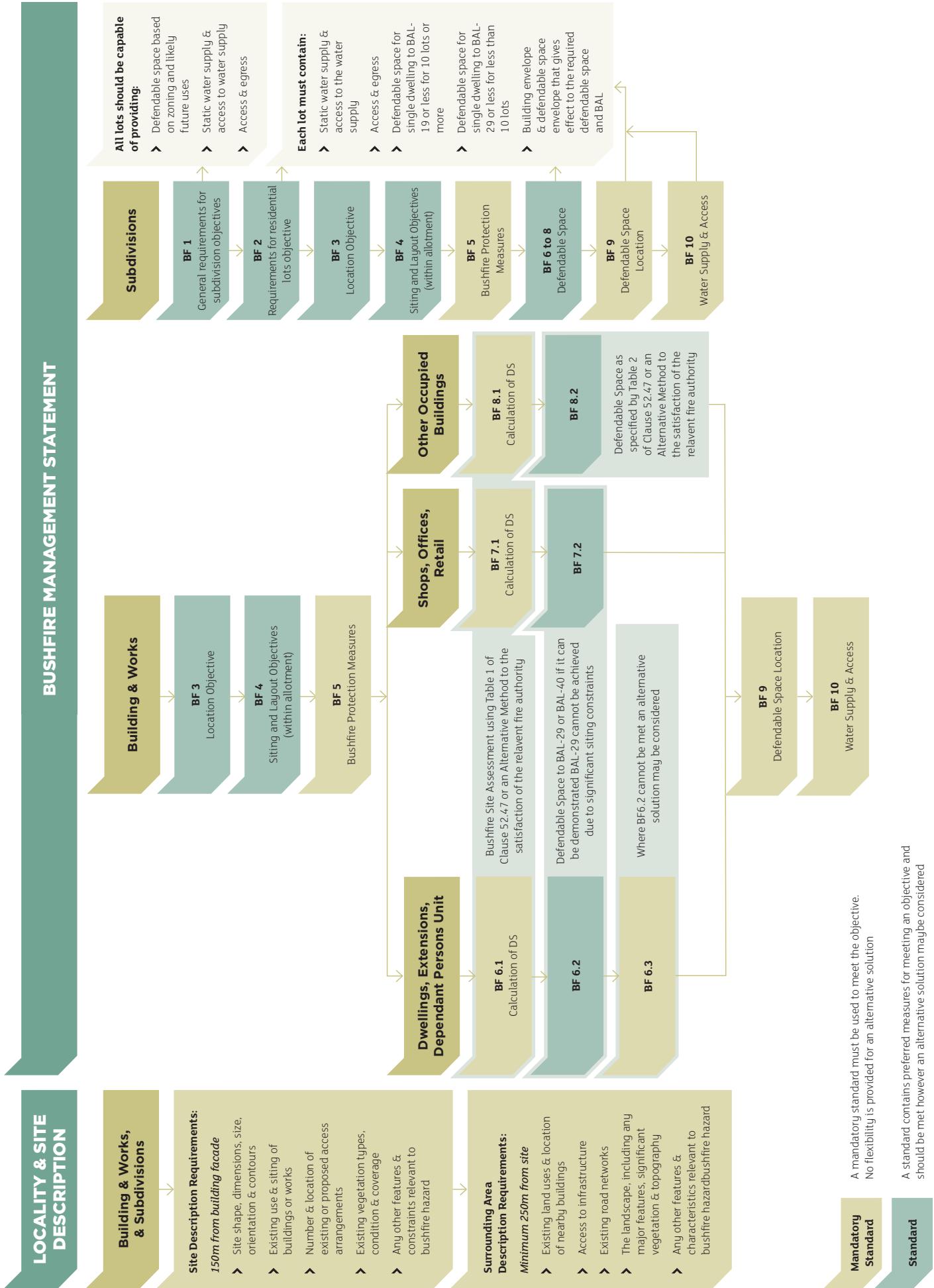
There are a number of additional measures that can be implemented to improve the performance of the property (including the building) in a bushfire. The Victoria Planning Provisions and AS 3959-2009 provide the minimum requirements that must be met for development in the BMO. However, additional measures may form part of any project to further enhance building protection. These include:

- build to a higher construction level (BAL)
- enhanced ember protection, particularly for BAL-12.5 and BAL-19
- using non-combustible materials for building and landscaping elements
- creation of additional defendable space through managing the vegetation on the entire site
- wind load protection
- the provision of sprinklers, drenchers or other wetting devices on buildings and/or surrounding vegetation
- the presence of a pool, spa, creek or other water body or reticulated water supplies in addition to dedicated static water supplies
- installation of hose reels with a diesel pump for firefighting
- additional dedicated static water supplies to meet the demand for sprinklers, drenchers, hose reels or other wetting devices
- non combustible fencing, particularly along a boundary within 5 metres of or adjacent to a building, to reduce a fire source and radiant heat
- gutter guards and valley guards to prevent the accumulation of combustible debris around roofing materials.

For BAL-12.5 and 19 construction, subfloor spaces and elevated floors should be enclosed, or measures taken to prevent ignition of materials in a subfloor space or elevated floor of a building, deck or verandah (including landings, stairs and ramps). The measures prescribed by BAL-29 should be considered for these elements.

Exposed elevations should be glazed or protected with toughened glass, shutters or fully screened to protect windows from the impact of flying debris.

➤ Figure 10: The BMO objectives, standards and mandatory standards



SECTION TWO BUILDING & WORKS

GUIDE TO STANDARD BF3: LOCATION OBJECTIVE

CLAUSE 52.47-3 LOCATION OBJECTIVE

To ensure that development is located and sited so that it does not increase the risk to life, property and community infrastructure from bushfire.

Fire intensity varies significantly depending on the characteristics of the surrounding landscape. Critical factors affecting fire intensity include the length of time a fire has to grow and develop, the quantity, arrangement and continuity or fragmentation of vegetation cover and the topography the fire is burning within.

The bushfire risk on a specific site can vary considerably depending on the:

- slope
- type, amount, arrangement and location of vegetation
- existing development on and around the site
- nature of the surrounding area.

Topography can be used to help minimise the spread of bushfire into and within a development by locating buildings away from steep slopes, saddles or ridge tops. The planning provisions require that development avoid bushfire hazard and vegetation removal wherever possible. Appropriate location and siting of a new development is one of the most effective and cost-efficient ways of reducing bushfire risk and can minimise the need for vegetation removal.

Bushfire impact on development needs to be considered in the context of both the site and the landscape it sits within. The intensity of bushfire attack depends heavily upon landscape features such as topography, type of fuel and the fragmentation of the fuel in the landscape. These factors strongly influence the potential size of a bushfire and the impact it may have. For these reasons, Standard BF3 requires the potential bushfire attack in terms of landscape fire behaviour to be considered.

MEETING THE OBJECTIVE

For most permit applications in the BMO, the bushfire protection measures as outlined in Clause 52.47 of the planning scheme will adequately address the expected bushfire risk. However, there will be locations where the potential size and impact of a bushfire in the context of the broader landscape mean development should not occur. These locations are typically in heavily forested and mountainous areas or locations within the vicinity of vegetated slopes greater than 20 degrees (landscape scenario D on page 16). In these cases implementing the bushfire protection measures of Clause 52.47 of planning schemes will not reduce the

bushfire risk to an acceptable level and the objectives of Clause 13.05 will not be met. Development in this instance is unlikely to be supported.

When assessing bushfire risk at a landscape scale, the following should be considered and incorporated into the permit application:

- the characteristics of the bushfire hazard including the type, area and location of vegetation
- the topography of the land and its potential impact on the intensity and severity of a bushfire
- the likely bushfire behaviour at both the local and broader scale
- access and egress both to the site and within the site
- the proximity of the site to established urban or township areas
- the impact of bushfire protection objectives under the BMO and any schedule to the overlay on the level of risk.

In landscapes where the bushfire risk can be reduced to an acceptable level, development should be located:

- away from existing unmanaged vegetation and corridors of vegetation that lead into the development
- close to public roads and access ways, and provide clear access to the public road system for both residents and firefighters
- access routes should be located away from the bushfire hazard and sited where the bushfire risk and vegetation removal are minimised.

LANDSCAPE RISK AND BUSHFIRE PROTECTION MEASURES

The bushfire protection measures within the BMO and Clause 52.47 of planning schemes should be considered in the context of both the site-based risk and the broader landscape risk. As the landscape risk increases, the circumstances in which the various standards within Clause 52.47 are applied need to match that risk. For example, Mandatory Standard BF9 provides a ‘reasonable assurance’ test when considering defendable space on neighbouring land.

As the landscape risk increases, so will the level of assurance required. This is because the base modelling assumptions in the Bushfire Site Assessment and AS 3959-2009 in some instances may underestimate the impact of a bushfire in severe landscapes. The Bushfire Site Assessment and AS 3959-2009 use models to calculate bushfire risk. The inherent assumptions and inputs of these models may not be the best reflection of risk for a particular circumstance.

How the broader landscape should be considered is discussed, where relevant, under each applicable Objective or Standard. To support these discussions, several scenarios describing bushfire behaviour in the landscape are provided below.

› **Figure 11: Landscape Scenarios**

Landscape scenario D

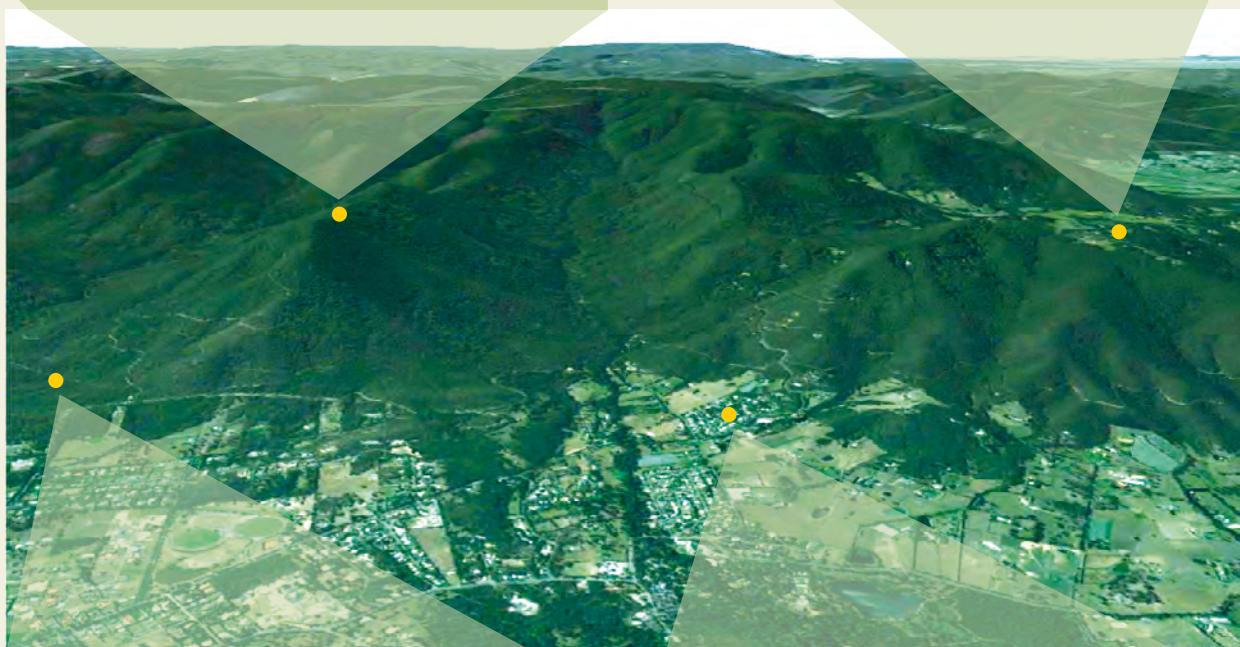
A landscape with the potential for extreme bushfire behaviour or a 'fire storm', where impacts to a building are outside the considerations in AS3959-2009. Bushfires in this landscape have the potential to grow and develop for many hours and are driven by long fire runs in continuous fuels of forest or heath with steep topography (often greater than 20 degrees). Fires will have high convective energy, extreme fire-driven winds and super-heated air being driven ahead of the fire. Fuel loads may be extreme and in excess of those assumed by AS 3959-2009.

Development in these landscapes is unlikely to be appropriate.

Landscape scenario C

A landscape with the potential for long fire runs in forest or heath-type vegetation with minimal fragmentation. Moderate topography, generally less than 20 degrees, and strong potential for damaging winds and extreme ember attack.

Bushfire protection measures in addition to those required by Clause 52.47 should be considered, see FAQ page 13 and Alternative Solutions page 29.



Landscape scenario A

A landscape consistent with the assumptions in AS3959-2009. A steady state rate of spread is likely to be achieved. However, the fire is unlikely to expose the development to severe convective winds.

The planning provisions accommodate for this type of landscape.

Landscape scenario B

Established 'urban' areas that contain or are within close proximity to significant areas of high fuel loads. The buildings will be exposed to radiant heat and localised flame contact from individual elements burning in the landscape rather than a definable fire front. These include elements such as neighbouring buildings, clumps of vegetation and sheds.

Numerous spot fires are likely. However, there will not be a fire front as assumed by AS3959-2009 (Appendix B) impacting the building. Predominant vegetation cannot be defined as 'low threat' or 'non-hazardous' because it does not meet the exclusions provided by Section 2.2.3.2 of AS3959-2009. This includes residential areas where gardens cannot be classified as 'cultivated' – although the vegetation has been modified the fuel load remains high. An alternative method may be the best approach for these areas, particularly where defendable space cannot be achieved.

Note: These descriptors may also fit areas not shown in this diagram.

GUIDE TO STANDARD BF4: SITING AND LAYOUT OBJECTIVE

CLAUSE 52.47-4 SITING AND LAYOUT OBJECTIVE

To ensure that the siting and layout of development reduces the risk to life, property and community infrastructure from bushfire to an acceptable level and prioritises the protection of human life.

Siting can significantly reduce the impact of bushfire on a building. The siting, layout and design of a development should be responsive to the surrounding bushfire risk. The permit application must demonstrate that all reasonable siting options have been considered and that the development is located to minimise bushfire risk.

Standard BF4 states that the siting and layout of development should:

- consider slope, access, aspect, orientation and vegetation in the context of bushfire risk
- avoid and minimise the removal of vegetation
- site new buildings as far from the bushfire hazard as practicable

- minimise the need for long access and egress routes through areas of bushfire hazard
- locate habitable buildings as close as practicable to property entrances
- provide safe access and egress for emergency services.

When siting new development it is also important to consider Mandatory Standard BF9 and the defendable space and associated construction requirements. In most instances the Mandatory Standard requires that defendable space be achieved wholly within the site (see page 31).

MEETING THE OBJECTIVE

Development must be located and sited so that it does not increase the risk to life, property and the community. A proposal will not be appropriate unless the development has been sited and designed to ensure bushfire risk on the lot is minimised.

Existing features such as roads, dams, maintained open space and other areas with minimal fuel should be located between the development and the bushfire hazard.

Other things that should be considered include:

- maximising separation distances between the development and the bushfire hazard
- positioning, aligning and designing the building to minimise exposure to the potential bushfire hazard
- incorporating landscaping features and the layout of the development
- avoiding 'other' fuel sources.

➢ Figure 12: Use the layout of a property to minimise bushfire risk.



Consider slope, access, aspect, orientation and vegetation

Bushfire behaviour is explained in *Section 2*. Consider the factors that contribute to house loss and bushfire threat when choosing a site. Development should be sited on flat land away from unmanaged vegetation and close to public roads.

Avoid and minimise the removal of vegetation

Defendable space requirements must be achieved for all new development in the BMO. The most effective way of avoiding the removal of vegetation is to choose a site that avoids or minimises the need to clear vegetation and the need for long access routes.

Minimise the need for long access and egress routes

The suitability of a proposed access route will be considered based on:

- whether it meets the water and access requirements on page 32
- the quantity of vegetation that needs to be removed to create the driveway
- the vegetation and landscape the access route will go through. For example, a flat drive through grassland has a lower risk than a steep track through forest
- the tenure of the land through which the access way passes and reasonable assurance that the access way can be practically implemented and maintained.

Locate habitable buildings as close as practicable to the property entrances

Many factors will influence the exact siting of a building in relation to the property entrance. All permit applications in the BMO will need to demonstrate that they have:

- achieved defendable space requirements
- minimised the bushfire risk
- avoided the removal of vegetation
- minimised the removal of vegetation where it cannot be avoided
- sited new buildings as far from the bushfire hazard as practicable.

The provision of more than one access route should also be considered.

Provide safe access and egress for emergency services

As set out in the Guide to Mandatory Standard BF10¹ on page 32.

Maximise separation distances

Separation from a bushfire hazard can be achieved through appropriate siting of a development. The greater the separation between the hazard and the development, the lower the risk and construction costs.

➢ **Figure 13: Locate development close to property entrance.**



Position, align and design the development

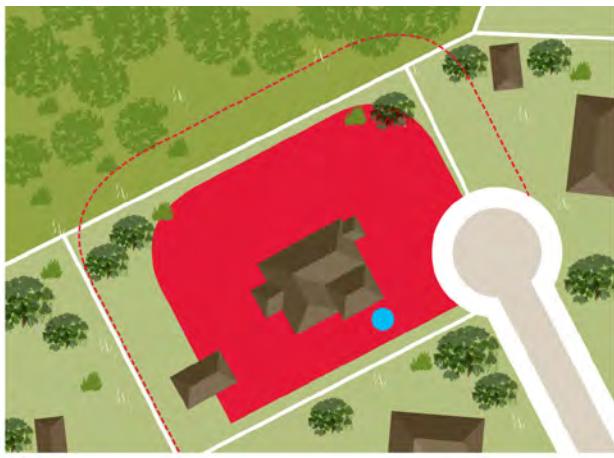
The design and layout of a building must also be responsive to the bushfire risk. Vulnerable elements of the building, such as windows and doors, require particular attention when positioning and designing a building to minimise exposure.

To reduce exposure, the building footprint should be positioned within the lot to maximise defendable space and minimise the bushfire risk, taking account of:

- slope
- type, amount and location of vegetation
- existing development on and around the site
- the nature of the surrounding area (having particular regard to access and water availability).

On a small lot it will be necessary to consider both the shape and the size of the building to maximise the defendable space achieved within the lot.

➢ **Figure 14: A complex house design with poor siting prevents the required defendable space being achieved within the lot.**



Classifiable Vegetation

- Access road
 - Cultivated garden
 - Woodland
- Inner zone / defendable space
 - Outer zone / defendable space
 - Water Tank

To reduce vulnerability to ember attack building design should also minimise the use of:

- re-entrant corners
- complex roof lines
- gaps between building materials (walls and roof)
- unenclosed underfloor space.

See Figure 8.

➢ **Figure 15: A simple house design and siting to maximise defendable space will achieve a better outcome for minimising bushfire risk.**



Classifiable Vegetation

- Access road
 - Cultivated garden
 - Woodland
- Inner zone / defendable space
 - Outer zone / defendable space
 - Water Tank

Incorporate landscaping features

Landscaping features such as stone walls, non-combustible fences and water tanks can be used to provide barriers to wind, radiant heat and embers.

CFA's *Landscaping for Bushfire* publication sets out four design principles that can be used to reduce bushfire risk within the defendable space. These principles are:

- create defendable space
- remove flammable objects from around a building
- break up fuel continuity
- carefully select, maintain and locate trees.

There are four model gardens that demonstrate these principles for coastal, hilly, suburban and rural environments. To view the model gardens online, go to cfa.vic.gov.au/plants.

Avoid 'other' fuel sources

Vegetation is not the only source of fuel for a bushfire. Sheds, woodpiles, gas bottles, cars, fences, outbuildings and neighbouring buildings can all become a significant source of fuel and produce toxic fumes in the event of a bushfire. Ensure separation between these fuel sources through the siting, layout and maintenance of the development. For further information on requirements for outbuildings and other fuel sources, see page 25.

GUIDE TO MANDATORY STANDARD BF5: BUSHFIRE PROTECTION REQUIREMENTS OBJECTIVE

CLAUSE 52.47-5 BUSHFIRE PROTECTION REQUIREMENTS OBJECTIVE

To ensure that bushfire protection measures required by this clause are implemented and maintained in perpetuity.

Mandatory Standard BF5 requires that:

- bushfire protection measures proposed by the applicant can be practically implemented and maintained in conjunction with the ongoing use of the land
- the location, type and layout of proposed landscaping, revegetation or any native vegetation offsets does not increase the bushfire risk to the proposed development or the adjacent area
- the bushfire protection measures required by Clause 52.47 are implemented regardless of other bushfire protection measures that may be provided including private bushfire shelters, community shelters and the presence of other places of last resort.

MEETING THE OBJECTIVE

BMO permit applications must consider the feasibility of implementing and maintaining all bushfire protection measures for the life of the development. These considerations will vary significantly between proposals and may include the likelihood of being able to:

- implement bushfire protection measures in conjunction with other planning objectives such as native vegetation or cultural and heritage protection
- practically maintain defendable space, such as on steeply sloping land or where it encroaches onto neighbouring lots
- practically construct a road or provide access to a water supply that meets the requirements of the relevant fire authority.

Where vegetation is being removed and native vegetation offsets are required onsite, the implementation of defendable space for the development and the ability of neighbouring land owners to manage their bushfire risk cannot be compromised. Effective defendable space, construction, water and access can all be compromised by inappropriate landscaping. Any native vegetation offsets or landscaping within defendable space should meet the requirements as relevant for inner or outer zones.

Any revegetation or native vegetation offsets within the 150 metre BMO assessment area should not:

- alter the predominant vegetation class that has been used to calculate defendable space and level of bushfire attack
- prevent defendable space from being established and maintained
- have an impact on the defendable space of existing adjacent development (in the same or separate ownership).

Where native vegetation offsets will affect fuel load, structure or continuity in a way that will increase fire intensity and behaviour, they must be located outside of the 150-metre area being assessed as part of the Bushfire Site Assessment.

To demonstrate that an application will meet these requirements, a landscape plan prepared in accordance with CFA's *Landscaping for Bushfire* and to the satisfaction of the relevant fire authority should be submitted with the permit application. The plan should detail all proposed landscaping, revegetation or native vegetation offsets and demonstrate how the relevant defendable space objectives of Clause 52.47 are achieved.

The provision of additional bushfire protection measures cannot be used to offset other requirements such as defendable space. This includes a private bushfire shelter, community refuge or neighbourhood safer place.

► **Figure 16: An example of good garden design that maintains an effective defendable space.**



GUIDE FOR BUILDINGS AND DEFENDABLE SPACE OBJECTIVES: BF6.1, BF6.2, BF7.1 AND BF7.2

Clause 52.47 of planning schemes sets out requirements for defendable space and corresponding construction levels for different types of development. These requirements vary depending on the type of development proposed, the vulnerability of the development and its likely occupants, and the nature of the site. They are summarised in the following table. All applications must satisfy objectives for location, layout and siting, defendable space, bushfire protection measures, water and access.

Table 2: Defendable space and construction requirements

Development type	Construction requirement	Defendable space
52.47-6 Defendable space for dwellings and dependent person's units objective		
Standard BF6.2	BAL-29 or less	Table 1 of Clause 52.47
Standard BF6.2	Siting constraints BAL-40	Table 1 of Clause 52.47
Standard BF6.3	Alternative solution	
52.47-7 Defendable space for industry, office and retail premises objective		
Standard BF 7.1	BAL-29 or less	Table 1 of Clause 52.47
Standard BF7.2	BAL-40	Table 1 of Clause 52.47
52.47-8 Defendable space and construction for other occupied buildings objective*		
Standard BF8.1 and BF8.2	BAL-12.5	Table 2 of Clause 52.47

* Other occupied buildings include: accommodation (other than dwellings or dependent person's units), childcare centre, education centre, hospital, leisure and recreation and place of assembly. These uses are defined in the planning scheme at Clause 74 *Land Use Terms*.

Managing defendable space

Vegetation is the primary source of fuel for a bushfire. The amount of fuel available to a bushfire and where a building is located can directly affect its survival.

The impact of a bushfire can be reduced where vegetation has been modified and other fuel sources removed from around the building. This reduces the amount of fuel available to

burn. Vegetation management does not require the removal of all fuels. Plants and trees can provide protection from strong winds, intense heat and embers. Ground cover is also needed to prevent erosion.

The table below sets out the requirements for vegetation management in the BMO.

Table 3: Defendable space management requirements

Inner zone	<ul style="list-style-type: none">➤ Within 10 metres of a building, flammable objects such as plants, mulches and fences must not be located close* to vulnerable parts of the building such as windows, decks and eaves.➤ Trees must not overhang the roofline of the building, touch walls or other elements of a building.➤ Grass must be no more than 5 centimetres in height. All leaves and vegetation debris are to be removed at regular intervals.➤ Shrubs must not be planted under trees and must be separated by at least 1.5 times their mature height.➤ Plants greater than 10 centimetres in height at maturity must not be placed directly in front of a window or other glass feature.➤ Tree canopy separation of 2 metres and the overall canopy cover of no more than 15 per cent at maturity.➤ Tree branches below 2 metres from ground level must be removed.
Outer zone	<ul style="list-style-type: none">➤ Grass must be no more than 10 centimetres in height and leaf and other debris must be mowed, slashed or mulched.➤ Shrubs and/or trees must not form a continuous canopy with unmanaged fuels.➤ Tree branches below 2 metres from ground level must be removed.➤ Trees may touch each other with an overall canopy cover of no more than 30 per cent at maturity.➤ Shrubs must be in clumps of no greater than 10 square metres, which are separated from each other by at least 10 metres.
Inner and outer zones	<ul style="list-style-type: none">➤ Non-flammable features such as tennis courts, swimming pools, dams, patios, driveways or paths should be incorporated into the proposal, especially on the northern and western sides of the proposed building.➤ Features with high flammability such as doormats and firewood stacks should not be located near the structure.

* Close is considered to be 1.5 to 2 times the mature height of the fuel.

Alternatively, a landscaping plan in accordance with CFA's *Landscaping for Bushfire* and to the satisfaction of the relevant fire authority may be used in lieu of the requirements in the table above. This must be submitted as part of the Bushfire Management Statement and planning permit application, and

demonstrate how the relevant defendable space objective in Clause 52.47 of planning schemes will be met. Any proposed landscaping, revegetation or native vegetation off-sets must be clearly indicated on a scale plan submitted with an application and suitable for endorsing as part of a planning permit.

DEFENDABLE SPACE FOR DWELLINGS, DEPENDENT PERSON'S UNITS, INDUSTRY, OFFICE AND RETAIL PREMISES OBJECTIVE

To ensure that the construction of a building has regard to the nature of the bushfire hazard of the site and surrounding area and that the necessary area of defendable space is provided.

Mandatory Standards 6.1 and 7.1

Defendable space is calculated in the same way for dwellings, dependent person's units, industry, office and retail premises, through applying Table 1 of Clause 52.47. Other occupied buildings use Table 2 of Clause 52.47. A Bushfire Site Assessment determines the level of bushfire risk for a particular site and must be undertaken to apply Table 1 or 2 of Clause 52.47. The DPCD Practice Note 65 *Bushfire Management Overlay and Bushfire Protection: Planning Requirements* sets out the process for the Bushfire Site Assessment, available at www.dpcd.vic.gov.au.

Standards 6.2 and 7.2

Once a Bushfire Site Assessment has been undertaken, these Standards set out the requirements for defendable space and corresponding construction levels (BAL). The requirements vary depending on the type of development proposed. These Standards recognise the vulnerability to bushfire for different uses and the broader planning context associated with development.

For dwellings, dependent person's units, industry, office and retail premises, defendable space to achieve BAL-29 or less is prescribed.

Standards 6.2 and 7.2 provide for defendable space and construction for BAL-40 where it can be demonstrated that significant siting constraints prevent the development from achieving defendable space and construction for BAL-29 or less.

MEETING THE OBJECTIVES

In the event of a bushfire, a building that has achieved the defendable space requirements for BAL-40 can expect a level of flame impact from the fire front. Careful consideration is therefore needed before an application relying on this level of defendable space will be accepted, and it is expected that there will be few instances where this will occur. An application that relies on BAL-40 defendable space will need to be complemented by other favourable site conditions, including:

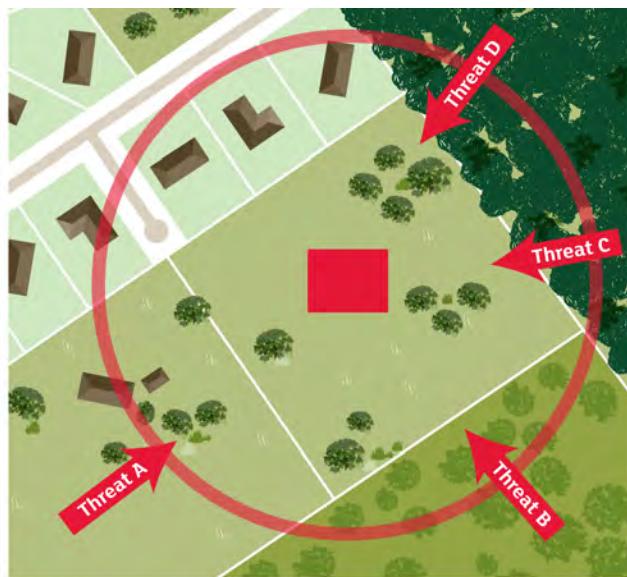
- a relatively low landscape bushfire risk
- the type of occupancy/use of the building
- appropriate access and egress.

BAL-40 will not be considered where the building can be sited to achieve BAL-29 or less.

Recording your Bushfire Site Assessment

Attachment 4 of the DPCD template for recording a Bushfire Site Assessment, uses north, south, east and west to classify the vegetation and slope and determine the required defendable space. On more complex sites (see Figure 17) the Bushfire Site Assessment should be refined to better reflect the shape, location and coverage of the vegetation and more accurately consider the threat, including slope.

➤ **Figure 17: For complex sites the Bushfire Site Assessment should align with the risk rather than the aspect.**



Classifiable Vegetation

Cultivated Garden	Threat
Grassland	Preferred house site
Woodland	
Forest	150m assessment area

For complex sites, the vegetation and slope assessment should be recorded as it appears on the ground irrespective of aspect or orientation. The illustration below demonstrates a responsive assessment based on aerial photography and an on-site inspection.

➤ Figure 18: DPCD Bushfire Site Assessment Template

2a. Determine the classifiable vegetation: (circle one from each column).

Vegetation Type	Threat A	Threat B	Threat C	Threat D
Forest	Forest	Forest	Forest	Forest
Woodland	Woodland	Woodland	Woodland	Woodland
Shrubland	Shrubland	Shrubland	Shrubland	Shrubland
Scrub	Scrub	Scrub	Scrub	Scrub
Mallee/Mulga	Mallee/Mulga	Mallee/Mulga	Mallee/Mulga	Mallee/Mulga
Rainforest	Rainforest	Rainforest	Rainforest	Rainforest
Grassland	Grassland	Grassland	Grassland	Grassland
Excludable	Excludable	Excludable	Excludable	Excludable

2b. Determine the distance of the proposed development from the classifiable vegetation: (enter in metres).

Distance from the proposed development to vegetation	Threat A	Threat B	Threat C	Threat D

2c. Determine the effective slope under the vegetation: (circle one for each column).

Flat/Upslope	Threat A	Threat B	Threat C	Threat D
Yes	Yes	Yes	Yes	Yes
>0-5°	>0-5°	>0-5°	>0-5°	>0-5°
>5-10°	>5-10°	>5-10°	>5-10°	>5-10°
>10-15°	>10-15°	>10-15°	>10-15°	>10-15°
>15-20°	>15-20°	>15-20°	>15-20°	>15-20°

Step 3. Determine your defendable space and corresponding BAL.

Adapted from DPCD Bushfire Site Assessment Template.
North, South, East and West aspects changed to better represent potential bushfire threats.

Applying defendable space

Based on the worst case aspect for vegetation and slope, defendable space should be created and maintained around the entire building for the distances prescribed in Clause 52.47 of the planning scheme.

➤ Figure 19: Defendable Space based on worst case aspect for vegetation and slopes. Both inner and outer zone achieved within lot boundaries.



Classifiable Vegetation

Cultivated garden	Inner Zone / defendable space
Grassland	Outer Zone / defendable space
Woodland	150m assessment area
Forest	Water tank

Where siting constraints exist and the landscape risk allows (see landscape scenarios A and B on page 16), the shape of the defendable space may vary according to the threat from a particular aspect and a more detailed Bushfire Site Assessment. For example, if the classifiable vegetation is forest to the north-east, woodland to the south-east and grassland to all other aspects, the shape of the defendable space surrounding the development may be responsive to the different levels of threat.

➤ Figure 20: Siting constraints and lower landscape risk result in defendable space being adjusted according to aspect.



Classifiable Vegetation

Cultivated garden	Inner Zone / defendable space
Grassland	Outer Zone / defendable space
Woodland	150m assessment area
Forest	Water tank

Significant siting constraints

Where a proposal is using siting constraints to justify a BAL-40 response under Standard BF6.2 or BF7.2, the Bushfire Management Statement needs to clearly set out the siting constraints it is relying on. Prioritising human life and applying the precautionary principle as required by Clause 13.05 of planning schemes means that concessions due to siting constraints will vary depending on the landscape risk. For example, where siting constraints exist and a development is located in a high-risk landscape, a proposal to provide defendable space of less than BAL-29 is unlikely to be appropriate.

Significant siting constraints do not arise from the desire to enhance views or to develop more than one building on a single lot.

Significant siting constraints may include:

- land subject to inundation or landslip
- the size of the lot
- matters of national environmental significance (*Environment Protection and Biodiversity Conservation Act, 1999*).

Outbuildings ancillary to a dwelling which are not used for accommodation

Research shows there is a strong correlation between house loss in a bushfire and the proximity of flammable objects within 10 metres. Outbuildings such as a shed are often used for storage and can become a significant fuel source in the event of a fire.

The layout, siting and design of any outbuilding needs to be carefully considered so that bushfire risk is not increased, particularly when an outbuilding will be within 10 metres of a dwelling.

In accordance with Clause 44.06-1 of planning schemes, buildings and works, not used for accommodation with a floor area of less than 100m² ancillary to a dwelling are exempt from a planning permit.

However, buildings or works with a floor area of more than 100 m² that are ancillary to a dwelling must be provided with defendable space and construction as required by Table 1 of Clause 52.47 or using an alternative method to the satisfaction of the relevant fire authority.

An alternative method may include the outbuilding being:

- separated from any dwelling on any lot by at least 10 metres and provided with 10 metres of defendable space (or to the property boundary); or
- provided with 10 metres of defendable space (or to the property boundary) and providing a wall (or walls) that extend to the underside of a non-combustible roof covering and has a Fire Resistance Level (FRL) of not less than 60/60/60 for load-bearing walls and -/60/60 for non-load-bearing walls when tested from the side towards any dwelling. Any openings in the wall shall be protected in accordance with the following:
 - doorways by FRL -/60/30 self-closing fire doors.
 - windows by FRL -/60/- fire windows permanently fixed in the closed position
 - other openings by construction with an FRL of -/60/-.

A shed or a building not used for accommodation that is ancillary to a dwelling and greater than 10 metres from any dwelling will generally have no construction requirements

Water requirements shall be met in the same manner as for a dwelling. Where the dwelling has an existing water supply that satisfies the requirements of Standard BF10, page 32 a separate supply for the shed or outbuilding will generally not be required.

Where reasonable, access should be provided in the same manner as for a dwelling. If appropriate access is not being provided, the Bushfire Management Statement should detail the conditions or constraints that are preventing access from reasonably being achieved.

Extensions

Extensions triggering a permit are to be considered in the same context as new development and the Bushfire Management Statement will need to address all of the relevant objectives and standards in Clause 52.47 of planning schemes. When proposing or assessing applications for extensions in the BMO, the primary consideration is the likelihood of the extension increasing the bushfire risk to the existing or neighbouring buildings.

Actions that increase the risk from bushfire include:

- building closer to the bushfire hazard, particularly where defendable space for BAL-29 or less cannot be achieved
- increasing the height of the building where this results in greater likelihood of flame contact or radiant heat being received on the building, particularly where defendable space for BAL-29 or less cannot be achieved
- the extension potentially altering the risk by significantly increasing the potential number of people within the building.

Water and access are required to be provided in accordance with Mandatory Standard BF10.

Defendable space is required to be provided for both the existing building and the extension in accordance with Table 1 of Clause 52.47 of planning schemes or to the property boundary, whichever is the lesser.

It is important that the existing part of the building is also protected by defendable space if the building is to have a level of resilience to bushfire.

Construction is required to be in accordance with Table 1 of Clause 52.47 of the planning scheme, based on the distance to the classifiable vegetation.

Unless specifically stated on the permit, the relevant building surveyor may exercise their discretion under Regulation 608 of the *Victorian Building Regulations 2006*.

ALTERNATIVE METHOD FOR CALCULATING DEFENDABLE SPACE AND CONSTRUCTION

An alternative method for calculating defendable space allows permit applicants to demonstrate how the objectives for defendable space and construction can be achieved through more detailed consideration of local variables, including bushfire behaviour.

Permit applications will be required to meet the defendable space distances as listed in Table 1 (or 2 for other occupied buildings) of Clause 52.47 in planning schemes. However, where significant siting constraints exist, the landscape risk is low (landscape scenarios A and/or B on page 16) and siting opportunities have been maximised, an alternative method for calculating defendable space may be considered.

The Bushfire Management Statement will need to demonstrate and justify why an alternative method for calculating defendable space has been used.

BMO application requirements

For an alternative method in addition to the general application requirements of Clause 44.06-2 the Bushfire Management Statement should:

- clearly identify that an alternative method in accordance with Standards BF6.1, BF7.1 or BF8.1 is proposed
- demonstrate through the use of a scale plan that the defendable space distances of Table 1 or 2 (as relevant) of Clause 52.47 of the planning scheme cannot be achieved having regard for Mandatory Standard BF9
- consider all relevant inputs and assumptions based on the approach provided by Appendix B of AS3959-2009
- provide a comparative analysis to the standard requirements.

It is the responsibility of the applicant to ensure that all calculations, inputs and assumptions adequately reflect the bushfire risk of a particular site and are detailed in the Bushfire Management Statement.

Where a component of an alternative method relies on a report, scientific paper or other document, the Bushfire Management Statement must state the relevant section(s) supporting the method, including page numbers. A copy of the full document should be provided with the application.

Assessment process: inputs and assumptions

The BMO site assessment process uses particular inputs that reflect the extreme nature of the bushfire risk for land affected by the BMO. If an alternative method for calculating defendable space and construction is being proposed, Appendix B of AS 3959-2009 should be used.

There are many inputs and assumptions that may be varied within the Appendix B process. If varying any of these inputs, the applicant must reassess all of the modelling inputs to ensure they are representative of the local site. It is not acceptable to pick and choose some aspects of the Standard. The applicant must demonstrate why the reviewed inputs are more suited to the local conditions on the site.

For example, for many of Victoria's wet forests the base assumption for Fire Danger Index (FDI) will be overstated, however the fuel load assumptions are likely to be underestimated. Therefore, an application to vary the FDI must also justify an appropriate fuel load.

Note: a precautionary approach will be adopted when reductions to inputs are considered, particularly where a site is subject to significant landscape fire risk.

Alterations to inputs such as flame temperature, flame emissivity, atmospheric transmissivity and heat of combustion are unlikely to be supported. Considerations of these inputs are less relevant to individual site characteristics.

FLAME TEMPERATURE

State policy identified 1200 Kelvin as the most appropriate input for flame temperature and modelling radiant heat in BMO areas. This State policy has been informed by expert advice. Consideration of the most appropriate flame temperature is more theoretical and less relevant to individual site characteristics. Therefore, it cannot be altered on a site-by-site basis.

[DPCD Advisory Note 44 Defendable space in the Bushfire Management Overlay](#) provides further information about the flame temperature inputs used in the BMO.

Modifications to the following inputs to Appendix B of AS-3959-2009 may be considered where adequate justification is provided:

Vegetation height

In shrubland and scrub vegetation classifications, vegetation height has a significant impact on the fire intensity calculations and therefore the subsequent radiant heat calculations. Where a modified vegetation height is used as part of an alternative method, evidence must be provided to show that the vegetation is at its maximum growth height.

Fuel loads (surface and overall)

The fuel loads used in AS 3959-2009 reflect the Australia-wide accepted level for each classification of vegetation, assuming it has reached its maximum level of fuel accumulation or 'steady state.'

Where fuel loads have been adjusted as part of an alternative method, justification as to why the fuel loads have been altered will need to be provided to the satisfaction of the relevant fire authority. The alternative method will most likely require the support of published and peer-reviewed literature or impartial expert evidence and must reflect the 'steady state' fuel loads. The DSE Overall Fuel Hazard Guide may support this process but should not be the sole justification for any fuel load modification. Where 'overall fuel load' is being considered, all available fuels must be accounted for, including – if relevant – canopy fuel.

There have been numerous reports and analyses undertaken on specific vegetation types that may be acceptable to justify a lower fuel load. It is also important to consider the proximity of where the report/analysis was undertaken in relation to the site subject to the planning application.

Flame width

Where a bushfire hazard is less than 100 metres wide, it may be appropriate to modify the flame width. A reduction in flame width may be considered through the use of aerial photography and Appendix B modelling that clearly justifies the potential fire front width and the resultant radiant heat.

Fire Danger Index (FDI)

Tables 1 and 2 of Clause 52.47 are based on an FDI of 120. This is considered to reasonably represent worst-case fire weather conditions on a state-wide basis. Where FDI is varied it must be informed by long-term 'worst case' conditions for that particular site and must include:

- data from a reputable source, such as the Bureau of Meteorology
- justification of the relevance of the selected weather stations for the particular site
- data that covers the entire period for which reliable data is available for the area
- data based on summer afternoon weather observations.

While future trends and/or FDIs based on worst-case individual components (i.e. worst-case radiant heat, temperature, wind speed, etc. for the period of data available) may be acceptable, a precautionary approach to weather analysis and assessment should always be used.

Wind speed

Like FDI, wind speed has a significant impact on the rate of spread, particularly in environments of scrub and shrubland vegetation classifications. By altering the rate of spread any subsequent calculation will also be significantly altered.

Tables 1 and 2 of Clause 52.47 are based on an average wind speed of 45 km/h. The same analysis requirements of FDI are applicable to wind speed. Worst case summer average wind speeds should be considered if wind speed is varied.

Note: Wind speeds for a height of 10 metres above ground level should be used.

Effective slope, site slope, flame angle and elevation of receiver

There are situations where alterations or more precise consideration of these inputs may be acceptable. Alterations to these inputs should be supported by detailed elevation surveys, plans or analysis.

Effective slope must be based on the worst-case potential fire behaviour.

A precautionary approach to weather analysis and assessment should always be used.

Urban areas where gardens can not be classified as cultivated

The landscape section on page 16 provides a description of established or urban areas where fuels have been modified but generally cannot be classified as cultivated (landscape scenario B, Figure 11). Meeting the defendable space requirements on these lots can be difficult because although the vegetation has been ‘partially modified’, the neighbouring lots do not meet the exclusions provided by Section 2 of AS 3959-2009 or Mandatory Standard BF9. For areas that meet this description, an alternative method for meeting the objectives of defendable space and construction may be considered.

When considering this approach the following will be particularly relevant:

- addressing the requirements of Standards BF3, BF4, BF5 and BF10 to the fullest extent possible with regard to the site constraints and the nature of surrounding development (for example, requiring inner zone vegetation management to the property boundary)
- the definition of defendable space at Clause 72 of planning schemes and the inner and outer zone requirements
- distance to classifiable vegetation
- distance to ‘*partially modified*’ (not meeting defendable space requirements) vegetation on neighbouring lots, the extent to which this fuel has been modified and the extent to which this partially modified vegetation covers the area that would otherwise be considered as defendable space
- the extent to which flammable objects such as plants, mulches and fences will be located close to vulnerable parts of the building such as windows, decks and doors.

Where partially modified vegetation has been determined as a threat, consideration should be given to the potential flame lengths from this fuel (1.5 to 2 times the height of the fuel) and the need for the building construction to have a level of resilience to the flaming produced by these individual elements. Flame contact from individual garden elements does not have the same level of impact as direct flame contact from the fire front or BAL-FZ exposure. Depending on the site characteristics a BAL-29 or BAL-40 should be considered in these instances, as these construction levels are likely to provide a suitable level of protection to this type of exposure.

FAQs

Why does a shed on a residential property require a planning permit under the BMO provisions?

In Clause 74 of planning schemes a dwelling is defined as:

"A building used as a self-contained residence, which must include: a) a kitchen sink; b) food preparation facilities; c) a bath or shower; d) a closet pan and wash basin. It includes outbuildings and works normal to a dwelling."

Because a dwelling requires a permit in the BMO and the definition of a dwelling includes outbuildings, a planning permit is also required for a shed/outbuilding. The only exception to this is if the BMO exemption is met. For example, the shed is ancillary to the dwelling, is not used for accommodation and has a floor area of less than 100 square metres.

Sheds and outbuildings can be a significant fuel source in a bushfire which can pose a threat to a dwelling. For this reason sheds are considered in the planning requirements.

GUIDE TO MANDATORY STANDARD BF6.3: ALTERNATIVE SOLUTIONS

Mandatory Standard BF6.3 provides for alternative solutions. This is different to an alternative method for calculating defendable space under Standard BF6.2. An alternative solution allows for site-specific considerations where development does not achieve defendable space requirements of at least BAL-40. An alternative method may also form part of an alternative solution.

The BMO only enables development with defendable space requirements for less than a BAL-40 if it complies with Mandatory Standard BF6.3.

Mandatory Standard BF6.3

Where a dwelling or dependent person's unit cannot meet Standard BF6.2, an alternative solution may be considered where:

- the application is for a building and works associated with a single dwelling or dependent person's unit on a lot:
 - that was created before 18 November 2011
 - Located in an established urban area and is in the Residential 1 Zone, Residential 2 Zone, Residential 3 Zone, Mixed-use Zone or Township Zone.
- there are significant siting constraints and it is demonstrated that defendable space for a BAL-40 or less cannot be achieved, including having regard to Standard BF9
- additional bushfire protection measures are incorporated into the proposal, including in relation to access, water supply, landscaping and vegetation management, construction and emergency arrangements, to the satisfaction of the relevant fire authority
- it is demonstrated that Standard BF6.2 has been implemented to the fullest possible extent having regard to the site constraints and the nature of surrounding development
- the dwelling or dependent person's unit is sited no closer to the bushfire hazard than the dwellings on neighbouring properties
- the design and siting of the dwelling does not increase the risk from bushfire to other habitable structures on the site or in the surrounding area
- for an extension to an existing dwelling, the dwelling is sited no closer to the bushfire hazard than the existing building footprint.

These requirements must all be met and need to be considered in the context of landscape risk. The BMO only enables development with defendable space requirements for less than a BAL-40 if it complies with Mandatory Standard BF6.3.

MEETING THE OBJECTIVE

Alternative solution

There will be situations where AS3959-2009 overestimates the potential bushfire exposure for a particular site, for example, a site next to a small patch of remnant vegetation in a predominantly urban landscape. Equally, there will be instances where AS3959-2009 will underestimate potential bushfire behaviour, such as in large forested, mountainous environments where impact on a development is likely to include factors not considered by AS3959-2009. These factors include convective energy and extreme fire-driven wind and are described in landscape scenario C and D on page 16. In high risk landscapes, even if the requirements of BF6.3 can be met, development may not be approved. The objectives of Clause 52.47-3 and the State policy of prioritising human life and the exercising precautionary principle will be applied.

A peer review of a permit application that utilises fire engineering to justify a design response may be requested to ensure it meets the requirements of the State Planning Policy.

Where an application seeks to apply Mandatory Standard BF6.3, additional bushfire protection measures need to be incorporated into the proposal. Mandatory Standard BF6.3 will only apply to landscapes where the potential fire behaviour is less severe. In most instances the deemed to satisfy BAL-FZ response provided by AS3959-2009 is likely to form the basis of the response. However, construction requirements alone will not be sufficient to provide a suitable level of safety, and additional bushfire protection measures are required.

An application should also consider how to improve upon the standard requirements for the following:

- siting and responsive design (see Figures 14 & 15)
- access
- water supply
- landscaping and vegetation management
- construction.

Other considerations might include:

- opportunities for egress to a lower-risk area (such as a substantial town centre)
- drenching systems
- radiant heat barriers
- enhanced construction to withstand fire-driven winds
- improved tenability for occupants
- walls of fire resistance level 60/60/60 to the side of the building experiencing direct flame contact
- no openings on the side of the building that could be exposed to direct flame contact
- prescribing systems that have been tested and met AS1530.8.2 in preference to other systems allowed by AS3959-2009.

As required by Mandatory Standard BF5, the provision of additional bushfire protection measures such as private bushfire shelter, community refuge or neighbourhood safer place cannot be used to offset other requirements.

Where an alternative solution is proposed, all aspects of the proposal, including methodology and inputs, will be subject to review. The proposal must demonstrate that all aspects of the design fire and the construction response adequately reflect the risk and justify the alternative solution.

Where an application proposes a construction solution other than the deemed to satisfy BAL-FZ, an engineering approach utilising the principles of fire safety engineering may be considered. However, these types of applications will require a *Fire Engineering Brief* to the relevant fire authority and may involve greater cost and time commitments.

A peer review of a permit application that utilises fire engineering to justify a design response may be requested.

GUIDE TO BF 8.1 AND BF8.2: DEFENDABLE SPACE AND CONSTRUCTION FOR OTHER OCCUPIED BUILDINGS OBJECTIVE

OTHER OCCUPIED BUILDINGS OBJECTIVE

To ensure that the defendable space to be provided and the construction of buildings are appropriate to the number, age and mobility of anticipated occupants.

Other occupied buildings are different to those used for dwellings, retail or industrial uses because they may have occupants with increased vulnerability for reasons such as:

- lack of familiarity with the local area and Victoria's bushfire conditions
- age
- mobility or health
- communication barriers.

They may also have a greater number of people likely to be using them on a regular basis than a dwelling.

Other occupied buildings include the following uses:

- accommodation (other than a dwelling or a dependent person's unit)
- child care centre
- education centre
- hospital
- leisure and recreation
- place of assembly.

Definitions of these uses can be found in Clause 74 of the planning scheme.

Other occupied buildings require extensive bushfire protection, which may include a Bushfire Emergency Plan submitted as part of the application. For more information refer to CFA's *Guide to developing a Bushfire Emergency Plan in Victoria*.

Employers have an obligation under the *Occupational Health and Safety Act 2004* to provide a safe working environment for employees and visitors. Accordingly, under this legislation buildings and structures that accommodate workers and are located in areas identified as having a high bushfire risk must be designed to minimise the risk from bushfire. If the proposed building site is located within the BMO, the risk will be minimised if the building is sited as far as practicable from the bushfire risk and incorporates all required bushfire protection measures.

MEETING THE OBJECTIVE

The Bushfire Management Statement must include clear evidence of the relationship between the type, number and dependency of occupants and how the proposal addresses the risks particular to that occupancy.

The defendable space distances within Table 2 of Clause 52.47 of the planning scheme should be applied to other occupied buildings within the BMO. Table 2 is based on radiant heat flux of 10kW/m², see DPCD Advisory Note 44. Minimum construction of BAL-12.5 is required.

The defendable space requirements in Table 2 of Clause 52.47 of the planning scheme may not be practical for situations such as school camps and eco resorts. This type of use typically relies upon close proximity to the bush for its appeal. However, this proximity excludes the ability to achieve appropriate defendable space for every building. To ensure that these developments prioritise the protection of human life, a different approach may be considered.

Applications of this nature should consider:

- closing the facility when the forecast weather has the potential to threaten life
- making arrangements to accommodate occupants who have been displaced if the facility is closed
- providing at least one building on-site that meets the defendable space distances specified in Table 2 of Clause 52.47 of the planning scheme. This building (or buildings) should be:
 - identified in a Bushfire Emergency Plan as a place of potential shelter and clearly communicated to all likely occupants, visitors, etc.
 - located as close as practicable to the front primary entrance to the development
 - accessible by persons of the age, mobility and type likely to be staying at or visiting the development.

A Bushfire Emergency Plan to the satisfaction of CFA must be prepared in accordance with CFA's *Guide to developing a Bushfire Emergency Plan in Victoria*.

This approach is not appropriate for uses such as hospitals, schools or aged care, where the occupants have a high degree of dependency.

These facilities will need to meet the defendable space requirements of Table 2 of Clause 52.47 for all buildings being proposed.

Given the complexity of the applications referred to above, it is recommended that the applicant consults CFA prior to submitting an application to Council.

GUIDE TO MANDATORY STANDARD BF9: DEFENDABLE SPACE LOCATION OBJECTIVE

CLAUSE 52.47-9 DEFENDABLE SPACE LOCATION OBJECTIVE

To ensure defendable space is contained on the land to which the planning permit will apply.

The most practical way to ensure that defendable space can be implemented and maintained is for it to be contained fully within the property. However, this objective allows for consideration of defendable space on adjoining land under some circumstances.

Mandatory Standard BF9 identifies that defendable space can be considered on adjoining land where:

- it incorporates land that does not require management to minimise the spread and intensity of bushfire, or
- it incorporates land that will be managed to minimise the spread and intensity of bushfire consistent with the purpose of providing defendable space, and
- there is reasonable assurance that the adjoining land will remain or continue to be managed in the same condition.

If defendable space is located fully on the site then Standard BF9 does not need to be considered.

The most practical way to ensure that defendable space can be implemented and maintained is for it to be contained fully within the property.

MEETING THE OBJECTIVE

Applications should achieve the defendable space fully within the lot. However, where defendable space includes adjoining land, the Bushfire Management Statement must provide evidence of how Mandatory Standard BF9 will be met.

Depending on the risk and the local context, an acceptable level of 'management' under Mandatory Standard BF9 may include:

- approved government, local government or Statutory Authority management. For example, a Fire Operations Plan prepared by the Department of Sustainability and Environment or Parks Victoria, or VicRoads Roadside Fire Management Plans
- neighbouring properties subject to the vegetation management conditions specified by a BMO permit
- 'low threat' and 'non-hazardous' vegetation as defined by AS3959-2009
- a formal agreement such as a section 173 to manage vegetation on private land that implements the defendable space prior to the building and works beginning.

Where areas being classified as 'low threat' or 'non-hazardous' vegetation under AS3959-2009 are being considered under Mandatory Standard BF9 as part of defendable space, they must be managed in a minimal fuel condition. This means there is insufficient fuel available to threaten the development.

Where vegetation is modified but does not clearly meet the definitions of 'low threat' or 'non-hazardous' vegetation under AS3959-2009 or the inner and outer zone prescriptions for defendable space, refer to 'Urban areas where gardens can not be classified as cultivated' (see page 28).

Evidence of 'reasonable assurance'

Reasonable assurance must reflect the level of bushfire risk. As the landscape risk increases and/or the level of defendable space provided on the lot decreases, the reasonable assurance required must reflect that risk.

To demonstrate that there is 'reasonable assurance' it may be necessary to provide the following information with the planning application (as applicable):

- For privately owned land, evidence that an agreement made pursuant to Section 173 of the *Planning and Environment Act 1987* has been registered on the title to the adjoining land, requiring the owner to manage the land to the required standard. Refer to further guidance below about criteria for the use of a Section 173 Agreement.
- For land owned or managed by a local council, a copy of the Fire Management Plan or similar that has been adopted for the land and/or evidence that the required management is specified in the council's Municipal Fire Prevention Plan or similar.

- For land owned and managed by the Department of Sustainability and Environment, VicRoads or other government departments, a copy of the adopted Fire Operations Plan or a copy of the Fire Management Plan that has been adopted for the land and/or evidence that the required management is specified in the council's Municipal Fire Prevention Plan or similar.

NB: A stated intention to implement an appropriate mechanism to achieve 'reasonable assurance' will not generally be accepted.

Use of Section 173 agreements

The use of a Section 173 agreement will generally not be accepted where an alternative site is available to allow the required defendable space to be achieved on-site.

Where it is determined that the use of a Section 173 agreement is necessary and appropriate, conditions of the permit will specify that the buildings and works approved by the permit cannot be commenced until:

- the required defendable space has been implemented on the adjoining land
- the agreement has been registered on the title to the adjoining land.

GUIDE TO MANDATORY STANDARD BF10: WATER SUPPLY AND ACCESS OBJECTIVES

CLAUSE 52.47-10 WATER SUPPLY AND ACCESS OBJECTIVES

To ensure the provision of adequate supply of water to facilitate firefighting and property protection during and after the passage of a bushfire.

To ensure that safe access is provided for emergency and other vehicles at all times.

Water is essential for firefighting. The amount and reliability of water is critical when considering development at both the subdivision and building stages. Reticulated water supplies may be compromised during major fire events, as was experienced in the Black Saturday fires. The provision of a dedicated water supply with appropriate access is therefore a consideration for all development within the BMO.

The fire authority requirements outlined in this section are the minimum required for water supply and access in the BMO. CFA also produces a number of guiding documents on these matters in areas outside of a BMO. These documents are also useful resources.

These are available at cfa.vic.gov.au and include:

- *Requirements for Water Supplies and Access for Subdivisions in Residential 1 and 2 and Township Zones*
- *Preferred Requirements: Water Supplies and Access for Subdivisions in Rural Zones*
- *Identification of Street Hydrants for Firefighting Purposes.*

The requirements for water supply and access for subdivisions are found on pages 43-44.

MEETING THE OBJECTIVE – WATER

Demonstrated compliance with the following requirements will generally be deemed to meet the water supply objective of Clause 52.47-10 and Mandatory Standard BF10:

Provision of a dedicated static water supply on the lot that complies with the following requirements:

- A capacity of not less than specified in Table 4 overleaf that is maintained solely for fire fighting purposes.
- The water supply must be stored in an above ground water tank constructed of concrete, steel or corrugated iron.
- The water supply must be located within 60 metres of the outer edge of the building (including any obstructions).
- The water supply outlet/s must be fixed to the water tank.
- All pipework between the water supply and the outlet/s must be 64 millimetres (minimum) nominal bore (see Figure 21 overleaf).
- All fixed above-ground water pipelines and fittings must be of non-corrodible and non-combustible materials.

➢ Where CFA access and coupling are specified by Table 4 the water supply must:

- Be located so that fire brigade vehicles are able to get to within 4 metres of the water supply outlet and the outlet must face away from the building if located less than 20 metres from the building to enable access during emergencies.
- Incorporate an additional 64 millimetres (minimum) gate or ball valve and 64 millimetres (fixed size), 3 threads per inch, male fitting to suit a CFA coupling.
- Incorporate a vortex inhibitor or additional water must be provided to ensure that the volume of water available is not restricted by a vortex. Refer to Section 5 of AS.2419 for requirements for vortex inhibitors.
- The water supply outlet must incorporate a ball or gate valve to provide access to the water by the resident of the dwelling.
- All below-ground water pipelines must be installed to at least the following depths:
 - subject to vehicle traffic: 300 millimetres
 - under dwellings or concrete slabs: 75 millimetres
 - all other locations: 225 millimetres
- The water supply must be readily identifiable (see Figure 22) from the building or appropriate signage must be provided which:
 - has an arrow pointing to the location of the water supply
 - has dimensions of not less than 310 millimetres high and 400 millimetres long
 - is red in colour, with a blue reflective marker attached
 - is labelled with a 'W' that is not less than 15 centimetres high and 3 centimetres thick.

For further information on the provision of water, download the Fire Ready Kit from cfa.vic.gov.au

Table 4: Minimum static water supply for dwellings in the BMO

Office, Retail and Dwellings and Dependent Person's Units

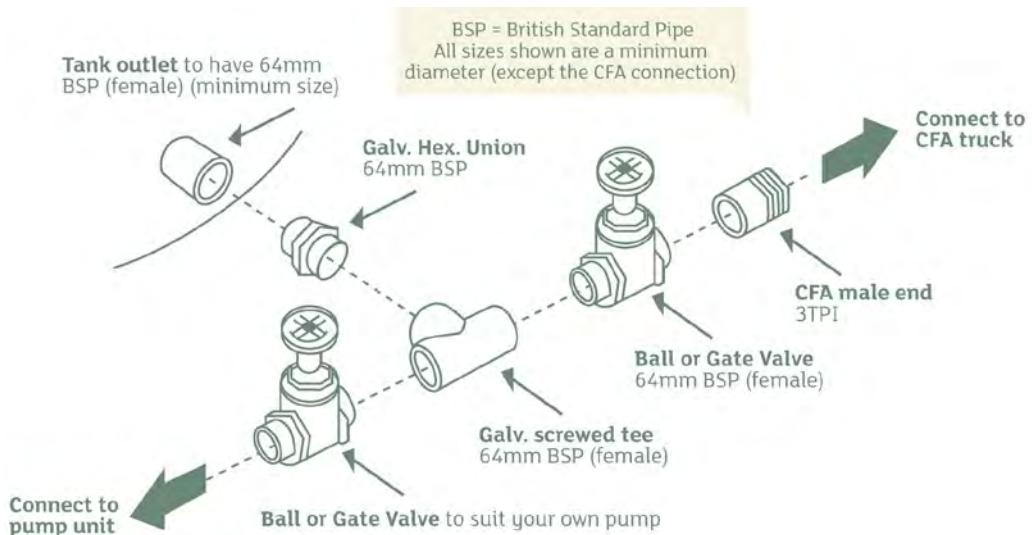
	Reticulated water supply and hydrant*	Effective capacity (litres)	CFA access to supply and CFA couplings?
Lot size less than 500 square metres	N/A	2,500	No
Lot size 500–1500 square metres	Yes	5,000	No
	No	10,000	Yes
Lot size greater than 1500 square metres	N/A	10,000	Yes

Other development

	Reticulated water supply and hydrant*	Effective capacity (litres)	CFA access to supply and CFA couplings?
All other developments		10,000 per 1,500 square metres up to 40,000	Yes

* Located within 120 metres of the rear of the building

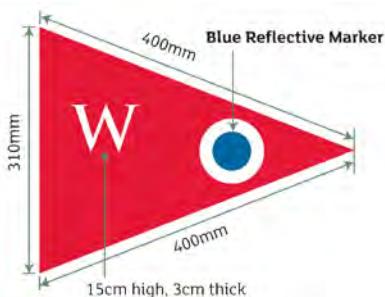
► **Figure 21: Requirements for water supply outlet, pipe work and valves.**



Further guidance

- CFA considers that dams are not suitable as an alternative static water supply due to the potential for reduced capacity and water quality (i.e. silting) in drought conditions.
- CFA may consider an alternative solution for static water supply where volume, reliability, access and performance of a system are demonstrated to achieve equivalence to the above requirements. This includes tanks which may be underground or have remote access points.
- If CFA access and coupling are not required the tank should be fitted with a gate valve to suit domestic requirements.

› **Figure 22: Water supply identification.**



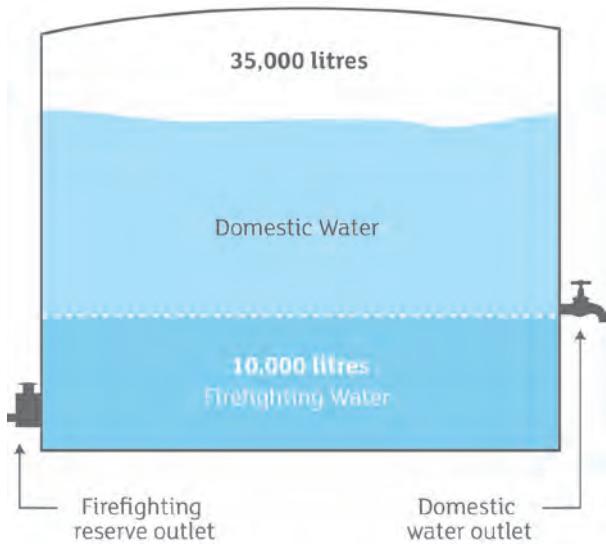
FAQs

Can water supply for firefighting purposes be in the same tank as other water supply?

In a domestic situation a water supply for firefighting purposes may be in the same tank as other water supply provided they are separated with different outlets (below).

In a commercial situation where there are requirements for structural firefighting water, that water supply may also be used for bushfire requirements.

› **Figure 23: Firefighting water and domestic water in a shared tank.**



MEETING THE OBJECTIVE – ACCESS

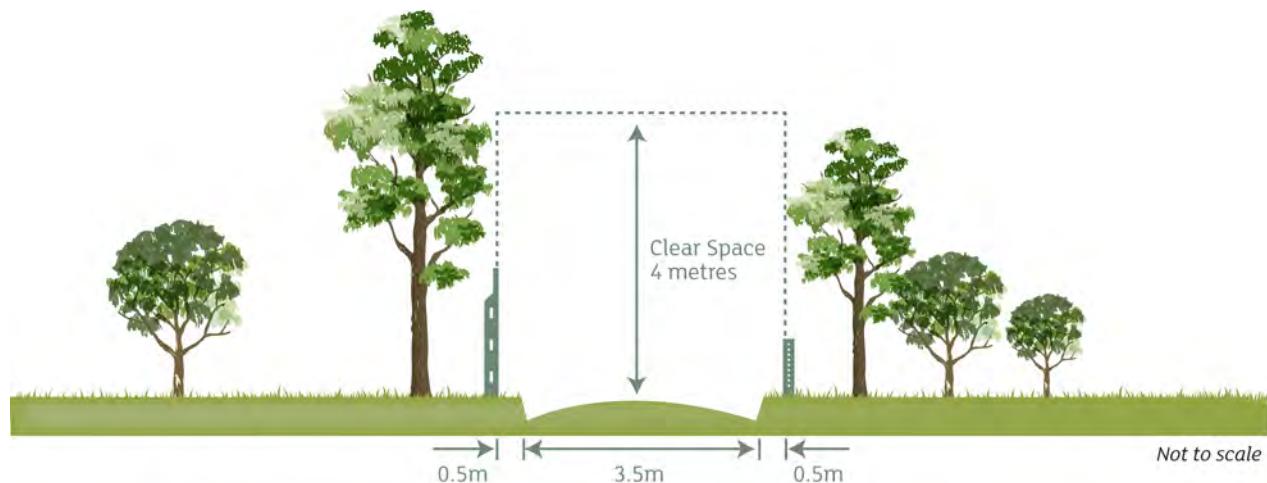
Demonstrated compliance with the following requirements will generally be deemed to meet the access objective of Clause 52.4.7-10 and Mandatory Standard BF10:

- › If the length of the driveway from the road to the building and water supply outlet (including gates, bridges and culverts) is greater than 30 metres, access to the building must be designed to allow emergency vehicle access. The minimum design requirements for the driveway are:
 - Curves in driveway 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.
- › The driveway must:
 - Be designed, constructed and maintained for a load limit of at least 15 tonnes and be of all-weather construction.
 - Provide a minimum trafficable width of 3.5 metres and be substantially clear of encroachments for at least 0.5 metres on each side (see Figure 24 overleaf)
 - Be clear of encroachments at least 4 metres vertically (see Figure 24).
- › If the length of the driveway from the road to the building and water supply outlet (including gates, bridges and culverts) is greater than 100 metres, a turning area for fire fighting vehicles close to the building must be provided, by either:
 - A turning circle with a minimum radius of eight metres.
 - The driveway encircling the dwelling.
 - The provision of 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 (see Figure 25).
- › If the length of the driveway from the road to the building and water supply outlet including gates, bridges and culverts is greater than 200 metres, passing bays must be provided. Passing bays must be a minimum of 20 metres long and must be provided at least every 200 metres, with a minimum trafficable width of six metres (see Figure 26).

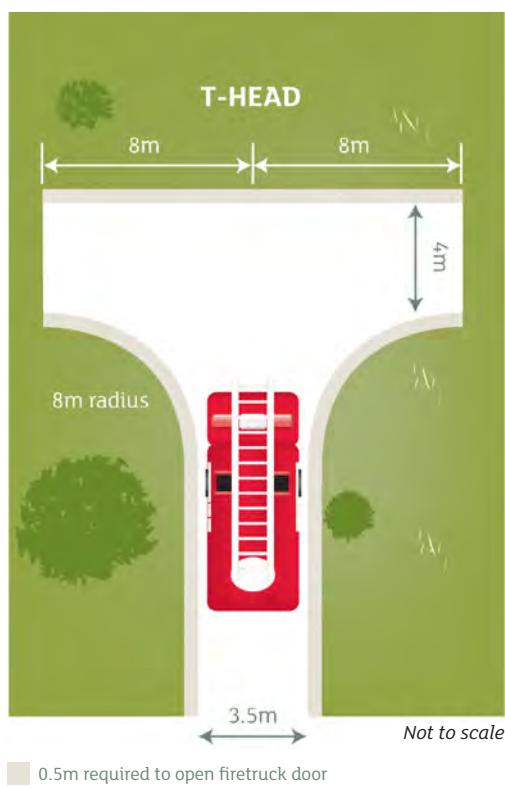
Further Guidance

- › Driveways less than 30 metres in length have no requirements providing a fire brigade vehicle can get within 4 metres of the water supply outlet if required.

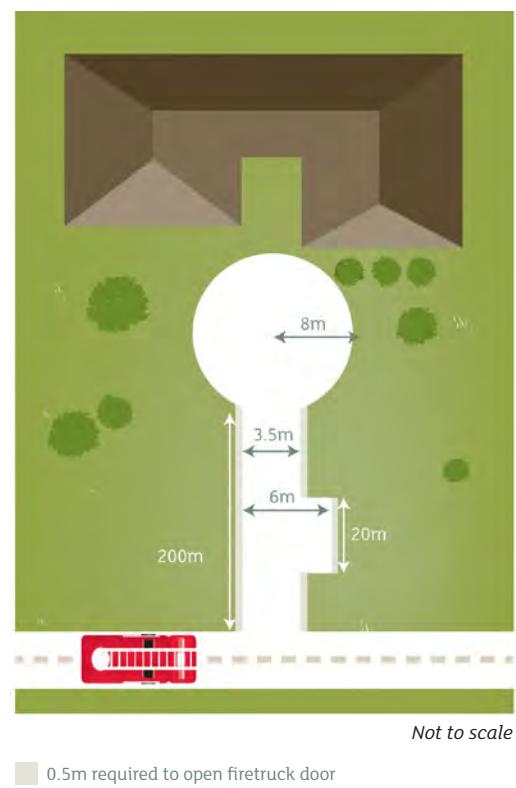
› Figure 24: Encroachment clearances.



› Figure 25: T-head driveway.



› Figure 26: Driveway longer than 200 metres.



SECTION THREE SUBDIVISIONS

GUIDE TO STANDARDS BF1 AND BF2: GENERAL REQUIREMENTS FOR SUBDIVISION OBJECTIVES

All subdivisions must comply with the permit application requirements as specified in the BMO at Clause 44.06 of planning schemes. These include a locality and site description as well as a Bushfire Management Statement. In addition to the application requirements, subdivision in high bushfire risk areas should be considered in the context of the State Planning Policy Framework and strategic planning objectives, particularly Clause 13.05 *Bushfire*.

The overarching strategies of this policy are to:

- prioritise the protection of life
- apply the precautionary principle when assessing risk to life, property and community infrastructure from bushfire
- only permit new development where:
 - the bushfire risk can be reduced to an acceptable level
 - bushfire protection measures can be readily implemented and managed within the property
 - the risk to existing residents, property and community infrastructure from bushfire is not increased.

There will be some locations where the potential size and impact of a bushfire in the context of the broader landscape means that new development should not occur and will not be supported.

Clause 52.47-1: General requirements for subdivision objectives

To ensure that subdivision of land that would result in an unacceptable risk to human life is not permitted.

To ensure that all lots created are capable of:

- achieving an appropriate level of defendable space
- providing an adequate supply of water to facilitate firefighting and property protection during and after the passage of a bushfire
- providing safe access to properties for emergency and other vehicles at all times.

Standard BF1

All lots created should be capable of providing:

- appropriate defendable space based on the zoning of the land and likely future uses
- static water supply and access to this water supply which meet the requirements of the relevant fire authority
- access and egress which meet the requirements of the relevant fire authority.

For subdivisions of 10 lots or more, the need for a perimeter road to be provided adjoining the bushfire hazard for firefighting purposes should be considered.

Clause 52.47-2: Subdivision requirements for residential lots objective

To ensure that any lot created on which a single dwelling may be developed is provided with essential bushfire protection measures at the subdivision stage.

This objective applies to subdivision which creates a lot for residential development in Residential 1 Zone, Residential 2 Zone, Residential 3 Zone, Low Density Residential Zone, Mixed Use Zone, Township Zone, Rural Living Zone, Green Wedge A Zone, Comprehensive Development Zone or Priority Development Zone.

Standard BF2

Each lot must contain:

- a static water supply and access to this water supply which meet the requirements of the relevant fire authority
- access and egress arrangements which meet the requirements of the relevant fire authority
- defendable space for the construction of a single dwelling to a BAL-19 or less with reference to Table 1 of Standard BF6.1 for a subdivision of 10 lots or more
- defendable space for the construction of a single dwelling to a BAL-29 or less with reference to Table 1 of Standard BF6.1 for a subdivision of less than 10 lots BF6.1
- building envelope and a defendable space envelope that give effect to the required defendable space and BAL.

Subdivision should be located within close proximity to existing settlements where the road network, water supply and existing cleared areas complement the requirements of the BMO.

Specific application requirements for subdivisions

All subdivision applications should include a plan of the subdivision layout submitted as part of the Bushfire Management Statement. The plan must clearly show the following information:

- Defendable space as well as perimeter and other roads separating any existing or proposed hazards from proposed buildings or building envelopes
- Demonstrate how the design components of the subdivision, such as roads, public open space, lots, services and facilities have been utilised to minimise the impact of bushfire and reduce fire intensity
- Provide details of landscape design, revegetation and offset requirements
- Identify lots and lot sizes proposed with building envelopes demonstrating compliance with the necessary defendable space and construction requirements.

Clause 44.06-4 requires a mandatory condition be included in the permit for applicable residential subdivisions. The condition requires a Section 173 agreement under the *Planning and Environment Act 1987*, which sets out the following matters:

- That the agreement has been prepared for the purpose of an exemption from a planning permit under Clause 44.06-1 of the planning scheme
- The building envelope and defendable space envelope to achieve the Bushfire Attack Level approved under the permit
- The vegetation management requirements and arrangements suitable to implement and maintain the defendable space approved under the permit
- The access and water supply requirements approved under the permit.

There are some instances where this does not apply. For further information go to dpcd.vic.gov.au.

MEETING THE OBJECTIVES

The most effective way to mitigate bushfire risk is, in the first instance, to avoid the risk. Clause 13.05 of the Victoria Planning Provisions requires planning which creates or expands settlement in an area at risk from bushfire so as to address the risk at both the local and broader context. It states that if bushfire risk can't be reduced to an acceptable level then the development should not proceed.

Subdivisions must consider the likely future development on any lot created to avoid and minimise the need for further planning approvals to determine defendable space and BAL construction requirements. New subdivisions provide the opportunity to ensure that bushfire protection measures are embedded as part of the overall design of urban interface and rural areas.

Clause 52.47-3: Location objective for subdivisions

Subdivision should be located within close proximity to existing settlements where the road network, water supply and existing cleared areas complement the requirements of the BMO. Isolated subdivisions in areas surrounded by significant vegetation and complex topography will not be appropriate.

Once a subdivision has been considered in the context of the strategic planning objectives and local policy, a location must be chosen that minimises the risk of bushfire spreading into and within the development. Poor siting, layout and design of a subdivision can mean future lots are unable to effectively mitigate bushfire risk.

Landscape fire behaviour is an essential consideration in the location of a subdivision. The bushfire risk for a specific location may vary considerably depending on topography, type, amount and location of existing vegetation as well as the proximity to established urban areas. The location of a subdivision should be chosen to avoid increasing the bushfire risk by taking into consideration the factors that affect bushfire behaviour. These are outlined below.

Topography

Topography has a significant influence on a bushfire. Steep gorges, valleys, saddles and ridges may promote fire generated winds and eddies on leeward slopes. Uphill slopes allow for the rapid spread of a fire.

Topography can be used to help minimise the spread of bushfire into and within a subdivision by locating development away from steep slopes, saddles or ridge tops.

Existing vegetation

The proximity of a subdivision to unmanaged vegetation has a substantial effect on bushfire risk. The type and amount of vegetation within and surrounding a subdivision will also influence this risk.

Subdivisions should be located away from existing unmanaged vegetation, particularly large plantations and State or National parks. Corridors of vegetation that lead into the development should be avoided as they can facilitate the spread of bushfire into a subdivision. Take advantage of natural cleared areas and where possible locate subdivisions within these areas of minimal fuel.

Access routes should be located away from the bushfire hazard.

Existing development

The proximity of a subdivision in relation to established urban or township areas can also influence the bushfire risk. Subdivisions should be located close to public roads and access ways and provide clear and ready access from all properties to the public road system for both residents and firefighters. Access routes should be located away from the bushfire hazard.

FAQs

What if the BMO only covers part of a subdivision?

The area of land that is covered by the BMO must comply with the requirements as set out in Clause 44.06. For the remainder of the subdivision Clause 13.05 and Clause 65 of planning schemes still require bushfire to be considered and as necessary the appropriate bushfire protection measures implemented. The remainder of the subdivision may also be Bushfire Prone under the *Building Regulation 2006* with minimum bushfire construction requirements continuing to apply.

Do I need to consider bushfire if my subdivision is not covered by the BMO?

If a development is not covered by the BMO bushfire risk should still be considered in accordance with the State Planning Policy at Clause 13.05. Bushfire risk should be managed irrespective of whether the site is covered by the BMO and all subdivisions should be designed to reflect the level of bushfire risk on the site.

Subdivision in Bushfire Prone Areas under the *Victorian Building Regulations 2006* is required to meet minimum bushfire construction requirements. Good subdivision design in a Bushfire Prone Area means the subdivision should be laid out so that BAL-40 and BAL-FZ lots are not created.

Irrespective of whether the BMO applies to the land Clause 65 of planning schemes requires the responsible authority (council) to consider bushfire before issuing a permit. Further, Clause 13.05 is relevant to all subdivision in Victoria and new development should only occur where bushfire risk is not increased.

LAYOUT AND SITING FOR SUBDIVISIONS

Clause 52.47-4: Siting and layout objective

To ensure that the siting and layout of development reduces the risk to life, property and community infrastructure from bushfire to an acceptable level and prioritises the protection of human life.

The siting and layout of a subdivision can be used to reduce the risk of bushfire spreading into and within the development. There are certain features that may be used to help maximise separation between the bushfire hazard and the development.

MEETING THE OBJECTIVE

Areas of minimal fuel

The siting and layout of a subdivision should take advantage of features such as:

- existing areas of open space where there is little or no vegetation such as roads and water bodies
- areas of low fuel such as golf courses, sports ovals, picnic grounds, waterways and rocky areas.

Any large area where there is little or no fuel can be used to increase the distance between the subdivision and the bushfire hazard. Locating these areas of minimal fuel between the subdivision and the hazard will help reduce the bushfire risk to the development.

When considering these areas, the Bushfire Management Statement needs to provide reasonable assurance that they will remain in an ongoing state of minimal fuel.

Design components

Design components within a subdivision can also be used to help reduce the intensity and impede the spread of bushfire. Plans submitted with a subdivision application should clearly demonstrate that the following have been considered and/or incorporated:

- To increase separation distance, locate areas with minimal fuel such as roads, water bodies, parklands, open space and public recreation areas between the development and the bushfire hazard
- Cluster building envelopes to provide enhanced protection and minimise environmental impact through mutually shared defendable space
- Minimise exposure of the subdivision boundaries to the bushfire hazard through appropriate siting and simple design. A simple shaped subdivision will generally have less 'edge' exposed to the bushfire hazard than a complex shape
- Ensure the design of landscaped and revegetation areas do not increase the potential fire hazard. This can be achieved by avoiding corridors of vegetation that will allow the passage of a bushfire into the subdivision
- Direct roads away from the bushfire hazard and avoid situations where roads pass through areas of unmanaged vegetation
- Provide perimeter ring roads.

Any large area where there is little or no fuel can be used to increase the distance between the subdivision and the bushfire hazard.

› **Figure 27: Design components and areas of minimal fuel within a subdivision can be used to help reduce the intensity of a bushfire.**



BUSHFIRE PROTECTION MEASURES FOR SUBDIVISIONS

Clause 52.47-5: Bushfire protection measures objective

To ensure that bushfire protection measures required by this clause are implemented and maintained in perpetuity.

The ability to practically implement and maintain bushfire protection measures is a critical consideration in the design of a subdivision. Defendable space requirements and the location of native vegetation offsets as well as landscaping in public areas can have a significant bearing on the overall bushfire risk to development.

This is because bushfire behaviour is influenced on a much larger scale by collective defendable space.

Mandatory Standard BF5 requires that:

- › bushfire protection measures proposed by the applicant can be practically implemented and maintained in conjunction with the ongoing use of the land
- › the location, type and layout of proposed landscaping, revegetation or any native vegetation offsets does not increase the bushfire risk to the proposed development or the adjacent area
- › the bushfire protection measures required by Clause 52.47 are implemented regardless of other bushfire protection measures that may be provided, including private bushfire shelters, community shelters and the presence of other places of last resort.

MEETING THE OBJECTIVE

Proposals must demonstrate bushfire protection measures such as defendable space can be practically implemented. Ongoing management of bushfire protection measures on steeply sloping land and land prone to flooding or landslip are examples where this may not be practical.

Landscaping is a key feature of subdivisions and is a crucial component of the ongoing maintenance of bushfire protection measures. Inappropriate landscaping can significantly increase the bushfire risk within a subdivision.

Any proposed landscaping or vegetation offsets must be clearly identified as part of the permit application. Any vegetation offsets, revegetation or landscaping required as part of the proposed vegetation management arrangements must be provided in a way that minimises the ongoing risk of bushfires on the site and in the surrounding area.

CFA's *Landscaping for Bushfire* publication contains design principles that can be implemented to reduce bushfire risk. It also provides detail about how to landscape within defendable space to comply with BMO vegetation management conditions. See cfa.vic.gov.au/plants

Subdivisions that create public open space or communal land

Where a subdivision proposes the creation of public open space or other forms of communal land, the Bushfire Management Statement must demonstrate that the existing and future management of this land does not compromise defendable space requirements for lots within the subdivision or on adjoining land.

Landscaping in public and communal areas needs to be carefully planned to avoid increasing bushfire risk through creation of fuel corridors or areas of high fuel loads. There should be adequate separation between landscaping in communal areas and vegetation outside the subdivision to reduce the intensity and spread of fire. The creation of large areas of continuous fuel anywhere in a new development should be avoided.

Subdivision applications that create public open space or communal land must provide clear and detailed information about:

- the vegetation management prescriptions that will be implemented on the land on an ongoing basis
- who will be responsible for managing the land on an ongoing basis
- the mechanism that will be used to ensure that the land is managed in the prescribed manner on an ongoing basis.

Where land is to be transferred to the local council or other public authority, it will be necessary to submit the following information with the planning application:

- A letter from a senior officer of the shire, council or public authority acknowledging that if the subdivision is approved the shire, council or public authority would:
 - take responsibility for the ongoing management of the land
 - implement the vegetation management prescribed for the land in the application on an ongoing basis
 - prepare a fire management plan that gives effect to the agreed vegetation management and for this to be incorporated into their Municipal Fire Prevention Plan (or similar formally adopted plan).

To ensure that the land continues to be managed in this manner on an ongoing basis, a condition of the planning permit will specify that a Statement of Compliance cannot be issued until the agreed vegetation management has been implemented and a fire management plan has been prepared and is incorporated into the Municipal Fire Prevention Plan (or similar).

Where the land is to remain in private ownership, the use of an agreement pursuant to Section 173 of the *Planning and Environment Act 1987* will be required to ensure that the specified vegetation management is implemented on an ongoing basis.

DEFENDABLE SPACE AND CONSTRUCTION OBJECTIVES

Clause 52.47-6 to 52.47-9

To determine defendable space and construction requirements for a subdivision, a Bushfire Site Assessment should be undertaken, following the process provided by the DPCD Practice Note 65 *Bushfire Management Overlay: Planning Requirements*. This analysis should determine a building envelope or set back for each lot created which achieves the appropriate level of defendable space. Depending on the future use of the land, Standard BF1 and BF2 of Clause 52.47 stipulate the level of defendable space and construction which should be achieved.

Standard BF1 (in part)

All lots created should be capable of providing:

- appropriate defendable space based on the zoning of the land and the likely future uses.

Landscaping in public and communal areas needs to be carefully planned to avoid increasing bushfire risk through creation of fuel corridors or areas of high fuel loads.

Subdivision containing existing development should aim to achieve defendable space for BAL-12.5

Standard BF2 (in part)

Each lot must contain:

- defendable space for the construction of a single dwelling to a BAL-19 or less with reference to Table 1 of Standard BF6.1 for a subdivision of 10 lots or more
- defendable space for the construction of a single dwelling to a BAL-29 or less with reference to Table 1 of Standard BF6.1 for a subdivision of less than 10 lots
- building envelope and a defendable space envelope that give effect to the required defendable space and BAL.

MEETING THE OBJECTIVE

The required defendable space and construction level for buildings and works within a subdivision will depend on the number of proposed lots and the type of use intended for the subdivision. Each lot must demonstrate that adequate defendable space and construction will be provided.

Standard BF2 sets out defendable space and construction requirements for all residential subdivisions. These are provided below, in Table 5.

Table 5: Defendable space requirements for subdivisions (Standard BF2)

Type of development	Criteria for defendable space
Subdivision less than 10 lots including residential, industry, office and retail	BAL-29 or less, use defendable space Table 1 in clause 52.47
Subdivision 10 lots or more including residential, industry, office and retail	BAL-19 or less, use Table 1 in clause 52.47

For urban areas where a future use such as industry, office or retail is intended, the requirement of Clause 52.47-2 should also be achieved. If a subdivision includes a use listed under Clause 52.47-8 for other occupied buildings, the defendable space requirements of Table 2 in Clause 52.47 should be achieved.

To adequately reflect the use of the land, subdivision in rural areas such as farming and rural zones should aim to achieve defendable space for BAL-12.5 in accordance with Table 1 of Clause 52.47. Factors such as siting constraints, the current density of development in the area and low landscape risk may allow for less defendable space than BAL-12.5 to be considered.

Where a subdivision includes multiple uses, the defendable space provided for each lot should reflect the future intended use of each lot.

Subdivision not listed under Clause 44.06-4 should still consider using a Section 173 agreement to ensure that any future landowner will be informed of the bushfire protection measures applying to the land.

To ensure defendable space can be implemented the conditions of the permit will generally require defendable space to be implemented on each lot prior to Statement of Compliance.

Subdivisions containing existing development

Where a subdivision creates a lot that contains existing development (for example a dwelling), the layout and design of the subdivision must ensure bushfire risk is not increased to either the existing or neighbouring development.

Any vacant lot created should achieve the defendable space and construction requirements, as outlined above for the intended future use. Subdivision should not create a lot that would not get a future permit to develop the land in line with its zoning.

Generally, existing development will not have been built to any bushfire construction requirements. Where this is the case, subdivision containing existing development should aim to achieve defendable space for at least BAL-12.5 in accordance with Table 1 of Clause 52.47. This is to limit radiant heat and ember attack on the building.

Where the existing building has been constructed to current requirements then the defendable space should reflect the relevant BAL.

Where the siting of the existing development prevents the above from being achieved, it will be necessary to demonstrate that the layout of the subdivision does not result in the development being exposed to a higher level of bushfire risk than the current conditions. This should be achieved by locating boundaries so that defendable space is achieved within the allotment. In certain situations, arrangements such as a Section 173 agreement that ensure defendable space will be maintained on other lots within the subdivision may be considered. The siting constraints or other factors that have resulted in this approach should be detailed in the application.

If a subdivision creates a lot that:

- retains existing development and
- does not already achieve defendable space, access and water requirements

the conditions of the permit will require these bushfire mitigation measures to be implemented prior to Statement of Compliance. Where siting constraints or existing conditions prevent these protection measures from being reasonably achieved prior to Statement of Compliance, the details of these conditions or constraints should be provided as part of the application.

New subdivisions are required to manage their own bushfire risk within the boundaries of the subdivision.

Defendable space location in subdivisions

Clause 13.05 of the State Planning Policy provides clear direction only development where bushfire protection measures can be readily implemented and managed within the property should be permitted.

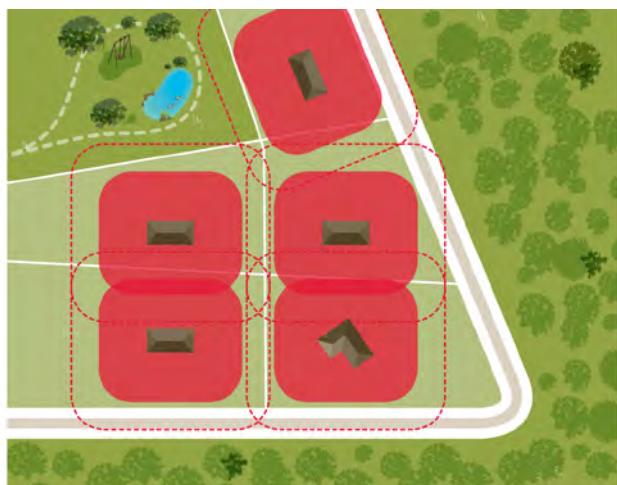
Unlike proposals for buildings and works where off-site defendable space can be considered, Mandatory Standards BF1 and BF2 require defendable space to be achieved within the subdivision. This approach sets a clear expectation that new subdivisions are required to manage their own bushfire risk within the boundaries of the subdivision.

When considering defendable space for a subdivision, the only instance where adjoining land may be included as part of the defendable space is where:

- the adjoining land is already in a minimal fuel condition such as a sealed road or a lake
- the land will not require ongoing management to remain in this condition
- the subdivision is infill and surrounding land is cultivated.

Shared or mutual defendable space can be considered between lots within the subdivision, providing the future use of the land will provide reasonable assurance the defendable space will be maintained.

➤ **Figure 28: Lots can share defendable space.**



Classifiable Vegetation

- Grassland
- Woodland

- Inner Zone / defendable space
- Outer Zone / defendable space

For smaller residential lots the most straight forward way to implement defendable space may be to apply inner zone requirements to each lot created. Outer zone requirements may be more suitable for communal areas of defendable space such as parks, reserves or nature strips.

➤ **Figure 29: Apply inner zone to each lot and outer zone to communal areas.**



- BAL-12.5 and Inner Zone Management
- BAL-19 and Inner Zone Management
- Outer Zone Management
- Hazard
- Subdivision Boundary

WATER SUPPLY FOR SUBDIVISIONS

General requirements for subdivision objectives (as relevant to water supply)

To ensure that all lots created are capable of:

- providing an adequate supply of water to facilitate firefighting and property protection during and after the passage of a bushfire.

Standards BF1 and BF2 for water supply (in part)

All lots created should be capable of providing:

- static water supply and access to this water supply which meet the requirements of the relevant fire authority.

MEETING THE OBJECTIVES

The water supply requirements for individual lots are provided in *Section 2: Guide to Mandatory Standard BF10: Water Supply and Access Objectives* on page 32 of this document. The application should demonstrate each lot created will meet these requirements so as to show the applicable water supply objectives of Clause 52.47-1 and Clause 52.47-2 will be met.

Subdivision in Zones listed under Clause 52.47-2 should be provided with a reticulated water supply and hydrants. Where a reticulated water supply is available or being installed, operable hydrants must be provided (as applicable) in accordance with CFA's:

- *Preferred Requirements: Water Supplies and Access for Subdivisions in Rural Zones*, or
- *Requirements for Water Supplies and Access for Subdivisions in Residential 1 and 2 and Township Zone*.

For subdivisions where hydrants are being installed:

- installation depths must comply with the Water Supply Code of Australia WSA 03-2011
- to ensure operation of the standpipe, fire plugs must be installed between 100 and 200 millimeters from the top cover plate to the top of the lugs
- to ensure that firefighters can rapidly locate water supplies in an emergency, hydrants must be identified as specified in *Identification of Street Hydrants for Firefighting Purposes* (available at cfa.vic.gov.au).

Where a subdivision has been provided with a communal water supply to the satisfaction of the relevant fire authority, an individual static water supply for each lot, as if a reticulated system were in place may be considered (see *Section 2: Guide to Mandatory Standard BF10*, page 32). Where a communal water supply is being proposed it should be discussed with the relevant fire authority early in the design of the subdivision.

ACCESS FOR SUBDIVISIONS

General requirements for subdivision objectives (as relevant to access)

To ensure that all lots created are capable of:

- providing safe access to properties for emergency and other vehicles at all times.

Standards BF1 and BF2 for access (in part)

All lots created should be capable of providing:

- access and egress which meet the requirements of the relevant fire authority.

For subdivisions of 10 lots or more, the need for a perimeter road to be provided adjoining the bushfire hazard for firefighting purposes should be considered.

MEETING THE OBJECTIVES

The access requirements within individual lots are provided in *Section 2: Guide to Mandatory Standard BF10: Water Supply and Access Objectives* on page 32 of this document. To meet the access objectives of Clause 52.47-1 and Clause 52.47-2, as applicable, the application should demonstrate each lot created will meet these requirements.

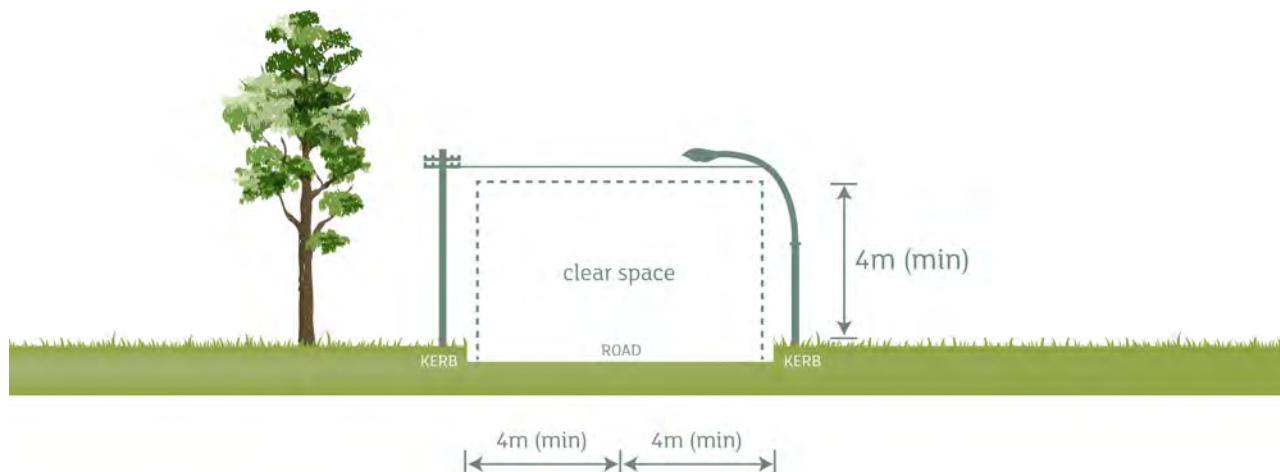
The road network within the subdivision should be designed, as applicable in accordance with CFA's:

- *Preferred Requirements: Water Supplies and Access for Subdivisions in Rural Zones*, or
- *Requirements for Water Supplies and Access for Subdivisions in Residential 1 and 2 and Township Zone*

Additionally, the siting, design and layout of lots and public roads should facilitate access and egress for residents and fire services through the following:

- Trafficable roads must comply with Table C1 of Clause 56 of planning scheme
- Dead-end roads must not exceed 200 metres in length or service more than nine lots
- All roads must be of all-weather construction and be substantially clear of horizontal encroachments within 4 metres either side of the centre line (see Figure 30)
- A vertical clearance to a height of 4 metres above the trafficable road must be maintained at all times (see Figure 30)
- Adequate provision for turning of fire brigade vehicles which meet the specification of Austroad Design for an 8.8 metre Service Vehicle must be provided in dead-end roads and cul-de-sacs
- Roads more than 60 metres in length from the nearest intersection must have a turning circle with a minimum radius of 8 metres (including roll-over kerbs if they are provided). The provision of 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 is also acceptable
- Road surface capacity and bridges shall be capable of carrying loads of 15 tonnes as a minimum
- Bridges shall be clearly signposted and indicate the load-carrying capacity of the bridge
- The average grade must be no more than 1 in 7 (14.4% or 8.1°) with a maximum of no more than 1 in 5 (20% or 11.3°) for no more than 50 metres. Dips must have no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle.

› **Figure 30: Access must provide adequate horizontal and vertical clearance.**



For residential, industrial and commercial subdivisions

The public road network must facilitate access by firefighters. Where a subdivision interfaces with unmanaged vegetation, a perimeter road should be provided. Perimeter roads provide a buffer and can aid firefighting operations in the event of a bushfire. Perimeter roads also support fire prevention works such as Fuel Reduction Burning.

The siting and layout of lots should provide a perimeter road that separates the hazard from the development of land and include provision of the following:

- › Perimeter roads interfacing the hazard should be a minimum of 8 metres in width from kerb to kerb
- › Parking that encourages users not to impede access of emergency vehicles (e.g. off-street parking) and does not obstruct access to water hydrants.

For infill residential sites

Where a subdivision forms part of a small infill arrangement (generally less than 10 lots), the capacity for connections to existing road networks may be limited. In such cases, it is recognised that site constraints may limit the opportunity for perimeter roads. Perimeter roads are normally required as part of the bushfire protection measures for new residential areas.

Private roads

Access into and around properties is also important. For example, 'gated' developments such as aged care or aged living with a private road network rely on firefighting access in the same manner as residential areas with public roads. Internal road systems and common property accessways should therefore meet the same standards as a residential subdivision.

Rural subdivisions

For rural-residential areas, the features of the landscape often present challenges with extensive areas of heavy vegetation cover. It is important that new development reduce the bushfire risk for future residents to an acceptable level and apply the precautionary principle to prioritise the protection of human life.

The siting and layout of lots should provide safe access to and from the property and ensure that:

- › access into and out of all properties is by direct access to a suitable public road
- › if less than 6 metres in width, access through a subdivision or across a lot to an individual building envelope must be provided with passing bays of a minimum of 20 metres in length every 200 metres. The combined width of the passing bay and accessway must be a minimum of 6 metres
- › road access of at least 6 metres in width is required where access serves more than one lot
- › where required by the relevant fire authority, a fire trail should meet the requirement of a driveway, see page 35
- › a second access within a lot directed in an alternative direction should be provided where the primary access is greater than 200 metres from a public road.

Subdivisions in the farming zone and rural areas may not have an established road network. In this case they will need to comply with the access requirements for buildings and works (see *Section 2: Guide to Mandatory Standard BF10: Water Supply and Access Objectives* on page 32 of this document).

FURTHER RESOURCES

REFERENCES

- [DPCD Victoria Planning Provisions](#)
- [DPCD Bushfire Management Statement Template](#)
- [DPCD Example Bushfire Management Statement](#)
- [CFA Landscaping for Bushfire: Garden Design and Plant Selection](#)
- [CFA Guide to Developing a Bushfire Emergency Plan in Victoria](#)
- [CFA Requirements for Water Supplies and Access for Subdivisions in Residential 1 and 2 and Township Zones](#)
- [CFA Preferred Requirements: Water Supplies and Access for Subdivisions in Rural Zones](#)
- [CFA, MFB and DSE Identification of Street Hydrants for Firefighting Purpose](#)
- [DPCD Advisory Note 33](#)
- [DPCD Advisory Note 39](#)
- [DPCD Advisory Note 44](#)
- [DPCD Practice Note 64](#)
- [DPCD Practice Note 65](#)

BIBLIOGRAPHY

- 2009 Victorian Bushfires Royal Commission, 2010, *Final Report*, Melbourne.
- Chen, K and McAneney, J, 2010, *Bushfire penetration into urban areas in Australia: a spatial analysis*, Risk Frontiers, Macquarie University, Bushfire Cooperative Research Centre.
- Cheney, P and Sullivan, A, 2008, *Grassfires: fuel, weather and fire behaviour*, CSIRO Publishing, Melbourne.
- Country Fire Authority, 2011, *Fire Ready Kit*, Melbourne.
- Country Fire Authority and Department of Sustainability and Environment, 2011, *Bushfire Firefighter: Reference Manual*, Melbourne.
- Country Fire Authority and Metropolitan Fire and Emergency Services Board, 2011, *Guideline 33 Performance Based Design within the Built Environment*, Version 2, Melbourne.
- Department of Sustainability and Environment, 2010, 'Overall Fuel Hazard Assessment Guide, 4th edition' *Fire and adaptive management report No.82*.
- Douglas, GB, He, Y, Kwok, KCS, 2010, 'Wind Impacts on Fire Spread and Structural Failure in a Complex Terrain', in *Proceedings of 14th Australasian Wind Engineering Society Workshop*, pp. 91–94. Australasian Wind Engineering Society, Canberra.
- Douglas, GB, Tan, Z and Midgely, S, 2006, 'A Verification Method for Evaluating Alternative Building Solutions in Bushfire-Prone Areas', in *The Future of Fire Safety*. International Fire Safety Engineering Conference 2006, Gold Coast, 23 May 2006.
- Drysdale, D, 1998, *An introduction to fire dynamics*, second edition, John Wiley and Sons, England.
- Luke, RH and McArthur, AG, 1978, *Bushfires in Australia*, Australian Government Publishing Service, Canberra.
- Ramsay, C and Rudolph, L, 2003, *Landscape and Building Design for Bushfire Areas*, CSIRO Publishing, Melbourne.
- Ramsay, C, Wynn-Jones, M, Wood C, Douglas, G and Robeson, P, 2006, 'The Australian Bushfire Safety Engineering Guidelines', *The Future of Fire Safety*. International Safety Engineering Conference, Gold Coast, 23 May 2006.
- Standards Australia, 2009, AS 3959-2009 *Construction in Bushfire Prone Areas*, Sydney.

WEBSITES

- cfa.vic.gov.au
- dpcd.vic.gov.au
- buildingcommission.com.au
- land.vic.gov.au
- standards.org.au
- dse.vic.gov.au

