BUILDING IN DESIGNATED BUSH FIRE PRONE AREAS

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In Western Australia, building work is required to comply with the performance requirements of the Building Code of Australia (BCA), which comprises Volumes One and Two of the National Construction Code Series.

The BCA contains specific bush fire construction requirements for certain residential buildings in designated bush fire prone areas that aim to reduce the risk of ignition from a bush fire.

Areas identified on the Map of Bush Fire Prone Areas (the Map) trigger these requirements. The Map can be accessed at https://maps.slip.wa.gov.au/landgate/bushfireprone/

1. What are the bush fire building requirements?

The Building Act 2011 and Building Regulations 2012 adopt the BCA as the primary applicable building standard for all new buildings and incidental structures in Western Australia. The BCA also applies to new building work to existing buildings. The BCA sets out the minimum technical requirements for design and construction and includes specific bush fire requirements for certain residential buildings in bush fire prone areas.

2. How do the bush fire building requirements affect me?

If you are planning to undertake building work in a designated bush fire prone area, for example constructing a new dwelling or an extension to an existing building, then you may be required to comply with the bush fire construction requirements of the BCA.

3. What types of buildings need to comply?

The BCA bush fire construction requirements apply to the following classes of residential buildings located in designated bush fire prone areas:

Class 1a - A single dwelling being a detached house, or row houses, duplexes, town houses, terrace houses or villa units where attached dwellings are separated by a fire resisting wall.

Class 1b - Includes the following:

- boarding houses, guest houses, hostels or the like in which not more than 12 people would ordinarily be resident and with a total area of all floors not exceeding 300m²; or
- four or more single dwellings located on one allotment and used for short term holiday accommodation.

Class 2 - Dwellings, such as apartments and flats in a building containing two or more units.

Class 3 - A residential building which is a common place of long term or transient living for a number of unrelated persons, including:

- a boarding or lodging house, guest house, hostel, or backpackers accommodation;
- a residential part of a hotel or motel;
- a residential part of a school;
- accommodation for the aged, children or people with disabilities;
- a residential part of a health-care building which accommodates members of staff; or
- a residential part of a detention centre.

Class 10a - buildings and decks associated with Class 1a, Class 1b, Class 2 or Class 3 buildings. Class 10a buildings include non-habitable buildings such as garages, carport, shed, or the like.

4. How do I know if I am in a bush fire prone area?

The Map identifies land that has been designated as a bush fire prone area by the Fire and Emergency Services (FES) Commissioner. You can view the Map for your property by entering your address at https://maps.slip.wa.gov.au/landgate/bushfireprone/

A building located wholly or partially within a bush fire prone area (i.e. an area coloured pink on the Map) may be required to comply with additional bushfire building requirements.
A building located entirely outside of a bush fire prone area (i.e. located in a non-pink area), regardless of whether any other portion of the same lot is within a bush fire prone area, is not required to comply with additional bushfire building requirements.

5. Are there any concessions?

Alterations and additions
The bush fire building requirements do not apply to certain building work which relates to some existing buildings. The exclusions apply to building work that is the renovation, alteration, extension, improvement or repair of a "relevant building" if

- the estimated value of the building work is less than $20,000; or
- it does not increase the risk of ignition from bush fire attack for the existing building.

A "relevant building" is an existing building that:

a) was not required to comply with bushfire standards when it was constructed;
b) was not required to comply with bushfire standards as part of a change of classification;
c) if the works were unauthorised, was not required to comply with bushfire standards as part of an approval for unauthorised building work;
d) was not required to comply with bushfire standards if it was a relocated building.

Class 10a and decks
New or relocated Class 10a or decks do not need to comply with the bushfire construction requirements if they are associated with a relevant building as outlined above.
Newly designated bushfire prone areas
Building work does not need to comply with the bushfire construction requirements in areas that have been newly designated as a bushfire prone area on the Map for less than four months before the date a building permit application is made.
If you are not sure if your building work needs to comply with the BCA bush fire construction requirements, you should discuss the project with either the relevant permit authority or a private building surveyor.

6. What are the compliance options under the BCA?

Building legislation in Western Australia adopts the Building Code of Australia, being Volumes One and Two of the National Construction Code (NCC), as the applicable building standard.
The NCC is a performance based document. The NCC Performance Requirements can be met using a Performance Solution, a Deemed-to-Satisfy (DTS) solution, or a combination of both.
Compliance with bush fire BCA Performance Requirements G5.1 (in BCA Volume One) and P2.7.5 (in BCA Volume 2) for certain residential buildings in designated bush fire prone areas can be demonstrated by Deemed-to-Satisfy Solutions, Performance Solutions or a combination of both.
Deemed-to-Satisfy Solutions are prescriptive. They tell you what, when and how to do something. They include materials, components, design factors and construction methods that, if used, are deemed to meet the Performance Requirements, hence the term "Deemed-to-Satisfy".
Performance Solutions are unique for each individual situation. These solutions are often flexible in achieving the outcomes and encouraging innovative design and technology use.
Performance Solution directly addresses the Performance Requirements by using one or more of the Assessment Methods available in the NCC.
For Class 1a or Class 1b buildings and associated Class 10a buildings or decks, DTS Solutions include compliance with:

- AS 3959; or
- National Association of Steel Housing (NASH) Standard – Steel Framed Construction in Bush fire Areas (2014, incorporating Amendment A).

For Class 2 or Class 3 buildings and associated Class 10a buildings or decks, the DTS Solution is compliance with AS 3959.

7. How can I access the Australian Standards AS 3959?

AAS 3959 can be purchased from Standards Australia website at https://store.standards.org.au/. A copy is also available for viewing at the Shire of Nannup but photocopies cannot be taken.

8. What are the AS 3959 construction requirements?

The BCA has adopted AS 3959 as one way of meeting the bush fire Performance Requirements of the BCA when undertaking building work in a designated bush fire prone area.
AS 3959 contains two methods for determining the potential intensity of bushfire attack on a building, also known as a Bushfire Attack Levels (BAL). These methods are Method 1 (simplified) BAL assessment and Method 2 (detailed).
The BAL for the specific building will determine the level of bush fire resistant construction that the building must include.
There are six BAL ratings with corresponding construction requirements:

- BAL – LOW (Information available in AS3959 Section 4)
- BAL - 12.5 (Construction information available in AS3959 Section 3 and 5)
- BAL - 19 (Construction information available in AS3959 Section 3 and 6)
- BAL - 29 (Construction information available in AS3959 Section 3 and 7)
- BAL - 40 (Construction information available in AS3959 Section 3 and 8)
- BAL - FZ (Construction information available in AS3959 Section 3 and 9)

The standard considers such elements as:

- General matters
- Construction requirements for specific structures
- External moldings
- Higher levels of construction
- Reduction in construction requirements due to shielding
- Vents weepholes and gaps
- Bush fire shutters
- Testing to AS 1530.8.1
- Glazing
- Sarking
- Timber log walls
- Subfloor supports
- Floors
- External walls
- Verandahs, decks, steps, ramps and landings
- Roof mounted evaporative coolers
- Water and gas supply pipes
- Flame Zone testing to AS 1530.8.2
- External glazed elements and assemblies and external doors
- Roofs, including verandah and attached carport roofs, penetrations, roof lights, eaves, fascia's, gables, gutters and downpipes

Any associated structures such as garages, carports, decks or verandas that are attached or adjacent to a building required to comply with the standard also need to comply. This could mean that the structure will need to meet the same construction requirements as the house, or be adequately separated from the house either by the nature of its construction or by its distance from the house.
While AS 3959 improves the performance of buildings subject to bush fire attack, there is no guarantee however, that a building will survive a bush fire on every occasion. This is due to the unpredictable behaviour of fire and extreme weather.

9. What are the bushfire attack levels?

AS 3959 requires the building to be assessed to determine the "Bushfire Attack Level" (BAL). The standard defines (BAL) as:
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 metre squared, and the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.
The determination of a BAL in accordance with AS 3959 is a site specific assessment that takes into consideration a number of factors, including the slope of the land, types of surrounding vegetation and its proximity to any other buildings or structures on the site.

At the end of the assessment the building will be assigned one of six BALs. The assigned BAL determines the level of bush fire resistant construction required for the building.
The BALs are as follows:

- BAL-LOW - very low risk (bush fire resistant construction is not required)
- BAL-12.5 - low risk
- BAL-19 - moderate risk
- BAL-29 - high risk
- BAL-40 - very high risk
- BAL-FZ - extreme risk (Flame Zone)

10. What is considered in assessing a property's bush fire risk?

The BCA requires an assessment of the potential intensity of bush fire attack for certain classes of residential buildings located in designated bush fire prone areas. AS 3959 provides methods for measuring the severity of the building's potential exposure to ember attack, radiant heat and direct flame contact.
The determination of a building's Bushfire Attack Level (BAL) is a site specific assessment that takes into consideration a number of factors including the slope of the land, the types of surrounding vegetation and the distance of the building to that vegetation. At the end of the assessment the building will be assigned one of six BALs. The assigned BAL determines the level of bush fire resistant construction required for the building.

11. Who can I contact about bush fire construction requirements for my building?

In the first instance queries about the application of the BCA bush fire construction requirements should be referred to the building surveyor who will be signing, or has signed, the relevant Certificate of Design Compliance for the building.
For uncertified building permit applications, this may be the building surveyor at the permit authority. For certified building permit applications this may be either the building surveyor at the permit authority (if the permit authority provides that service) or a building surveying contractor (private building surveyor).

12. What are the requirements for roof mounted evaporative air-conditioning?

The installation of a roof-mounted evaporative cooler in a designated bush fire prone area is captured under the State's building laws and must therefore comply with the performance requirements of the BCA. This generally requires compliance with AS 3959.
Proposed roof-mounted evaporative coolers should be discussed in detail with the building surveyor and builder at the outset of planning for the project. Or if the work is exempt from a building permit, you need to discuss with the retailer or manufacturer how compliance with AS 3959 can be achieved.
If you are considering installing a roof-mounted evaporative cooler in a designated bush fire prone area you need to have your property assessed for its level of bush fire risk as this will determine the appropriate level of protection that your evaporative cooler will require.

13. Can I have timber decking, stairs, windows, screens or the like?

Proposed timber fixtures such as decking, stairs, windows, screens and the like should be discussed in detail with the building surveyor and builder at the outset of planning for the project. If the work is exempt from a building permit, you need to discuss with the retailer or manufacturer how compliance with AS 3959 can be achieved.

14. What do I need to do about garages, carports, verandas or similar structures?

See Section 3 of AS 3959. Proposed garages, carports, verandas or similar structures should be discussed in detail with the building surveyor and builder at the outset of planning for the project, or if the work is exempt from a building permit, you need to discuss with the retailer or manufacturer how compliance with AS 3959 can be achieved.

AS 3959 Bushfire Attack Level (BAL) Assessment Report

Site Details			
Address:	Lot 200 My Street		
Suburb:	Bedfordale	**Postcode:**	6112
Local Government Area:	City of Armadale		
Description of Building Works:	House Extension		

Report Details			
Prepared By:	Gavin Fancote		
Report Number:	BAL 2-1111	**Report Revision:**	0
Assessment Date:	21/05/2018	**Report Date:**	21/05/2018

BPAD Accredited Practitioner Details		
Name:	Gavin Fancote	I hereby declare that I am a BPAD accredited bushfire practitioner.
Company Details:	Entire Fire Management	
I hereby certify that I have undertaken the assessment of the above-mentioned site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959 -2009 (Method 1)		Accreditation No. BPADXXX154 Signature: *Authorised Practitioner Stamp*

Reliance on the assessment and determination of the Bushfire Attack Level contained in this report should not extend beyond a period of 12 months from the Assessment date. If the assessment was completed more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated report issued.

Site Assessment & Site Plans

(Attached as page 2 of this report)

The assessment of this site / development was undertaken on the above-mentioned date and approved by an Accredited BPAD Practitioner for determining the Bushfire Attack Level in accordance with AS 3959 - 2009 Simplified Procedure (Method 1).

EXAMPLE ONLY

Entire Empire Pty Ltd | ABN: 63 468 728 651 | www.entirefire.com.au | admin@entireempire.com.au | (08) 9498 0056 | PO Box 4439 Harrisdale WA 6112

Entire Empire Pty Ltd
ABN: 63 468 728 651
Office: (08) 9498 0056
Address: 39B Alex Wood Drive
Forrestdale Business Park
Forrestdale WA 6112

Project	Lot 200 My Street, Bedfordale		
Title	BAL Assessment		
Size A3	Scale 1:1200	Sheet BAL 2-1111	Rev 0
Name Gavin Fancote		Date 21 May 2018	

Legend

- Subject Land
- 150m Exclusion Zone
- 100m Exclusion Zone
- Vegetation Plot Boundary
- Proposed Building
- Photo Point

Vegetation Class

- Class B - Woodland
- Class C - Shrubland
- Class D - Scrub
- Class G - Grassland
- Excluded as per c2.2.3.2(f)

0 20 40 60 80 100 120m

Notes

Vegetation Classification

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	1	**Plot no:**	1
Vegetation Classification or Exclusion Clause			
Class C - Shrubland			
Description			
Open area containing native shrubs to 2m max height. Well maintained area with minimal ground fuels			

Photo ID:	2	**Plot no:**	2
Vegetation Classification or Exclusion Clause			
Class B - Woodland			
Description			
Open Woodland, mature eucalypt windbreak within 20m of an area of classifiable vegetation plot. Maintained ground fuels.			

Photo ID:	3	**Plot no:**	3
Vegetation Classification or Exclusion Clause			
Class C - Shrubland			
Description			
Small plot of shrubs that is within 20m of classifiable vegetation plot. shrubs to 2m max height.			

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Vegetation Classification (continued)

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	4	**Plot no:**	4
Vegetation Classification or Exclusion Clause			
Class B - Woodland			
Description			
Mature pine tree windbreak that is within 20m of an area of classifiable vegetation. Maintained understorey and minimal groundfuels.			

Photo ID:	5	**Plot no:**	5
Vegetation Classification or Exclusion Clause			
Excluded c2.2.3.2(f)			
Description			
Low Threat Vegetation Maintained gardens and lawn.			

Photo ID:	6	**Plot no:**	6
Vegetation Classification or Exclusion Clause			
Excluded c2.2.3.2(f)			
Description			
Low Threat Vegetation Mostly developed with gravel driveway and buildings.			

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Vegetation Classification (continued)

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	7	**Plot no:**	7
Vegetation Classification or Exclusion Clause			
Excluded c2.2.3.2(f)			
Description			
Low Threat Vegetation Maintained gardens and lawn.			

Photo ID:	8	**Plot no:**	8
Vegetation Classification or Exclusion Clause			
Excluded c2.2.3.2(f)			
Description			
Low Threat Vegetation Maintained gardens and lawn.			

Photo ID:		**Plot no:**	
Vegetation Classification or Exclusion Clause			
Description			

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Relevant Fire Danger Index

The fire danger index for this site has been determined in accordance with Table 2.1 or otherwise determined in accordance with a jurisdictional variation applicable to the site.

Fire Danger Index FDI 80 Table 2.4.3

Potential Bushfire Impacts

The potential bushfire impact to the site / proposed development from each of the identified vegetation plots are identified below.

Plot	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Class C - Shrubland	Flat	30m	12.5
2	Class B - Woodland	Flat	28m	19
3	Class C - Shrubland	Flat	15m	19
4	Class B - Woodland	Flat	27m	19
5	Excluded c2.2.3.2(f)	-	-	LOW
6	Excluded c2.2.3.2(f)	-	-	LOW
7	Excluded c2.2.3.2(f)	-	-	LOW
8	Excluded c2.2.3.2(f)	-	-	LOW

Table 1: BAL Analysis

Determined Bushfire Attack Level (BAL)

The Determined Bushfire Attack Level (highest BAL) for the site / proposed development has been determined in accordance with clause 2.2.6 of AS 3959-2009 using the above analysis.

Determined Bushfire Attack Level	**BAL -** 19

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Notes:
The determined BAL rating is BAL-19 due to multiple plots of vegetation as indicated
in Table 1 above.
Construction requirements under AS3959-2009 are required for this development
and can be found using section 3 and 6 of the standard.

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Bushfire Attack Level (BAL) Certificate

Determined in accordance with AS 3959-2009

This Certificate has been issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme. The certificate details the conclusions of the full Bushfire Attack Level Assessment Report (full report) prepared by the Accredited Practitioner.

Property Details and Description of Works

Address Details	**Unit no**	**Street no**	**Lot no**	**Street name / Plan Reference**		
			200	My Street		
	Suburb				**State**	**Postcode**
	Bedfordale				WA	6112
Local government area	City of Armadale					
Main BCA class of the building	10	**Use(s) of the building**	Residential			
Description of the building or works	Construction of House extensions					

Determination of Highest Bushfire Attack Level

AS 3959 Assessment Procedure	Vegetation Classification	Effective Slope	Separation Distance	BAL
Method 1	Class B - Woodland	Flat	28m	19

BPAD Accredited Practitioner Details

Name Gavin Fancote	I hereby declare that I am a BPAD accredited bushfire practitioner.
Company Details Entire Fire Management	Accreditation No. BPAD XXX154
I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959-2009 (Incorporating Amendments 1, 2 and 3).	Signature:

Authorised Practitioner Stamp

Reliance on the assessment and determination of the Bushfire Attack Level contained in this certificate should not extend beyond a period of 12 months from the date of issue of the certificate. If this certificate was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated certificate issued.

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