BPP Group Pty Ltd.
ABN: 39 166 551 784
Level 1 159-161 James Street Guildford WA 6055
PO Box 388 Guildford WA 6935
P: 6477 1144 | E: admin@bushfireprone.com.au

ADVICE BRIEF

Limitations Notice:

1. *This is advice only. It is intended to assist decision making and is not suitable to submit with a building or planning application; and*
2. *The site visit conducted for this advice will not necessarily remove the requirement for a further site visit to assess and record site data in more detail in order to meet objectives that are developed post consideration of this advice brief.*

Our Reference:	230987		
Client Details:	Contact: Lynn & Jim Baddeley	info@jalbrook.com.au	
Bushfire Consultant:	Louise Stokes (BPAD Level 1 - No. 51589)		
Reviewed:	Kathy Nastov (BPAD Level 3 - No. 27794)		
Appraisal Method:	Site Visit and Desktop	**Date:**	9 December 2023

PROPOSED DEVELOPMENT/USE

Description:	Jalbrook Estate is an established short stay accommodation property, with six cottages, a reception/gallery building and main residence. It is proposed to apply for a change of use for one residence to be used for short stay and to locate two tiny homes to the west of the existing residence. A further three cottages may be constructed to the east of the main reception building. In addition, the property owners are applying for a license for a Reception Centre with an Incidental Camping Area for weddings and functions. Jalbrook would like to host events up to 250 people. The proposed infrastructure will support this business venture. Located on Jayes Road, three minutes' drive from the town centre of Balingup, the property is well maintained and has extensive plantings of deciduous trees around the property. The Bibbulmun Track passes by the property along the boundary, following the Balingup Brook.	
Site Location:	Lot 1 on Plan 012867	**Lot Size:** 43,246m^2
Is a planning application, that addresses the conditions established by State Planning Policy 3.7, required in addition to a building application?		Yes

ASSESSMENT SUMMARY STATEMENTS

Relevant Bushfire Planning Considerations:

- This is an Extreme Bushfire Hazard (risk) area with dense offsite Forest vegetation along the Balingup Brook.
- All onsite buildings can achieve a BAL – 29 with appropriate clearing.
- The property has one access via the private driveway to Jayes Road. There is ability to widen this driveway to meet the technical requirements and for emergency response vehicles.

Bushfire Attack Levels: An Indicative BAL – 29 can be achieved for all buildings and the proposed camp areas.

Proposed Tourism Land Use Type:

Other short-term accommodation including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds).

ADVICE / RECOMMENDATIONS

1. The private driveway will require pruning of bushes on each side to achieve the technical requirements and a passing bay would improve the flow, particularly if the camp area is progressed.

2. It is recommended that a BAL- 29 APZ is established around all habitable buildings and water tanks. Vegetation removal is required to achieve this.

3. Dedicated water tanks for firefighting purposes will need to be located on the property. This includes a minimum 50,000 litre strategic water tank to service the proposed camp area, main residence and the proposed tiny homes.

4. Should this proposal proceed, and a Bushfire Management Plan (BMP) and Bushfire Evacuation Plan (BEP) will be required by the Local Government, BPP can provide a fee proposal for conducting the required assessments and development of the required documents. The BEP will also need to consider evacuation during events.

IDENTIFICATION OF BUSHFIRE PRONE VEGETATION

ONSITE VEGETATION	
Explanatory Information Typically, the landowner can potentially manage this vegetation i.e., remove and/or maintain in a minimal fuel, low threat state in perpetuity, as part of an asset protection zone (APZ). The APZ creates separation between the potential bushfire hazard and a building. This can remove the potential for flame contact (from the bushfire itself) and lowers the level of radiant heat that can be transferred to the building (from the bushfire itself). ***Note: Certain extents and types of native vegetation cannot be modified or removed without permission being obtained from the relevant agency/authority (e.g., local government) – seek their advice first.*** Note that the BAL rating does not consider the building's potential exposure to radiant heat, flames and embers from other vulnerable combustible materials/items/structures that might exist around a building and be ignited by embers from a bushfire that is some distance away. These are consequential fires, and this risk can be the primary risk and must be separately considered and managed by the property owner/manager.	
Location Description and Classification	Explanation
127 Jayes Road Balingup	Onsite vegetation is primarily Excluded vegetation as managed gardens featuring deciduous trees. There are a number of native bushes and trees surrounding existing cottages and water tanks. Some of these will need to be cleared to achieve a BAL – 29 Asset Protection Zone. See Fig 3.2 BAL Contour map for further details. To the west of the property there is an area of Forest vegetation (Rivergum and Marri) growing to a height of 10-15m. The understory is a mix of blackberry, native and unmanaged grasses and bushes and fallen logs/branches. This area is predominantly along the creek line.

OFFSITE VEGETATION	
Explanatory Information In most situations, the owner of the subject site will have no authority to reduce these offsite bushfire hazards by clearing or modifying the vegetation and maintaining the land in a minimal fuel, low threat state in perpetuity. Consequently, the potential bushfire threats from this vegetation will typically remain. This may limit the separation distances that can be achieved (i.e., the size of the APZ that can be established). An exception for relevant parts of the land may exist when: 1. The offsite landowner is subject to a legislated management responsibility e.g., compliance with a fire break/fuel load notice; or 2. A formal agreement for the management of the vegetation on relevant areas of land is established with the offsite landowner (or its responsible manager) e.g., a private landowner or a government agency.	
Location Description and Classification	Explanation
Land surrounding Jalbrook Estate	The Balingup Brook encircles Jalbrook Estate to the northeast, north, west, and southwest. Following the creek on both sides is Forest vegetation (primarily Marri, Flooded gum and a section of E.Maculata) growing to a height of 25m with 80% canopy cover. The undergrowth is thick with blackberry, native bushes, unmanaged grasses and fallen logs. To the east of the property is an area of Grassland (managed for agricultural pursuits).

INDICATIVE BUSHFIRE ATTACK LEVELS (BAL)

Explanatory Information

Each BAL rating represents a range of radiant heat levels that can potentially be transferred to buildings from a bushfire. The determined rating has the following two uses in WA:

1. For building applications, it establishes the construction requirements to be applied, to relevant buildings, for compliance with the Building Code of Australia (BCA). Relevant buildings are essentially residential buildings and associated non-habitable building/structures. Other buildings can be required to comply by the relevant decision makers (Department of Planning Lands and Heritage or the local government authority).

2. For planning applications, it identifies where existing and/or future buildings will be subject to BAL-29 or less and therefore considered suitable for approval for this parameter. Higher BAL ratings (BAL-40 and BAL-FZ) may only be accepted in limited circumstances and will require detailed merit based assessments to support their approval.

The primary variables that determine a BAL rating are:

1. The type of vegetation present (this determines the expected bushfire behaviour);
2. The slope of the land under that vegetation (fires spread faster up slopes and result in greater fire intensity and therefore threat levels);
3. The distance for which a building is or can be separated from the identified bushfire prone vegetation by land that contains either no vegetation or supports minimal vegetative fuels and will be maintained (in perpetuity) in a low threat state (i.e., it meets specifications established by AS 3959:2018).

AS 3959:2018 establishes the BAL determination methodology to use. It is applied as either Method 1, the simplified procedure, or Method 2 as a detailed procedure. Method 2 can be utilised for a more site specific assessment or to incorporate other site and construction variables that may modify the modelled fire or alter the potential for radiant heat to be transferred to buildings (e.g., the impact of any shielding). The application of Method 2 will require the involvement of a Level 3 (BPAD) accredited bushfire practitioner with appropriate levels of bushfire experience. This can incur significant additional costs.

Assessment Comments (refer to Table on following page):

MINIMUM VEGETATION SEPARATION DISTANCES REQUIRED TO ACHIEVE THE TARGET BAL [1] (Simplified BAL Determination Procedure Method 1 - AS 3959:2018 Clause 2.2)								TARGET BAL BAL-29
Relevant Building	**Vegetation Classification** AS 3959:2018, clause 2.2.3		**Effective Slope [2]**	**Current Separation Distances [3] and Corresponding BAL**		**Required Separation Distances [3]**		**Can the Target Potentially be Achieved?**
						Minimum	Additional from Current	
	Location Description	Class	Direction/Degrees	metres	BAL	metres	metres	
Manager's residence, existing cottages, proposed function marquee, proposed cottages, tiny homes and nature stay campground.	Location on map	(A) Forest	Upslope or flat 0	-	-	21m		Yes
		(G) Grassland	Upslope or flat 0	-	-	8m		Yes
		(A) Forest	Downslope >0-5	-	-	27m		Yes
		(A) Forest	Downslope >0-5	-	-	27m		Yes
		(G) Grassland	Downslope >0-5	-	-	9m		Yes
		Excluded, clause 2.2.3.2 (f)	-	-	-	-		Yes

[1] **Stating the required minimum separation distance is not an authority to remove native vegetation. Permission must be sought from the relevant agency/authority.**

[2] **Effective Slope:** The slope of the ground under the classified vegetation, in the direction corresponding to the potential fire spread towards a building, which will most influence the rate of spread, severity and ultimate level of radiant heat (i.e., worst case BAL). Limited to 20^0 downslope and any upslopes are considered as flat when using Method 1.

[3] **Separation Distance:** The distance in the horizontal plane between the receiver (building) and the edge of the classified vegetation. For forests and woodlands, the edge of the vegetation will be determined by the unmanaged understorey rather than either the canopy (drip line) or the trunk. For an indicative BAL when building/structure location within the lot is not known, a building setback from the relevant lot boundary facing the relevant area of vegetation, may be identified (e.g., an R-code setback).

Figure 3.1

Classified Vegetation & Topography

Lot 1 on Plan 012867, Area : 43,246 sq m
127 Jayes Road,
BALINGUP 6253
SHIRE OF DONNYBROOK - BALINGUP

AREA : 1
Class (A) Forest
Effective slope: 0°

AREA : 2
Class (G) Grassland
Effective slope: 0°

AREA : 3
Class (A) Forest
Effective slope: >0° to 5°

AREA : 4
Class (A) Forest
Effective slope: >0° to 5°

AREA : 6
Class (G) Grassland
Effective slope: >0° to 5°

AREA : 6
Class (G) Grassland
Effective slope: >0° to 5°

AREA : 7
Excluded

AREA : 8
Excluded

AREA : 8
Excluded

AREA : 8
Excluded

AREA : 8
Excluded

AREA : 8
Excluded

Dwelling

Lot 1

140 m
135 m
130 m
125 m
165 m
160 m
155 m
150 m
145 m
140 m
135 m
130 m
125 m
120 m
115 m
110 m
115 m
120 m
125 m
110 m

BROOKE ST
BROOKE ST
JAYES RD
Balingup Brook

------ LEGEND ------

- Subject Site
- Other Lots

Existing Building

- Dwelling
- Spa
- Chalet
- Winery / Shop
- Shed
- Water Tank
- Other Building

150m Vegetation Assessment Area

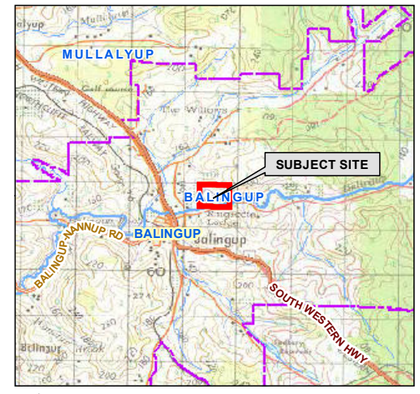
- 150m from Subject Site

Classified Vegetation

- Class (A) Forest
- Class (G) Grassland
- Excluded 2.2.3.2

0 20 40 60 80
Metres

------ LOCALITY ------



Aerial Imagery : Landgate/SLIP
Image Date : Sept 2022

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 12/12/2023
Map updated by: Ian Ross 12/12/2023
A3 Scale 1:1,750

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2023\230987 - 127 Jayes Road Balingup (BMP Evac)\Mapping\MXD\230987_Fig3-1_VEG_127 Jayes Road Balingup.mxd

Figure 3.2

BAL Contour Map

Lot 1 on Plan 012867, Area : 43,246 sq m
127 Jayes Road,
BALINGUP 6253
SHIRE OF DONNYBROOK - BALINGUP

AREA 6
AREA 1
AREA 8
AREA 2
AREA 4
AREA 7
AREA 8
AREA 3
AREA 8
AREA 8
Lot 1
Dwelling
Shed
Chalet
Chalet
BROOKE ST
BROOKE ST
JAYES RD

------ **LEGEND** ------

- Subject Site
- Other Lots

Existing Building

- Dwelling
- Spa
- Chalet
- Winery / Shop
- Shed
- Water Tank
- Other Building

100m Vegetation Assessment Area

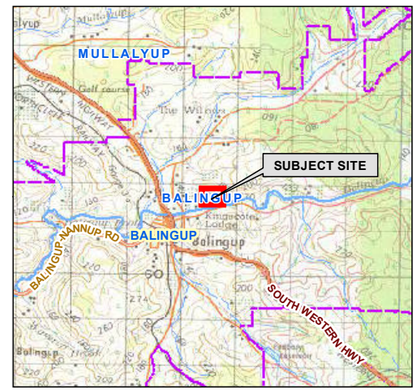
- 100m from Subject Site

Indicative Bushfire Attack Levels

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL LOW
- Classified Vegetation Boundary

0 20 40 60 80
Metres

------ **LOCALITY** ------



Aerial Imagery : Landgate/SLIP
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Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 12/12/2023
Map updated by: Ian Ross 12/12/2023
A3 Scale 1:1,250

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2023\230987 - 127 Jayes Road Balingup (BMP Evac)\Mapping\MXD\230987_Fig3-2_BAL_127 Jayes Road Balingup.mxd

COMPLYING WITH STATE PLANNING POLICY 3.7 'PLANNING IN BUSHFIRE PRONE AREAS' (SPP 3.7)

Explanatory Information

Any development, in a designated bushfire prone area, that is required to have planning approval from the relevant decision maker, must meet the requirements established by SPP 3.7 (WAPC 2015, v1.0) and its associated Guidelines (DPLH 2021 v1.4).

The Guidelines establish the key bushfire protection measures that are considered by the regulatory authorities to satisfy the required level of performance against the threats of bushfire - for the proposed development or use. These are stated as the 'acceptable solutions' and they are grouped by their purpose under the five elements of the Bushfire Protection Criteria.

Elements 1-4 are applied for all strategic planning proposals, subdivision or development applications except for vulnerable tourism land uses.

Element 5 is applied to all vulnerable tourism land uses and addresses Elements 1-4 by applying acceptable solutions that are specific to the use.

SPP 3.7 also establishes the 'alternative solution' pathway for the application of merit or performance based assessments as alternative solutions where the acceptable solutions cannot be met. Using this pathway will require the involvement of a Level 3 (BPAD) accredited bushfire practitioner with appropriate levels of bushfire experience. This can incur significant costs to develop and justify a proposed alternative solution - with no guarantee of success. But it can be a valid pathway to pursue in certain circumstances.

ABILITY OF THE PROPOSED DEVELOPMENT/USE TO COMPLY WITH THE RELEVANT ACCEPTABLE SOLUTIONS

Element 1: Location	Compliance Likelihood				
	Almost None	Unlikely	Possibly	Likely	Almost Certain
					✓

Assessment Comments:

The development site is located in an area that on completion, all habitable buildings will be subject to a BAL -29 or below. Some clearing of native vegetation is required around existing cottages and water tanks, environmental approvals may be required.

There is evidence that mitigation works have been undertaken onsite to reduce the understory of blackberry growth in the Forest vegetation along the Balingup Brook.

The Proposed Vulnerable Tourism Land Use	Short term accommodation (other than B&B/Holiday House) including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds).				
Element 5: Siting and Design	Compliance Likelihood				
	Almost None	Unlikely	Possibly	Likely	Almost Certain
					✓

Assessment Comments: With vegetation clearing all buildings can achieve a BAL – 29 rating.

Element 5: Vehicular Access	Compliance Likelihood				
	Almost None	Unlikely	Possibly	Likely	Almost Certain
					✓

Assessment Comments: The public road Jayes Road meets the technical requirements for this proposal. It travels in two directions (Balingup townsite and Greenbushes via the Grimwade Greenbushes Road). The road is trafficable in all weather conditions for 2WD vehicles. The Local Government is currently managing vegetation along the verge of Jayes Road and widening the road.

The private driveway can meet the technical requirements. It is a gravel road that is in good condition. A passing bay can be installed and vegetation along the edge of the driveway can be trimmed.

There are large parking areas and turn around areas.

Signage can be installed as per the Acceptable Solutions.

Element 5: Provision of Water	Compliance Likelihood				
	Almost None	Unlikely	Possibly	Likely	Almost Certain
					✓

Assessment Comments: A dedicated water tank for firefighting purposes of 50,000 litres would be required at the eastern edge of the property to service the proposed function centre, existing and proposed cottages.

Currently there are 3 x 90,000 litre water tanks on the property. One of these can be isolated as a dedicated firefighting water tank to service the existing cottages, the proposed three cottages and function centre.

The dedicated water supply can be constructed to the technical requirements. Details on the technical requirements are included in the Appendixes of this report for your information.

ATTACHMENT 1 – INFORMATION LINKS AND RELEVANT CONTACTS

INFORMATION LINKS	
DFES – Map of Bushfire Prone Areas	https://maps.slip.wa.gov.au/landgate/bushfireprone/
Department of Planning, Lands and Heritage – all bushfire planning documentation	https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas
AS 3959:2018 Construction of buildings in bushfire prone areas	https://infostore.saiglobal.com/en-au/standards/as-3959-2018-122340_saig_as_as_2685241/
NASH Standard – Steel Framed Construction in Bushfire Area	https://nash.asn.au/nash/publications/nash-standards
Local Government – Firebreak Notice	www.donnybrook.wa.gov.au
Bushfire Practitioner Accreditation (FPA Australia)	http://www.fpaa.com.au/bpad.aspx
RELEVANT CONTACTS	
Shire of Donnybrook Balingup Planning Department	P. (08) 9780 4200 A new Planner is commencing in the New Year.

ATTACHMENT 2 – PHOTOS

<table>
<tr><td> 
</td><td> 
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<tr><td>Vegetation Classification: Class A Forest</td><td>Vegetation Classification: Class G Grassland</td></tr>
<tr><td>Location: Area 3</td><td>Location: Area 6</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>Vegetation Classification: Excluded as per clause 2.2.3.2 (f) Low Threat Vegetation</td><td>Vegetation Classification: Excluded as per clause 2.2.3.2 (f) Low Threat Vegetation</td></tr>
<tr><td>Location: The eastern boundary</td><td>Location: Proposed nature campground</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>Vegetation Classification: Class A Forest</td><td>Vegetation Classification: Excluded as per clause 2.2.3.2 (f) Low Threat Vegetation</td></tr>
<tr><td>Location: Area 4</td><td>Location: Proposed location of function marquee</td></tr>
</table>

	
Vegetation Classification: Class G Grassland	Vegetation Classification: Class A Forest
Location: Area 6	Location: Area 3
	
Vegetation Classification: Class A Forest	Vegetation Classification: Excluded as per clause 2.2.3.2 (e) Non Vegetated Areas and (f) Low Threat Vegetation
Location: Area 1	Location: Proposed location for Tiny Homes

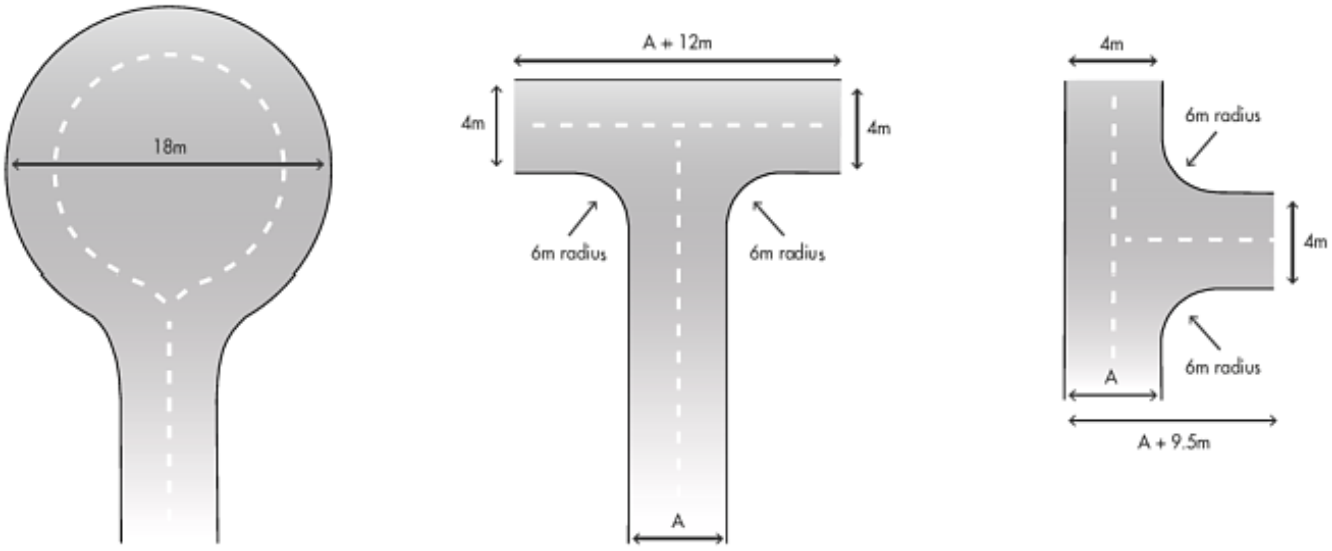
ATTACHMENT 3 TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

The design/layout requirements for access are established by the acceptable solutions of the Guidelines (DPLH, 2021 v1.4) Element 3 and vary dependent on the access component, the land use and the presence of 'vulnerable' persons. Consequently, the best reference source are the Guidelines. The technical requirements that are fixed for all components and uses are presented in this appendix.

GUIDELINES TABLE 6, EXPLANATORY NOTES E3.3 & E3.6 AND RELEVANT ACCEPTABLE SOLUTIONS

Technical Component	Vehicular Access Types / Components			
	Public Roads	Emergency Access Way [1]	Fire Service Access Route [1]	Battle-axe and Private Driveways [2]
Minimum trafficable surface (m)	In accordance with A3.1	6	6	4
Minimum Horizontal clearance (m)	N/A	6	6	6
Minimum Vertical clearance (m)	4.5			
Minimum weight capacity (t)	15			
Maximum Grade Unsealed Road [3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum Grade Sealed Road [3]		1:7 (14.3%)		
Maximum Average Grade Sealed Road		1:10 (10%)		
Minimum Inner Radius of Road Curves (m)		8.5		

Turnaround Area Dimensions for No-through Road, Battle-axe Legs and Private Driveways [4]



Passing Bay Requirements for Battle-axe leg and Private Driveway

When the access component length is greater than the stated maximum, passing bays are required every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum 6m).

Emergency Access Way – Additional Requirements

Provide a through connection to a public road, be no more than 500m in length, must be signposted and if gated, gates must be open the whole trafficable width and remain unlocked.

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% or 7.1 degree) entry and exit angle.

[4] The turnaround area should be within 30m of the main habitable building.

ATTACHMENT 4 – TECHNICAL REQUIREMENTS FOR ONSITE VEGETATION MANAGEMENT

ESTABLISHED BY ELEMENT 2, A2.1, E2 AND SCHEDULE 1 (GUIDELINES V1.4)

The APZ:

This is an area surrounding a habitable building containing either no fire fuels and/or low threat fire fuels that are maintained in a minimal fuel condition. The primary objectives include:

- To ensure the building is sufficiently separated from the bushfire hazard to limit the impact of its direct attack mechanisms i.e., reduce the potential for direct flame contact on the building, reduce the level of radiant heat to which the building is exposed, prevent surface fire spreading to the building and (dependent on the vegetation types) some reduction on the level of ember attack. *Schedule 1: Standards for Asset Protection Zones* (reproduced in Appendix B) and the explanatory notes in the Guidelines (DPLH as amended) provide guidance for achieving this objective. The relevant local government may have further guidance tailored to local conditions in their annual firebreak notice (refer to Appendix B);
- To ensure other combustible materials that can result in consequential fire (typically ignited by embers) within both the APZ and parts of the building - are eliminated, minimised and/or appropriately located or protected. The explanatory notes in the Guidelines (DPLH as amended) provide some guidance for achieving this objective (and other sources are available); and
- Provide a defendable space for firefighting activities.

Bushfire Planning Requirements:

For planning purposes (as opposed to building purposes – see additional notes in Section 5.4 of this BMP - 'What sized APZ must be established') - the necessary outcome for siting and design of development, is to demonstrate that a building can be located within the developable portion of any lot (i.e. outside those parts of the lot that form the required R-Code building setbacks, or any other excluded area), and be subject to potential radiant heat from a bushfire in the adjacent vegetation not exceeding 29 kW/m^2 (i.e. a maximum BAL rating of BAL-29).

This will be achieved when the dimensions of the APZ are large enough. These are the BAL-29 APZ dimensions, and they will vary dependent on the type of vegetation present and the slope of the ground under that vegetation. The required dimensions are determined in this BMP. Other requirements include:

- The APZ should be contained solely within the boundaries of each lot, except in instances where the neighbouring lot(s) or adjacent public land will be maintained to a low-fuel state in perpetuity, and this can be justified (or are non-vegetated).
- Where possible, planning for siting and design of development should incorporate elements that include non-vegetated areas (e.g., roads / parking / drainage / water body) and/or formally managed areas of vegetation (public open space / recreation areas / services installed in a common section of land), as either part of the required APZ dimensions for each lot or to additionally increase separation distances to provide greater protection.

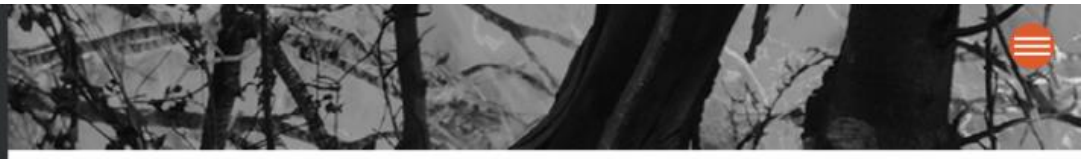
Explanatory Notes – Guidelines E2

These notes address:

- Managing an Asset Protection Zone (APZ) to a low threat state;
- Landscaping and design of an asset protection zone; and
- Plant flammability

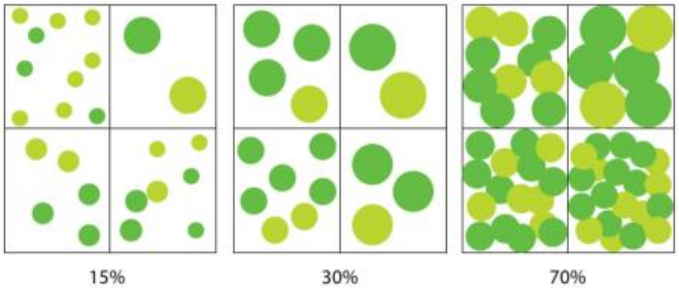
Schedule 1: Standards for Asset Protection Zones

Refer to the following extract from the Guidelines.



ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ. **Figure 19:** Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.

OBJECT	REQUIREMENT
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

ESTABLISHED BY AS 3959:2018 – LOW THREAT AND NON-VEGETATED AREAS

AS 3959 establishes the methodology for determining a bushfire attack level (BAL) along with the corresponding construction requirements. The methodology includes the classification of the subject site's vegetation according to their 'type' and the application of the corresponding bushfire behaviour parameters in determining the applicable BAL(s). Certain vegetation can be considered as low threat and excluded from classification. Where this has occurred in the assessing of the subject site, the extract below establishes the state that area of land must be maintained to.

2.2.3.2 *Exclusions—Low threat vegetation and non-vegetated areas*

The following vegetation shall be excluded from a BAL assessment:

(a) Vegetation of any type that is more than 100 m from the site.

(b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified vegetation.

(c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified vegetation.

(d) Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.

(e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

(f) Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.

NOTES:

1 Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognizable as short-cropped grass for example, to a nominal height of 100 mm).

2 A windbreak is considered a single row of trees used as a screen or to reduce the effect of wind on the leeward side of the trees.

ESTABLISHED BY THE LOCAL GOVERNMENT – THE ANNUAL FIREBREAK NOTICE

Check the notice issued annually (under s33 of the Bushfires Act 1954) for any required changes including any made to the required Asset Protection Zone (APZ) dimensions if they are larger than that corresponding to the building's BAL rating. Note: a copy of the Notice is not included here as it is subject to being reviewed and modified.

A1.5 Requirements Established by the Guidelines – Water Supply Dedicated for Bushfire Firefighting Purposes

(Source: Guidelines for Planning in Bushfire Prone Areas - WAPC 2021 v1.4 Appendix 4, Element 2, Schedule 1 and Explanatory Note E4)

E4 Use of Water Supply

Water supply for firefighting in the event of a bushfire can be provided on a lot for use by emergency services or for use by the landowner, if their Bushfire Survival Plan is to stay and defend their property. Water supply in the form of a dedicated standalone tank may be provided solely for use by emergency services, and/or a water supply may be provided for use by the landowner in the form of non-drinking water (garden or grey water for firefighting) or drinking water. It is important to note, that a combined tank of drinking water and water for firefighting purposes is not recommended. It is required to be separated in accordance with section 4.2.3 of AS/NZS 3500.1:2018. This requirement is necessary, as stagnant water may alter the quality of the drinking water and the emergency services, by law, may not be able to take water from the water supply to suppress a bushfire.

E4 Independent Water and Power Supply

Bushfires can directly impact a water service provider's equipment or pipes. As such, a reticulated water supply may not be reliable due to a reduction in water pressure or loss of supply. Where development is in a bushfire prone area (even if there is access to reticulated water), it is recommended that the landowner consider providing an additional water supply for use by emergency services.

Where a landowner intends on staying to defend their property during a bushfire event, as identified in their Bushfire Survival Plan, it is recommended that pumping equipment separate to the electricity network be provided. The pumping equipment could be a diesel or petrol-powered pump, or an electric pump if there is an onsite generator or backup power supply independent from electricity network grid.

It is recommended that combustion pumps should be a minimum 5hp or 3kW diesel or petrol powered pump and should be shielded against bushfire attack. Where an electric pump is used, a backup power supply independent from electricity network grid should be provided. A 3.7kw/12kw-h sized battery (14.8kw-h reserved solely for bushfire will power a 3.7kw system for 4 hours) with blackout protection or a generator should be provided.

E4 Strategic Water Supplies

Many local governments have a well-developed network of strategic water tanks for firefighting within their local government area. Given this, it is at the discretion of the local government to determine if the water supply within a locality, is sufficient to cater for an increasing population when a subdivision is proposed. Local governments are encouraged to work with their local emergency services to ensure the water needs for firefighting is understood.

Where a structure plan or subdivision proposes to create more than three but less than 24 lots, it is optional as to whether each lot is provided with a 10,000 litre tank or a strategic water tank is provided for the entire development. If 25 or more lots are proposed, then it is recommended that a 50,000 litre strategic water tank (for every 25 lots) is provided. For every lot additional to the 25, it is at the discretion of the local government whether they require an additional strategic water tank or for each lot to be provided with a 10,000 litre tank. For example, 37 proposed lots require two strategic water tanks, or a 10,000 litre tank on each lot, or a combination of both with a strategic water tank and 12 proposed lots with a 10,000 litre tank on each lot. Where the local government, following consultation with the local emergency services, is of the opinion that a strategic water tank is unnecessary, a 10,000 litre standalone tank per lot can be provided.

A strategic water tank should be located no more than 10 minutes from the subject site (20-minute turnaround time). The turnaround time is the time it takes from a lot to the water supply and return back to the lot, at legal road speeds. Where a strategic water tank has been provided at the subdivision stage and a development application is located within the 20-minute turnaround time of that (or another) strategic water source, then the decision-maker could remove the requirement for the provision of an additional water supply at the development application stage. Local government will need to consider whether the strategic water tank has the capacity to serve the lot identified in the development application i.e. what lots were identified at subdivision stage to be serviced by the strategic water tank. A landowner should enquire with their local government to determine whether a water supply on their lot will be required.

When there is fragmented ownership of a structure plan area, or when staging of a subdivision is to occur and the local government has determined that a strategic water tank is required, then the first stage should include arrangements for the installation of a water tank and the identification of land to be ceded to the local government authority (if applicable).

Where local planning scheme provisions provide for developer contributions for public infrastructure and the local government is supportive, then a cash-in lieu arrangement may be established for the provision of a strategic water tank.

Grouped dwellings may provide dedicated firefighting water supply in one standalone tank per lot or may provide one shared standalone tank with the accumulative amount of water needed, for the number of lots it will serve. For example, a development proposing three lots may either have three tanks of 10,000L (one per lot) or one tank with 30,000L (shared between three lots).

E4 Alternative Water Sources

A dam, river or other source may be considered a firefighting water source if it complies with DFES guidelines and it can be demonstrated that the water level will be maintained above the top of the highest fire brigade suction point in perpetuity, if it is expected that the water supply will be used by emergency services. Approval for the use of these types of water supplies are on a case-by-case basis and at the discretion of the decision maker, in consultation with emergency services and local government.

E4 Location of Water Tanks

A water tank should be located with consideration to surrounding vegetation and should avoid locations where the tank will be situated underneath existing vegetation or where vegetation will grow against or overhang the tank, as shown in Figure 30 below. Where a tank is located on the bushfire hazard side of a building, sufficient shielding for the protection of firefighters should be provided. In addition to the tank location, the fitting should be positioned and/or shielded from the bushfire hazard to allow access by emergency services. It is recommended that the fitting face away from the bushfire hazard and be within four metres of a hardstand area.

A good and bad example of landscaping around a water tank

(Source: Guidelines for Planning in Bushfire Prone Areas 2021, Appendix 4)

Schedule 2: Water Supply Dedicated for Bushfire Firefighting Purposes

2.1: Water supply requirements

Water dedicated for firefighting should be provided in accordance with Table 7 below and be in addition to water required for drinking purposes.

Table 7: Water supply dedicated for bushfire firefighting purposes

PLANNING APPLICATION	NON-RETICULATED AREAS
Development application	10,000L per habitable building
Structure Plan / Subdivision: Creation of 1 additional lot	10,000L per lot
Structure Plan / Subdivision: Creation of 3 to 24 lots	10,000L tank per lot **or** 50,000L strategic water tank
Structure Plan / Subdivision: Creation of 25 lots or more	50,000L per 25 lots or part thereof Provided as a strategic water tank(s) or 10,000L tank per lot

2.2: Technical requirements

2.2.1 Construction and design

An above-ground tank and associated stand should be constructed of non-combustible material. The tank may need to comply with AS/NZS 3500.1:2018.

Below ground tanks should have a 200mm diameter access hole to allow tankers or emergency service vehicles to refill direct from the tank, with the outlet location clearly marked at the surface. The tank may need to comply with AS/NZS3500.1:2018. An inspection opening may double as the access hole provided that the inspection opening meets the requirements of AS/NZS 3500.1:2018. If the tank is required under the BCA as part of fire hydrant installation, then the tank will also need to comply with AS 2419.

Where an outlet for an emergency service vehicle is provided, then an unobstructed, hardened ground surface is to be supplied within four metres of any water supply.

2.2.2 Pipes and fittings

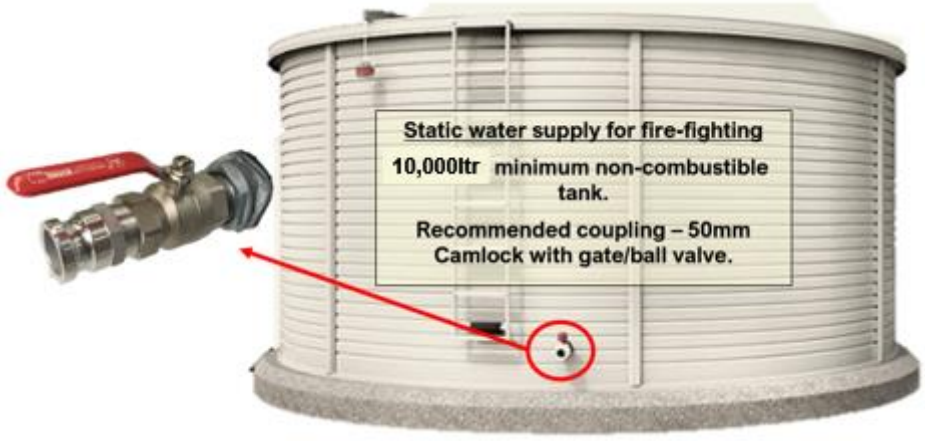
All above-ground, exposed water supply pipes and fittings should be metal. Fittings should be located away from the source of bushfire attack and be in accordance with the applicable section below, unless otherwise specified by the local government.

2.2.2.1 Fittings for above-ground water tanks:

- Commercial land uses: 125mm Storz fitting; or
- Strategic water tanks: 50mm or 100mm (where applicable and adapters are available) male camlock coupling with full flow valve; or
- Standalone water tanks: 50mm male camlock coupling with full flow valve; or
- Combined water tanks: 50mm male camlock coupling with full flow valve or a domestic fitting, being a standard household tap that enables an occupant to access the water supply with domestic hoses or buckets for extinguishing minor fires.

2.2.2.2 Remote outlets

In certain circumstances, it may be beneficial to have the outlet located away from the water supply. In such instances in which a remote outlet is to be used, the applicant should consult the local government and DFES on their proposal.

TECHNICAL REQUIREMENTS FOR STATIC WATER SUPPLY (EXAMPLES ONLY – CHECK WITH LOCAL GOVERNMENT FOR VARIATIONS)
Example construction / coupling requirements from various sources including FESA (DFES) Operational Circular 07/2011 and Planning for Bushfire Protection Guidelines WAPC 2010]


ATTACHMENT 6 – EXPLANATION OF BUSHFIRE ATTACK LEVELS AND REFERENCES FOR CONSTRUCTION REQUIREMENTS

Bushfire Attack Level	Explanation of BAL Levels [1]	References for Construction Requirements	
		AS 3959:2018 Construction of Buildings in Bushfire Prone Areas	**The Nash Standard – Steel Framed Construction in Bushfire Areas**
		Referenced by the Building Code of Australia for Building Classes 1, 2, 3 & 10a	Referenced by the Building Code of Australia for Building Classes 1 & 10a
BAL – LOW	There is insufficient risk to warrant specific construction requirements but there is still some risk. *(Note: DFES recommend that ember attack protection features be incorporated in the design where practicable).*	Section 4. No Requirements	No Requirements
BAL – 12.5	There is a risk of ember attack. Construction elements are expected to be exposed to heat flux not greater than 12.5 kW/m^2	Sections 3 & 5.	All construction requirements for BAL-12.5 to BAL-40 are the same except for windows and external doors, which must comply with AS 3959. The construction requirements are set out as essentially non-combustible construction systems for each of the following building elements: • Section 1.4: General Requirements • Section 2: Roof and Ceiling System • Section 3: External Wall System • Section 4: Floor System • Section 5: Carports Verandahs and Decks.
BAL – 19	There is a risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to radiant heat. The construction elements are expected to be exposed to a heat flux not greater than 19 kW/m^2.	Sections 3 & 6	
BAL – 29	There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level radiant heat. The construction elements are expected to be exposed to a heat flux not greater than 29 kW/m^2.	Sections 3 & 7.	
BAL – 40	There is a much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front. The construction elements are expected to be exposed to a heat flux not greater than 40kW/m^2.	Sections 3 & 8.	
BAL – FZ (Flame Zone)	There is an extremely high risk of ember attack and burning debris ignited by windborne embers, and a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front. The construction elements are expected to be exposed to a heat flux greater than 40 kW/m^2.	Sections 3 & 9.	The construction requirements are set out in Sections 1-5 and differ from the requirements for all other BAL ratings.

[1] AS 3959:2018 *Construction of buildings in bushfire prone areas,* defines a Bushfire Attack Level (BAL) as a "means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat flux expressed in kW/m^2, and is the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire."