



NSW RURAL FIRE SERVICE

BUILDING IN BUSH FIRE PRONE AREAS
SINGLE DWELLING
APPLICATION KIT



PREPARE ACT SURVIVE

Contents

SECTION 1	4
Who should use this Kit	4
Legislative context and submission requirements	4
Determining if your property is on bush fire prone land?	4
How to use this kit	4
Design Principles for Building on Bush Fire Prone Land	4
PART A	5
Property Details	5
PART B	5
Type of Proposal	5
PART C	5
Determining Construction Levels Required (Bush Fire Attack Levels, or BAL)	5
Classification of Vegetation Formations Chart	6
NSW Local Government Areas Fire Danger Index	9
PART D	14
Flame Zone	14
PART E	14
Water Supplies	14
Water Requirements:	14
PART F	16
Gas Supplies	16
PART G	16
Access	16
PART H	17
Asset Protection Zones	17
Dictionary	18
SECTION 2	19
Bush Fire Assessment Report	19
PART A: Property details	19
PART B: Type of proposal	19
PART C: Bush fire attack and level of construction	20
PART D: Flame zone	23
PART E: Water supplies	23
PART F: Gas supplies	24
Part G: Access	24

Section 1

Who should use this Kit

This kit is intended to be used to provide the relevant consent authority with the information needed so that they can assess your proposed development in accordance with the EP&A Act section 4.14.

This kit will assist people building a new house or altering or adding to an existing building on bush fire prone land. Not all councils will accept the single dwelling application kit so check with your local council before proceeding. If the requirements in this kit cannot be met then a performance based solution may be needed and a suitably qualified bush fire consultant may be able to assist.

Legislative context and submission requirements

The NSW Rural Fire Service (NSW RFS) has, under the Rural Fires Act 1997, a statutory obligation to protect life, property and the environment through fire suppression and fire prevention.

In response to devastating losses in past bush fires, the NSW Government enacted legislative changes to ensure bush fire matters are considered in the development process.

Section 4.14 of the *Environmental Planning and Assessment Act 1979* which all new development on bush fire prone land to comply with PBP 2019.

This kit is intended to provide you with a method for assessing compliance with PBP 2019 for new building and for alterations and additions to existing buildings.

Development Applications (DA) on bush fire prone land must be accompanied by a Bush Fire Assessment Report (BFAR) which explains how compliance with PBP 2019 is to be achieved.

The BFAR which is contained in the pullout section of this kit must address the following:

- a statement that the site is on bush fire prone land (BFPL);
- the location, extent and vegetation formation of any bushland on or within 140 metres of the site;
- the slope under the vegetation hazard for each aspect using the steepest slope within 100 metres of the site;
- any features on or adjoining the site that may mitigate the impact of a bush fire on the proposed development;

- a statement assessing the likely environmental impact of any proposed bush fire protection measures (BPMs) and associated works;
- a site plan showing access, water supplies, asset protection zone (APZ) requirements, bush fire attack level (BAL) and building footprints in relation to the bush fire hazards.

Determining if your property is on bush fire prone land?

To determine if your proposed development is on bush fire prone land you will need to check with your local council or use the BFPL Tool on the NSW RFS website www.rfs.nsw.gov.au.

Planning law in NSW requires new development on bush fire prone land to comply with the provisions of PBP 2019.

How to use this Kit

The Kit will take you through each step in the bush fire assessment process and help you describe the site characteristics required to complete this assessment. The assessment will give you the BAL for your property and will guide you in determining the appropriate BPMs that are required for your proposed development.

To complete the pull-out BFAR (Section 2) you should work through the bush fire assessment.

Details regarding what construction materials and designs are required for each BAL are contained within AS3959-2018 'Construction of buildings in bushfire-prone areas' (AS3959-2018).

Further information on bush fire protection requirements can be found in PBP 2019 which is available on the NSW RFS website.

Design Principles for Building on Bush Fire Prone Land

The design of a building can be enhanced to reduce the effects of bush fire attack by:

- providing ember protection and building away from the flame zone;
- avoiding building on ridge tops and saddles;
- building on level ground wherever possible;
- building on cut-in benches rather than elevated areas;
- avoiding raised floors, utilise concrete slabs;
- locating habitable buildings near the property entrance for easier access/egress;

- using non-combustible fencing and barriers (e.g. courtyards, fenced off areas for gardens, BBQ areas and the like) to shield the building from the hazard;
- reducing the bulk of a building (height and width) facing a bush fire hazard; and
- simplifying the design of buildings to reduce the numbers of re-entrant corners.

Part A

Property Details

In Section 2 (A), fill in the property details for the site or buildings you plan to develop.

It is important to accurately identify your property to be developed. Your Statement of Environmental Effects which is generally included as a council requirement with your DA will often include a map showing the property location within the broader locality. If this is not done you should include it in this report.

Your contact details will assist council to quickly obtain additional information or to arrange a site inspection if needed.

It is important to clearly identify whether your property is on BFPL. Tick the box to indicate that the property has been checked against the Council's Bush Fire Prone Land Map or the NSW RFS BFPL Tool.

Part B

Type of Proposal

In Section 2 (B), tick the applicable boxes for the type of proposal.

Provide a brief written description of the type of building (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. Include a copy of any plans for landscaping. Tick the box to show that plans are included.

Part C

Determining Construction Levels Required (Bush Fire Attack Levels, or BAL)

To determine the BAL for a building the following steps must be followed:

- STEP 1:** Determine the vegetation type
- STEP 2:** Determine the distance from the building to the bush fire vegetation hazard
- STEP 3:** Determine the effective slope
- STEP 4:** Determine FFDi
- STEP 5:** Determine BAL Level
- STEP 6:** Determine BAL construction requirements

If grasslands are the only vegetation bush fire hazard then you can use the grassland deeming provisions instead of the above assessment process. If you choose to use the grassland deeming provisions refer to Step 5 below.

Explanation of steps

Step 1: Determine the vegetation type

You will need to determine the vegetation around your property to at least 140 metres in all directions from the proposed building.

Check the chart at page 6 of this document to help determine your vegetation type.

For each compass direction (normally north, south, east and west) surrounding your home, identify on the assessment sheet, using the table provided on the inside rear fold-out cover, what vegetation type your building is exposed to.

If you are unsure of the vegetation classification, you may wish to enlist the assistance of suitably qualified bush fire consultant for advice.

NOTE: Where there is more than one vegetation type each type shall be classified separately with the worst case scenario (the most dominate vegetation for bush fire impact) applied.

Classification of Vegetation Formations Chart



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 (Open Shrub)

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 notaports Fire Project

Step 2: Determine the distance from the building to the bush fire vegetation hazard

Identify whether vegetation is located on your property or on an adjoining property.

For vegetation located on your property measure the distance from the building to vegetation and record.

If the vegetation is not located on your property measure the distance from the building to your boundary.

This needs to be done for each aspect of the building elevations that are exposed to bush fire vegetation hazards.

The measured distance is your APZ, see Part H for more details on APZs.

Step 3: Determine the effective slope

Measuring slope can be undertaken using various tools such as clinometers and surveying equipment. There are also commercially available phone applications however the following method is detailed where no equipment is provided.

Simple slope assessment methodology.

Method for estimating slope:

1. Pick a spot between 40 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.
3. Looking past the rule at the assistant's 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.

Figure 2

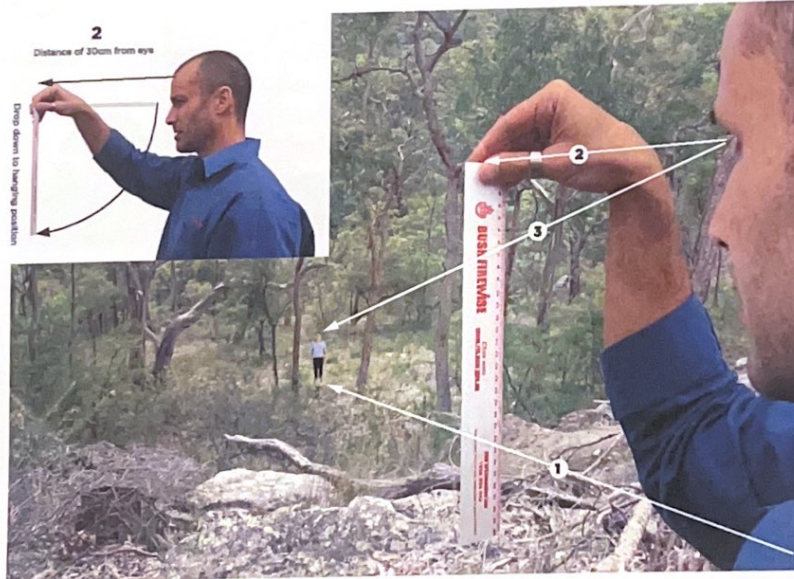


Table 1

Method for estimating slope

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 -20°



Figure 4

Relative slope

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

Step 4: Determine FFDI

To determine the relevant FFDI, refer to the NSW Local Government Areas FDI reference below to the relevant Table number for each Council area.

Use the FDI value obtained as the appropriate FFDI value for your assessment.

NSW LOCAL GOVERNMENT AREAS FIRE DANGER INDEX (FDI)

FAR NORTH COAST (80)

Ballina
Byron
Clarence Valley
Kyogle
Lismore
Richmond Valley
Tweed

NORTH COAST (80)

Bellingen
Coffs Harbour
Mid-Coast
Port Macquarie-Hastings
Kempsey
Nambucca

GREATER HUNTER (100)

Cessnock
Dungog
Lake Macquarie
Maitland
Muswellbrook
Newcastle
Port Stephens
Singleton
Upper Hunter

GREATER SYDNEY REGION (100)

All Sydney Metropolitan Councils
Plus Blue Mountains, Hawkesbury and Central Coast

ILLAWARRA/SHOALHAVEN (100)

Kiama
Shellharbour
Shoalhaven
Wingecarribee
Wollondilly
Wollongong

FAR SOUTH COAST (100)

Bega Valley
Eurobodalla

MONARO ALPINE (80)

Snowy Monaro

SOUTHERN RANGES (100)

Queanbeyan - Palerang
Goulburn Mulwaree
Upper Lachlan
Yass Valley

CENTRAL RANGES (80)

Bathurst
Blayney
Cabonne
Cowra
Lithgow
Mid Western Regional
Oberon
Orange

NEW ENGLAND (80)

Armidale Regional
Glen Innes Severn
Tenterfield
Uralla
Walcha

NORTHERN SLOPES (80)

Gunnedah
Gwydir
Inverell
Liverpool Plains
Tamworth Regional

NORTH WESTERN (80)

Moree Plains
Narrabri
Walgett
Warrumbungle

UPPER CENTRAL WEST PLAINS (80)

Bogan
Coonamble
Gilgandra
Warren

LOWER CENTRAL WEST PLAINS (80)

Bland
Dubbo Regional
Forbes
Lachlan
Narromine
Parkes
Temora
Weddin

SOUTHERN SLOPES (80)

Hilltops
Cootamundra - Gundagai
Snowy Valleys

EASTERN RIVERINA (80)

Albury
Coolamon
Greater Hume
Junee
Lockhart
Wagga Wagga

SOUTHERN RIVERINA (80)

Berrigan
Edward River
Federation
Murray River
Murrumbidgee

NORTHERN RIVERINA (80)

Carrathool
Griffith
Hay
Leeton
Narrandera
Murrumbidgee

SOUTH WESTERN (80)

Balranald
Wentworth

FAR WESTERN (80)

Bourke
Brewarrina
Broken Hill
Central Darling
Cobar
Unincorporated NSW

Step 5: Determine BAL Level

Match the relevant FFDI, appropriate vegetation, separation distance and effective slope to determine the BAL applicable to the building (or associated area) from the following tables.

This should be done for each side of the building.
 Note: If your proposal is greater than 100m from vegetation then there are no construction requirements.

Table 2

Determination of bush fire attack level, **FDI 80**

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				
Rainforest	< 7	7 -< 9	9 -< 14	14 -< 20	20 -< 100
Forest (wet and dry sclerophyll) Including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 15	15 -< 20	20 -< 29	29 -< 40	40 -< 100
Grassy and Semi-Arid Woodland (including Mallee)	< 8	8 -< 11	11 -< 16	16 -< 22	22 -< 100
Forested Wetland (excluding Coastal Swamp Forest)	< 6	6 -< 8	8 -< 12	12 -< 18	18 -< 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	< 7	7 -< 10	10 -< 14	14 -< 20	20 -< 50

How to use this table

- STEP 1:** Determine the vegetation type
- STEP 2:** Determine the distance from the building to the bush fire vegetation hazard
- STEP 3:** Determine the effective slope
- STEP 4:** Determine FFDI
- STEP 5:** Determine BAL Level
- STEP 6:** Determining BAL construction requirements

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
- STEP 6:** Provide information supporting construction requirements

Table 3

Determination of bush fire attack level, FDI 100

KEITH VEGETATION FORMATION	BUSH FIRE ATTACK LEVEL (BAL)					
	BAL-F2	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
	Grassland	< 8	8 -< 10	10 -< 15	15 -< 22	29 -< 100
> 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
	Grassland	< 9	9 -< 12	12 -< 17	17 -< 25	37 -< 100
> 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
	Grassland	< 10	10 -< 13	13 -< 20	20 -< 28	46 -< 100
> 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
	Grassland	< 11	11 -< 15	15 -< 23	23 -< 32	56 -< 100
> 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
	Grassland	< 13	13 -< 17	17 -< 26	26 -< 36	36 -< 50

Table 4

Determination of bush fire attack level, FDI 80

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 FLATLAND	Rainforest	< 7	7 -< 9	9 -< 14	14 -< 20	20 -< 100
	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 15	15 -< 20	20 -< 29	29 -< 40	40 -< 100
	Grassy and Semi-Arid Woodland (including Mallee)	< 8	8 -< 11	11 -< 16	16 -< 22	22 -< 100
	Forested Wetland (excluding Coastal Swamp Forest)	< 6	6 -< 8	8 -< 12	12 -< 18	18 -< 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	< 7	7 -< 10	10 -< 14	14 -< 20	20 -< 50
	Rainforest	< 9	9 -< 12	12 -< 17	17 -< 25	25 -< 100
> 0 > 5 DEGREES - DOWNSLOPE	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 19	19 -< 25	25 -< 35	35 -< 47	47 -< 100
	Grassy and Semi-Arid Woodland (including Mallee)	< 10	10 -< 13	13 -< 19	19 -< 28	28 -< 100
	Forested Wetland (excluding Coastal Swamp Forest)	< 8	8 -< 10	10 -< 15	15 -< 22	22 -< 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	< 8	8 -< 11	11 -< 16	16 -< 23	23 -< 50
	Rainforest	< 11	11 -< 15	15 -< 22	22 -< 32	32 -< 100
	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 24	24 -< 31	31 -< 43	43 -< 57	57 -< 100
> 5 > 10 DEGREES - DOWNSLOPE	Grassy and Semi-Arid Woodland (including Mallee)	< 12	12 -< 17	17 -< 24	24 -< 34	34 -< 100
	Forested Wetland (excluding Coastal Swamp Forest)	< 10	10 -< 13	13 -< 20	20 -< 28	28 -< 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	< 9	9 -< 12	12 -< 18	18 -< 26	26 -< 50
	Rainforest	< 14	14 -< 20	20 -< 29	29 -< 40	40 -< 100
	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 30	30 -< 39	39 -< 52	52 -< 68	68 -< 100
	Grassy and Semi-Arid Woodland (including Mallee)	< 16	16 -< 21	21 -< 31	31 -< 42	42 -< 100
> 10 > 15 DEGREES - DOWNSLOPE	Forested Wetland (excluding Coastal Swamp Forest)	< 12	12 -< 17	17 -< 25	25 -< 35	35 -< 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	< 10	10 -< 14	14 -< 21	21 -< 30	30 -< 50
	Rainforest	< 19	19 -< 25	25 -< 36	36 -< 49	49 -< 100
	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 38	38 -< 48	48 -< 63	63 -< 81	81 -< 100
	Grassy and Semi-Arid Woodland (including Mallee)	< 20	20 -< 27	27 -< 38	38 -< 52	52 -< 100
	Forested Wetland (excluding Coastal Swamp Forest)	< 16	16 -< 22	22 -< 32	32 -< 43	43 -< 100
> 15 > 20 DEGREES - DOWNSLOPE	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	< 12	12 -< 16	16 -< 24	24 -< 34	34 -< 50

Grassland Deeming Provisions

The Deeming Provisions for grasslands provides an acceptable set of simplified requirements for building in areas where grasslands are considered to be the only bush fire hazard. A site assessment as detailed in the previous Steps 1 to 5.

Table 5

Grassland Deeming Provisions

BUSH FIRE PROTECTION MEASURE	GRASSLAND DEEMING PROVISIONS
APZ	<ul style="list-style-type: none"> ➤ limited to a maximum of 15 degrees downslope; ➤ minimum APZ of 20m is provided between the building and unmanaged grass; ➤ the APZ is wholly within the boundaries of the development site; and ➤ the APZ is maintained as a mown area with grass heights less than 100mm.
Construction	➤ construction in accordance with BAL-12.5 of AS3959-2018 and any additional construction requirements in PBP 2019.
Access	➤ comply with the property access provisions in Part G.
Water supply	➤ comply with the water supply provisions in Part E.
Landscaping	➤ comply with the relevant provisions in Appendix 4, PBP 2019 noting that other vegetation bush fire hazards cannot be present if these provisions are to apply.

Step 6: Determining BAL construction requirements

Once the appropriate BAL has been determined in Step 5, AS3959-2018 and or/the NASH Standard 2014 will be used to determine the construction requirements for the proposed design.

Where the proposed development is exposed to a grassland bush fire hazard only (and no other hazards exist within 140m of the proposed development), the Grassland Deeming Provisions can be used instead of the above assessment process, as detailed below.

Where a distance of 50m or more of managed grass to a height of 100mm is to be provided, no further BPMs are required. Where a minimum maintained distance to unmanaged grass of at least 20m is to be provided, the set of provisions shown in Table 5 apply. Where the Grassland Deeming Provisions cannot be achieved, the standard assessment process outlined in Steps 1 to 5 must be adopted. The maximum slope for the Deeming Provisions is restricted to 15 degrees downslope.

For developments in grassland hazard areas where the deeming provisions are applied, compliance with Table 5 is required.

Part D

Flame Zone

If your property's category of bush fire attack is flame zone, your proposal will not be complying with the acceptable solutions of PBP 2019 and your DA will be referred to the NSW RFS.

In many situations, compliance with section 9 of AS3959-2018 may be sufficient to meet PBP 2019.

If your building is in the flame zone there are options you can choose between:

- You can obtain the services of a suitably qualified bush fire consultant to undertake a performance assessment and make recommendations to Council or;
- You can provide your assessment and report using Chapter 9 of AS3959-2018 or the NASH standard 2014 as the basis for the relevant bush fire protection measures for your proposed site.

Keep in mind that another option is to site the building outside the flame zone by allocating more land for an increased APZ. This will permit you to lower your required level of construction.

If you choose to prepare your own BFAR for a BAL-FZ situation you may need to introduce additional bush fire protection features in order to obtain Council approval. This is particularly relevant where a minimum setback distance of 10m is not provided to the hazard vegetation.

If at least a 10m setback is not able to be provided between the building and the bush fire hazard then AS3959-2018 requires all building elements to be tested to a specified bush fire testing standard.

For renovations and alterations the NSW RFS may also recommend that improvements are made to existing buildings in order to provide improved bush fire safety. These may include:

- Screening of existing windows for ember protection;
- Gutter guards, leafless gutters and valleys; and
- Sealing of weep holes and other openings and external doors.

Part E

Water Supplies

Where reticulated water supply is not provided or is considered inadequate, an on site stored supply of water for firefighting will be required. Reticulated water supplies are those that are piped by council or a water authority.

Applicants should ensure they have adequate supplies of water (i.e. tanks, pools, etc) that will be available if the mains system fails or is not available (i.e. rural areas). Additional water can be either a dedicated or static water supply.

Static water supply is an alternative source of water that is guaranteed in a bush fire event, such as a rainwater tank, swimming pool or dam in addition to the mains water supply that could be utilised to fight fires.

Water Requirements:

The water supply requirements for development are as follows:

- Reticulated water is to be provided to the development, where available; and
- A static water supply is provided where no reticulated water is available.
- Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005;
- Hydrants are not located within any road carriageway; and
- Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.
- All above-ground water service pipes external to the building are metal, including and up to any taps.
- Where no reticulated water supply is available, water for firefighting purposes is provided in accordance with Table 6 below.
- A connection for firefighting purposes is located on the non-hazard side and away from the structure; 65mm Storz outlet with a ball valve is fitted to the outlet;
- Ball valve and pipes are adequate for water flow and are metal;
- Supply pipes from tank to ball valve have the same bore size to ensure flow volume;
- Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank;
- A hardened ground surface for truck access is supplied within 4m;
- Above-ground tanks are manufactured from concrete or metal;
- Raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F of AS 3959);
- Unobstructed access can be provided at all times;
- Underground tanks are clearly marked;
- Tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters;
- All exposed water pipes external to the building are metal, including any fittings;
- Where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack; any hose and reel for firefighting connected to the pump shall be 19mm internal diameter; and
- Fire hose reels are constructed in accordance with AS/NZS 1221:1997, and installed in accordance with the relevant clauses of AS 2441:2005.



Figure 5
Gate Valve

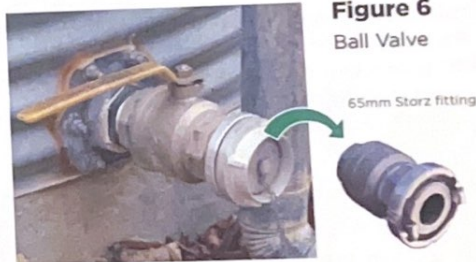


Figure 6
Ball Valve

Table 6

Dedicated water supply requirements for proposals where reticulated water supplies are not provided.

Development Type	Water Requirement
Residential Lots (<1,000m ²)	5,000 l/lot
Rural-residential Lots (1,000 - 10,000m ²) <1 ha	10,000 l/lot
Large Rural/Lifestyle Lots (>10,000m ²) >1 ha	20,000 l/lot
Townhouse/Unit Style (e.g. Flats including Dual Occupancy)	5,000 l/unit up to 20,000l maximum.

Note: The figures in the above table are additional to Basix or any other requirements.

Part F

Gas Supplies

The plans submitted with your application need to show the location and type of bottled gas services within the property.

Reticulated or bottled gas needs to be installed and maintained in accordance with AS/NZS 1596:2014 - *The storage and handling of LP Gas* and the requirements of relevant authorities. Metal piping is to be used.

All fixed gas cylinders are to be kept clear of all flammable materials to a distance of 10m and shielded from bush fire hazards on the hazard side of the installation.

If gas cylinders need to be kept close to the building, the relief valves are to be directed away from the building and at least 2m away from any combustible material so that they do not act as a mechanism for fire spread. All connections are to be metal.

Polymer sheathed flexible gas supply lines and connections are not to be used.

Part G

Access

The following identifies the requirements from PBP 2019 that are required for property access. Not all access requirements will be applicable to a particular development due to site specific conditions (e.g. some dwelling sites may be located physically close enough to a public road to avoid the need for passing bays). However where compliance with the following requirements is not possible, a performance based solution may be needed.

There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.

In circumstances where this cannot occur, the following requirements apply:

- › Property access roads are two-wheel drive, all-weather roads.
- › The capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes), bridges and causeways are to clearly indicate load rating.
- › There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.
- › At least one alternative property access road is provided for individual dwellings or groups of dwellings that are located more than 200m from a public through road;
- › minimum 4m carriageway width;
- › in forest, woodland and heath situations, rural property roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m, at the passing bay;
- › a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;
- › property access must provide a suitable turning area in accordance with PBP 2019 Appendix 3;
- › curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;
- › the minimum distance between inner and outer curves is 6m;
- › the crossfall is not more than 10 degrees;
- › maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and
- › a development comprising more than three dwellings has formalised access by dedication of a road and not by right of way.

Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.

Part H

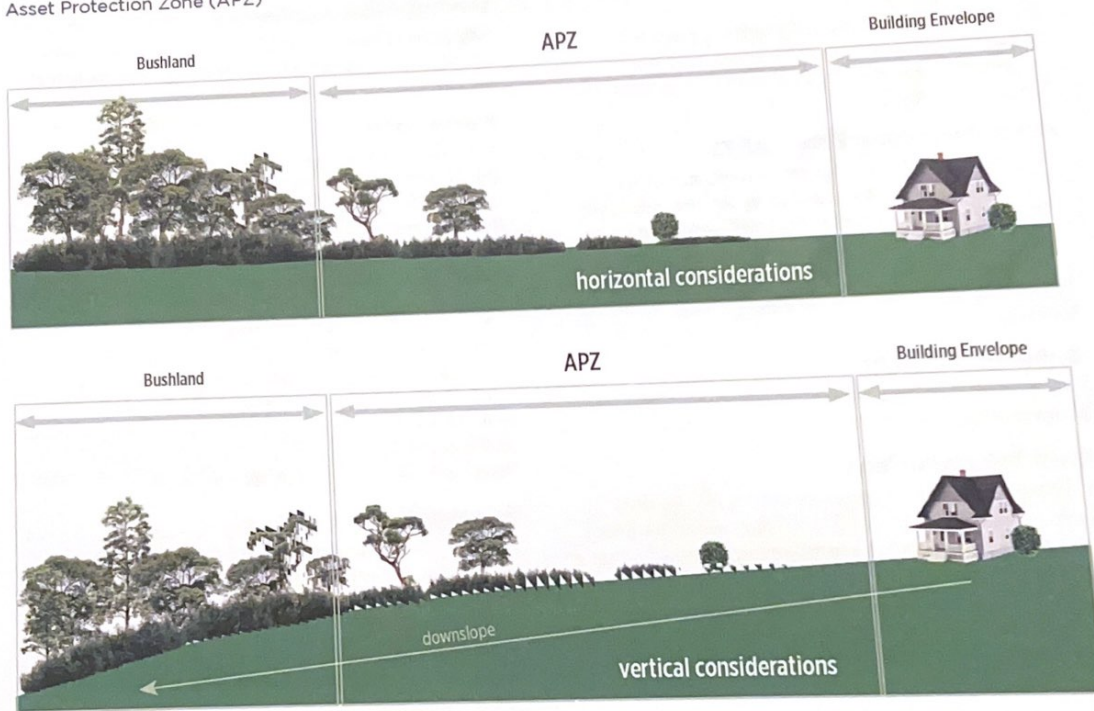
Asset Protection Zones (APZ)

An APZ is an area between a bush fire hazard and a building which is managed to minimise fuel loads, inhibit fire paths and reduce the effects of heat, flame, ember and smoke attack. It keeps the effects of the fire away from the building. The size of the APZ is based on vegetation type, slope and BAL provided.

Although it is possible to build using BAL-Flame Zone construction levels, providing a minimum defensible space and APZs wherever possible will increase the resilience of your home in bush fire situations.

Figure 7

Asset Protection Zone (APZ)



The APZ should be contained wholly within the proposed development site, but can also include existing roads. Unmanaged land or land that is not to be managed will not be considered as an APZ.

APZ's on adjoining managed land will only be considered under exceptional circumstances and then only when an agreed legal arrangement, such

as a legally enforceable easement is provided and submitted with your development 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 NSW RFS website).

Dictionary

Additional definitions can be found in *Planning for Bush Fire Protection 2019*.

Acceptable Solution

The acceptable solutions that meet the requirements (being Chapters 1-8) of Australian Standard AS3959-2018, *Construction of buildings in bushfire-prone areas* or *Planning for Bush Fire Protection 2019* (PBP).

Performance based solution

A method of complying with the performance criteria other than by acceptable solutions.

AS3959-2018

Australian Standard AS3959-2018, *Construction of buildings in bushfire-prone areas*, specifies construction standards applicable to buildings 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 required 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.

Building footprint

The area shown on a plan over which a building is proposed to be erected.

Bush fire prone land

Is an area of land that can support a bush fire or is likely to be subject to bush fire attack. Bush fire prone area is land mapped for a local government area that identifies the vegetation classifications and associated buffer zones. Bush Fire Prone Land Maps are prepared by local councils and certified by the Commissioner of the NSW RFS under section 10.3(2) of the Environmental Planning and Assessment Act 1979.

Bush fire protection measures (BPMs)

Are a range of measures 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 (BFAR)

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 to be provided to meet PBP 2019.

Appendix 2 (A2.2) of *Planning for Bush Fire Protection 2019* provides the information requirements for a bush fire assessment. See also clause 46 of the *Rural Fires Regulation*.

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.

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.

Forest Fire Danger Index (FFDI)

A measure of the degree of danger of bush fire in Australian forests. This index combines a record of dryness, based on rainfall and evaporation, with meteorological variables for wind speed, temperature and humidity. FDI information can be found on the NSW RFS website www.rfs.nsw.gov.au.

Grasslands

Grassed areas capable of sustaining a fire. Under AS 3959 2018, this is identified as low open shrubland, hummock grassland, closed tussock grassland, tussock grassland, open tussock, sparse open tussock, dense sown pasture, sown pasture, open herbfield, and sparse open herb field. Grass, whether exotic or native, which is regularly maintained at or below 10cm in height (including maintained lawns, golf courses, maintained public reserves, parklands, nature strips and commercial nurseries) is regarded as managed land.

TEAR OUT AND ATTACH THIS BUSH FIRE ASSESSMENT REPORT WITH YOUR APPLICATION TO COUNCIL

SECTION TWO

BUSH FIRE ASSESSMENT REPORT

PART A: Property details

Applicant name: James Kimber

Contact phone numbers Home: _____ Mobile: 041251686

Council: Yass

Council reference (if known): _____

Lot: 7

DP: 1255121

Address to be developed: 1331 Marked Tree Road Gundaroo N.S.W.

My property is on Bush Fire Prone Land: Yes No

PART B: Type of proposal

Type of Proposal: Second Dwelling at above address.

New Building Urban Isolated Rural Rural Residential

Alteration/Additions to an existing building

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

Single storey Dwelling

Copy of plans attached: Yes No

PART C: Bush fire attack and level of construction

Step 1

Assess the vegetation hazard in all directions

Category	North	East	South	West
Keith vegetation group	Rainforest	Rainforest	Rainforest	Rainforest
	Forest	Forest	Forest	Forest
	Grassy and Semi-Arid Woodland	Woodland	Woodland	Woodland
	Forested Wetland	Forested Wetland	Forested Wetland	Forested Wetland
	Tall Heath	Tall Heath	Tall Heath	Tall Heath
	Short Heath	Short Heath	Short Heath	Short Heath
	Arid-Shrubland	Arid-Shrubland	Arid-Shrubland	Arid-Shrubland
	Freshwater Wetlands	Freshwater Wetlands	Freshwater Wetlands	Freshwater Wetlands
	Grasslands	Grasslands	Grasslands	Grasslands
	Managed Land	Managed Land	Managed Land	Managed Land

Copy of any relevant photos attached: Yes No

Step 2

Determine the distance from the building to the bush fire vegetation hazard

Aspect	North	East	South	West
Distance	30 m	70 m	300 m	200-500 m

Bush fi

Are a rar the risk a APZs, co arranger managen

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]	upslope/flat	upslope/flat	upslope/flat	upslope/flat
	>0 to 5	>0 to 5	>0 to 5	>0 to 5
	>5 to 10	>5 to 10	>5 to 10	>5 to 10
	>10 to 15	>10 to 15	>10 to 15	>10 to 15
	>15 to 20	>15 to 20	>15 to 20	>15 to 20

Step 4

Determine the FFDI that applies to your local government area. Circle the relevant FFDI below

FFDI: 100 80

Step 5

Match the relevant FFDI, vegetation, distance and slope to determine the required BAL.

Identify the BAL 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 AS3959-2018.

Bush Fire Attack Level: BAL-FZ BAL-29 BAL-12.5
BAL-40 BAL-19 No requirement

Step 6

Determining BAL construction requirements

Once the appropriate BAL has been determined in Step 5, AS3959-2018 and or/ the NASH Standard 2014 will be used to determine the construction requirements for the proposed design.

Does your proposal meet the construction requirements for the BALs required as per AS3959-2018 and the NASH Standard (2014):

Yes No



Grassland Deeming Provisions Assessment

This assessment is only required where the deeming provisions are to be used. Where the deeming provisions are not to be used, previous Steps 1 to 6 in Part C must be applied. Tick which box below applies to individual circumstances:

- An APZ of 50m or more can be provided - this can be considered to meet PBP 2019, no further bush fire protection measures are required
- An APZ of 20-49m can be provided - comply with Grassland Deeming Provisions requirements in the following Table
- An APZ of less than 20m is provided or the standard assessment process is proposed - use the assessment process identified in Steps 1 to 6 above

Grassland Deeming Provisions

BUSH FIRE PROTECTION MEASURE	GRASSLAND DEEMING PROVISIONS
APZ	<ul style="list-style-type: none"> > limited to a maximum of 15 degrees downslope; > minimum APZ of 20m is provided between the building and unmanaged grass; > the APZ is wholly within the boundaries of the development site; and > the APZ is maintained as a mown area with grass heights less than 100mm.
Construction	> construction in accordance with BAL-12.5 of AS3959-2018 and any additional construction requirements in PBP 2019.
Access	> comply with the property access provisions in Part G.
Water supply	> comply with the water supply provisions in Part E.
Landscaping	> comply with the relevant provisions in Appendix 4 of PBP 2019, noting that other vegetation bush fire hazards cannot be present if these provisions are to apply.

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PART D: Flame zone

Provide details and justification for any additional bush fire protection measures required for a performance based solution.

PART E: Water supplies

Does your property have a reticulated water supply?; If so, please provide details on the distance to the nearest fire hydrant on your site plan.

Reticulated water supply is available:

Yes No

Distance 80 (m) to hydrant from house.

Do you have or do you plan to have a dedicated water supply for firefighting purposes?

Yes No

Development Type	Water Requirement	Planned	Existing
Residential Lots (<1,000m ²)	5,000 l/lot		
Rural-residential Lots (1,000 - 10,000m ²) <1 ha	10,000 l/lot		
Large Rural/Lifestyle Lots (>10,000m ²) >1 ha	20,000 l/lot		✓
Townhouse/Unit Style (e.g. Flats including Dual Occupancy)	5,000 l/unit up to 20,000l maximum.		

Do you have or do you plan to have a static water supply (e.g. pool, tank or dam)?

Include approximate size in litres and also include tank material if using a tank:

Water supply type	Capacity	Construction material	Planned	Existing
e.g. pool	50,000l	Above ground rolled steel with plastic liner		✓

NOTE: Check with your local council concerning their Local Environmental Plan (LEP) or their Development Control Plan (DCP) as this may dictate the type and size of tank.

PART F: Gas supplies

Do you have reticulated or bottled gas?

Yes No

Type of gas:

Reticulated gas:

Yes No

Bottled gas:

Yes No

NOTE: When attaching development plans please ensure they clearly show location and details of electricity and gas (where relevant) on your property.

Part G: Access

Does the development proposal meet the requirements as defined in this document?

Yes No

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