A guide to building in Victoria after bushfires

VICTORIAN BUILDING AUTHORITY

BUILDING CONFIDENCE

VICTORIA State Government

Contents:

A new standard in building after bushfires

The February 2009 bushfires in Victoria rewrote the rules about bushfires.

The Victorian Government at the time took the decision to implement a new bushfire residential building standard.

Extensive research, expertise from fire and building authorities and public consultation around Australia were all part of this new standard, to ensure that homes are built to a higher degree of bushfire safety.

While it was anticipated the Bushfire Royal Commission that had been announced by the Victorian Government would consider longer term issues including planning requirements, building methods and materials and bushfire overlays, in the immediate aftermath of the fires the Government believed building standards should be improved immediately. The new standard was subsequently adopted by the Building Code of Australia in May 2010 and has since applied in all States and Territories.

This Victorian Building Authority's (VBA) *Guide to building in Victoria after bushfires* explains the bushfire residential building standard, AS 3959-2009, and what it means to individuals and communities. It explains how the build process works and will help you converse with your builder and local Council as you prepare to build.

As with the previous standard (AS 3959-1999), the costs of building will depend on the type of construction and your property's level of bushfire risk. However, with a more finely tuned risk assessment, the bushfire residential building standard focuses on construction requirements to address the level of exposure a building could face under bushfire attack. It provides homeowners with considerable choice in the type of design, construction and siting of their homes and takes into account best-practice construction materials and methods.

While the standard improves protection for new homes, as well as alterations and additions built in Victoria's Bushfire Prone Areas since 2009, it is important to note that due to the unpredictable and often devastating nature of bushfires, it does not guarantee a building will survive a fire.

It is equally important that people living in a Bushfire Prone Area are well prepared and have in place a bushfire survival plan. For more information about the bushfire residential building regulations and building in a Bushfire Prone Area, visit the VBA website (www.vba.vic.gov.au) or call the VBA on 1300 815 127. You can find out if your allotment is in a Bushfire Prone Area by obtaining a bushfire property report from http://www.dtpli.vic.gov.au/planning

Greater protection across the State

The bushfire residential building standard covers the construction of new homes and alterations and additions to a house in the State of Victoria if the building is located in a mapped Bushfire Prone Area or Bushfire Management Overlay (BMO).

The threat of ember attack and the intense heat generated by bushfires, coupled with vegetation close to homes and other factors outlined in this guide, means that all homes now require a bushfire attack level assessment (BAL). Local Councils may provide guidance in relation to areas that may have a zoned assessment in a planning scheme.

How the current standard came about

After the Canberra bushfires in 2003, the Australian Standards relating to building were extensively reviewed with the intention of introducing a new Australian Standard (AS 3959-1999) nationally. In the wake of the February 2009 bushfires the Victorian Government acted swiftly to ensure that new homes, alterations and additions in Victoria are designed, constructed and located with greater bushfire protection.

While its introduction in Victoria was an immediate response by the State Government, the standard was the culmination of a lengthy process that included public consultation, submissions from industry, as well as high levels of home fire safety and scientific research. This included extensive review by bushfire experts including the Country Fire Authority and the Australasian Fire Authorities Council.

All public submissions on the amendments supported revising the previous standard, which had four levels of risk assessment. The current standard assessment adopts six levels. A more scientific risk assessment determines the likely levels of heat exposure and then stipulates the appropriate construction method to improve the ability of a building to withstand bushfire attack, and importantly, protect occupants and the building.

How the standard applies

The standard applies to the construction of any new home or outbuilding, extensions or alterations to a home, or building a home where the site is in a mapped Bushfire Prone Area (building permit only) or Bushfire Management Overlay (planning permit also required).

The building process

Step 1: the design phase

If you intend to build, renovate or significantly repair a home in an area subject to bushfire threat, the process will be no different to any other standard but you will need to take the bushfire residential building standard into consideration.

All sites will require a site visit by an experienced assessor to determine the correct BAL. If your site is in a mapped Bushfire Prone Area you will be required to apply a minimum construction standard of BAL-12.5 even if your site has been assessed as BAL-LOW.

Your building designer, architect or builder can advise you on how best to achieve this. They will consider your design by looking at the appropriate BAL and then apply the construction methods most appropriate to meet your needs. The BAL and construction methods are explained on pages 10 and 11.

If you want to owner-build you should contact your building surveyor for advice, or phone the owner-builder section of the VBA.

When the design plans are complete, the next step is to appoint a builder.

Step 2: appointing a builder

One of the most important steps is ensuring your builder is a Registered Building Practitioner (RBP). This information is available at www.vba.vic.gov.au by clicking on the Find a Practitioner section or you can phone the Victorian Building Authority on 1300 815 127.

For most building or renovating work you will talk directly to the builder. Whatever the case, you must be able to deal with the same person for the duration of the project, so make sure you're satisfied and take the following precautions:

- Obtain at least three quotes
- Check examples of the builder's work and ask for references
- Before you sign the building contract, read it thoroughly and ensure that you understand it
- Check that the builder has an insurance policy covering the building work – it will be listed in the contract
- Importantly, ask if your builder has obtained advice on the bushfire residential building standard.

To find a Registered Building Practitioner, including a Building Surveyor, go to the 'Find an Practitioner' section of the VBA website, www.vba.vic.gov.au or call the Victorian Building Authority on 1300 815 127

Step 3: determine whether a planning permit is required

Under the Victoria Planning Provisions, the Bushfire Management Overlay (BMO) applies to areas of extreme bushfire hazard. From a planning perspective the BMO requires new homes, building extensions and subdivisions to conduct a bushfire management statement as part of the planning permit application. This bushfire assessment will establish the relevant national bushfire construction standard, create defendable space and ensure adequate water supply and emergency vehicle access is provided. This is consistent with the outcomes from the Victorian Bushfires Royal Commission Final Report following the 2009 Bushfires. If a bushfire assessment for a property within the BMO cannot manage bushfire risk to an acceptable level, then the planning permit and associated development might not proceed.

Contact the planning department at your local Council for more detail regarding requirements for planning permits in a BMO.

Application pathways

There are three application pathways and each has a different approach to preparing and assessing a planning permit application. The pathways provide a streamlined approach for dwellings in existing settlements, a more detailed approach for other types of development, and special provisions to guide the subdivision of land. The relevant extracts from Practice Note 65 are provided in the table below.

What are the three application pathways?

PATHWAY ONE	PATHWAY TWO	PATHWAY THREE
Single dwellings in existing settlements Clause 52.47-1	All other buildings and works Clause 52.47-2	Subdivision Clause 52.47-2

Planning Practice Note 65 -*Preparing and Assessing a Planning Application Under the Bushfire Provisions in Planning Schemes* will help you to identify your application pathway and learn more about how Clause 52.47 operates. Practice Note 65 is available via http://www.dtpli.vic.gov.au/planning/planning-and-building-for-bushfire-protection/bushfire-management-overlay-in-planning-schemes

The Bushfire Management Overlay includes some exemptions from the need to obtain a planning permit. You should check if any of these apply. The most common exemptions include:

- an alteration or extension to an existing dwelling that is less than 50 per cent of the gross floor area of the existing dwelling.
- an alteration or extension to any building (except a dwelling or dependent person's unit) that is less than 10 per cent of the gross floor area of the existing building.

Step 4: determine whether a building permit is needed

Most building work requires a building permit to be issued before work can start, however, some minor structures such as sheds less than 10 m^2 are exempt.

Building permits are issued by your Council's Municipal Building Surveyor or a Private Building Surveyor, who ensures your plans comply with the bushfire residential building standard.

Step 5: applying for a building permit

Applying for the building permit is easy. Simply:

- Apply for the building permit through your Council's Municipal Building Surveyor or a Private Building Surveyor
- Check the competency and experience of the building surveyor you have appointed and their fees applicable for issuing the permit and carrying out the inspections
- Pay the appropriate fee, and submit at least 3 copies of drawings, specifications, and allotment plans with a completed application form.

There are some minor types of building work that are exempt from the issuing of a building permit, such as:

- Pergolas associated with houses, with unroofed post and beam structures
- Garden sheds with a floor area of less than 10 m^2
- Repair work done for maintenance purposes, for example, replacing rotted weatherboards.

Not all minor work is exempt from a building permit, so do your research and contact your local Council's Municipal Building Surveyor or a Private Building Surveyor. Advice about what work is exempt from a building permit is also available in Practice Note 32-2014 available at www.vba.vic.gov.au

Step 6: the build process

Depending on your contract, your builder (or architect if you have appointed one) will oversee the entire building process. The building permit will also specify a period of time in which building work must commence and finish.

As part of the process, the building surveyor who issued the building permit must carry out the building inspections and issue an occupancy permit or a certificate of final inspection on completion of work.

Throughout the building process, there are things you can do to ensure it is rewarding:

- Establish a good working relationship with your builder and building surveyor
- Understand the costs involved and those for any subsequent variations
- Make sure variations are documented, understood and signed before work starts
- Familiarise yourself with and understand the schedule of progress payments.

Step 7: occupancy permits

Your building permit will state whether you require an occupancy permit or a certificate of final inspection prior to you moving into your new or renovated home.

The occupancy permit is issued by the building surveyor overseeing your building work, ensuring it complies with bushfire residential building standard.

An occupancy permit is issued when a building is 'suitable to occupy' from a safety point of view. It is issued when every item that can affect safety is in place and fully operational, such as the power, water and gas supply; smoke alarms; handrails and balustrades. It will signify that your home now meets the bushfire residential building standard and is designed, constructed and located with greater fire protection.

Important Information

Property assessment of existing structures after a bushfire

You will need to have the state of your property assessed, taking into consideration the professional advice about what needs to be done to existing structures. While existing structures may appear to be habitable, an inspection report may need to be carried out by your Council's Municipal Building Surveyor or Building Inspector.

Also, if you were insured, check with your insurance provider if it is okay for you to proceed with the building process.

Retrofitting

The bushfire residential building standard does not include mandatory retrofitting. This will be a decision that you will need to make. It will be wise to take into consideration recent events, your home's current level of protection, location and home site.

Routine maintenance is an important part of bushfire protection, for your home, out-buildings and garden. For example, if a metal shutter is fitted, it needs to work at the time of bushfire threat.

The VBA has published *guide to retrofit your home for better bushfire protection*. The information in this guide is available through the VBA website and will help you decide whether you retrofit your existing home and to what extent. You should consult with experts in this field, use Registered Building Practitioners and Licensed and Registered Plumbing Practitioners (where required) and obtain three quotes for the work you are having done.

Greater protection for people and buildings

The aim of the bushfire residential building standard is to improve the ability of buildings to withstand a bushfire attack. This will provide greater protection for the occupants who may be sheltering in it while the fire front passes and it also increases the chances of the building surviving.

A great deal of scientific modelling has gone into the bushfire residential building standard. The chart below outlines how the baseline data, which is defined as a Bushfire Attack Level (BAL) determines the type of construction required.

Bushfire Attack Levels and corresponding construction sections within the bushfire residential building standard

Bushfire Attack level (BAL)	Description of predicted bushfire attack and levels of exposure
BAL – LOW	There is insufficient risk to warrant specific construction requirements
BAL – 12.5	Ember attack
BAL – 19	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux between 12.5 and 19 kW m^2
BAL – 29	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux between 19 and 29 kW m^2
BAL – 40	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux with the increased likelihood of exposure to flames
BAL – FZ	Direct exposure to flames from fire front in addition to heat flux and ember attack

The BAL takes into consideration a number of factors including the Fire Danger Index, the slope of the land, types of surrounding vegetation and its proximity to any building.

The Fire Danger Index is a measure of the associated fire weather and the probability of a bushfire starting. It also includes its rate of spread, intensity and difficulty of suppression according to various combinations of temperature, relative humidity, wind speed and estimate of fuel state, all of which is influenced by daily rainfall and the time elapsed since the last rainfall.

The Fire Danger Index for Victoria is 100, making it one of the highest in Australia. In the Alpine areas of the state it sits at 50. The Fire Danger Index for the Northern Territory and Queensland is only 40.

Ember attack and the temperature of (radiant heat) of bushfire not only threaten buildings and properties, but are often unstoppable.

Bushfires burn at very high temperatures and the February 2009 fires have meant a revisit of the baseline data around radiant heat levels. Victoria has now opted for the higher standard, at 1090 Kelvin. Kelvin is a measurement of temperature.

817 degrees Celsius or 1090 Kelvin is the assumed flame temperature under the new standard (kelvin is a unit of temperature).

Importantly, the bushfire residential building standard is designed to improve the ability of a building to withstand a bushfire attack at higher temperature levels, providing greater protection to Victorians.

What my home might look like

The standard assessment has six levels of risk based on the Bushfire Attack Level (BAL), with increasing construction requirements ranging from ember protection at the low levels (BAL-12.5) to fire-rated construction at the highest (BAL-FZ [Flame Zone]). Following is an outline of requirements to build to the standard in each BAL from the lowest to the highest. Technical details of the BAL are covered in the previous section.

	BAL–LOW	BAL–12.5	BAL–19	BAL–29	BAL–40	BAL–FZ (FLAME ZONE)
SUBFLOOR SUPPORTS	No special construction requirements	No special construction requirements	No special construction requirements	Enclosure by external wall or by steel, bronze or aluminium mesh, non-combustible supports, naturally fire resistant timber stumps or posts on 75 mm metal stirrups	If enclosured by external wall refer below 'External Walls' section in table or non-combustible subfloor supports with an FRL (Fire Resistance Level, which represents the method of measuring a material's reaction to heat exposure taking into account the structural adequacy/integrity/insulation over a time period measured in minutes) of 30/-/-or naturally fire resistant timber stumps	Subfloor supports – enclosure by external wall or non-combustible with an FRL of 30/-/-
FLOORS	No special construction requirements	No special construction requirements	No special construction requirements	Concrete slab on ground; enclosure by external wall, metal mesh as above or flooring less than 400 mm above ground level to be non-combustible, naturally fire resistant timber or protected on the underside with sarking or mineral wool insulation	Concrete slab on ground, enclosure by external wall or protection of underside with a non-combustible material such as fibre cement sheet	Concrete slab on ground or enclosure by external wall or an FRL of 30/30/30 or protection of underside with 30 minute incipient spread of fire system
EXTERNAL WALLS	No special construction requirements	As for BAL–19	External walls – Parts less than 400 mm above ground or decks etc to be of non-combustible material, 6 mm fibre cement clad or bushfire resistant/naturally fire resistant timber	Non-combustible material (masonry, brick veneer, mud brick, aerated concrete, concrete), timber framed, steel framed walls sarked on the outside and clad with 6 mm fibre cement sheeting or steel sheeting or bushfire resistant timber	Non-combustible material (masonry, brick veneer, mud brick, aerated concrete, concrete) or timber framed or steel framed walls sarked on the outside and clad with 9 mm fibre cement sheeting or steel sheeting	Non-combustible material (masonry, brick veneer, mud brick, aerated concrete, concrete) with minimum thickness of 90 mm or an FRL of -/30/30 when tested from outside
EXTERNAL WINDOWS	No special construction requirements	As for BAL–19 except that 4 mm Grade A safety glass can be used in place of 5 mm toughened glass	Protected by bushfire shutter, completely screened with steel, bronze or aluminium mesh or 5 mm toughened glass or glass blocks within 400 mm of ground, deck etc. Openable portion metal screened with frame of metal or metal reinforced PVC-U or bushfire resisting timber	Protected by bushfire shutter or completely screened with steel, bronze or aluminium mesh, or 5 mm toughened glass with openable portion screened and frame of metal or metal reinforced PVC-U, or bushfire resisting timber and portion within 400 mm of ground level screened	Protected by bushfire shutter or 5 mm toughened glass. Openable portion screened with steel or bronze mesh	Protected by bushfire shutter or FRL of -/30/- and openable portion screened with steel or bronze mesh
EXTERNAL DOORS	No special construction requirements	As for BAL–19 except that door framing can be naturally fire resistant (high density) timber	Protected by bushfire shutter, or screened with steel, bronze or aluminium mesh or glazed with 5 mm toughened glass, non-combustible or 35 mm solid timber for 400 mm above threshold, metal or bushfire resisting timber framed for 400 mm above ground, decking, etc, tight-fitting with weather strips at base	Protected by bushfire shutter, or screened with steel, bronze or aluminium mesh or non-combustible, or 35 mm solid timber for 400 mm above threshold. Metal or bushfire resisting timber framed tight-fitting with weather strips at base	Protected by bushfire shutter, non-combustible or 35 mm solid timber, metal framed tight-fitting with weather strips at base and FRL of -/30/-	Protected by bushfire shutter or tight-fitting with weather strips at base and an FRL of -/30/-
ROOFS	No special construction requirements	As for BAL–19	Non-combustible covering. Roof/wall junction sealed. Openings fitted with non-combustible ember guards. Roof to be fully sarked	Non-combustible covering. Roof/wall junction sealed. Openings fitted with non-combustible ember guards. Roof to be fully sarked	Non-combustible covering. Roof/wall junction sealed. Openings fitted with non-combustible ember guards. Roof to be fully sarked and no roof mounted evaporative coolers	Non-combustible covering. Roof/wall junction sealed. Openings fitted with non-combustible ember guards. Roof to be fully sarked and no roof mounted evaporative coolers
VERANDAS, DECKS ETC	No special construction requirements	As for BAL–19	Enclosed sub-floor space – no special requirement for materials except within 400 mm of ground. No special requirements for supports or framing. Decking to be non-combustible or bushfire resistant within 300 mm horizontally and 400 mm vertically from a glazed element	Enclosed sub-floor space or non-combustible or bushfire resistant timber supports. Decking to be non-combustible	Enclosed sub-floor space or non-combustible supports. Decking to be non-combustible	Enclosed sub-floor space or non-combustible supports. Decking to have no gaps and be non-combustible

Please note: *The information in the table is indicative ONLY of the construction requirements in the bushfire residential building standard and is not intended as a design guide. You should consult AS3959-2009 for the full technical details.*

Buildings that must comply

The bushfire residential building standard applies to most new types of residential buildings, including alterations and additions.

Buildings to comply with the bushfire residential building standard include:

- New homes or outbuildings
- Repairs to a room, or part of a building or outbuilding such as a garage or shed
- Alterations and additions to homes and outbuildings.

Building permits are required for all new buildings, partial reconstruction work, alterations and additions of homes and outbuildings.

When a building permit is issued for an alteration or addition, the building surveyor has the discretion on whether full or partial compliance is needed. The bushfire residential building standard does not change this requirement.

Note: Structural damage may not always be apparent, so check with a Council's Municipal Building Surveyor or a Private Building Surveyor or a Registered Building Practitioner, such as a Structural Engineer, to ensure it is safe.

Questions & Answers

Q. What is the difference between the current building standard and the previous standard?

A. The current building standard has six risk levels whereas the previous standard had four. There are improved construction requirements that range from ember protection at the lower levels to direct flame contact protection at the highest.

The more scientific risk assessment of the current standard determines the likely levels of heat exposure and stipulates the appropriate construction method to improve a building's ability to withstand bushfire attack and, importantly, protect occupants, while the fire front passes.

Q. What are the key aspects of the current building standard?

A. The current building standard improves the construction requirements on residential buildings so they are better protected in the event of a bushfire. These range from construction measures that provide ember protection at the low levels to direct flame protection at the highest.

New homes at risk of bushfire may be required to have:

- Roofs, verandahs and decking make from non-combustible material
- Wall and roof joints sealed against ember attacks
- Windows protected by non-combustible shutters or made using 4 to 5mm toughened glass
- Door frames made from fire resistant timber, tightly fitted with a weather strip at the base.

Q. Does the standard focus on materials used rather than the design?

A. The building standard sets out suitable materials and construction methods appropriate to the bushfire risk – it does not prevent good design being used that is appropriate for the specific location.

Q. Will this standard save me and my home if a bushfire hits?

A. The standard will improve protection for new buildings in Victoria. However, it does not guarantee that a building or its occupants will survive a bushfire due to the unpredictable nature of bushfires.

Q. Can I still design a home the way I want it?

A. Design decisions continue to be made by property owners and their architects, designers and builders.

The current building standard stipulates construction methods and materials to better protect homes from bushfires but it does not specify design requirements.

Q. Does the building standard apply to all of Victoria or just declared Bushfire Prone Areas?

A. The standard only applies to allotments that are in a mapped Bushfire Prone Area or Bushfire Management Overlay. If your property is in a Bushfire Prone Area and your BAL is assessed as LOW, you will still be required to construct to the minimum ember attack standard, BAL-12.5.

Q. How does the building standard work in relation to building regulations?

A. The standard was initially included in the Victorian *Building Regulations 2006*. Since May 2010, it has been included in the Building Code of Australia which is adopted by all States and Territories.

Q. Will it cost me more to build my home under the current building standard than under the previous standard?

A. As with the previous standard, the costs of building depend on the type of construction and the property's level of bushfire risk. However, with more finely tuned risk assessment, the current building standard allows for flexibility in regard to construction costs.

Q. Will I have to use specific building products to meet the building standard?

A. No specific products are specified in the standard. For most BAL's a range of common building products satisfy the requirements of the standard.

Q. Will I be allowed to clear trees around my property?

A. The current building standard considers the existing vegetation on the site and the distance between buildings and vegetation. The removal of this is subject to approval by other authorities. It is recommended you check with your local Council.