

NSW RURAL FIRE SERVICE

BAL Risk Assessment Application Kit

New dwellings and alterations and additions to existing dwellings



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Prepared by NSW Rural Fire Service – January 2012



Foreword

Bush fire is a major challenge for the community. It has been a natural part of our landscape for thousands of years and remains an ever-present threat. Due to historic settlement patterns and the need to provide housing for people, development has occurred in areas that are bush fire prone placing lives and property at risk.

The NSW Rural Fire Service (RFS) has a statutory obligation to protect life, property and the environment through fire suppression and fire prevention. Improved land use planning and construction of buildings in bush fire prone areas are intrinsic to the fire management strategies of the Service.

This kit provides applicants with a streamlined approach to assist them in preparing their application for a BAL Risk Assessment Certificate as part of the Complying Development process.

This kit is divided into two (2) sections. Section 1 explains how to complete the pull out BAL Risk Assessment to ensure you undertake the process accurately. Section 2 is the detachable BAL Risk Application Form. This should accompany your application for a BAL Risk Assessment Certificate. This BAL Risk Assessment Certificate forms part of the information necessary to obtain a Complying Development certificate.

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Who should use this Applicants Kit

This kit will assist people planning on building a new dwelling or wanting to undertake alterations and additions to an existing dwelling in a bush fire prone area under the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 (the Codes SEPP). By using this kit you should be able to determine the bushfire attack level (BAL) for your property. Once this is completed, you can lodge your assessment and appropriate information with a recognised consultant, local Council or the RFS (until 25 February 2012) to obtain a BAL Risk Assessment Certificate.

Is your property in a bush fire prone area?

Check with your local Council to determine if your land is bush fire prone. If your property is identified as bush fire prone land, you will need to provide the information required by this kit to your chosen recognised consultant, local Council or RFS in order to obtain a BAL Risk Assessment Certificate to support of your Complying Development Certificate.

Why do I need to do this?

In order to undertake complying development on bush fire prone land your category of bush fire risk (i.e. BAL) for your property must be certified by a recognised consultant, local Council or RFS. Complying development is not permitted on high risk bush fire prone land, i.e. BAL-40 or BAL-FZ (Flame Zone).

If your development is determined as being in a high risk bush fire prone area then you will need to lodge a Development Application with the local Council as your development is not eligible to be considered as complying development under the Codes SEPP.

Your Obligations & RFS Requirements

When you lodge your application for a BAL Risk Assessment Certificate it will be checked for accuracy by the qualified consultant, Council or the RFS. If it proves to be in error or the required information is not provided your BAL Risk Assessment Certificate may not be issued and your proposed development delayed.

The RFS has developed this kit to assist you in assessing the category of bush fire risk (i.e. BAL) for your property so you can determine whether your proposed development may potentially proceed as complying development under the Codes SEPP.

Your application for a BAL Risk Assessment Certificate must be accompanied by the following information:

1. Completed BAL Risk Assessment Application Form (Section 2).
2. Plans – suitably scaled site plan showing existing buildings and proposed works.
3. A fee may be applicable. Please contact the NSW RFS on 8741 5175 or email: development.assessment@rfs.nsw.gov.au
4. Any relevant photos.
5. Other submission requirements.

The RFS has developed this kit to provide you with the assistance necessary to understand your obligations, and to make it as easy as possible for you to comply with *Planning for Bush Fire Protection, 2006*.

How to use this Kit

The kit will take you through each step in determining the category of bush fire risk (i.e. BAL bush fire attack level) for your property. Complete the pullout BAL Risk Assessment Application Form (Section 2) as you work through the explanatory notes.

If you determine that your proposed development is a higher risk, i.e. BAL-40 or BAL-FZ (Flame Zone) you may need to contact a bush fire consultant to assist you further. In these scenarios a Development Application may be required to be lodged with the local Council.

SECTION 1

PART A

Property Details

In Section 2 - **Part A**, fill in the property details for the site you plan to develop.

It is important to accurately identify your property to be developed. Provide the property address and Lot and Deposited Plan number. You also need to include a map showing the property location within the broader locality.

It is important to clearly identify whether your property is in a bush fire prone area. To determine whether your property is identified as being bush fire prone you should check Council's Bush Fire Prone Land Map or your s.149 Planning Certificate which can be obtained from Council.

Tick the box to indicate that the property has been checked that it is located upon Bush Fire Prone Land.

PART B

Type of Proposal

In Section 2 - **Part B**, tick the applicable boxes for the type of proposal.

Provide a brief written description of the type of building and your proposal; i.e. single or two storeys and what you are proposing to do. With alterations and additions, list the proposed works.

Attach a copy of the plans for the building you are proposing to build or the modifications you are making. Tick the box to show that plans are included. Plans must be suitably scaled, legible and clearly referenced and labelled.

PART C

Bush Fire Development Standards

In Section 2 - **Part C**, tick the applicable box.

The development standards that apply to your proposal under the Codes SEPP are dependent on the land zoning. The zoning of your land can be found on your s.149 certificate or by contacting your local Council.

Based on your zoning and relevant code there are two sets of development standards that relate to bush fire prone land. The General Housing Code applies to Residential zones R1, R2, R3, R4 or RU5 Rural zones RU1, RU2, RU3, RU4 and R5. In order to be potentially eligible to be considered complying development your proposal must satisfy the applicable development standards.

1. Residential Zones

If your proposed development falls under the provisions of Codes SEPP and your land is identified as being bush fire prone, complying development can be carried out provided the development standards for the Residential Housing Code (R1, R2, R3, R4 and RU5) can be met. These development standards are:

The development conforms to the specifications and requirements of the following that are relevant to the development:

- 1 i. Planning for Bush Fire Protection (ISBN 0 9751033 2 6) published by the NSW Rural Fire Service in December 2006; and
- ii. Addendum: Appendix 3 (ISBN 0 9751033 2 6, published by NSW Rural Fire Service in 2010) to Planning for Bush Fire Protection (ISBN 0 9751033 2 6); and
- iii. If another document is prescribed by the regulations for the purposes of section 79BA of the Environmental Planning and Assessment Act 1979 – that document

2. The part of the lot on which the development is to be carried out is not in bushfire attack level-40 (BAL 40) or the flame zone (BAL-FZ); and
3. The lot has direct access to a public road or a road vested in or maintained by the Council; and
4. A reticulated water supply is connected to the lot; and
5. A fire hydrant is located less than 60 metres from the location of the lot of the proposed development; and
6. Mains electricity is connected to the lot; and
7. Reticulated or bottled gas on the lot is installed and maintained in accordance with AS/NZS 1596:2008: The storage and handling of LP Gas and the requirements of relevant authorities (metal piping must be used); and
8. Any gas cylinders on the lot that are within 10m of a dwelling house:
 - i. have the release valves directed away from the dwelling house; and
 - ii. are enclosed on the hazard side of the installation; and
 - iii. have metal connections to and from the cylinders; and
 - iv. there are no polymer sheathed flexible gas supply lines to gas meters adjacent to the dwelling.

NOTE. The requirements of AS 3959—2009: Construction of buildings in bushfire-prone areas set out in the Building Code of Australia also apply.

PART C

2. Rural Zones

If your proposed development falls under the provisions of Codes SEPP and your land is identified as being bush fire prone, complying development can be carried out provided the development standards for i.e. RU1, RU2, RU3, RU4 and R5 to the Rural Housing Code can be met. These development standards are:

1. the development conforms to the specifications and requirements of the following that are relevant to the development:
 - i. Planning for Bush Fire Protection (ISBN 0 9751033 2 6) published by the NSW Rural Fire Service in December 2006;
 - ii. Addendum: Appendix 3 (ISBN 0 9751033 2 6, published by NSW Rural Fire Service in 2010) to Planning for Bush Fire Protection (ISBN 0 9751033 2 6); and
 - iii. if another document is prescribed by the regulations for the purposes of section 79BA of the Environmental Planning and Assessment Act 1979—that document, and
2. the part of the lot on which the development is to be carried out and any associated access way is not in bushfire attack level-40 (BAL-40) or the flame zone (BAL-FZ); and
3. the lot has direct access to a public road or a road vested in or maintained by the council; and
4. the development is located within 200m of that road; and
5. there is sufficient access designed in accordance with the acceptable solutions identified in clause 4.1.3 (2) of Planning for Bush Fire Protection (ISBN 0 9751033 2 6) published by the NSW Rural Fire Service in December 2006; and
6. a 20,000L water supply with 65mm metal Storz outlet with a gate or ball valve is provided for fire fighting purposes on the lot (the gate or ball valve, pipes and tank penetrations are to be designed to allow for a full 50mm inner diameter water flow through the Storz fitting and must be of a metal construction); and
7. reticulated or bottled gas on the lot is installed and maintained in accordance with AS/NZS 1596:2008: The storage and handling of LP Gas and the requirements of relevant authorities (metal piping must be used); and
8. all fixed gas cylinders on the lot are located at least 10m from flammable materials and are enclosed on the hazard side of the installation; and
9. any gas cylinders on the lot that are within 10m of a dwelling house:
 - i. have the release valves directed away from the dwelling house; and
 - ii. have metal connections to and from the cylinders; and
10. there are no polymer sheathed flexible gas supply lines to gas meters adjacent to the dwelling.

Note. The requirements of AS 3959—2009: Construction of buildings in bushfire-prone areas set out in the Building Code of Australia also apply.

PART D

Bushfire Attack Level (BAL) and Risk Assessment

In Section 2 - **Part D**, complete steps 1 to 5.

To determine the bush fire attack and required BAL for a building the following steps must be followed:

- STEP 1: Determine vegetation types surrounding the building using the vegetation chart in Appendix 1.
- STEP 2: Determine the distance between each vegetation formation and the building.
- STEP 3: Determine the effective slope.
- STEP 4: Determine the relevant Fire Danger Index (FDI).
- STEP 5: Match the relevant FDI, appropriate vegetation, distance and effective slope to determine the appropriate APZ and Bushfire Attack Level.

STEP 1 Determine the vegetation

You will need to determine the vegetation around your property (that is able to support a bush fire) to at least 140 metres in all directions from the proposed building works. Managed gardens and the like are not included.

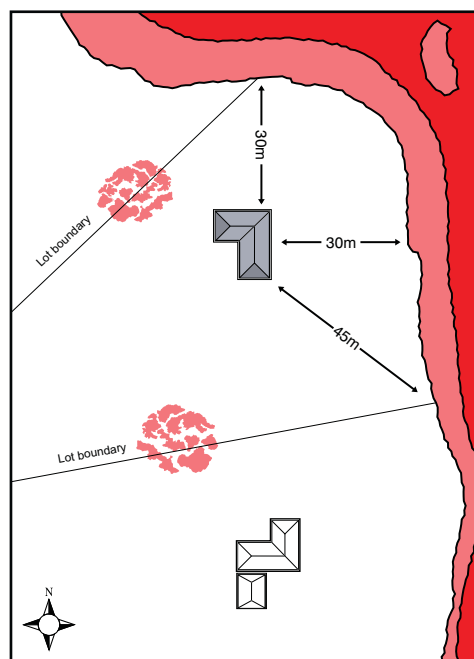
Check the chart in Appendix 1 (Classification of Vegetation Formations) of this kit to determine your vegetation type.

For each compass direction (normally north, south, east and west) surrounding your home, identify (using the above mentioned vegetation classification provided in Appendix 1) what the vegetation type is adjacent to your development site and indicate it on the application form (Section 2).

Another option (if you are not sure) is to take photographs facing each direction from the proposed building envelope. Label the aspect (e.g. view north west) and include as part of your application.

NOTE: Where a mix of vegetation types exist, the type of vegetation providing the greater bush fire hazard is to be used.

Example of a simple layout sketch with distances noted to vegetation



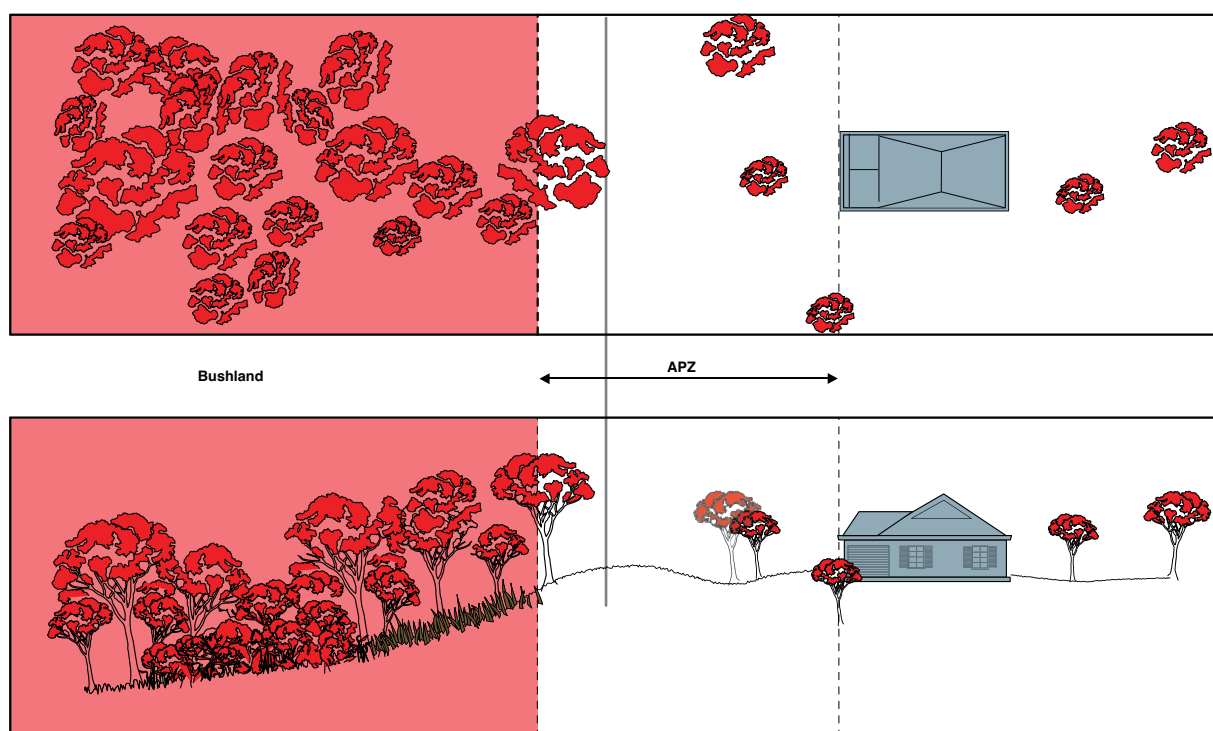
STEP 2 Determine the distance

You will need to determine the separation distance between the vegetation (from the edge of the foliage cover) and the building for each direction. This separation distance is often referred to as an APZ – asset protection zone.

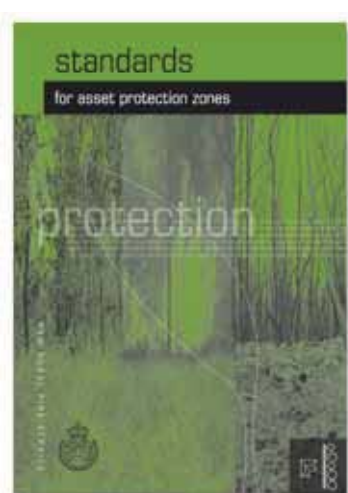
What is an APZ ?

An asset protection zone (APZ) is an area between a bush fire hazard and the building, which is managed to minimise fuel loads, inhibit a fire path and reduce the effects of heat, flame, ember and smoke attack. Put simply it keeps the effects of the fire away from the building. The size of the APZ required is based on vegetation type, slope and levels of construction.

Construction standards alone do not provide sufficient protection from the impacts of a bush fire. The different construction standards require a complementary APZ to achieve a complete solution. These APZs will generally become larger as the level of construction is lowered to compensate for the reduced protection in the building standard. An APZ is required for every application to develop land in a bush fire prone area and must be regularly maintained.



Asset Protection Zone (APZ)



RFS publication
describing APZs

The APZ should be contained wholly within the proposed development site; but can also include existing roads, other buildings and managed properties. Unmanaged land will not be considered as an APZ.

APZ's on adjoining unmanaged land will not be accepted. It will only be considered under exceptional circumstances when an agreed legal arrangement (such as an easement) is able to be achieved and will need to be submitted with a Application.

It is expected that the APZ will be maintained by the owner of the land being developed. See Standards for APZ for more information about design & maintenance (available from the RFS website or your local Fire Control Centre).

STEP 3 Determine the Effective Slope

Assess the effective slope over a distance of at least 100m from the building site towards the vegetation that is the bush fire hazard in each direction. On steeper slopes a greater distance should be assessed up to 140m.

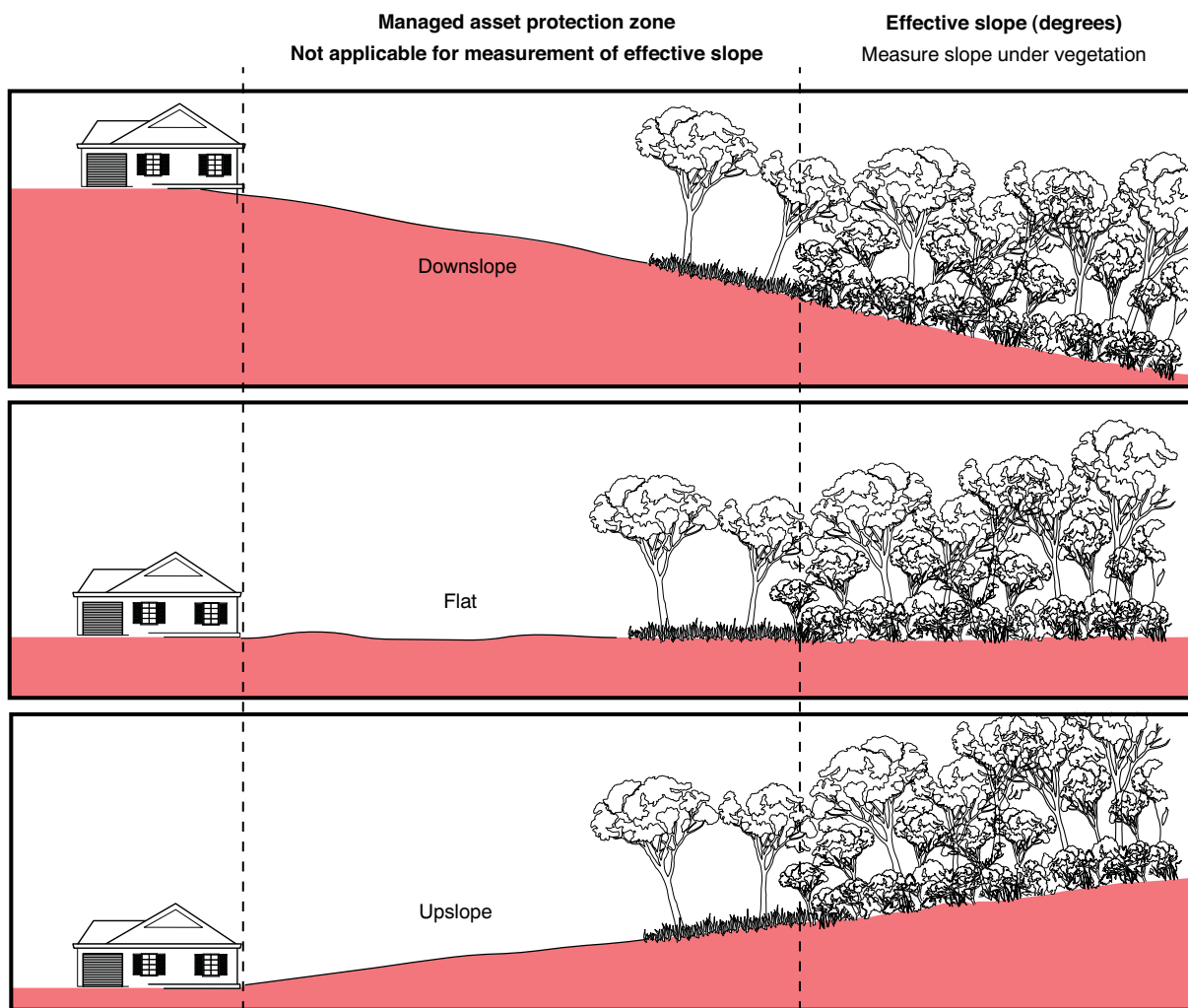
Commonly, properties will have slopes that vary over the 100m. The effective slope is the part of the overall slope that will have the greatest influence on the bushfire behaviour. This effective slope may be only a portion of the 100m but should represent a substantial portion. If you are unable to determine the effective slope you should seek further assistance from a specialist consultant.

The slope of the land influences the speed that a fire will travel. Fire will travel faster and with greater intensity uphill because vegetation in front of the fire is pre-heated and will more readily ignite.

The slope is determined in terms of the following classes, relative to the location of the hazard:

- all upslope vegetation (considered to be flat - 0°)
- >0 to 5° downslope
- >5 to 10° downslope
- >10 to 15° downslope
- >15 to 20° downslope

Notes: As a guide to measuring the slope you could try using the simple method shown on page 14.



Shows how to refer to the slope in any direction relative to the building



Fig 4. Simple slope assessment methodology.

Simple method for estimating slope:

- ① **Pick a spot between 40m and 100m away** and have an assistant of similar height stand as a reference point. If you do not have an assistant pick a nearby tree as a reference point and tie a bright ribbon or tape around the trunk at your eye height.
- ② Standing at the edge of the slope or at some point on the slope to be measured, **hold one end of a centimetre rule 30cm in front of your face, level with your eye** so that it hangs down (this is your eye level).
- ③ Looking past the rule at the assistants head or marker, **note how many centimetres** on the rule their head is **below your eye level**.
- ④ The table below will **convert this to a slope range**.
- ⑤ It is important to hold the end of the rule at eye level and let it hang straight down 30cm in front so that a reasonable level of accuracy is gained.

Measurement on rule (cm)	Converted slope range
Less than or equal to 0	Upslope or flat
0 - 3	0 - 5°
3 - 5	5 - 10°
5-8	10-15°
8-10	15 -18°
Greater than 10	Greater than 18°

STEP 4 Determine FDI

Example:
If you live in Tamworth
your FDI would be (80).

FDI is the number in
brackets e.g. (80)

To determine the relevant Fire Danger Index (FDI), identify your Council area and determine the corresponding Fire Danger Index rating from the table below. The FDI is based on the weather history for a region that will influence bush fire behaviour.

<p>1. FAR NORTH COAST (80) Ballina Byron Clarence Valley Kyogle Lismore Richmond Valley Tweed</p> <p>2. NORTH COAST (80) Bellingen Coffs Harbour Gloucester Great Lakes Greater Taree Hastings Kempsey Nambucca</p> <p>3. GREATER HUNTER (100) Cessnock Dungog Lake Macquarie Maitland Muswellbrook Newcastle Port Stephens Singleton Upper Hunter</p> <p>4. GREATER SYDNEY REGION (100) All Sydney Metropolitan Councils Plus Gosford, Blue Mountains, Hawkesbury and Wyong</p> <p>5. ILLAWARRA/SOALHAVEN (100) Kiama Shellharbour Shoalhaven Wingecarribee Wollondilly Wollongong</p> <p>6. FAR SOUTH COAST (100) Bega Valley Eurobodalla</p> <p>7. MONARO ALPINE (80) Bombala Cooma Monaro Snowy River</p>	<p>8. ACT (N/A) Australian Capital Territory</p> <p>9. SOUTHERN RANGES (100) Palarang Goulburn Mulwaree Queanbeyan Upper Lachlan Yass Valley</p> <p>10. CENTRAL RANGES (80) Bathurst Blayney Cabonne Cowra Lithgow Mid Western Regional Oberon Orange</p> <p>11. NEW ENGLAND (80) Armidale Dumaresq Glen Innes Severn Guyra Tenterfield Uralla Walcha</p> <p>12. NORTHERN SLOPES (80) Gunnedah Gwydir Inverell Liverpool Plains Tamworth Regional</p> <p>13. NORTH WESTERN (80) Moree Plains Narrabri Walgett Warrumbungle</p> <p>14. UPPER CENTRAL WEST PLAINS (80) Bogan Coonamble Gulgandra Warren</p> <p>15. LOWER CENTRAL WEST PLAINS (80) Bland Dubbo Forbes Lachlan</p>	<p>Narromine Parkes Temora Weddin Wellington</p> <p>16. SOUTHERN SLOPES (80) Boorowa Cootamundra Gundagai Harden Tumbarumba Tumut Young</p> <p>17. EASTERN RIVERINA (80) Albury Coolamon Greater Hume Junee Lockhart Wagga Wagga</p> <p>18. SOUTHERN RIVERINA (80) Berrigan Conargo Corowa Deniliquin Jerilderie Murray Urana Wakool</p> <p>19. NORTHERN RIVERINA (80) Carrathool Griffith Hay Leeton Murrumbidgee Narrandera</p> <p>20. SOUTH WESTERN (80) Balranald Wentworth</p> <p>21. FAR WESTERN (80) Bourke Brewarrina Broken Hill Central Darling Cobar Unincorporated NSW</p>
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Table 1 - The Fire Danger Index for each LGA in NSW

STEP 5

Bush Fire Attack and Level of Construction

Match the relevant FDI, appropriate vegetation, separation distance and effective slope to determine the category of bush fire attack and appropriate BAL applicable to the site from the following tables.

If your proposal is greater than 100m from vegetation then there are no construction requirements.

Determining your BAL

Use the Tables 3, 4 and 5 to determine the Bushfire Attack Level (BAL) that applies to the building for each direction. Of the BALs determined for each direction, select the one that provides the highest protection as this will apply to the entire building.

For most vegetation types, buildings more than 100m from the bush fire prone vegetation do not require any specific construction requirements however, homeowners are encouraged to provide basic measures such as suitable window screening and gutter guards to minimise the impacts of ember attack (as embers can travel greater than 100 metres).

Where a building is to be constructed close to bush fire prone vegetation, Australian Standard AS3959 describes the construction standards to protect against any bush fire attack. These are an acceptable construction solution (or a deemed-to-satisfy solution) where construction requirements are known, tried and tested and easily achieved at the construction stage. Those buildings which can provide the separation distances to achieve BAL-12.5 to BAL-29 will be regarded as lower risk and may potentially be considered as complying development.

BAL-40 and Flame Zone

Where buildings are unable to meet the separation distances for BAL-12.5 to BAL-29 (i.e. BAL-40 or BAL-FZ) they will be regarded as higher risk development and will no longer be eligible to be considered complying development. Buildings which exceed BAL-29 are those which are exposed to significant radiant heat and potential flame contact. They will require special design and construction solutions supported by evidence of satisfactory performance. Expert assistance from a bush fire consultant may be required in designing and assessing this type of building.

If your property's bushfire attack level is certified as BAL-40 or BAL-FZ, you are unable to comply with the requirements for complying development and will need to submit a Development Application through your local council in order to potentially obtain Development Consent.

Vegetation Formation (class)	FDI 80	Categories of Bush Fire Attack (AS 3959-2009)				
		BAL- FZ	BAL- 40	BAL- 29	BAL- 19	BAL-12.5
	Distance (m) of the site from the predominant vegetation class					
All upslopes and flat land (0 degrees)						
Forests (wet and dry sclerophyll)		<16	16-<21	21-<31	31-<42	42-100
Woodlands		<10	10-<14	14-<20	20-<29	29-100
Tall heath (shrub)		<7	7-<9	9-<13	13-<19	19-100
Short heath (shrub land)		<10	10-<13	13-<19	19-<27	27-100
Rainforest		<6	6-<9	9-<13	13-<19	19-100
Grasslands		<6	6-<8	8-<12	12-<17	17-50

Table 2 - Example of how to determine level of construction

A) How to use this

1. Determine the vegetation
2. Determine distance between building footprint and the hazard
3. Determine Slope
4. Determine your FDI
5. Note your bushfire attack level (BAL)

EXAMPLE:

Alterations to an existing building 24m away from forest vegetation on flat land in Tamworth.

- Step 1. Vegetation = forest
 Step 2. Distance = 24m
 Step 3. Slope = flat
 Step 4. FDI = 80
 Step 5. Bush fire attack level = BAL- 29

Table 3 - FDI 100

Vegetation Formation (class)	Categories of Bush Fire Attack (AS 3959-2009)				
	BAL- FZ	BAL- 40	BAL- 29	BAL- 19	BAL-12.5
	Distance (m) of the site from the predominant vegetation class				
All upslopes and flat land (0 degrees)					
Forests	<19	19-<25	25-<35	35-<48	48 - 100
Woodlands	<12	12-<16	16-<24	24-<33	33 - 100
Shrubland	<7	7-<9	9-<13	13-<19	19 - 100
Scrub	<10	10-<13	13-<19	19-<27	27 - 100
Mallee/Mulga	<6	6-<8	8-<12	12-<17	17 - 100
Rainforest	<8	8-<11	11-<16	16-<23	23 - 100
Grassland	<6	6-<9	9-<13	13-<19	19 - 50
Downslope > 0 to 5 degrees					
Forests	<24	24-<32	32-<43	43-<57	57 - 100
Woodlands	<12	15-<21	21-<29	29-<41	41 - 100
Shrubland	<7	7-<10	10-<15	15-<22	22 - 100
Scrub	<11	11-<15	15-<19	19-<27	27 - 100
Mallee/Mulga	<7	7-<9	9-<13	13-<20	20 - 100
Rainforest	<10	10-<14	14-<20	20-<29	29 - 100
Grassland	<7	7-<10	10-<15	15-<22	22 - 50
Downslope > 5 to 10 degrees					
Forests	<31	31-<39	39-<53	53-<69	69 - 100
Woodlands	<20	20-<26	26-<37	37-<50	50 - 100
Shrubland	<8	8-<11	11-<17	17-<25	25 - 100
Scrub	<12	12-<17	17-<24	24-<35	35 - 100
Mallee/Mulga	<7	7-<10	10-<15	15-<23	23 - 100
Rainforest	<13	13-<18	18-<26	26-<36	36 - 100
Grassland	<8	8-<11	11-<17	17-<25	25 - 50
Downslope > 10 to 15 degrees					
Forests	<39	39-<49	49-<64	64-<82	82 - 100
Woodlands	<25	25-<33	33-<45	45-<60	60 - 100
Shrubland	<9	9-<13	13-<19	19-<28	28 - 100
Scrub	<14	14-<19	19-<28	28-<39	99 - 100
Mallee/Mulga	<8	8-<11	11-<18	18-<26	26 - 100
Rainforest	<17	17-<23	23-<33	33-<45	45 - 100
Grassland	<9	9-<13	13-<20	20-<28	28 - 50
Downslope > 15 to 20 degrees					
Forests	<50	50-<61	61-<78	78-<98	98 - 100
Woodlands	<32	32-<41	41-<56	56-<73	73 - 100
Shrubland	<10	10-<15	15-<22	22-<31	31 - 100
Scrub	<15	15-<21	21-<31	31-<43	43 - 100
Mallee/Mulga	<9	9-<8	13-<20	20-<29	29 - 100
Rainforest	<22	22-<29	29-<42	42-<56	56 - 100
Grassland	<11	11-<15	15-<23	23-<32	32 - 50

Note: "Forests" refers to wet sclerophyll forest, dry sclerophyll forest and plantation forest (including pine plantations and forested wetlands). Until Grasslands have been adopted by the Australian standards they have not been included in this table.

Table 4 - FDI 80

Vegetation Formation (class)	Categories of Bush Fire Attack (AS 3959-2009)				
	BAL- FZ	BAL- 40	BAL- 29	BAL- 19	BAL-12.5
	Distance (m) of the site from the predominant vegetation class				
All upslopes and flat land (0 degrees)					
Forests	<16	16-<21	21-<31	31 -<42	42 - 100
Woodlands	<10	10-<14	14-<20	20 -<29	29 - 100
Shrubland	<7	7-<9	9-<13	13-<19	19 - 100
Scrub	<10	10-<13	13-<19	19-<27	27 - 100
Mallee/Mulga	<6	6-<8	8-<12	12-<17	17 - 100
Rainforest	<6	6-<9	9-<13	13-<19	19 - 100
Grassland	<6	6-<8	8-<12	12-<17	17 - 50
Downslope > 0 to 5 degrees					
Forests	<20	20-<27	27-<37	37-<50	50 - 100
Woodlands	<13	13-<17	17-<25	25-<35	35 - 100
Shrubland	<7	7-<10	10<15	15-<22	22 - 100
Scrub	<11	11-<15	15-<22	22-<31	31 - 100
Mallee/Mulga	<7	7-<9	9-<13	13-<20	20 - 100
Rainforest	<8	8-<11	11-<17	20-<24	24 - 100
Grassland	<7	7-<9	9-<14	14-<20	20 - 50
Downslope > 5 to 10 degrees					
Forests	<26	26-<33	33-<46	46-<61	61 - 100
Woodlands	<20	20-<26	26-<37	31-<43	43 - 100
Shrubland	<8	8-<11	11-<17	17-<25	25 - 100
Scrub	<12	12-<17	17-<24	24-<35	35 - 100
Mallee/Mulga	<7	7-<10	10-<15	15-<23	23 - 100
Rainforest	<11	11-<15	15-<22	22-<31	31 - 100
Grassland	<8	8-<10	10-<16	16-<23	23 - 50
Downslope > 10 to 15 degrees					
Forests	<33	33-<42	42-<56	56-<73	73 - 100
Woodlands	<21	21-<28	28-<39	39-<53	53 - 100
Shrubland	<9	9-<13	13-<19	19-<28	28 - 100
Scrub	<14	14-<19	19-<28	28-<39	99 - 100
Mallee/Mulga	<8	8-<11	11-<18	18-<26	26 - 100
Rainforest	<14	14-<19	19-<28	28-<39	39 - 100
Grassland	<9	9-<12	12-<18	18-<26	26 - 50
Downslope > 15 to 20 degrees					
Forests	<42	42-<52	52-<68	68-<87	87 - 100
Woodlands	<27	27-<35	35-<48	48-<64	64 - 100
Shrubland	<10	10-<15	15-<22	22-<31	31 - 100
Scrub	<15	15-<21	21-<31	31-<43	43 - 100
Mallee/Mulga	<9	9-<13	13-<20	20-<29	29 - 100
Rainforest	<18	18-<25	25-<36	36-<48	48 - 100
Grassland	<10	10-<14	14-<21	21-<30	30 - 50

Note: "Forests" refers to wet sclerophyll forest, dry sclerophyll forest and plantation forest (including pine plantations and forested wetlands). Until Grasslands have been adopted by the Australian standards they have not been included in this table.

Table 5 - FDI 50

Vegetation Formation (class)	Categories of Bush Fire Attack (AS 3959-2009)				
	BAL- FZ	BAL- 40	BAL- 29	BAL- 19	BAL-12.5
	Distance (m) of the site from the predominant vegetation class				
All upslopes and flat land (0 degrees)					
Forests	<12	12-<16	16-<23	23-<32	32 - 100
Woodlands	<7	7-<10	10-<15	15-<22	22 - 100
Shrubland	<7	7-<9	9-<13	13-<19	19 - 100
Scrub	<10	10-<13	13-<19	19-<27	27 - 100
Mallee/Mulga	<6	6-<8	8-<12	12-<17	17 - 100
Rainforest	<5	5-<6	6-<9	9-<14	14 - 100
Tussock Moorland	<7	7-<9	9-<14	14-<20	20 - 100
Grassland	<5	5-<6	6-<10	10-<14	14 - 50
Downslope > 0 to 5 degrees					
Forests	<14	14-<19	19-<27	27-<38	38 - 100
Woodlands	<9	9-<12	12-<18	18-<26	26 - 100
Shrubland	<7	7-<10	10-<15	15-<22	22 - 100
Scrub	<11	11-<15	15-<22	22-<31	31 - 100
Mallee/Mulga	<7	7-<9	9-<13	13-<20	20 - 100
Rainforest	<6	6-<8	8-<12	12-<17	17 - 100
Tussock Moorland	7-<8	8-<10	10-<16	16-<23	23 - 100
Grassland	<5	5-<7	7-<11	11-<16	16 - 50
Downslope > 5 to 10 degrees					
Forests	<18	18-<24	24-<34	34-<46	46 - 100
Woodlands	<11	11-<15	15-<23	23-<32	32 - 100
Shrubland	<8	8-11	11-<17	17-<25	25 - 100
Scrub	<12	12-<17	17-<24	24-<35	35 - 100
Mallee/Mulga	<7	7-<10	10-<15	15-<23	23 - 100
Rainforest	<7	7-<10	10-<15	15-<22	22 - 100
Tussock Moorland	<9	9-<12	12-<18	18-<26	26 - 100
Grassland	<6	6-<8	8-<13	13-<19	19 - 50
Downslope > 10 to 15 degrees					
Forests	<22	22-<30	30-<41	41-<56	56 - 100
Woodlands	<14	14-<19	19-<28	28-<40	40 - 100
Shrubland	<9	9-<13	13-<19	19-<28	28 - 100
Scrub	<14	14-<19	19-<28	28-<39	39 - 100
Mallee/Mulga	<8	8-<11	11-<18	18-<26	26 - 100
Rainforest	<9	9-<13	13-<19	19-<28	28 - 100
Tussock Moorland	<10	10-<13	13-<20	20-<29	29 - 100
Grassland	<7	7-<10	10-<15	15-<22	22 - 50
Downslope > 15 to 20 degrees					
Forests	<28	28-<37	37-<51	51-<67	67 - 100
Woodlands	<18	18-<25	25-<36	36-<48	48 - 100
Shrubland	<10	10-<15	15-<22	22-<31	31 - 100
Scrub	<15	15-<21	21-<31	31-<43	43 - 100
Mallee/Mulga	<9	9-<13	13-<20	20-<29	29 - 100
Rainforest	<12	12-<17	17-<25	25-<35	35 - 100
Tussock Moorland	<11	11-<15	15-<23	23-<33	33 - 100
Grassland	<8	8-<11	11-<17	17-<25	25 - 50

Note: This table covers the NSW Alpine resort areas of:

- The Perisher Range – Perisher, Smiggin Holes, Blue Cow and Guthega.
- Thredbo Alpine Village
- Charlottes Pass
- Mount Selwyn
- Bullocks Flat
- Ski Rider
- Kosciuszko Mountain Retreat
- Sponars Chalet

Forests are based on forest types found.

Note: "Forests" refers to wet sclerophyll forest, dry sclerophyll forest and plantation forest (including pine plantations and forested wetlands). Until Grasslands have been adopted by the Australian standards they have not been included in this table.

Table 6 - Heat flux exposure and appropriate bush fire attack levels

Heat Flux Exposure	Description	AS 3959-2009 Construction Level
N/A	Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements.	Bushfire Attack Level – Low (BAL-LOW)
≤ 12.5	Attack by burning debris is significant with radiant heat (not greater than 12.5 kW/m ²). Radiant heat is unlikely to threaten building elements (eg unscreened glass). Specific construction requirements for ember protection and accumulation of debris are warranted.	Bushfire Attack Level – 12.5 (BAL-12.5)
>12.5 ≤19	Attack by burning debris is significant with radiant heat levels (not greater than 19 kW/m ²) threatening some building elements (screened glass). Specific construction requirements for embers and radiant heat are warranted.	Bushfire Attack Level – 19 (BAL-19)
>19 ≤29	Attack by burning debris is significant and radiant heat levels (not greater than 29 kW/m ²) threaten building integrity. Specific construction requirements for ember and higher radiant heat are warranted. Some flame contact is possible.	Bushfire Attack Level – 29 (BAL-29)
>29 ≤40	Radiant heat levels and flame contact likely to significantly threaten building integrity and result in significant risk to residents who are unlikely to be adequately protected.	Bushfire Attack Level – 40 (BAL-40)
>40	Significant radiant heat and significant higher likelihood of flame contact from the fire front will threaten building integrity and result in significant risk to residents.	Bushfire Attack Level – Flame Zone (BAL-FZ)

Note: If you have determined your BAL risk assessment correctly and it is above BAL 29, then your development proposal can not be considered complying development. A development application will be required.

DICTIONARY

Additional definitions can be found in *Planning for Bush Fire Protection, 2006*.

Acceptable Solution

The acceptable solutions that meet the requirements of Australian Standard AS3959 – Construction in bushfire-prone areas or Planning for Bush Fire Protection, 2006.

Alternative Solution

Solutions that offer more flexibility to an applicant. The solutions provide scope for innovation and allow the designer to consider and account for site specific conditions and constraints. They are often more economical, functional or aesthetically pleasing than acceptable solutions. It is up to the applicant to demonstrate how the product, design or material can meet the performance requirement.

AS3959

Australian Standard AS3959 Construction of buildings in bushfire-prone areas, Standards Australia, 2009, that outlines construction standards applicable to residential developments in bush fire prone areas.

Asset Protection Zone (APZ)

An area surrounding a development managed to reduce the bush fire hazard to an acceptable level. The width of the APZ will vary with slope, vegetation and construction level. The APZ, consists of an area maintained to minimal fuel loads so that a fire path is not created between the hazard and the building.

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 metre squared, which is the basis for establishing the requirements for construction to improve protection of building elements from attack by bush fire.

BAL Risk Assessment

A site specific assessment procedure that is required as part of the complying development process. It provides a rating based on the expected level of bush fire attack in accordance with AS3959-2009

and Addendum Appendix 3 of Planning for Bush Fire Protection 2006.

BAL Risk Assessment Certificate

A Certificate issued by either a bush fire consultant, your Local Council or the RFS which confirms the BAL for your particular development site.

Building Footprint

The area shown on a plan over which a building can be erected.

Bush Fire Prone Area/Land

Is an area of land that can support a bush fire or is likely to be subject to bush fire attack. In general, a bush fire prone area is an area mapped for a local government area that identifies the vegetation types and associated buffer zones. Bush Fire Prone Land Maps are prepared by local councils and certified by the Commissioner of the RFS under section 146(2) of the Environmental Planning and Assessment Act 1979.

Bush Fire Protection Measures (BPMs)

Are a range of measures (controls) available to minimise the risk arising from a bush fire. BPMs include APZs, construction standards, suitable access arrangements, water and utility services, emergency management arrangements and landscaping.

Bush Fire Assessment Report

A report submitted in support of a development application by an applicant which determines the extent of bush fire attack to a development and the measures used to mitigate that attack. Appendix 4 of Planning for Bush Fire Protection, 2006 provides the information requirements for a bush fire assessment. See also clause 46 of the Rural Fires Regulation.

Codes SEPP

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Complying Development

Development that meets predetermined standards contained within local environmental plans, development control plans or state environmental planning policies. Under the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 – Codes SEPP, complying development applies to all new development which occurs on low risk bush fire prone land. This process excludes the need for lodgement of a development application and helps to fast track development approval.

Complying Development Certificate

A certificate issued by your Local Council or Private Certifier when your proposed development complies with the relevant requirements.

Development Application (DA)

Application normally made to the local council for consent to carry out development such as building, subdivision, or the use of a building or land.

Bush Fire Development Standards

Are a range of standards (controls) listed under the General Housing Code and Rural Housing Code that apply to new development undertaken on low risk bush fire prone land and which are available to minimise the risk arising from a bush fire. Standards include APZs, construction standards, suitable access arrangements, water and utility services, emergency management arrangements and landscaping.

Flame Zone

The distance from a bush fire at which there is significant potential for sustained flame contact to a building. Determined by the calculated distance at which the radiant heat of the design fire exceeds 40kW/m² or calculated by the sustained flame length, whichever is the lesser.

Fire Danger Index (FDI)

A relative number denoting an evaluation of rate of spread, or suppression difficulty for specific combinations of fuel, fuel moisture and wind speed. This data is then indexed into comparative FDIs based on the regions within NSW.

Infill Development

Development of land by the erection of or addition to a residential building (or buildings) which does not require the spatial extension of services including public roads, electricity, water or sewerage and is within an existing allotment.

Planning for Bush Fire Protection

A guide for Councils, Planners, Fire Authorities and Developers prepared by the NSW Rural Fire Service and revised 2006. Addendum Appendix 3 was included in 2010.

Qualified Consultant

Consultants who have been recognised by the NSW Rural Fire Service and NSW Department of Planning as suitably qualified. This recognition is for the purposes of 79BA of the Environmental Planning & Assessment Act 1997 and the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

RFS

New South Wales Rural Fire Service.

APPENDIX 1

Classification of Vegetation Formations



Forests

Open tree canopy dominated by eucalypt species (typically >10m in height) with crowns that touch or overlap. Canopy allows most sunlight to penetrate supporting growth of a prominent understorey layer varying between hard-leaved shrubs to luxuriant soft leaved shrubs, ferns and herbs.



Woodlands

Dominated by an open to sparse layer of eucalypts with the crowns rarely touching. Typically 15-35m high (may be shorter at sub-alpine altitudes). Diverse ground cover of grasses and herbs. Shrubs are sparsely distributed. Usually found on flat to undulating ground.



Tall Heaths (Scrub)

Shrubby vegetation greater than 2 metres tall. Principal plant species include banksias, spider flowers, wattles, legumes, eucalypts, tea-trees, paper barks, she oaks, grass trees, cord rushes and sedges. Grasses are scarce. Not found in arid and semi arid locations. Includes Hawkesbury Sandstone vegetation with scattered overstorey trees and predominantly healthy understorey and coastal heath. May include some mallee eucalypts in coastal locations.



Short Heath (Shrubland)

Shrubby vegetation less than 2 metres in height. Often more open in canopy. Principal plant species include banksias, spider flowers, wattles, legumes, eucalypts, tea-trees, paper barks, she oaks, grass trees, cord rushes and sedges. Grasses are scarce. Not found in arid and semi arid locations.



Rainforests

Closed and continuous complex tree canopy composed of relatively soft, horizontally-held leaves. Generally lacking in eucalypts. Understorey typically includes ferns and herbs. Vines often present in canopy or understorey. Occur mainly in areas that are reliably moist, mostly free of fire and have soils of moderate to high fertility. Typically coastal and escarpment locations.



Grasslands

Dominated by perennial grasses and the presence of broad-leaved herbs on flat topography. Lack of woody plants. Plants include grasses, daisies, legumes, geraniums, saltbushes and copperburrs.



Managed Land

Non-vegetated or reduced vegetation areas such as: actively grazed pastures, maintained urban yards, maintained lawns, crops, orchards, vineyards, commercial nurseries, playing fields, golf course fairways, cleared parks, non-vegetated areas, formed roads and footpaths including cleared verges, waterways, etc.

Photos supplied by Hotspots Fire Project

SECTION 2

SECTION TWO - BAL RISK APPLICATION FORM (To be detached and submitted)

PART A Property Details

Applicants Name:

Contact Phone Number: (H): (.....) (M):

Council:..... Council Reference (if known):

Lot: DP:

Address to be developed:

My property is on Bush Fire Prone Land: ☐ Yes ☐ No

PART B Type of Proposal

Type of Proposal:	Zoning:
<input type="checkbox"/> New Dwelling <input type="checkbox"/> Alteration/Additions to an existing building	<input type="checkbox"/> Residential <input type="checkbox"/> Rural

Proposal Description: *e.g. two storey house with attached garage*

Copy of plans attached: ☐ Yes

Copy of any relevant photos attached: ☐ Yes

Assessment fee attached: ☐ Yes

Other submission requirements ☐ Yes

NOTE: The RFS will not be able to undertake a BAL Risk Assessment unless all necessary information has been submitted.

PART C Bush Fire Development Standards

Does your proposal meet all the relevant Development Standards for your land zoning? (See Section 1 - Part C)

☐ Yes ☐ No ☐ Unknown

NOTE: If your proposal does not satisfy all the development standards for your land zoning, you may need to reconsider your application for complying development or contact a qualified bush fire consultant for more information.

PART D

BAL & Risk Assessment

Step 1: Assess the vegetation about the proposed building in all directions.

CATEGORY	NORTH	EAST	SOUTH	WEST
Converted vegetation (See Vegetation Chart)	<input type="checkbox"/> Forest	<input type="checkbox"/> Forest	<input type="checkbox"/> Forest	<input type="checkbox"/> Forest
	<input type="checkbox"/> Woodland	<input type="checkbox"/> Woodland	<input type="checkbox"/> Woodland	<input type="checkbox"/> Woodland
	<input type="checkbox"/> Tall Heath	<input type="checkbox"/> Tall Heath	<input type="checkbox"/> Tall Heath	<input type="checkbox"/> Tall Heath
	<input type="checkbox"/> Short Heath	<input type="checkbox"/> Short Heath	<input type="checkbox"/> Short Heath	<input type="checkbox"/> Short Heath
	<input type="checkbox"/> Mallee/Mulga	<input type="checkbox"/> Mallee/Mulga	<input type="checkbox"/> Mallee/Mulga	<input type="checkbox"/> Mallee/Mulga
	<input type="checkbox"/> Rainforest	<input type="checkbox"/> Rainforest	<input type="checkbox"/> Rainforest	<input type="checkbox"/> Rainforest
	<input type="checkbox"/> Grassland	<input type="checkbox"/> Grassland	<input type="checkbox"/> Grassland	<input type="checkbox"/> Grassland
	<input type="checkbox"/> Managed Land	<input type="checkbox"/> Managed Land	<input type="checkbox"/> Managed Land	<input type="checkbox"/> Managed Land

Step 2: Determine the distance from the building line to the vegetation in each direction as above

ASPECT	NORTH	EAST	SOUTH	WEST
Distance m m m m

Step 3: Determine the effective slope that will influence bush fire behaviour in each direction

CATEGORY	NORTH	EAST	SOUTH	WEST
Slope under the hazard (over 100m) [in degrees]	<input type="checkbox"/> upslope/flat	<input type="checkbox"/> upslope/flat	<input type="checkbox"/> upslope/flat	<input type="checkbox"/> upslope/flat
	<input type="checkbox"/> >0 to 5	<input type="checkbox"/> >0 to 5	<input type="checkbox"/> >0 to 5	<input type="checkbox"/> >0 to 5
	<input type="checkbox"/> >5 to 10	<input type="checkbox"/> >5 to 10	<input type="checkbox"/> >5 to 10	<input type="checkbox"/> >5 to 10
	<input type="checkbox"/> >10 to 15	<input type="checkbox"/> >10 to 15	<input type="checkbox"/> >10 to 15	<input type="checkbox"/> >10 to 15
	<input type="checkbox"/> >15	<input type="checkbox"/> >15	<input type="checkbox"/> >15	<input type="checkbox"/> >15

Step 4: Determine the Fire Danger Index (FDI) that applies to your local government area (council). Tick the relevant FDI below

FDI	<input type="checkbox"/> 100 (see Table 4. page ?)	<input type="checkbox"/> 80 (see Table 5. page ?)	<input type="checkbox"/> 50 (see Table 4. page ?)
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Step 5: Match the relevant FDI, vegetation, distance and slope to determine the required APZ and Construction level

Identify the bushfire attack level for each direction, select the highest level for the entire building and record below. Note BAL-12.5 is the lowest construction level within the scope of AS3959.

Identify the Bushfire Attack Level (BAL) below:

<input type="checkbox"/> BAL- FZ	<input type="checkbox"/> BAL- 40	<input type="checkbox"/> BAL- 29	<input type="checkbox"/> BAL-19	<input type="checkbox"/> BAL- 12.5	<input type="checkbox"/> No requirement
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NOTE: BAL-40 and BAL-FZ are considered higher risk development and do not constitute complying development. You are advised to consult with a qualified bush fire consultant for more information.

This document has been designed for owner/builders as well as architects, building designers and draftspersons who wish to submit plans for building or modifying an existing building as complying development in a Bush Fire Prone Area. This document has been designed to support you, and provide you with a process to follow that will assist you to meet the current requirements for bush fire protection.

NSW RURAL FIRE SERVICE

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