

Planning and Building in Bushfire Prone Areas

- Building Code & Bushfire Hazard Solutions P/L
- Overview of Planning for Bush Fire Protection 2019
- Exempt Development in NSW
- 2019/20 Bushfire Season
- Case Studies



Presented by
Building Code & Bushfire
Hazard Solutions P/L

Building Code & Bushfire Hazard Solutions P/L – brief background

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- Commenced in B/F industry in 1992. We now have 9 staff including 5 assessment practitioners with over 135 years fire fighting experience.
- Assisted in reviewing B/F regulations with NSW RFS and FPAA. We currently sit on several bushfire consultative committees for NSW & Nationally.
- Pre Purchase Assessments - critical for initial costing
- Provide Bushfire Assessment & Planning Reports – DA approvals.
- Provide Construction and Occupation Certificates.
- Provide specialist advice to government – (Special Act Precincts).
- Provide Expert Evidence (LEC and NCAT) – PEER Reviews etc.
- Prepare Bushfire Emergency Management Plans for major clients.
- Provide concept designs for bushfire sprayer systems (AS5414).
- We have a separate APZ team who construct / maintain APZ's for private DA consent & fire notices issued by NSW RFS.
- Other specialist work. (critical infrastructure – eg Sydney Water)

Planning for Bush Fire Protection 2019



NSW RURAL FIRE SERVICE



PLANNING FOR BUSH FIRE PROTECTION

A guide for councils, planners,
fire authorities and developers

NOVEMBER 2019

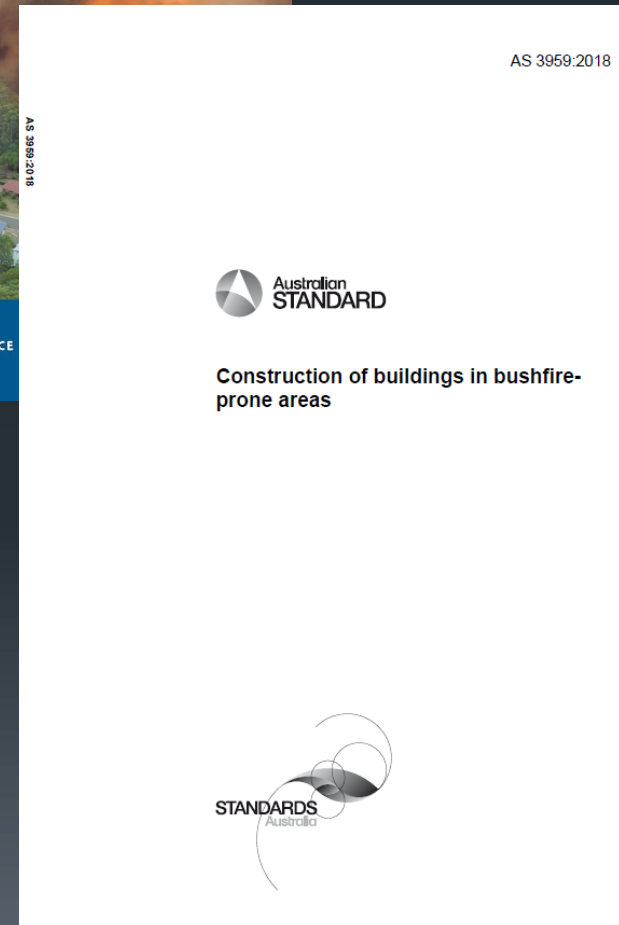
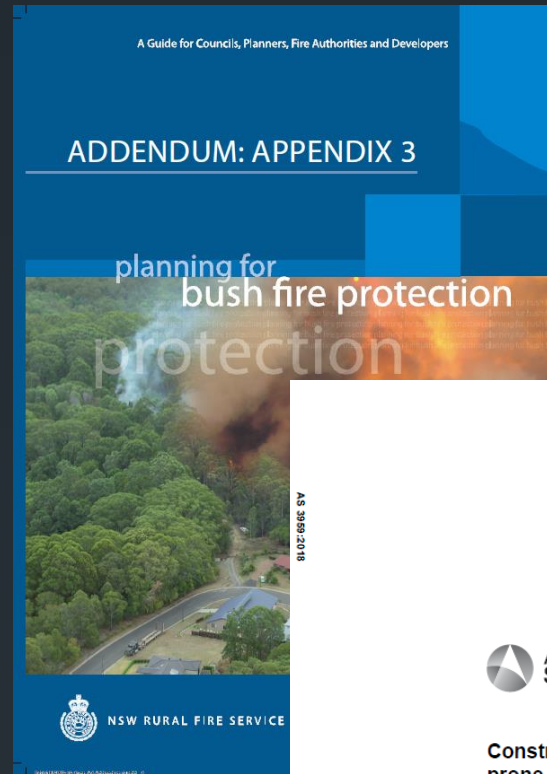


Alignment with Standards

Addendum Appendix 3 from PBP 2006 has been incorporated into the main body of PBP 2019.

PBP is used as the assessment methodology and then the corresponding Bushfire Attack Level under AS3959:2018 or the NASH standard.

The Additional Construction Requirements have also been captured in the new document.



Fuel Loads

A different set of fuel loads have been used to define the setbacks required for development in New South Wales (NSW). The vegetation classification system used within PBP 2019 is based on the Keith (2004) framework. Available fuel loads are based on recent information provided by:

- › The University of Wollongong's (UoW) Fuels Modelling Project.
- › The University of Melbourne (UoM) which reference the fuel classifications found in Keith (2004).
- › CSIRO Ecosystems Sciences and Bushfire Dynamics and Applications.



NSW RURAL FIRE SERVICE

COMPREHENSIVE
VEGETATION FUEL LOADS

March 2019



The purpose of this fact sheet is to provide all stakeholders in the bush fire industry with the detailed fuel load information which underpins the APZ distances in the Pre-Release version of *Planning for Bush Fire Protection 2018* (PBP).

The vegetation classification system used within the following tables is based on the publication 'Ocean Shores to Desert Dunes' David Keith (Keith, 2004) framework (except for heath). The fuel loads (t) used are from recent research provided by:

- › The University of Wollongong's (UoW) Fuels Modelling Project;
- › The University of Melbourne (UoM) which reference the fuel classifications found in Keith (2004); and
- › CSIRO Ecosystems Sciences and Bushfire Dynamics and Applications.

It should be noted that in developing the simplified acceptable solutions in the Pre-Release version of PBP, the fuel loads which were considered outliers and not expected to be found in, and adjacent to developed areas were discounted.

Notwithstanding, as part of any site assessment process, the vegetation classifications adopted below must be those which are representative for the site.

NSW RURAL FIRE SERVICE - COMPREHENSIVE VEGETATION FUEL LOADS 1 OF 3

Table A1.12.8

Vegetation formation details.

VEGETATION	SURFACE AND ELEVATED (t/ha)	OVERALL FUEL LOAD INCLUDING BARK AND CANOPY (t/ha)	VEGETATION HEIGHT (m)
Rainforest	10	13.2	NA
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	22	36.1	NA
Grassy and Semi-Arid Woodland (including Mallee)	10.5	20.2	NA
Forested Wetland (excluding Coastal Swamp Forest)	8.2	15.1	NA
Tall Heath	36.9	36.9	3
Short Heath	15	15	1.5
Arid-Shrublands (acacia and chenopod)	6.2	6.2	1.5
Freshwater Wetlands	4.4	4.4	1
Alpine Complex	5.8	5.8	1
Grassland	6	6	NA

Fuel Loads Cont.

The Fuel Load is a significant input when determining the potential intensity, flame length and forward rate of spread of a bushfire.

With the change in Fuel Loads comes a change in minimum required Asset Protection Zones for Subdivisions and Special Fire Protection Purpose developments and also change in separation distance when determining the Bushfire Attack Level.

Table A2.4 Minimum Specifications for Asset Protection Zones (m) for Residential and Rural Residential Subdivision Purposes (for Class 1 and 2 buildings) in FDI 100 Fire Areas ($\leq 29\text{kW/m}^2$)

Vegetation Formation	Effective Slopes				
	Upslope/Flat	>0°-5°	>5°-10°	>10°-15°	>15°-18°
Rainforests	10	10	15	20	25
Forests	20	25	35	50	60
Woodland (Grassy)	10	15	20	25	30
Plantations (Pine)	20	25	30	45	50
Tall Heath (Scrub)	15	15	20	20	20
Short Heath (Open Scrub)	10	10	10	15	15
Freshwater Wetlands	10	10	10	15	15
Forested Wetlands	15	20	25	35	45

Table A1.12.2

Minimum distances for APZs - residential development, FFDI 100 areas ($\leq 29\text{kW/m}^2$, 1090K)

KEITH VEGETATION FORMATION	EFFECTIVE SLOPE				
	Up slopes and flat	>0°-5°	>5°-10°	>10°-15°	>15°-20°
Distance (m) from the asset to the predominant vegetation formation					
Rainforest	11	14	18	23	30
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	24	29	36	45	56
Grassy and Semi-Arid Woodland (including Mallee)	12	16	20	25	32
Forested Wetland (excluding Coastal Swamp Forest)	10	12	16	20	26
Tall Heath	16	18	20	22	25
Short Heath	9	10	12	13	15
Arid-Shrublands (acacia and chenopod)	6	7	8	9	10
Freshwater Wetlands	5	6	6	7	8
Grassland	10	12	13	15	17

TABLE 2.4.2

DETERMINATION OF BUSHFIRE ATTACK LEVEL (BAL)—FDI 100 (1090 K)

Vegetation classification	Bushfire Attack Levels (BALs)				
	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)				
A. Forest	<19	19–<25	25–<35	35–<48	48–<100
B. Woodland	<12	12–<16	16–<24	24–<33	33–<100
C. Shrubland	<7	7–<9	9–<13	13–<19	19–<100
D. Scrub	<10	10–<13	13–<19	19–<27	27–<100
E. Mallee/Mulga	<6	6–<8	8–<12	12–<17	17–<100
F. Rainforest	<8	8–<11	11–<16	16–<23	23–<100
G. Grassland	<6	6–<9	9–<13	13–<19	19–50
Downslope >0 to 5 degrees					
A. Forest	<24	24–<32	32–<43	43–<57	57–<100
B. Woodland	<15	15–<21	21–<29	29–<41	41–<100
C. Shrubland	<7	7–<10	10–<15	15–<22	22–<100
D. Scrub	<11	11–<15	15–<22	22–<31	31–<100
E. Mallee/Mulga	<7	7–<9	9–<13	13–<20	20–<100
F. Rainforest	<10	10–<14	14–<20	20–<29	29–<100
G. Grassland	<7	7–<10	10–<15	15–<22	22–<50
Downslope >5 to 10 degrees					
A. Forest	<31	31–<39	39–<53	53–<69	69–<100
B. Woodland	<20	20–<26	26–<37	37–<50	50–<100
C. Shrubland	<8	8–<11	11–<17	17–<25	25–<100
D. Scrub	<12	12–<17	17–<24	24–<35	35–<100
E. Mallee/Mulga	<7	7–<10	10–<15	15–<23	23–<100
F. Rainforest	<13	13–<18	18–<26	26–<36	36–<100
G. Grassland	<8	8–<11	11–<17	17–<25	25–<50
Downslope >10 to 15 degrees					
A. Forest	<39	39–<49	49–<64	64–<82	82–<100
B. Woodland	<25	25–<33	33–<45	45–<60	60–<100
C. Shrubland	<9	9–<13	13–<19	19–<28	28–<100
D. Scrub	<14	14–<19	19–<28	28–<39	39–<100
E. Mallee/Mulga	<8	8–<11	11–<18	18–<26	26–<100
F. Rainforest	<17	17–<23	23–<33	33–<45	45–<100
G. Grassland	<9	9–<13	13–<20	20–<28	28–<50
Downslope >15 to 20 degrees					
A. Forest	<50	50–<61	61–<78	78–<98	98–<100
B. Woodland	<32	32–<41	41–<56	56–<73	73–<100
C. Shrubland	<10	10–<15	15–<22	22–<31	31–<100
D. Scrub	<15	15–<21	21–<31	31–<43	43–<100
E. Mallee/Mulga	<9	9–<13	13–<20	20–<29	29–<100
F. Rainforest	<22	22–<29	29–<42	42–<56	56–<100
G. Grassland	<11	11–<15	15–<23	23–<32	32–<50

Determination of BAL, FFDI 100 – residential developments

KEITH VEGETATION FORMATION	BUSH FIRE ATTACK LEVEL (BAL)				
	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
	Distance (m) asset to predominant vegetation class				
ALL UPSLOPE AND FLAT LAND					
Rainforest	< 8	8 –< 11	11 –< 16	16 –< 23	23 –< 100
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 18	18 –< 24	24 –< 33	33 –< 45	45 –< 100
Grassy and Semi-Arid Woodland (including Mallee)	< 9	9 –< 12	12 –< 18	18 –< 26	26 –< 100
Forested Wetland (excluding Coastal Swamp Forest)	< 7	7 –< 10	10 –< 14	14 –< 21	21 –< 100
Tall Heath	< 12	12 –< 16	16 –< 23	23 –< 32	32 –< 100
Short Heath	< 7	7 –< 9	9 –< 14	14 –< 20	20 –< 100
Arid-Shrublands (acacia and chenopod)	< 5	5 –< 6	6 –< 9	9 –< 14	14 –< 100
Freshwater Wetlands	< 4	4 –< 5	5 –< 7	7 –< 11	11 –< 100
Grassland	< 8	8 –< 10	10 –< 15	15 –< 22	22 –< 50
> 0 > 5 DEGREES – DOWNSLOPE					
Rainforest	< 11	11 –< 14	14 –< 21	21 –< 29	29 –< 100
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 22	22 –< 29	29 –< 40	40 –< 54	54 –< 100
Grassy and Semi-Arid Woodland (including Mallee)	< 12	12 –< 16	16 –< 23	23 –< 32	32 –< 100
Forested Wetland (excluding Coastal Swamp Forest)	< 9	9 –< 12	12 –< 18	18 –< 26	26 –< 100
Tall Heath	< 13	13 –< 18	18 –< 26	26 –< 36	36 –< 100
Short Heath	< 8	8 –< 10	10 –< 15	15 –< 22	22 –< 100
Arid-Shrublands (acacia and chenopod)	< 5	5 –< 7	7 –< 11	11 –< 16	16 –< 100
Freshwater Wetlands	< 4	4 –< 6	6 –< 8	8 –< 12	12 –< 100
Grassland	< 9	9 –< 12	12 –< 17	17 –< 25	25 –< 50
> 5 > 10 DEGREES – DOWNSLOPE					
Rainforest	< 14	14 –< 18	18 –< 26	26 –< 37	37 –< 100
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 28	28 –< 36	36 –< 49	49 –< 65	65 –< 100
Grassy and Semi-Arid Woodland (including Mallee)	< 15	15 –< 20	20 –< 28	28 –< 39	39 –< 100
Forested Wetland (excluding Coastal Swamp Forest)	< 12	12 –< 16	16 –< 23	23 –< 33	33 –< 100
Tall Heath	< 15	15 –< 20	20 –< 29	29 –< 40	40 –< 100
Short Heath	< 9	9 –< 12	12 –< 18	18 –< 25	25 –< 100
Arid-Shrublands (acacia and chenopod)	< 6	6 –< 8	8 –< 12	12 –< 18	18 –< 100
Freshwater Wetlands	< 5	5 –< 6	6 –< 10	10 –< 14	14 –< 100
Grassland	< 10	10 –< 13	13 –< 20	20 –< 28	28 –< 50
> 10 > 15 DEGREES – DOWNSLOPE					
Rainforest	< 17	17 –< 23	23 –< 34	34 –< 46	46 –< 100
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 36	36 –< 45	45 –< 60	60 –< 77	77 –< 100
Grassy and Semi-Arid Woodland (including Mallee)	< 19	19 –< 25	25 –< 36	36 –< 49	49 –< 100
Forested Wetland (excluding Coastal Swamp Forest)	< 15	15 –< 20	20 –< 29	29 –< 41	41 –< 100
Tall Heath	< 17	17 –< 22	22 –< 32	32 –< 44	44 –< 100
Short Heath	< 10	10 –< 13	13 –< 20	20 –< 29	29 –< 100
Arid-Shrublands (acacia and chenopod)	< 7	7 –< 9	9 –< 14	14 –< 20	20 –< 100
Freshwater Wetlands	< 5	5 –< 7	7 –< 11	11 –< 16	16 –< 100
Grassland	< 11	11 –< 15	15 –< 23	23 –< 32	32 –< 50
> 15 > 20 DEGREES – DOWNSLOPE					
Rainforest	< 23	23 –< 30	30 –< 42	42 –< 56	56 –< 100
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 46	46 –< 56	56 –< 73	73 –< 92	92 –< 100
Grassy and Semi-Arid Woodland (including Mallee)	< 24	24 –< 32	32 –< 44	44 –< 59	59 –< 100
Forested Wetland (excluding Coastal Swamp Forest)	< 19	19 –< 26	26 –< 37	37 –< 50	50 –< 100
Tall Heath	< 19	19 –< 25	25 –< 36	36 –< 49	49 –< 100
Short Heath	< 11	11 –< 15	15 –< 23	23 –< 32	32 –< 100
Arid-Shrublands (acacia and chenopod)	< 7	7 –< 10	10 –< 16	16 –< 23	23 –< 100
Freshwater Wetlands	< 6	6 –< 8	8 –< 13	13 –< 18	18 –< 100
Grassland	< 13	13 –< 17	17 –< 26	26 –< 36	36 –< 50

Fact Sheets

Fact Sheets and Development Control Practice Notes have been developed by the NSW RFS to clarify the use of Planning for Bush Fire Protection 2006. Wherever possible, these Fact Sheets have been incorporated into PBP 2019.

Previously it could be challenged that the Fast Facts have no legal bearing as they were not referenced in any legislated document – unless referenced in the conditions of consent.

**NSW RURAL FIRE SERVICE**

INTUMESCENT PAINTS

COMMUNITY RESILIENCEFACTSHEET 3/17

This Fast Fact summarises the NSW Rural Fire Service (NSW RFS) position in relation to the application of intumescent paint systems on construction located within bush fire prone areas and supersedes our previous Fact Sheet 1/15 version 4.5 February 2015.

The application of intumescent paints as an applied finish should not be confused with fire retardant treated timbers. NSW RFS policy requires that fire retardant treated timbers need to be pressure impregnated with a retardant to qualify and does not need periodic maintenance to retain their fire resistant qualities. Timbers having an application of intumescent paint are not considered to be fire retardant treated timber. The applied membrane has the retardant qualities, not the surface it has been applied to.

Recently the NSW RFS has been made aware of new and refined products that may provide a useful means to reduce the impact of bush fire to buildings located within bush fire prone areas.

Any proposed use of intumescent paint must be supported by a NATA certified laboratory test and

perform as required by AS3959-2009, 'Construction of buildings in bushfire-prone areas'.

Any proposed systems shall also comply with the weathering performance as required by ASTM D 2898 Method B 'Accelerated Weathering Test'.

NSW RURAL FIRE SERVICECOMMUNITY RESILIENCEFAST FACTS4/10

Building Elements not addressed in AS3959-2009

This Fast Fact outlines the requirements of the NSW Rural Fire Service (RFS) for the following elements of buildings located on bush fire prone land that are not specifically addressed by *AS3959 (2009) - Construction of buildings in bushfire-prone areas*:

- Timber supports, posts and beams
- Fascia and Bargeboards for Bushfire Attack Level (BAL) 40.

Timber Supports, Post and Beams

AS3959 (2009) - Construction of buildings in bushfire-prone areas does not address construction requirements for exposed timber supports, posts and beams for uses such as verandas, carports and awning roofs. As such, there is a need to adopt a practical approach to the matter and ensure that the intent of AS3959 and *Planning for Bush Fire Protection 2006* (PBP) is applied.

Specifically:

- timber posts supporting the roof load only and not supporting a deck;
- exposed timber beams supporting the roof load only;
- timber posts and exposed beams which are purely decorative and offer no structural support to the dwelling (such as pergolas)

Application

In determining the type of timber appropriate in these circumstances, the requirements of AS3959 and Addendum Appendix 3 of PBP for other similar building elements have been considered. Therefore, the NSW RFS provides the following advice in regards to the applications described above;

BAL 12.5 and BAL19

- a) non combustible material, or
- b) a timber species identified in Paragraph E1, Appendix E of AS3959; or
- c) bush fire resisting timber identified in Appendix F of AS3959, or
- d) timber logs of a species with a density of 680kg/m³ or greater at a 12 % moisture content.; of a minimum nominal thickness of 90mm and a minimum thickness of 70mm and gauge planed; or
- e) a combination of a), b), c) or d)

BAL 29

- a) non combustible material, or
- b) bush fire resisting timber identified in Appendix F of AS3959, or
- c) a combination of a) and b)

NSW RURAL FIRE SERVICE



Strategic Planning

A new chapter has been added on strategic planning. The aim of this chapter is to ensure that bush fire is properly considered at the rezoning phase of development to ensure that appropriate bush fire protection measures can be implemented at subdivision or design and build stage.

Need to not only ensure future compliance with PBP but look at the broader landscape, impact to surrounding development and capacity of local road infrastructure.



Special Fire Protection Purposes

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A number of uses that are captured by the Rural Fires Act as Special Fire Protection Purpose (SFPP) development have been identified as having unique characteristics. Tailored Objectives have been developed.

These developments include:

Caravan parks

Camping

Primitive camping

Bed and breakfast and farm stay

Ecotourism

Home-based child care

Manufactured home estates

Tertiary Institutions

Table 6.8a

Performance criteria and acceptable solutions for APZs and construction for SFPP development.

PERFORMANCE CRITERIA		ACCEPTABLE SOLUTIONS	
ASSET PROTECTION ZONES	The intent may be achieved where:		
	➤ radiant heat levels of greater than 10kW/m ² (calculated at 1200K) will not be experienced on any part of the building.	➤ the building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1.	
	➤ APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	➤ APZs are located on lands with a slope less than 18 degrees.	
	➤ APZs are managed and maintained to prevent the spread of fire to the building.	➤ the APZ is managed in accordance with the requirements of Appendix 4 of this document, and is wholly within the boundaries of the development site;	
	➤ the APZ is provided in perpetuity.	➤ APZ are wholly within the boundaries of the development site; and ➤ other structures located within the APZ need to be located further than 6m from the refuge building.	
VARIATIONS			
	Camping and primitive camping: no performance criteria applicable.	➤ N/A.	
	Bed and breakfast and farmstay: the building will not be exposed to radiant heat levels exceeding 29kW/m ² (1090K).	➤ an APZ is provided in accordance with Tables A1.12.2 or A1.12.3 in Appendix 1 of this document around the entire building or structure.	
	Ecotourism: radiant heat levels of greater than 10kW/m ² (1200K) will not be experienced on any part of the building by emergency service occupants during emergency management on site that can be reasonably expected.	Typically, reasons for setting tailored objectives include, but are not limited to:	1
	➤ lower occupancy levels;		
	➤ the presence of a resident/manager on site, thereby improving the potential for informed emergency evacuation decisions; and		
	➤ construction under AS 3959 or NASH Standard		
	Manufactured home estates: radiant heat levels of greater than 10kW/m ² (1200K) will not be experienced on any part of the proposed dwelling.		ix or

Typically, reasons for setting tailored objectives include, but are not limited to:

- lower occupancy levels;
- the presence of a resident/manager on site, thereby improving the potential for informed emergency evacuation decisions; and
- construction under AS 3959 or NASH Standard may be impractical (i.e. tents and caravans).

Fire Weather Areas

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Fire weather areas across the State are currently under review. Local government boundaries in NSW are also under review.

The fire weather area information has been removed from PBP 2019 and will be published on the NSW RFS website separately.

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

Table A2.3 NSW Fire Areas and associated council areas with appropriate FDI rating assumed as a 1:50 year event.

Landscaping

Standards have been introduced within PBP for assessing what constitutes an Inner Protection Area and an Outer Protection Area within the asset protection zone.

All other landscaping guidance has been removed from the document and will be published within a revised version of the NSW RFS document 'Standards for Asset Protection Zones'.

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defensible space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

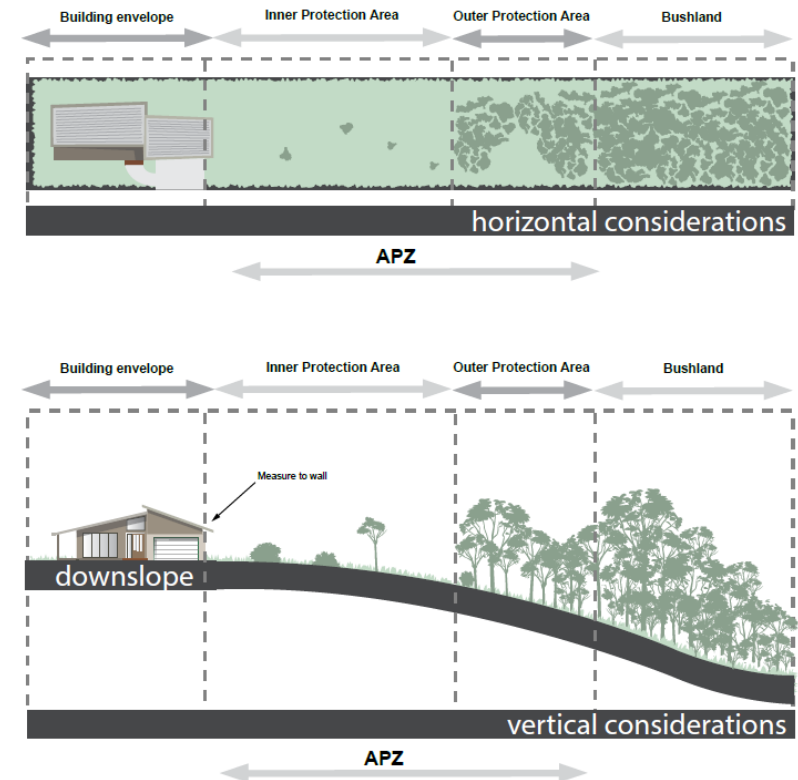
Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.

Figure A4.1

Typical Inner and Outer Protection Areas.



Upgrading Existing Buildings

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Any guidance on the upgrade of existing buildings has been removed from PBP and will be published in a separate fact sheet on the NSW RFS website.



NSW RURAL FIRE SERVICE

DEVELOPMENT ASSESSMENT & PLANNING
Upgrading of Existing Buildings

WORKING TOWARDS A SAFER COMMUNITY



INTRODUCTION

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 (NSW 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 NSW RFS.

Through a working relationship with local Councils and the NSW Department of Planning, the NSW RFS has been able to refine and implement bush fire protection for new developments through the NSW

planning system. Since the introduction of these planning and building regulations in August 2002, all new development on bush fire prone land in NSW must comply with the requirements of *Planning for Bush Fire Protection 2006* and Australian Standard 3959-2009 - *Construction of buildings in bushfire-prone areas* (AS3959).

This means that people who are building or renovating have a clear direction on how to design and build their homes to be better protected from the impacts of bush fires. The types of protection measures include asset protection zones (vegetation management), access, landscaping, water supply, building design and construction. These measures assist building survival during a bush fire. They also contribute to the safety of fire-fighters and members of the community occupying buildings during the passage of a bush fire front.

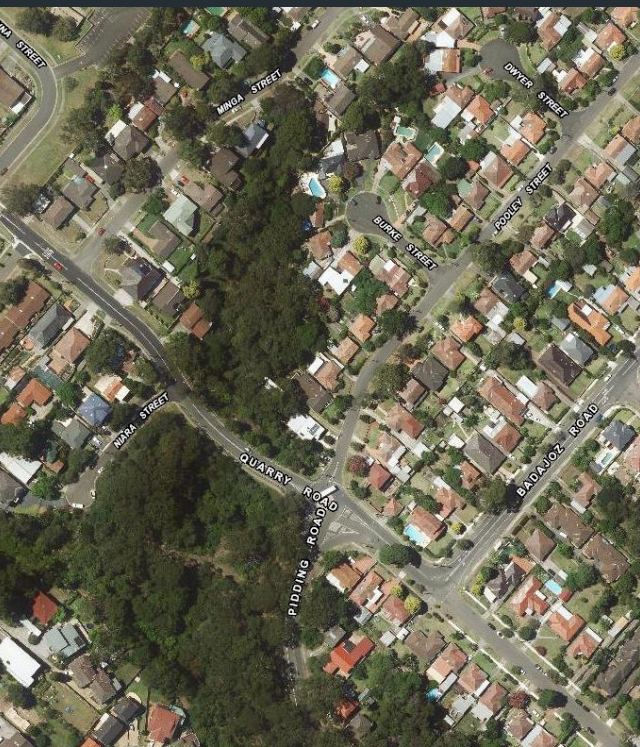
Unfortunately, the majority of buildings in bush fire prone areas pre-date these regulations, meaning that most existing houses are at an increased risk of damage or loss from a bush fire.

BUSH FIRE INFORMATION LINE
1800 NSW RFS
1800 679 737
www.rfs.nsw.gov.au

NSW RFS DEVELOPMENT ASSESSMENT 0914

1/4

Low Threat Vegetation, Remnants & Short Fire Run



Low Threat Vegetation has now been incorporated into the document. While AS3959 'Construction of buildings in bushfire-prone areas' and the Guideline for Bushfire Prone Land Mapping currently have exclusions for vegetation

The simplified approach in PBP 19 provides an acceptable method for assessing remnant vegetation. Remnant vegetation is a parcel of vegetation with a size of less than 1 Ha or a shape that provides a potential fire run that could threaten buildings not exceeding 50m. These remnants are considered a low hazard and APZ setbacks and building construction standards for these may be the same as for rainforests.

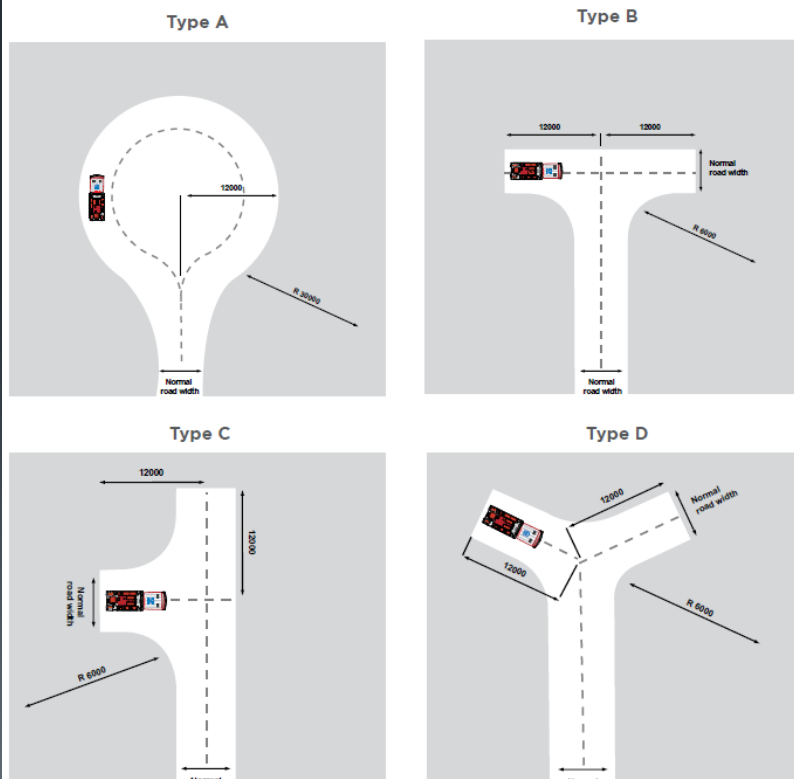
The Short Fire Run allows bushfire design modelling to be undertaken factoring in the limited fire development period. This can result in smaller minimum APZs and lower BALs.

Access

- Minimum carriageway for internal roads reduced from 6.5m to 5.5m
- Additional turning options available
- Fire Trails removed

Figure A3.3

Multipoint turning options.



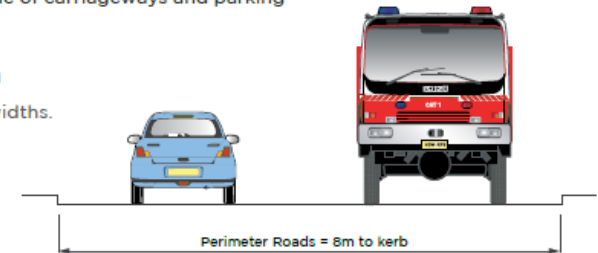
A3.9 Road types

A3.9.1 Perimeter Roads

Perimeter roads are to be provided with a minimum clear width of 8m. Parking and hydrants are to be provided outside of carriageways. Hydrants are to be located outside of carriageways and parking areas.

Figure A3.9a

Perimeter road widths.

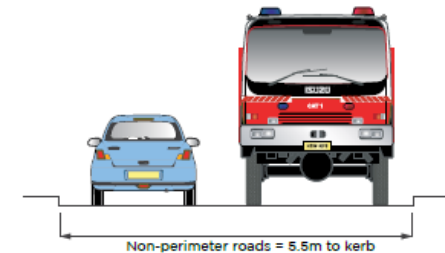


A3.9.2 Non-perimeter Roads

Non-perimeter roads shall be provided with a minimum clear width of 5.5m. Parking is to be provided outside of the carriageway and hydrants are not to be located in carriageways or parking areas.

Figure A3.9b

Non-perimeter road widths.



A3.9.3 Property access

Property access roads are to be a minimum of 4m wide.

Figure A3.9c

Property access road widths.



Document Structure

The Performance Based Controls contained within Chapter 4 of the 2006 PBP have been broken down into separate chapters. There is now a separate chapter for each development type (i.e. Residential Subdivisions, Special Fire Protection Purpose Developments, Residential Infill Development).

Limitations

16

A section on the limitations of the document has been inserted. Limitations of this document include, but are not limited to uncertainties in the following areas:

- Fire Danger Index
- fuel loads
- existing developments
- human behaviour
- maintenance.

10/50

Reference to the 10/50 Vegetation Clearing Scheme has been included in the document.

This scheme has not been modified.



High Rise Developments

17

The document has captured the Fast Fact which addresses high rise developments – exceeding three storeys.

The added considerations for high rise developments include:

Population - higher resident densities can pose issues for emergency management;

Location – bush fire impacts can be increased where high rise buildings are located in higher elevations or on ridge tops;

Egress - is more challenging and places an increased demand on road infrastructure during evacuation;

Construction - there is a higher external façade surface area that may be exposed to bush fire attack and:

- car and storage facilities on the ground level can provide an additional fuel loading;

- balconies and external features can easily trap embers which can ignite combustible materials.

Height -the height can result in increased exposure to convective heat.

Better Bushfire Outcome

Where an alteration and addition is proposed to a dwelling built prior to 2002 and the existing building has no bush fire protection measures incorporated into its design, consideration must be given to upgrading the existing structure.

This method can include redirecting funds from an addition that complies with the relevant BAL to existing parts of the building.

An example of this could be rather than building an addition to Flame Zone (being the relevant BAL) it is built to BAL 40 but the existing doors and windows which do not form part of the works are replaced with BAL 40 compliant systems.

Other Development

18

- Buildings of Class 5 to 8 of the National Construction Code (NCC)
- Class 10a and 10b structures
- Private and community bushfire shelters
- Wind and solar farms
- Mining
- Telecommunications towers
- Outdoor events in bush fire prone areas
- Hazardous industry
- Public assembly buildings
- Commercial and industrial development

AS 3959:2018



Construction of buildings in bushfire-prone areas



This edition incorporates the following changes:

- (a) The site assessment in Section 2 has been simplified to address interpretational issues related to slope, grasslands and low threat vegetation.
- (b) Section 3 clarifies that the shielding concessions relate only to the elements of the wall and do not apply to the subfloor or roofs.
- (c) The protection of gaps and openings has been addressed by requiring suitable measures for doors and windows and providing for other gaps to be suitably sealed.
- (d) The requirements for floors at BAL-12.5 and BAL-19 relating to bearers, joists and flooring within 400 mm above finished ground level now align with BAL-29.
- (e) Windows address the framed material, hardware, glazing, seals and weather strips and screens. Doors address the door panel material, door frame material, hardware, glazing, seals and weather proofing, screens and to be tight fitting. Vehicle access doors recognise that guide tracks do not permit direct access for embers and do not require edge gap protection. Weather strips are to conform with a flammability index of no greater than five (AS 1530.2).
- (f) Roofs can now include certain translucent or transparent roof coverings at BAL-12.5 and BAL-19 for verandas, carports or awnings where the roof is separated from the main building.
- (g) Editorial changes have been made for consistency with Section 2 and to locate tables with the relevant sections of the site assessment methodology. Appendices F and H have been combined.

Exempt Development

20

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

Current version for 20 March 2020 to date (accessed 14 April 2020 at 07:46)

[Part 2](#) > [Division 1](#) > [Subdivision 27](#)



Subdivision 27 Minor building alterations (external)

2.53 Specified development

A minor external non-structural building alteration, such as the following—

- (a) painting, plastering, cement rendering, cladding, attaching fittings or decorative work,
- (b) the replacement of an external window, glazing areas or a door (other than those on bush fire prone land),
- (c) the repair to or replacement of a non-structural wall or roof cladding,
- (d) the installation of a security screen or grill to a door or window or a security door,
- (e) the repair to or replacement of a balustrade,
- (f) restumping or repairing structure foundations without increasing the height of the structure,

is development specified for this code if it is not constructed or installed on or in a heritage item or a draft heritage item or in a heritage conservation area or a draft heritage conservation area.

2.54 Development standards

The standards specified for that development are that the development must—

- (a) not comprise the making of, or an alteration to the size of, any opening in a wall or roof, such as a doorway, window or skylight, and
- (b) not reduce the existing fire resistance level of a wall or roof, and
- (c) if located on bush fire prone land—
 - (i) be adequately sealed or protected to prevent the entry of embers, and
 - (ii) use equivalent or improved quality materials, and

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

Current version for 20 March 2020 to date (accessed 14 April 2020 at 07:49)

[Part 1](#) > [Division 2](#) > [Clause 1.16](#)

1.16 General requirements for exempt development

- (1) To be exempt development for the purposes of this Policy, the development—
 - (a) must meet the relevant deemed-to-satisfy provisions of the *Building Code of Australia*, or if there are no such relevant provisions, must be structurally adequate, and
 - (b) must not, if it relates to an existing building, cause the building to contravene the *Building Code of Australia*, and

Part G5 Construction in bushfire prone areas

Performance Requirements

NSW GP5.1

Qld GP5.1

GP5.1 Bushfire resistance

A building that is constructed in a *designated bushfire prone area* must, to the degree necessary, be designed and constructed to reduce the risk of ignition from a bushfire, appropriate to the—

- (a) potential for ignition caused by burning embers, radiant heat or flame generated by a bushfire; and
- (b) intensity of the bushfire attack on the building.

Application

GP5.1 only applies to—

- (a) a Class 2 or 3 building; or
- (b) a Class 10a building or deck associated with a Class 2 or 3 building, located in a *designated bushfire prone area*.

Part 3.10.5 Construction in bushfire prone areas

Appropriate *Performance Requirements*

Where an alternate bushfire protection design is proposed as a *Performance Solution* to that described in [Part 3.10.5](#), that proposal must comply with—

- (a) *Performance Requirement P2.7.5*; and
- (b) The relevant *Performance Requirements* determined in accordance with [A2.2\(3\)](#) and [A2.4\(3\)](#) as applicable.

Acceptable Construction Manuals

3.10.5.0 Application

Performance Requirement P2.7.5 is satisfied for—

- (a) a Class 1 building; or
- (b) a Class 10a building or deck associated with a Class 1 building, located in a *designated bushfire prone area* if it is constructed in accordance with—
- (c) AS 3959; or
- (d) NASH Standard – Steel Framed Construction in Bushfire Areas.

3.10.5.0 is replaced with the following clause in New South Wales:

Performance Requirement P2.7.5 is satisfied, for—

- (a) a Class 1 building; or
- (b) a Class 10a building or deck associated with a Class 1 building, located in a *designated bushfire prone area*, if it is constructed in accordance with the following:
- (c) AS 3959 except—
 - (i) as amended by *Planning for Bush Fire Protection*; and
 - (ii) for Section 9 for Bushfire Attack Level FZ (BAL-FZ).
- (d) NASH Standard – Steel Framed Construction in Bushfire Areas except—
 - (i) as amended by *Planning for Bush Fire Protection*; and
 - (ii) for buildings subject to Bushfire Attack Level FZ (BAL-FZ).
- (e) the requirements of (c), or (d) above as modified by the development consent following consultation with the NSW Rural Fire Service under section 4.14 of the Environmental Planning and Assessment Act 1979 if required; or
- (f) the requirements of (c), or (d) above as modified by development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development.

Explanatory information:

In New South Wales, buildings subject to BAL-FZ must comply with specific conditions of development consent for construction at this level.

Special Fire Protection Purpose

Rural Fires Act 1997 No 65

Current version for 26 October 2018 to date (accessed 14 April 2020 at 07:57)

Part 4 > Division 8 > Subdivision 2 > Section 100B



100B Bush fire safety authorities

- (1) The Commissioner may issue a bush fire safety authority for:
 - (a) a subdivision of bush fire prone land that could lawfully be used for residential or rural residential purposes, or
 - (b) development of bush fire prone land for a special fire protection purpose.
- (2) A bush fire safety authority authorises development for a purpose referred to in subsection (1) to the extent that it complies with standards regarding setbacks, provision of water supply and other matters considered by the Commissioner to be necessary to protect persons, property or the environment from danger that may arise from a bush fire.
- (3) A person must obtain such a bush fire safety authority before developing bush fire prone land for a purpose referred to in subsection (1).
- (4) Application for a bush fire safety authority is to be made to the Commissioner in accordance with the regulations.
- (5) Development to which subsection (1) applies:
 - (a) does not include the carrying out of internal alterations to any building, and
 - (a1) does not include the carrying out of any development excluded from the operation of this section by the regulations, and
 - (b) is not complying development for the purposes of the *Environmental Planning and Assessment Act 1979*, despite any environmental planning instrument.
- (6) In this section:

special fire protection purpose means the purpose of the following:

 - (a) a school,
 - (b) a child care centre,
 - (c) a hospital (including a hospital for the mentally ill or mentally disordered),
 - (d) a hotel, motel or other tourist accommodation,
 - (e) a building wholly or principally used as a home or other establishment for mentally incapacitated persons,
 - (f) seniors housing within the meaning of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*,
 - (g) a group home within the meaning of *State Environmental Planning Policy No 9—Group Homes*,
 - (h) a retirement village,
 - (i) any other purpose prescribed by the regulations.

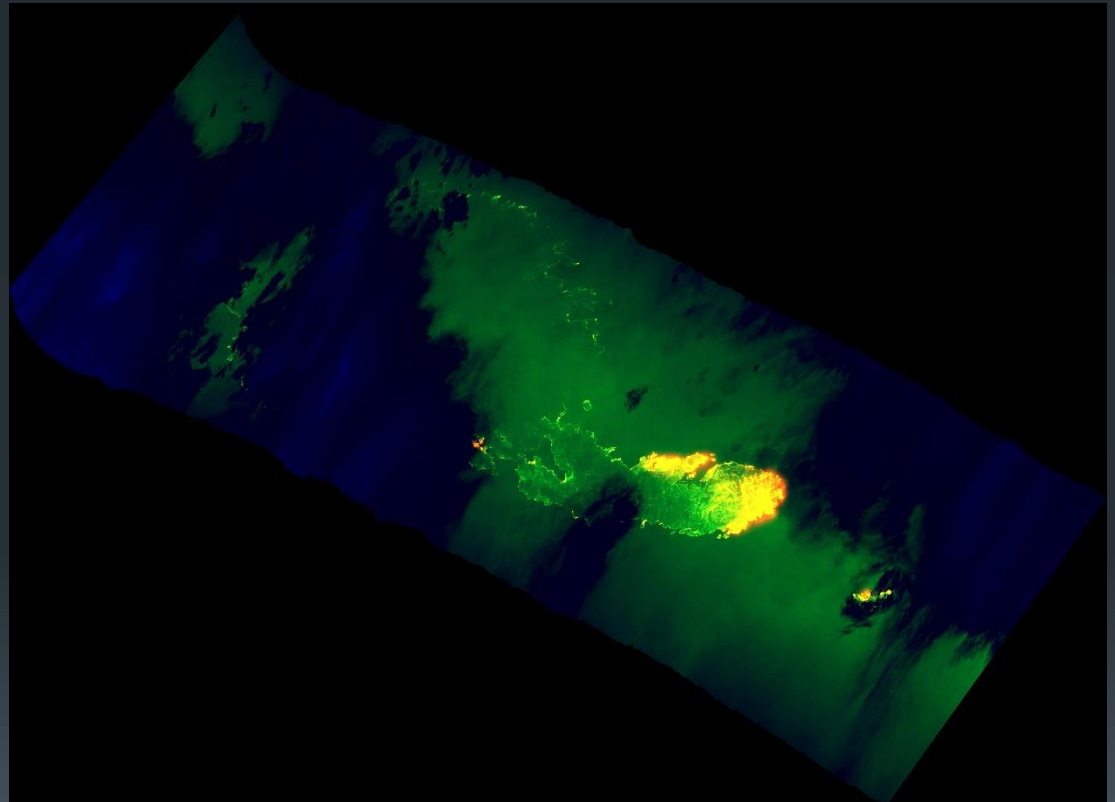
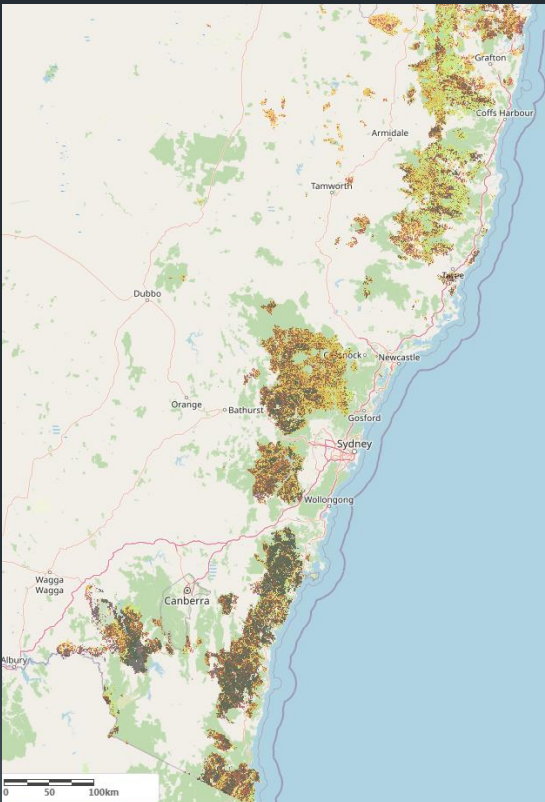
6.5 Minor development in SFPP facilities

Minor development includes the following:

- Internal works;
- Flag poles;
- Aerials and antennas;
- Satellite dishes;
- Paved areas;
- Earth works and draining;
- Class 10a structures located further than 6m from a habitable building; and
- Minor non-structural building alterations (external) such as the following:
 - painting, plastering, cement rendering, cladding, attaching fittings or decorative work;
 - the replacement of an external window, glazing areas or a door (however, the opening and/or external glazed area of the window or door must not be increased in size);
 - the repair to or replacement of a non-structural wall or roof cladding;
 - the installation of a security screen or grill to a door or window or a security door;
 - the repair to or replacement of a balustrade; and
 - re-stumping or repairing structure foundations without increasing the height of the structure.

The development types listed above do not have any influence on potential bush fire impacts and the bush fire protection of the building. For this reason, the NSW RFS does not consider that a BFSa is necessary for the development types listed above. Wherever applicable, the building elements concerned will need to comply with the requirements of AS 3959 or NASH Standard under the NCC.

2019 – 2020 Bushfire Season



Overview

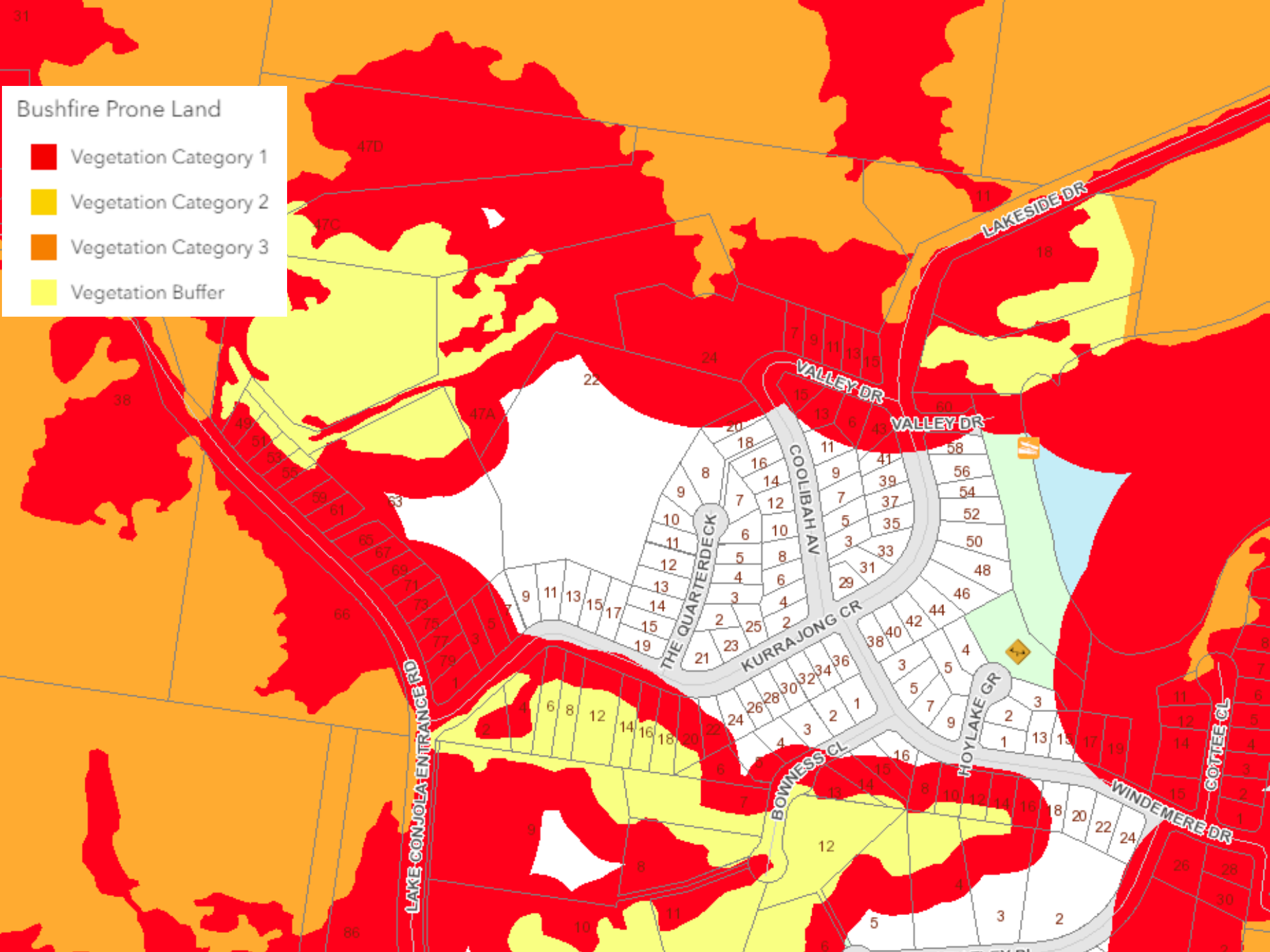
- Fire Season started in June 2019 in Queensland.
- By the end of March 2020, 18.6 million hectares burnt.
- 5,900 buildings destroyed (Including 2,779 homes)
- 34 people killed.
- By 7 January 2020, the smoke had moved approximately 11,000 kilometres across the South Pacific Ocean to Chile and Argentina.
- Ash was being dropped on New Zealand.





Bushfire Prone Land

-  Vegetation Category 1
 Vegetation Category 2
 Vegetation Category 3
 Vegetation Buffer



Radiant Heat

28



Embers

29



Structure to Structure



Adjacent Planting

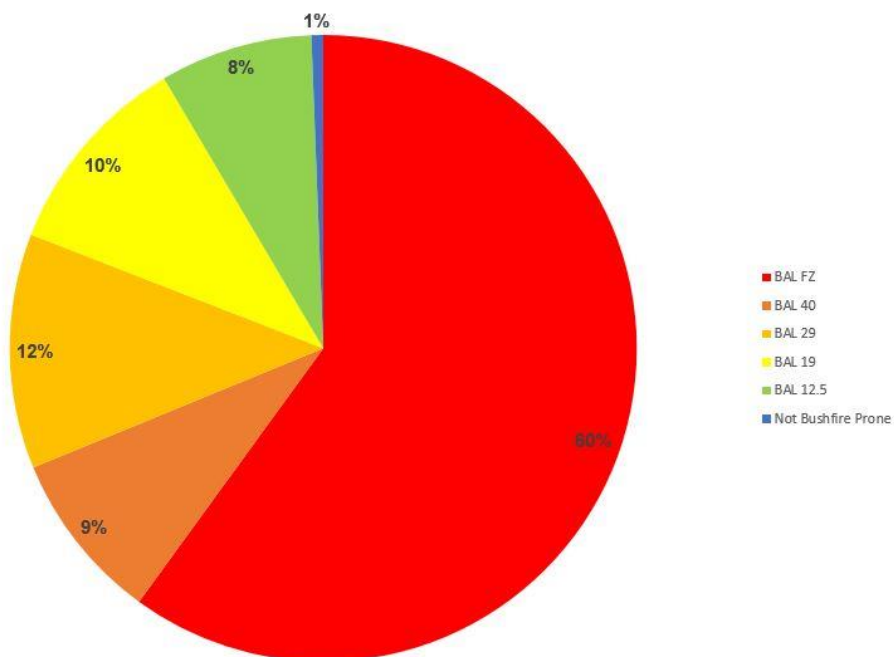


Anomalies and Poly Tanks

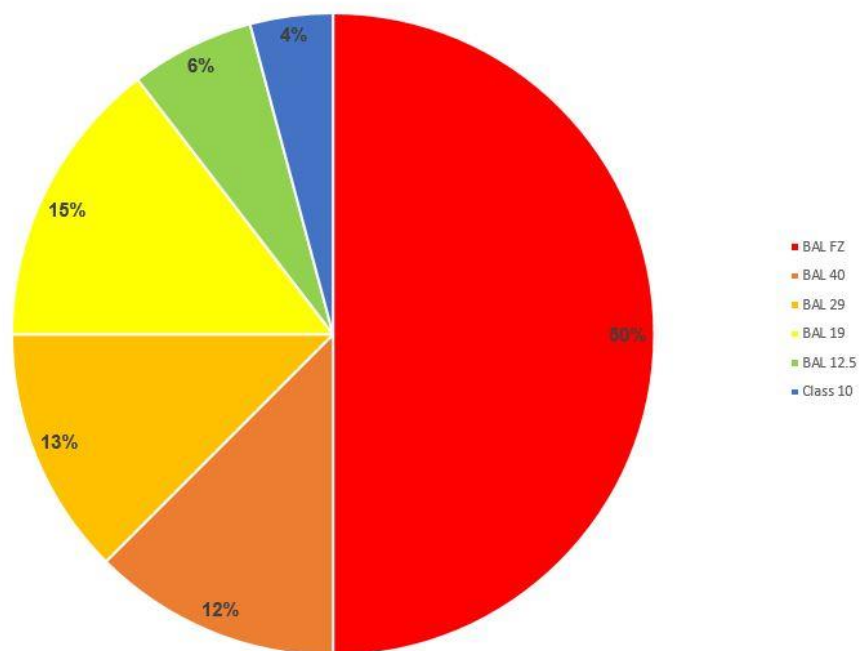


BCBHS Assessments

BAL Rating
Best Available Information (330 sites)



BAL Rating
Site Inspection Information (48 sites)



Reviews

- Royal Commission
- State Reviews



ENTERED ON RECORD by me in Register of Patents No. 55, page 7, on 20 February 2020.

Shane Martin
Secretary to the Federal Executive Council



ELIZABETH THE SECOND, by the Grace of God Queen of Australia and Her other Realms and Territories, Head of the Commonwealth

TO

Air Chief Marshal Mark Donald Binskin AC (Retd),

The Honourable Dr Annabelle Claire Bennett AC SC, and

Professor Andrew Kerr Macintosh

GREETING

WHEREAS Australia is experiencing an extreme bushfire season in 2019-2020, resulting in devastating loss of life, property and wildlife, and environmental destruction across the nation.

AND these bushfires have profoundly affected communities across Australia and engaged the responsibilities and powers of State and Territory Governments as well as those of the Commonwealth Government.

AND the changing global climate carries risks for the Australian environment and Australia's ability to prevent, mitigate and respond to bushfires and other natural disasters.

AND recognising that Australia as a nation must take action, including the development and implementation of adaptation actions, to address the consequences of longer, hotter, drier seasons and severe weather events.

AND recognising that, while all levels of government will review various operational aspects of the 2019-2020 bushfire season as they consider necessary, an inquiry focused on national coordination, conducted jointly between the Commonwealth and State and Territory Governments will give Australians confidence that natural disaster coordination arrangements are the best they can be.

NOW THEREFORE We do, by these Our Letters Patent issued in Our name by Our Governor-General of the Commonwealth of Australia on the advice of the Federal Executive Council and under the Constitution of the Commonwealth of Australia, the *Royal Commissions Act 1902* and every other

Case Studies

- Case Study 1: Minimal Bushfire Protection Measures
- Case Study 2: Well planned development



Case Study 1





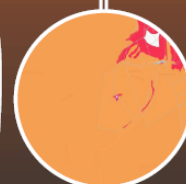


Case Study 2



Bush Fire Assessment Report

Proposed:
Proposed New Dwelling





Council Bushfire Prone Land Maps

42



GUIDE FOR BUSH FIRE PRONE LAND MAPPING

VERSION 5b
November 2015



Councils Bushfire Prone Lands Map – ePlanning Spatial Viewer

New Guideline for Bush Fire Prone Land Mapping

Cat 1 vegetation (red) has 100m buffer zones,
Cat 2 (light orange) has 30m buffer zones

Buffer zones (yellow)

New BPLM's will have Category 1, 2 and 3 vegetation

BAL Flame Zone

Section 9.1

In circumstances where the 10 m setback distance between the building and the edge of the classified vegetation cannot be achieved, those elements of the building that are less than 10 m from the edge of the classified vegetation shall conform with AS 1530.8.2.

Building Elements not tested to AS1530.8.2 include:

- Garage Doors
- Decks
- Masonry Walls
- Support Posts

Timbers in the Flame Zone

Except for window frames and inconsequential trim complying with AS1530.8.1 (BAL 40) and AS1530.8.2 (BAL FZ), combustible construction is not permitted in BAL-40 or BAL-FZ. This includes walls, doors, decking, roofing, exposed flooring and the like.



Other BAL Flame Zone Products

- Roofing

- Bowers (Promat)
- Firefly
- Appendix H System

- Walls

- FireCrunch
- Hebel
- James Hardie
- Inex

- Decking

- James Hardie
- Maxi Deck (Inex)
- Deco Deck
- Knotwood



Thank you

Questions?



Presented by
Building Code & Bushfire
Hazard Solutions P/L