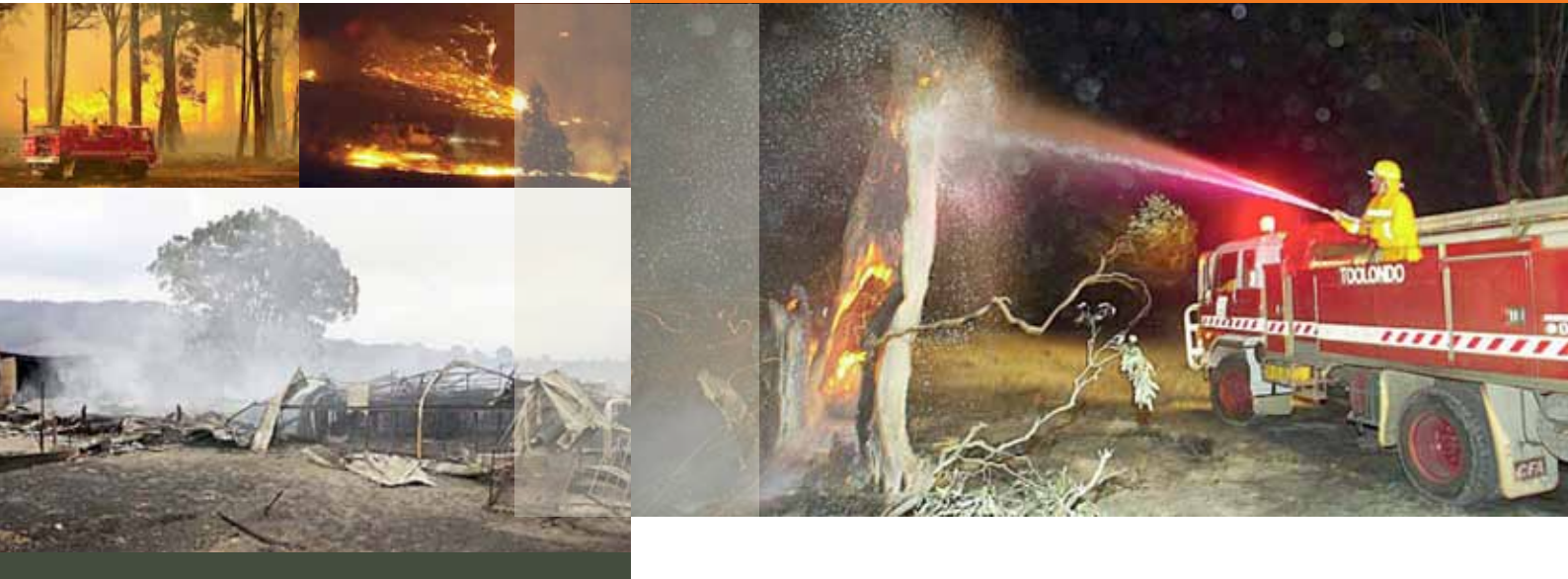




BUILDING CODE OF AUSTRALIA

bush fire construction

2010



“BUSH FIRES”

Every year Australians living in the bush face reality, the very thing that they love “*The Bush*” can very easily develop into a fire that spreads rapidly.

Summers are getting hotter and hotter, drier and drier creating ideal conditions for fire to develop and spread rapidly.

Strong winds coming from central Australia dry out the bush, creating an ideal fire environment.

The wind influences the speed, direction and intensity of the fire by providing more oxygen to feed the fire.

Small pieces of burning leaves, twigs and bark are then carried by the strong driving winds causing new fires to ignite ahead of the main fire.

A “BUSH FIRE” WILL SPREAD IN THREE WAYS:

- (1) **Radiant heat** – sufficient radiant heat can heat fuels in front of the fire until they ignite and then continue to burn.
- (2) **Direct flame contact** – flames move forward and continue to ignite dry fuels ahead of the fire.
- (3) **Burning embers** – when embers land on fine fuels they can start small fires. If left unchecked, these fires smolder, grow and spread.

Update to AS 3959 -2010; *Building in Bushfire Prone Areas*

Following the recent bushfires in Victoria, the Victorian Government and Standards Australia agreed to fast track to publication the latest draft bushfire standard.

The ABCB board have now endorsed the final draft version of the standard for publication, and the new standard will be called up into the BCA as of May 2010.

The new standard is far superior to the existing 1999 version because it is easier to follow and is more realistic in approach. Additionally, buildings at the lower levels of attack should be less costly to construct when compared to the existing standard, however buildings at the higher levels will be more costly.

2.3.4 EXISTING AND PROPOSED WATER SUPPLY FOR THE ALLOTMENT

It is critical that fire-fighting services have ready access to an adequate water supply during bushfires. For this reason the bushfire planning policies require buildings to have a dedicated water supply that is available for fire-fighting purposes at all times. The following requirements apply to dwellings, tourist accommodation and other habitable buildings:

- buildings located in general or medium bushfire risk areas are required to have a minimum of 5000 litres dedicated water supply
- buildings located in a high bushfire risk area are required to have a minimum of 22 000 litres dedicated water supply.

2.3.4.1 ACCESS TO DEDICATED WATER SUPPLIES

(Mandatory provision of the Code for Development Plan Consent purposes)

The bushfire planning provisions require the water supply to be located adjacent to the buildings or in another location on the allotment that is accessible to fire-fighting purposes. Access to dedicated water supplies required for fire-fighting purposes shall:

- be constructed from all-weather materials
- have a minimum formed road width of 4 metres
- allow fire-fighting vehicles to enter and exit in a forward direction
- incorporate an all-weather filling area capable of supporting fire-fighting vehicles with a gross vehicle mass (GVM) of 21 tonnes
- have access verges bordering open water storage areas that incorporate retaining walls to support the weight of fire-fighting vehicles with a gross vehicle mass (GVM) of 21 tonnes.



VOLUME ONE CLASS 2 >9 BUILDINGS PART G5 CONSTRUCTION IN BUSHFIRE PRONE AREAS

OBJECTIVE

G05

The **Objective** of this Part is to:

- (a) safeguard occupants from injury; and
- (b) protect buildings, from the effects of a bushfire.

APPLICATION

G05 only applies to a Class 2 or 3 building in a ***designated bushfire prone area*** and applies in addition to other provisions of the BCA.

FUNCTIONAL STATEMENT

GF5.1

A building constructed in a ***designated bushfire prone area*** is to provide a resistance to bushfires in order to **reduce the danger to life** and minimise the risk of the loss of the building.

PERFORMANCE REQUIREMENT

GP5.1 GP5.1 amended by Amdt No. 6

A building that is constructed in a ***designated bushfire prone area*** must be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes.

G5.2 Protection

A Class 2 or 3 building in a *designated bushfire prone area* must comply with AS 3959.



VOLUME TWO CLASS 1 & 10 BUILDINGS

PART 3.7.4 BUSHFIRE AREAS

SA Clause 3.7.4.1 Application

Compliance with this acceptable construction practice satisfies Performance requirement P 2.3.4 for;

- (A) Class 1 building; or
- (B) A Class 10 building or deck located within 6m of a Class 1 building that is required to comply with this part, constructed in a designated bushfire prone area.

SA 3.7.4.2 Bush fire attack levels

Where a site is located in a designated bushfire prone area, the bushfire attack level that applies to the site is:

- (a) for areas identified as **General Bushfire Risk** areas in Council Development Plans, the **BAL- Low** Bushfire attack level applies;
- (b) for areas identified as **Medium Bushfire Risk** areas in Council Development Plans, the **BAL 12.5** bush fire attack level applies;
- (c) for areas identified as **High Bushfire Risk** areas in Council Development Plans, the bushfire attack level **assessed for the site** pursuant to AS 3959 applies; AND in South Australia;
- (d) for **Excluded areas within 500m** of an adjoining High Bushfire Risk area, as identified in South Australian Development Plans, the **BAL – Low** bushfire attack level; and
- (e) for **Excluded areas within 100m** of an adjoining High Bushfire Risk area, as identified in South Australian Development Plans, the Bushfire attack level **assessed for the site** in accordance with AS 3959.

South Australian Construction Requirements – “PROPOSAL” SA Housing Code Clause F8.2

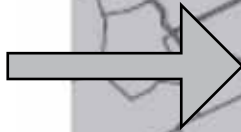
- (a) A Class 1a building, or a Class 10a building or deck located within 6m of a Class 1a building that is required to comply with this section, must be constructed in accordance with Table F8.2 for the Bushfire attack level (BAL) for the site.
- (b) A Class 10a building or deck is NOT required to comply with F 8.2(a) **if it is** separated from a Class 1a building by:
 - (i) for a Class 10a building or deck **attached to or sharing** a common roof space with a Class 1a building, a wall that extends from the footings or concrete slab to the underside of a non combustible roof covering and complies with one of the following:
 - (A) the wall has an FRL of not less than 60/60/60 for load bearing walls, and -/60/60 for non loadbearing walls when tested from the Class 10 side; or
 - (B) the wall is masonry, earth wall or masonry veneer construction where the masonry leaf is not less than 90mm thickness.
 - (ii) for a Class 10a building or deck located **below** a Class 1a buildings, separating floor and/or wall construction complying with one of the following:
 - (A) the floor and/or wall has an FRL of not less than 60/60/60 for load bearing construction, and -/60/60 for non loadbearing construction when tested from the Class 10 side.;
 - (B) where part or all of the separating construction is a wall, the wall need not comply with (A) if it complies with F8.2(b) (i) (B).
 - (iii) for a Class 10a building or deck **located within 6m** of a Class 1 building comply with F8.2(b)(i).
- (c) Opening in separating construction referred to in F 8.2(b) (i) and (ii) must comply with the following:
 - (i) Doorways must be protected by -/60/30 self closing fire doors;
 - (ii) Windows must be protected by -/60/- fire windows permanently fixed in the closed position;
 - (iii) Other openings (*excluding control joints and construction joints, sub floor vents, weep holes and penetrations for pipes and conduits*) must be protected by construction with an FRL of not less than -/60/-.

FIGURE Alex(BPA)2 ADJOINS

HIGH



MEDIUM



EXCLUDED

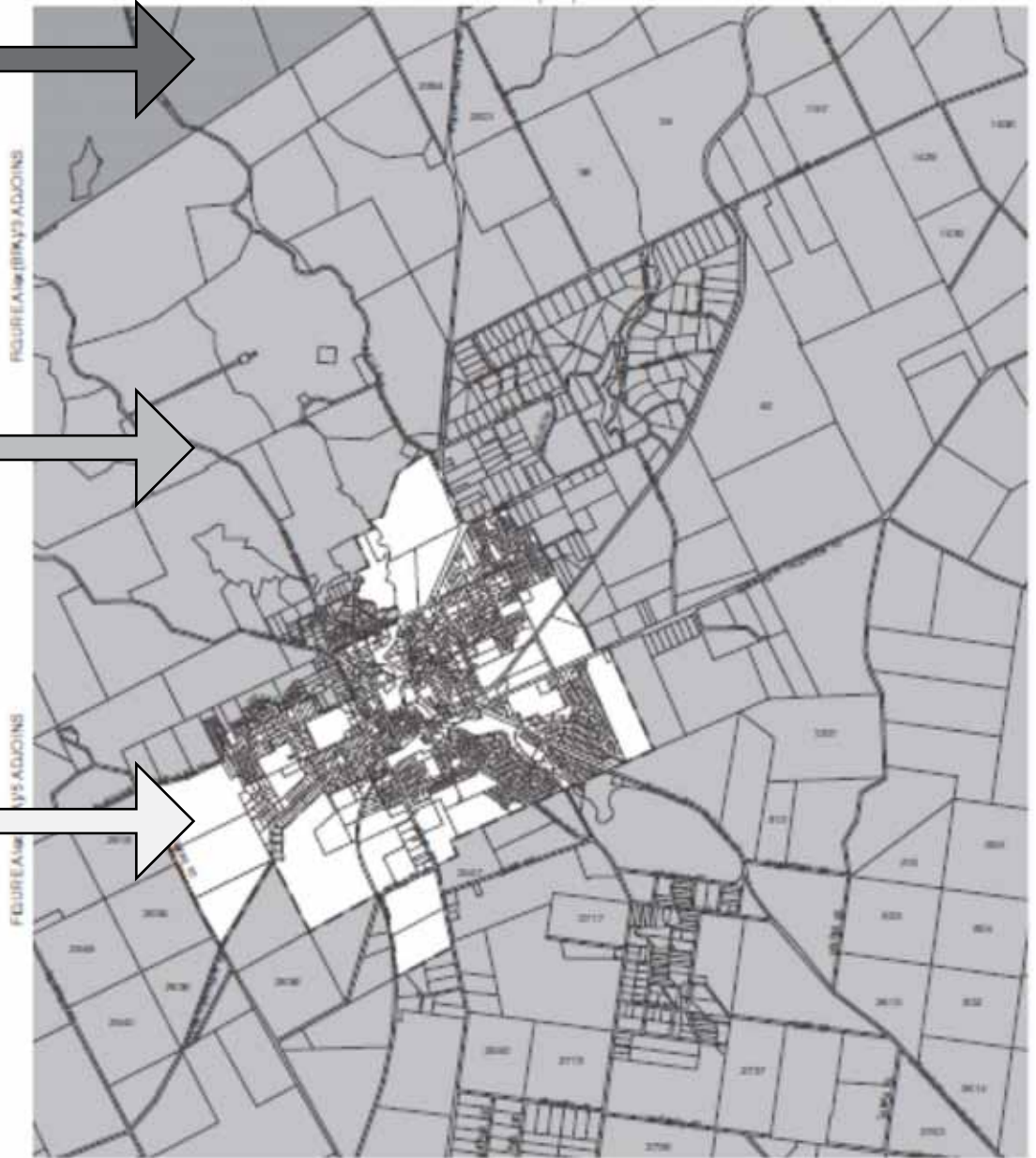
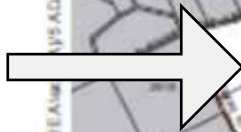


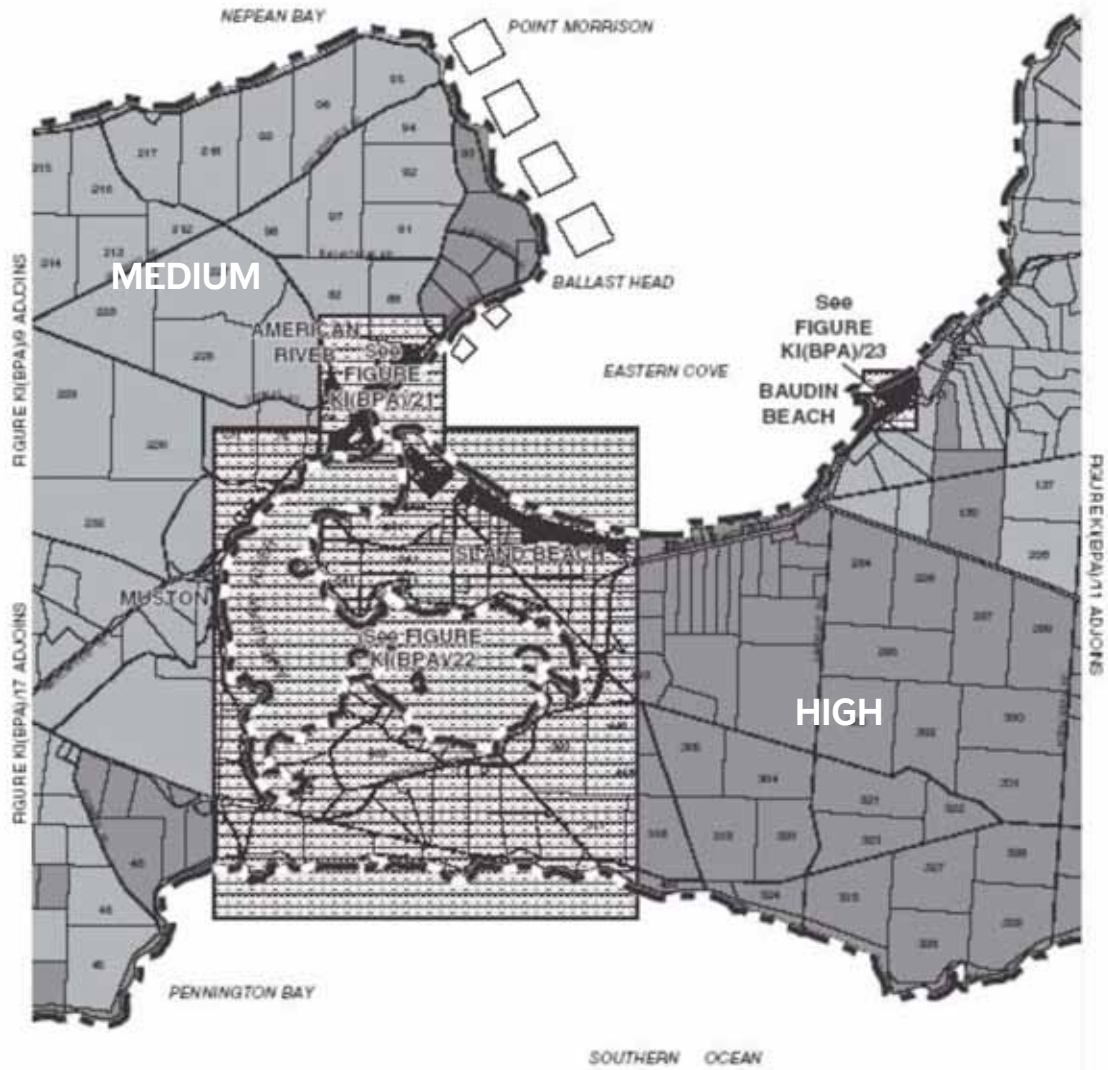
FIGURE Alex(BPA)1 ADJOINS

STRATHALBYN



-  High Bushfire Risk
-  Medium Bushfire Risk
-  Excluded Area from Bushfire Protection Planning Provisions

**ALEXANDRINA COUNCIL
BUSHFIRE PROTECTION AREA
FIGURE Alex(BPA)4**



-  High Bushfire Risk
-  Medium Bushfire Risk
-  Development Plan Boundary



KANGAROO ISLAND COUNCIL BUSHFIRE PROTECTION AREA FIGURE KI(BPA)10

Consolidated - 28 May 2009

FIGURE KI(BPA)10 ADJOINS

FIGURE KI(BPA)21 ADJOINS

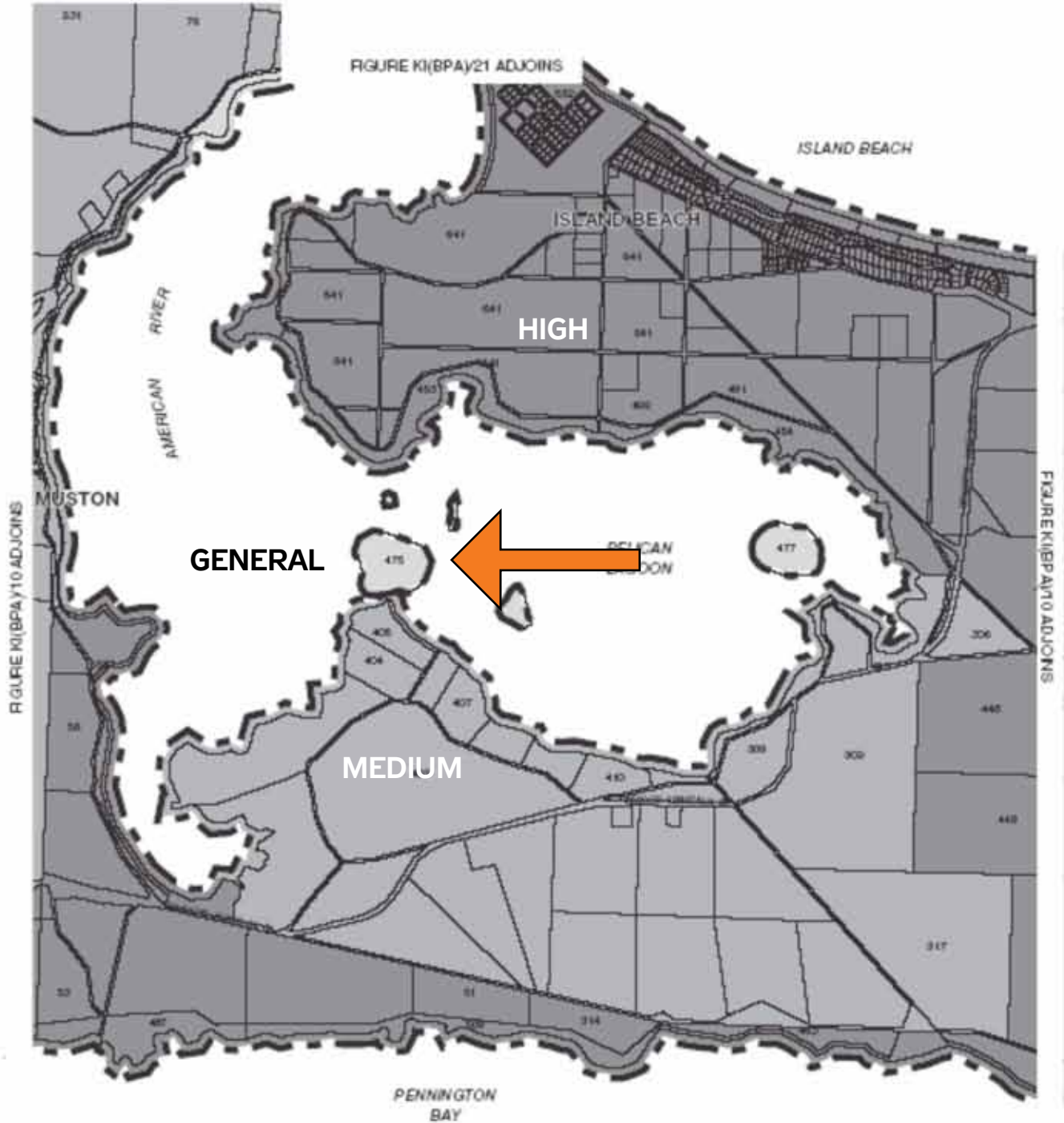


FIGURE KI(BPA)10 ADJOINS

FIGURE KI(BPA)10 ADJOINS

-  High Bushfire Risk
-  Medium Bushfire Risk
-  General Bushfire Risk
-  Development Plan Boundary



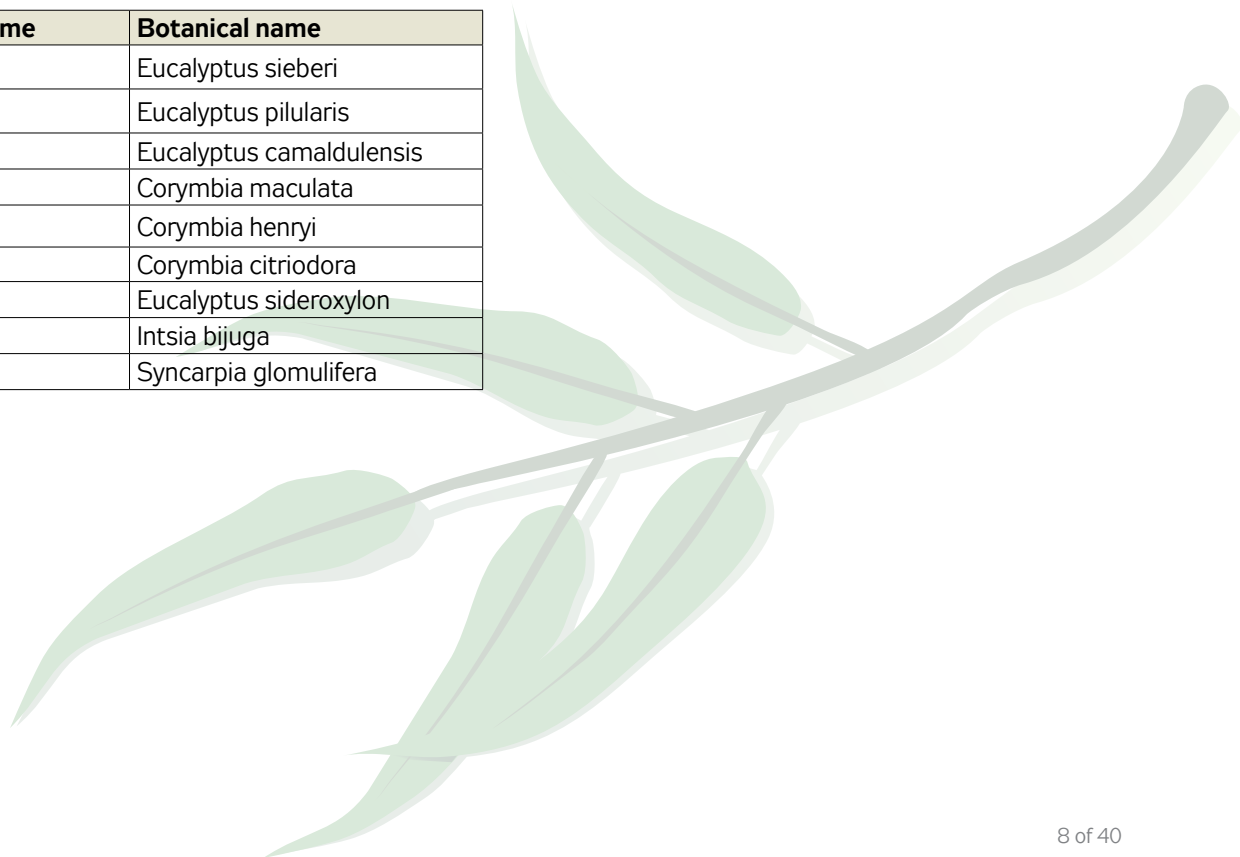
KANGAROO ISLAND COUNCIL BUSHFIRE PROTECTION AREA FIGURE KI(BPA)22

Consolidated - 28 May 2009

SA 3.7.4.3 Construction Requirements

- (a) Class 1 building, or a Class 10 building or a deck required to comply with this Part, **must** be constructed in accordance with Table SA 3.7.4.1 for the bushfire attack level for the site.
- (b) Class 10a building or deck is **not** required to comply with SA 3.7.4.3(a) if it is separated from a Class 1 building by:
- (i) for a Class 10a building or deck attached to or sharing a common roof space with a Class 1 building, a wall that extends from the footings or concrete slab to the underside of a non combustibile roof covering and complies with one of the following:
 - (A) The wall has an FRL of not less than 60/60/60 for loadbearing walls, and -/60/60 for non-loadbearing walls when tested from the Class 10 side;
 - (B) The wall is masonry, earth wall, or masonry veneer construction where the masonry leaf is not less than 90mm in thickness.
 - (ii) for a Class 10a building or deck located below a Class 1 building, separating floor and /or wall construction complying with one of the following:
 - (A) The floor and /or wall has an FRL of not less than 60/60/60 for loadbearing construction, and -/60/60 for non-bearing construction when tested from the Class 10 side;
 - (B) Where part or all of the separating construction is a wall, the wall need not comply with (A) SA 3.7.4.3 if it complies with SA3.7.4.3(b) (i)(B);
 - (iii) For a class 10a building or deck located within 6m of a Class 1 building, comply with SA 3.7.4.3 (b) (i).
- (c) Openings in separating construction referred to in SA 3.7.4.3 (b) (i) & (ii) must comply with the following;
- (i) Doorways must be protected by -/60/30 self-closing fire doors;
 - (ii) Windows must be protected by -/60/- fire windows permanently fixed in the closed position;
 - (iii) Other openings (excluding control and construction joints, sub-floor vents, weepholes and penetrations for pipes and conduits) must be protected by construction with an FRL of not less than -/60/-.
- (d) For the purpose of Table SA 3.7.4.1 bushfire resisting timber is timber that complies with appendix F of AS 3959.
- (e) Where any material, element of construction or system satisfies the test criteria of either AS 1530.8.1, for BAL- 12.5, BAL-29 and BAL-40 and As 1530.8.2 for BAL-FZ, it satisfies the requirements of that BAL.
- (f) If any material, element of construction or system satisfies the test criteria without screening for ember protection, the requirements for screening of openable parts of windows or doors must still apply.

Standard trade name	Botanical name
Ash, silvertop	Eucalyptus sieberi
Blackbutt	Eucalyptus pilularis
Gum, red, river	Eucalyptus camaldulensis
Gum, spotted	Corymbia maculata
	Corymbia henryi
	Corymbia citriodora
Ironbark, red	Eucalyptus sideroxylon
Kwila (Merbau)	Intsia bijuga
Turpentine	Syncarpia glomulifera



(g) Where *required*, bushfire shutters must:

(i) be fixed to the building and non-removable;

(ii) when in the closed position:

- have no gap greater than 3mm between the shutter and the wall, the sill or the head;
- be readily manually operable from either inside or outside;
- protect the entire window assembly or door assembly;
- consist of materials specified in **Table F8.2** (Windows and External Doors);

(iii) where perforated, have:

- uniformly distributed perforations with a maximum aperture of 3mm when the shutter is providing radiant heat protection or 2mm when the shutter is also providing ember protection (such as where the operable portion of the window is not screened in accordance with the requirements of the respective BAL);
- a perforated area no greater than 20% of the shutter;

(iv) if bushfire shutters are fitted to all external doors then at least one of those shutters must be operable from the inside to facilitate safe egress from the building.

(h) Where *required*, screens for *windows* and doors must be made from corrosion-resistant steel, bronze or aluminium mesh or perforated sheet with a maximum aperture size of 2mm. Gaps between the perimeter of the screen assembly and the building element to which it is fitted must not exceed 3mm. The frame supporting the mesh or perforated sheet must be made from metal or bushfire-resisting-timber.

Understanding AS 3959

Construction of Buildings in Bushfire Prone Zones

AS 3959 specifies the requirements for the construction of buildings in a bushfire-prone area in order to **improve their resistance** to bushfire attack.

Although the standard is designed to improve the performance of a building when subjected to bushfire attack there can be **NO** guarantee that any building will survive a bushfire on every occasion.

The methodology for determining a building's construction requirements are:

- **Determine whether the building is in a designated bushfire prone area;**
- **Determine your Fire Developed Index (FDI);**
- **Using the site classification procedure, determine the bushfire attack level (BAL);**
- **Select the appropriate construction solutions for the BAL level SAHC;**

The site assessment procedure is based on scientific data and can be arrived at using either a simplified method within the body of the standard or fire engineering principles contained in appendix B.

The Fire Developed Index (FDI) is a measure of the probability of a bush fire starting, its rate of spread, intensity and difficulty of suppression according to various combinations of temperature, relative humidity, wind speed and estimate of fuel state, all of which is influenced by daily rainfall and the time elapsed since the last rainfall.

Note: In recent Port Lincoln bush fires and FDI reading was taken adjacent the Port Lincoln airport at 300 FDI. The FDI values chosen for use in AS 3959 are from 50FDI in Tasmania, 80 FDI in South Australia and 100FDI in Victoria.

There are now six levels of bushfire attack, compared to the existing three. The levels are based on heat flux exposure and range from Low to Flame Zone. Namely:

BAL – Low;	BAL – 19 kW/m ²	BAL – 40 kW/m ²
BAL – 12.5 kW/m ²	BAL – 29 kW/m ²	BAL - FZ



TABLE G1

TYPICAL RADIANT HEAT INTENSITIES FOR VARIOUS PHENOMENA

Phenomena	kW/m ²
Pain to humans after 10 s to 20 s	4
Pain to humans after 3 s	10
Ignition of cotton fabric after a long time (small flame required)	13
Ignition of timber after a long time 13 (small flame required)	13
Ignition of cotton fabric after a long time (non-piloted) (flame not required to ignite)	25
Ignition of timber after a long time (non-piloted) (flame not required to ignite)	25
Ignition of gaberdine fabric after a long time (non-piloted) (flame not required to ignite)	27
Ignition of black drill fabric after a long time (non-piloted) (flame not required to ignite)	38
Ignition of cotton fabric after 5 s (non-piloted) (flame not required to ignite)	42
Ignition of timber in 20 s (non-piloted) (flame not required to ignite)	45
Ignition of timber in 10 s (non-piloted) (flame not required to ignite)	55

BUSHFIRE ATTACK LEVELS (BAL'S) EXPLAINED

BAL – LOW: *The risk is considered to be **VERY LOW**.*

There is insufficient risk to warrant any specific construction requirements but there is still some risk.

BAL – 12.5: *The risk is considered to be **LOW**.*

There is a risk of ember attack.

The construction elements are expected to be exposed to a heat flux not greater than 12.5 kW/m².

BAL – 19: *The risk is considered to be **MODERATE**.*

There is a risk of ember attack and burning debris ignited by wind borne 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/m².

BAL – 29: *The risk is considered to be **HIGH**.*

There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level of radiant heat.

The construction elements are expected to be exposed to a heat flux not greater than 29 kW/m².

BAL – 40: *The risk is considered to be **VERY HIGH**.*

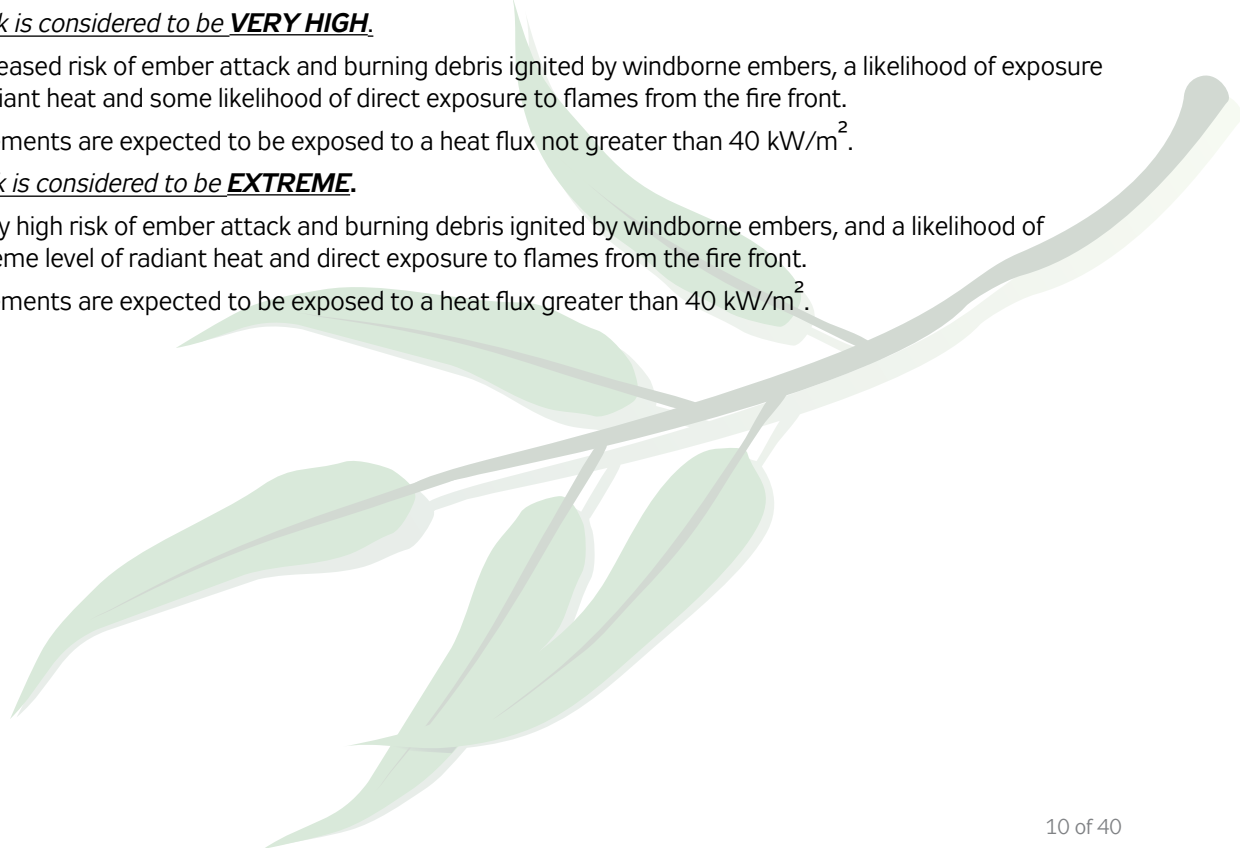
There is a much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front.

The construction elements are expected to be exposed to a heat flux not greater than 40 kW/m².

BAL – FZ: *The risk is considered to be **EXTREME**.*

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/m².



BUSH FIRE ATTACK LEVELS FOR SOUTH AUSTRALIA

Where a site is located in a designated bush fire prone area, the bush fire attack level to the site shall be:

- (1) For areas defined as “General Bushfire Risk” > **The BAL – Low level;**
- (2) For area defined as “Medium Bushfire Risk” > **BAL – 12.5;**
- (3) For areas defined as “High Bushfire Risk” > **The bush fire attack level assessed for the site shall be carried out in accordance with AS 3959 AND**
- (4) For “Excluded Areas” within 500m of an adjoining High Bushfire Risk area the **BAL – Low**
- (5) For “Excluded Areas” within 100m of an adjoining High Bush Fire Risk area. **The bush fire attack level assessed for the site shall be carried out in accordance with AS 3959**

SIMPLIFIED PROCEDURE TO DETERMINE THE BAL LEVEL

Step	Clause	Procedure
Step 1	2.2.2	Determine the relevant FDI (see Table 2.1).
Step 2	2.2.3	Determine the classified vegetation type(s) (see Table 2.3 and Figure 2.3).
Step 3	2.2.4	Determine the distance of the site from the classified vegetation type(s) [(Point A to Point B see Figure 2.1)].
Step 4	2.2.5	Determine the effective slope(s) under the classified vegetation type(s) (see Figure 2.2).
Step 5	2.2.6	Determine the BAL from the appropriate table (see Tables 2.4.2, 2.4.3, 2.4.4 and 2.4.5, and refer to Table 2.4.1 for input values used in developing the Tables.
Step 6	2.2.7	Determine the appropriate construction requirements.

Step1: Relevant Fire Danger Index (FDI)

The relevant FDI shall be determined in accordance with Table 2.1 for the identified jurisdiction or region within a jurisdiction.

TABLE 2.1

State/Region	FDI
Australian Capital Territory	100
New South Wales	
(a) Greater Hunter, Greater Sydney, Illawarra/Shoalhaven, Far South Coast and Southern Ranges fire weather districts	100
(b) NSW alpine areas	50
(c) NSW general (excluding alpine areas, Greater Hunter, Greater Sydney, Illawarra/Shoalhaven, Far South Coast and Southern Ranges fire weather districts)	80
Northern Territory	40
Queensland	40
→ South Australia	80
Tasmania	50
Victoria	
(a) Victoria alpine areas	50
(b) Victoria general (excluding alpine areas)	100
Western Australia	80

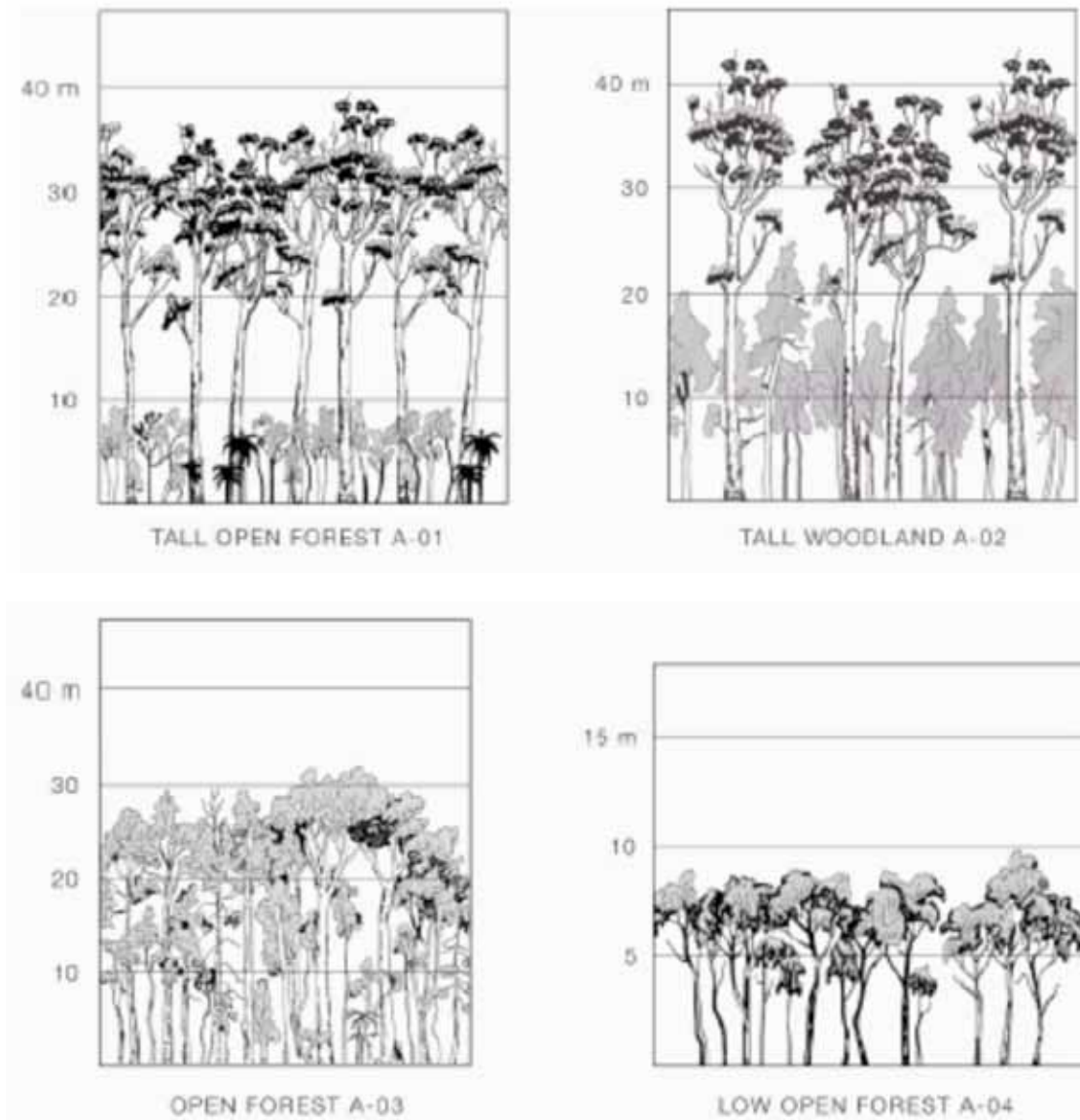
NOTES:

1. The FDI values may be able to be refined within a jurisdiction or region where sufficient climatological data is available and in consultation with the relevant regulatory authority.
2. The FDI values were provided by the Australian Fire and Emergency Service Authorities Council (AFAC).
3. Alpine and sub-alpine areas are defined as per the Building Code of Australia, Volume Two

Step 2: Vegetation classification

Vegetation shall be classified in accordance with Table 2.3 and Figures 2.4(A) to 2.4(G).

Where there is more than one vegetation type, each type shall be classified separately with the worst case scenario (predominant vegetation is not necessarily the worst case scenario) applied.



NOTE: See Table 2.3.

FIGURE 2.4(A) CLASSIFICATION OF VEGETATION—FOREST

TABLE 2.3

CLASSIFICATION OF VEGETATION

Vegetation classification (see Tables 2.4.2 – 2.4.5)	Vegetation type	Figure No. in Fig. 2.3 and Figs 2.4(A) to 2.4(G)	Description
A Forest	Tall open forest	01	Trees over 30m high; 30-70% foliage cover (may include understorey ranging from rainforest and tree ferns to low trees and tall shrubs). Found in areas of high reliable rainfall. Typically dominated by eucalypts.
	Tall woodland	02	
	Open forest	03	Trees 10-30m high; 30-70% foliage cover (may include understorey of sclerophyllous low trees and tall scrubs or grass). Typically dominated by eucalypts.
	Low open forest	04	
	Pine plantation	Not shown in Figure 2.3	Trees 10-30m in height at maturity, generally comprising Pinus species or other softwood species, planted as a single species for the production of timber.
B Woodland	Woodland	05	Trees 10-30m high; 10-30% foliage cover dominated by eucalypts; understorey low trees to tall shrubs typically dominated by Acacia, Callitris or Casuarina.
	Open woodland	06	
	Low woodland	07	Low trees and shrubs 2-10m high; foliage cover less than 10%. Dominated by eucalypts and Acacias. Often have a grassy understorey or low shrubs. Acacias and Casuarina woodlands grade to Atriplex shrublands in the arid and semi-arid zones.
	Low open woodland	08	
	Open shrubland	09	
C Shrubland	Closed heath	10	Found in wet areas affected by poor soil fertility or shallow soils. Shrubs 1-2m high often comprising Banksia, Acacia, Hakea and Grevillea. Wet heaths occur in sands adjoining dunes of the littoral (shore) zone. Montane heaths occur on shallow or water-logged soils.
	Open heath	11	
	Low shrubland	12	Shrubs < 2m high; greater than 30% foliage cover. Understoreys may contain grasses. Acacia and Casuarina often dominant in the arid and semi-arid zones.

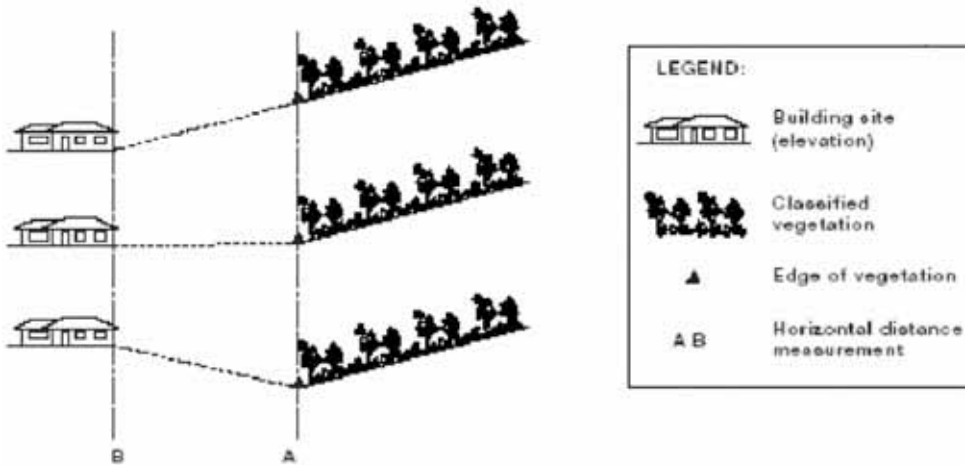
Exclusions - Low threat vegetation and non-vegetated areas

The Bushfire Attack Level shall be classified **BAL - LOW** where the vegetation is one or a combination of any of the following:

- (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;
- (c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other;
- (d) Strips of vegetation less than 20 m in width regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified;
- (e) Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops;
- (f) Low threat vegetation, including managed grassland, maintained lawns, golf courses, maintained public reserves and parklands, botanical gardens, vineyards, orchards, cultivated ornamental gardens, commercial nurseries, nature strips and wind breaks.

Step 3: Distance of the site from classified vegetation

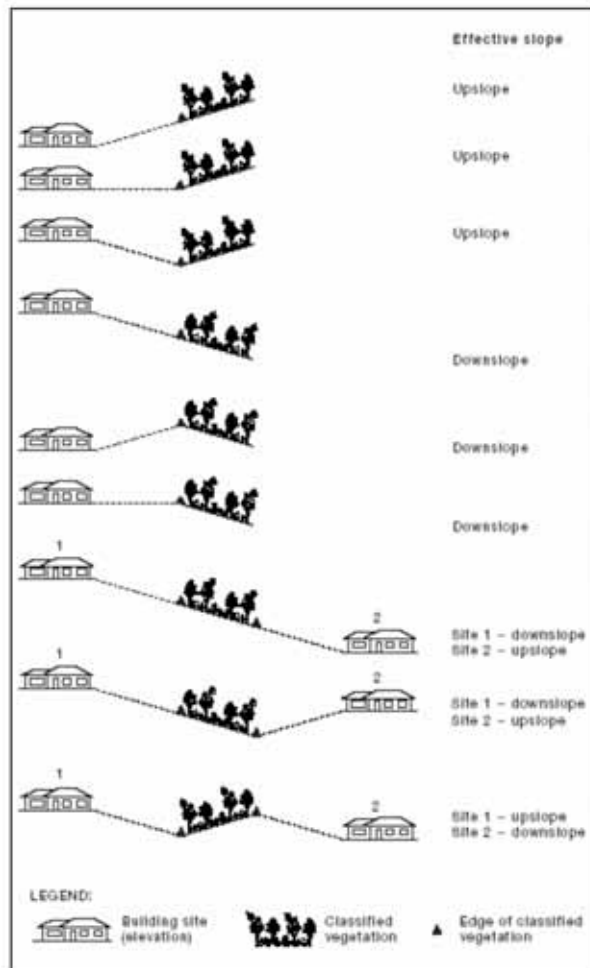
For each vegetation type classified in Clause 2.2.3, determine the distance of the site from the classified vegetation, measured in the horizontal plane (see Figure 2.1, Point A to Point B).



The measurement of distance A to B is measured in plan (i.e., horizontally) and is taken to the external wall of the proposed building, or for parts of the building that do not have external walls (including carports, verandas, decks, landings, steps and ramps), to the supporting posts or columns.

TABLE 2.2
SLOPE COMPARISONS

Degrees	Ratio	Percentages
45	1:1	100
34	1:1.5	66
26	1:2	50
21	1:2.5	40
18	1:3	33
15	1:3.5	28
14	1:4	25
12	1:4.5	22
11	1:5	20
10	1:5.5	18
9	1:6	16
9	1:6.5	15
8	1:7	14
8	1:7.5	13
7	1:8	12
7	1:8.5	11
6	1:9	11
6	1:10	10
5	1:11	9
5	1:12	8
4	1:13	8
4	1:14	7
4	1:15	7
4	1:16	6
3	1:17	6
3	1:18	5.5
3	1:19	5
3	1:20	5



Step 4: Effective slope of land under the classified vegetation

'Slope' refers to the slope under the classified vegetation in relation to the building—not the slope between the vegetation and the building.

For each vegetation type classified in Clause 2.2.3, determine the effective slope (in degrees) of the land under the classified vegetation and whether it is upslope or down slope in relation to the site (see Figure 2.2).

Effective slope of land under classified vegetation is presented in degrees, approximate slope ratios and percentages. As fires travel slower down a hill, all classified vegetation that is upslope will assume a value of 0° (i.e., flat land).

Table 2.2 provides comparisons between degrees, slope ratios and percentages.

Step 5 - Determination of Bushfire Attack Level (BAL)

The determination of Bushfire Attack Level (BAL) for a site using Method 1 shall be determined in accordance with the following:

- Select the relevant table from **Tables 2.4.3** based on the FDI determined at Clause 2.2.2 (Step 1).
- Using the relevant table, determine the Bushfire Attack Level (BAL) for each of the vegetation classifications determined at Clause 2.2.3 (Step 2), the distance from the site determined at Clause 2.2.4 (Step 3) and the effective slope determined at Clause 2.2.5 (Step 4).
- Select the highest Bushfire Attack Level (BAL) obtained from Item (b) above.

TABLE 2.4.3

DETERMINATION OF BUSHFIRE ATTACK LEVEL (BAL) - FDI 80 (1090 K)

Vegetation Classification	Bushfire Attack Levels (BALs)				
	BAL – FZ	BAL – 40	BAL – 29	BAL – 19	BAL – 12.5
	Distance (m) of the site from the predominant vegetation class				
All upslopes and flat land (0 degrees)					
A. Forest	<16	16 – <21	21 - <31	31 - <42	42 - <100
B. Woodland	<10	10 - <14	14 - <20	20 - <29	29 - <100
C. Shrubland	<10	10 - <13	13 - <19	19 - <27	27 - <100
D. Scrub	<7	7 - <9	9 - <13	13 - <19	19 - <100
E. Mallee/Mulga	<6	6 - <8	8 - <12	12 - <17	17 - <100
F. Rainforest	<6	6 - <9	9 - <13	13 - <19	19 - <100
Downslopes >0 –to 5 degrees					
A. Forest	<20	20 - <27	27 - <37	37 - <50	50 - <100
B. Woodland	<13	13 - <17	17 - <25	25 - <35	35 - <100
C. Shrubland	<11	11 - <15	15 - <22	22 - <31	31 - <100
D. Scrub	<7	7 - <10	10 - <15	15 - <22	22 - <100
E. Mallee/Mulga	< 7	7 - <9	9 - <13	13 - <20	20 - <100
F. Rainforest	<8	8 - <11	11 - <17	17 - <24	24 - <100
Downslope >5 to 10 degrees					
A. Forest	<26	26 - <33	33 - <46	46 - <61	61 - <100
B. Woodland	<16	16 - <22	22 - <31	31 - <43	43 - <100
C. Shrubland	<12	12 - <17	17 - <24	24 - <35	35 - <100
D. Scrub	<8	8 - <11	11 - <17	17 - <25	25 - <100
E. Mallee/Mulga	<7	7 - <10	10 - <15	15 - <23	23 - <100
F. Rainforest	<11	11 - <15	15 - <22	22 - <31	31 - <100
Downslope >10 to 15 degrees					
A. Forest	<33	33 - <42	42 - <56	56 - <73	73 - <100
B. Woodland	<21	21 - <28	28 - <39	39 - <53	53 - <100
C. Shrubland	<14	14 - <19	19 - <28	28 - <39	39 - <100
D. Scrub	<9	9 - <13	13 - <19	19 - <28	28 - <100
E. Mallee/Mulga	<8	8 - <11	11 - <18	18 - <26	26 - <100
F. Rainforest	<14	14 - <19	19 - <28	28 - <39	39 - <100
Downslope >15 to 20 degrees					
A. Forest	<42	42 - <52	52 - <68	68 - <87	87 - <100
B. Woodland	<27	27 - <35	35 - <48	48 - <64	64 - <100
C. Shrubland	<15	15 - <21	21 - <31	31 - <43	43 - <100
D. Scrub	<10	<10 – 15	15 - <22	22 - <31	31 - <100
E. Mallee/Mulga	<9	9 - <13	13 - <20	20 - <29	29 - <100
F. Rainforest	<18	18 - <25	25 - <36	36 - <48	48 - <100

EXAMPLE:

- Step 1** FDI 80 for South Australia
- Step 2** Vegetation type = Open forest up to 30m high
- Step 3** Distance to vegetation = 25m
- Step 4** Determine slope = Flat > up slope 5 degrees.
- Step 5** Select BAL level = **BAL 29**

Step 6: Determination of the appropriate construction requirements

Proceed to Section 3 to determine the appropriate construction requirements.

TABLE 3.1
BUSHFIRE ATTACK LEVELS AND CORRESPONDING SECTIONS FOR SPECIFIC CONSTRUCTION REQUIREMENTS

Bushfire Attack Level (BAL)	Classified vegetation within 100m of the site and heat flux exposure thresholds	Description of predicted bushfire attack and levels of exposure	Construction Section
BAL – LOW	See Clause 2.2.3.2	There is insufficient risk to warrant specific construction requirements	4
BA _i - 12.5	≤ 12.5 kW/m ²	Ember attack	3 and 5
BAL – 19	>12.5 kW/m ² ≤ 19 kW/m ²	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux	3 and 6
→ BAL – 29	>19 kW/m ² ≤ 29 kW/m ²	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux	3 and 7
BAL – 40	> 29 kW/m ² ≤ 40 kW/m ²	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux with the increased likelihood of exposure to flames	3 and 8
BAL – FZ	> 40 kW/m ²	Direct exposure to flames from fire front in addition to heat flux and ember attack	3 and 9



TABLE F8.2

CONSTRUCTION REQUIREMENTS FOR BAL – LOW, BAL – 12.5, BAL – 19, BAL – 29, BAL – 40 AND BAL – FZ SITES

FLOORING SYSTEMS	
1. BAL – Low	
	<p>A flooring system must comply with one or a combination of the following:</p> <p>(a) A concrete slab-on-ground.</p> <p>(b) A suspended concrete floor.</p> <p>(c) A framed floor where, if the underside is greater than 600mm above finished ground or paving level, the sub-floor space is enclosed with –</p> <ul style="list-style-type: none"> (i) a <i>non-combustible</i> sheet material. If fibre-cement sheets are used for this purpose, the sheets must have a minimum thickness of 6mm; or (ii) a wall that extends around the perimeter of the floor from the underside of the lowest framing member to finished ground or paving level and is constructed of one or a combination of the following: <ul style="list-style-type: none"> (aa) a <i>non-combustible</i> material, such as full masonry, brick veneer, mud brick, concrete or aerated concrete. (bb) a timber or steel-framed wall that is sarked on the outside of the frame with <i>sarking-type-material</i> having a <i>flammability index</i> of not more than 5, and clad with – <ul style="list-style-type: none"> (A) fibre-cement external sheeting with a minimum thickness of 6mm; or (B) steel sheet; or (C) bushfire-resisting-timber; or (D) a combination of (A), (B) or (C). (cc) a combination of (aa) and (bb). (iii) a vertical <i>non-combustible</i> sheet material that extends around the perimeter of the floor from the underside of the lowest framing member to finished ground or paving level. If fibre-cement sheets are used for this purpose, the sheets must have a minimum thickness of 6mm. <p>(d) a framed floor where, if any joist and/or bearer is less than 600mm above finished ground or paving level, the sub-floor space is –</p> <ul style="list-style-type: none"> (i) if unenclosed, constructed from flooring material, including bearers, joists and flooring that is – <ul style="list-style-type: none"> (A) non-combustible; or (B) bushfire-resisting-timber; or (C) particleboard or plywood flooring where the underside is lined with <i>sarking-type-material</i> or mineral wool insulation; or (D) a system complying with AS 1530.8.1; or (E) a combination of (A), (B), (C) or (D). (ii) enclosed with a wall complying with (c)(ii). (iii) enclosed with a mesh or perforated sheet made from corrosion-resistant steel, bronze or aluminium with a maximum aperture size of 2mm. (iv) enclosed with <i>non-combustible</i> sheet material that extends not less than 400mm above finished ground or paving level and to the bottom of the wall sheeting material. If fibre reinforced cement sheets are used for this purpose, the sheets must have a minimum thickness of 6mm. Refer Figure F8.2.1 <p>A flooring system complying with (c) or (d) must have all joints in the external surface of walls covered, sealed, overlapped, backed or butt-jointed to prevent gaps greater than 3mm. Alternatively, <i>sarking-type-material</i> can be applied over the frame prior to fixing any external sheeting.</p>
2. BAL - 12.5	As per the BAL – Low requirements of this table
3. BAL – 19	As per the BAL – Low requirements of this table
4. BAL – 29	As per the BAL – Low requirements of this table
5. BAL – 40	<p>As per the BAL – Low requirements of this table with the following variation –</p> <p>A framed floor where the sub-floor space is unenclosed, must be constructed from flooring materials, including bearers, joists and flooring that are –</p> <ul style="list-style-type: none"> (i) <i>non-combustible</i>; or (ii) have the underside of the combustible elements of the floor system protected with a <i>non-combustible</i> material; or (iii) a system complying with AS 1530.8.1; or (iv) a combination of (i), (ii) or (iii).

6. BAL – FZ
As per the BAL – Low requirements of this table with the following variation – A framed floor where the sub-floor space is unenclosed, must be constructed from flooring materials, including bearers, joists and flooring that – <ul style="list-style-type: none"> (i) have an FRL of at least 30/30/30 and the surface material must be non-combustible; or (ii) have the underside of the combustible elements of the floor system protected with a 30 minute resistance to the incipient spread of fire; or (iii) comply with AS 1530.8.2 when tested from the underside; or (iv) a combination of (i), (ii) or (iii).
SUPPORTING POSTS, COLUMNS, STUMPS, PIERS AND POLES
1. BAL – Low
Supporting posts, columns, stumps, piers and poles must comply with one or a combination of the following: <ul style="list-style-type: none"> (a) A non-combustible material. (b) A bushfire-resisting-timber for not less than 400mm above finished ground or paving level. (c) Timber mounted on metal stirrups with a clearance of not less than 75mm above finished ground or paving level. Refer Figure F8.2.2
2. BAL – 12.5
As per the BAL – Low requirements of this table
3. BAL – 19
As per the BAL – Low requirements of this table
4. BAL – 29
Supporting posts, columns, stumps, piers and poles must comply with one or a combination of the following: A non-combustible material; or Bushfire-resisting-timber.
5. BAL – 40
Supporting posts, columns, stumps, piers and poles must comply with one or a combination of the following: <ul style="list-style-type: none"> (a) A non-combustible material; or (b) A system complying with AS 1530.8.1.
6. BAL – FZ
Supporting posts, columns, stumps, piers and poles must comply with one or a combination of the following: <ul style="list-style-type: none"> (a) Have an FRL of at least 30/-/- and must be non-combustible; or (b) A system complying with AS 1530.8.2.
EXTERNAL WALLS
1. BAL – Low
No requirements
2. BAL- 12.5
External walls must comply with one or a combination of the following: <ul style="list-style-type: none"> (a) A non-combustible material such as full masonry, brick veneer, mud brick, concrete or aerated concrete. (b) A timber or steel-framed wall that – <ul style="list-style-type: none"> (i) is sarked on the outside of the frame with sarking-type-material having a flammability index of not more than 5; and (ii) clad within 400mm of finished ground or paving level, or any balcony or deck with solid flooring with – <ul style="list-style-type: none"> (A) non-combustible material; or (B) steel sheet; or (C) fibre-cement external sheeting with a minimum thickness of 6mm; or (D) bushfire-resisting-timber; or (E) a combination of (A), (B), (C) or (D). <p>All joints in the external surface of walls must be covered, sealed, overlapped, backed or butt-jointed to prevent gaps greater than 3mm. Alternatively, sarking-type-material can be applied over the frame prior to fixing any external sheeting.</p>
3. BAL- 19
As per the BAL – 12.5 requirements of this table
4. BAL- 29
As per the BAL – 12.5 requirements of this table with the following variation – <ul style="list-style-type: none"> (a) All external cladding (less than and greater than 400mm above finished ground or paving level) must comply with (b) (ii)(A), (B), (C), (D) or (E) of the BAL – 12.5 requirements.

5. BAL- 40

As per the **BAL – 12.5** requirements of this table with the following variation –

- (a) All external cladding for timber or steel-framed walls (less than and greater than 400mm above finished ground or paving level) must be -
- (i) fibre-cement sheeting with a minimum thickness of 9mm; or
 - (ii) steel sheet; or
 - (iii) a combination of (i) and (ii).

6. BAL – FZ

External walls must be one or a combination of the following:

- (a) A *non-combustible* material such as full masonry, brick veneer, mud brick, concrete or aerated concrete with a minimum thickness of 90mm.
- (b) A system complying with AS 1530.8.2 when tested from the outside.
- (c) A system with an FRL of 30/30/30 or -/30/30 when tested from the outside.

WINDOWS

1. BAL – Low

No requirements

2. BAL- 12.5

Window assemblies, and shutters and screens, must comply with one or a combination of the following:

- (a) *Window* assemblies must be completely protected by a bushfire shutter that complies with **F8.2(g)** and is made from -
- (i) a *non-combustible* material; or
 - (ii) bushfire-resisting-timber; or
 - (iii) a combination of (i) and (ii).
- (b) *Window* assemblies must be completely protected externally by screens complying with F8.2(h).
- (c) *Window* assemblies must comply with the following –
- (i) For *window* assemblies less than 400mm from the ground or less than 400mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110mm in width from the *window* frame, *window* frames and *window* joinery must be one of the following:
 - (A) bushfire-resisting-timber; or
 - (B) metal; or
 - (C) metal-reinforced PVC-U. The reinforcing members must be made from aluminium, stainless steel or corrosion-resistant steel and the frame and sash must satisfy the design load, performance and structural strength of the member.
 - (ii) Externally fitted hardware that supports the sash in its functions of opening and closing must be metal.
 - (iii) Where glazing is less than 400mm from the ground or less than 400mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110mm in width from the *window* frame, the glazing must be Grade A safety glazing with a minimum thickness of 4mm or glass blocks with no restriction on glazing methods.

Note: Where double glazing is used, the above requirements apply to the external face of the window assembly only.

- (iv) Where glazing is other than that specified in (iii) above, annealed glass may be used.
- (v) The openable portions of *windows* must be screened internally or externally with screens that comply with **F8.2(h)**.

3. BAL- 19

As per the **BAL – 12.5** requirements of this table with the following variations –

- (a) Where glazing is less than 400mm from the ground or less than 400mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110mm in width from the *window* frame, the glazing must be toughened glass with a minimum thickness of 5mm, or glass blocks with no restriction on glazing methods.

Note: Where double glazing is used, the above requirements apply to the external face of the window assembly only.

- (b) Where glazing is other than that specified in (iii) above, annealed glass may be used. Where annealed glass is used, the fixed and openable portions of *windows* must be screened externally with screens that comply with the **F8.2(h)**, with the exception that aluminium mesh must not be used in the window screens.
- (c) Where leadlight *windows* are installed, they must be protected with *non-combustible* shutters or toughened glass.
- (d) Where toughened glass is used, it must have a minimum thickness of 5mm and the openable portions of the *windows* must be screened internally or externally with screens that comply with the **F8.2(h)**.
- (e) Glazed elements that are designed to take internal screens must use toughened glass with a minimum thickness of 5mm and the openable portion must be screened with screens that comply with the **F8.2(h)**.

4. BAL- 29

Window assemblies, and shutters and screens, must comply with one or a combination of the following:

- (a) Window assemblies must be completely protected by a bushfire shutter that complies with F8.2(g) and is made from -
 - (i) a non-combustible material; or
 - (ii) bushfire-resisting-timber; or
 - (iii) a combination of (i) and (ii).
- (b) Window assemblies must comply with the following:
 - (i) Window frames and window joinery must be made from one of the following:
 - (A) bushfire-resisting-timber; or
 - (B) metal; or
 - (C) metal-reinforced PVC-U. The reinforcing members must be made from aluminium, stainless steel or corrosion-resistant steel and the frame and sash must satisfy the design load, performance and structural strength of the member.
 - (ii) Externally fitted hardware that supports the sash in its functions of opening and closing must be metal.
 - (iii) Glazing must be toughened glass with a minimum thickness of 5mm.
 - (iv) The openable portion of windows must be screened internally or externally with screens that comply with F8.2(h), with the exception that aluminium mesh must not be used in the window screens.

5. BAL- 40

Window assemblies, and shutters and screens, must comply with one or a combination of the following:

- (a) Window assemblies must be completely protected by a bushfire shutter that complies with F8.2(g) and is made from a non-combustible material.
- (b) Window assemblies must comply with the following:
 - (i) Window frames and hardware must be metal; and
 - (ii) Glazing must be toughened glass with a minimum thickness of 6mm; and
 - (iii) Both the openable and the fixed portions of the window must be screened externally with screens that comply with F8.2(h), with the exception that aluminium mesh must not be used in the window screens and the frame supporting the mesh or perforated sheet must be metal
 - (iv) Seals to stiles, heads and sills or thresholds must be manufactured from materials having a flammability index of not more than 5 or from silicone.

6. BAL – FZ

Window assemblies, and shutters and screens, must comply with one or a combination of the following:

- (a) Window assemblies must be completely protected by a bushfire shutter that complies with F8.2(g), with the exception that perforations are not acceptable over the door system, and AS 1530.8.2 when tested from the outside.
- (b) The openable portion of the window must be screened internally or externally with screens that comply with F8.2(i), with the exception that aluminium mesh must not be used in the window screens and the frame supporting the mesh or perforated sheet must be metal, and either –
 - (i) the window system must have an FRL of at least -/30/-; or
 - (ii) the window system must comply with AS 1530.8.2 when tested from the outside.

EXTERNAL DOORS

(including side-hung external doors such as French doors, panel fold and bi-fold doors, sliding doors and garage doors)

1. BAL – Low

No requirements

2. BAL - 12.5

SIDE HUNG DOORS

Side-hung external doors must comply with one or a combination of the following:

- (a) They must be completely protected by a bushfire shutter that complies with **F8.2(g)** and is made from -
 - (i) non-*combustible* material; or
 - (ii) bushfire-resisting-timber; or
 - (iii) a combination of (i) and (ii).
- (b) They must be completely protected externally by screens complying with **F8.2(h)**.
- (c) They must comply with the following –
 - (i) Doors must be -
 - (A) non-*combustible*; or
 - (B) a solid timber door with a minimum thickness of 35mm for the first 400mm above the threshold; or
 - (C) a door, including a hollow core door, with a non-*combustible* kick-plate on the outside for the first 400mm above the threshold; or
 - (D) a fully framed glazed door, where the framing is made from materials *required* for bushfire shutters.
 - (ii) Where doors incorporate glazing, the glazing must comply with the glazing requirements for *windows*.
 - (iii) Doors must be tight-fitting to the door frame and to an abutting door, if applicable.
 - (iv) Where any part of the door frame is less than 400mm from the ground or less than 400mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110mm in width from the door, that part of the door frame must be made from one of the following:
 - (A) bushfire-resisting-timber; or
 - (B) metal; or
 - (C) metal-reinforced PVC-U. The reinforcing members must be made from aluminium, stainless steel or corrosion-resistant steel and the frame and sash must satisfy the design load, performance and structural strength of the member.
 - (v) Weather strips, draught excluders or draught seals must be installed at the base of side-hung external doors.

SLIDING DOORS

Sliding doors must comply with one or a combination of the following:

- (a) They must be completely protected by a bushfire shutter that complies with **F8.2(g)** and is made from -
 - (i) non-*combustible* material; or
 - (ii) bushfire-resisting-timber; or
 - (iii) a combination of (i) and (ii).
- (b) They must be completely protected externally by screens complying with **F8.2(h)**.
- (c) They must comply with the following –
 - (i) Any glazing incorporated in sliding doors must be Grade A safety glass complying with AS 1288.
 - (ii) Both the door frame supporting the sliding door and the framing surrounding any glazing must be –
 - (A) bushfire-resisting-timber; or
 - (B) metal; or
 - (C) metal-reinforced PVC-U. The reinforcing members must be made from aluminium, stainless steel or corrosion-resistant steel and the frame and sash must satisfy the design load, performance and structural strength of the member.
 - (iii) If the openable part of the sliding door is screened, the screens must comply with **F8.2(h)**.
 - (iv) Sliding doors must be tight-fitting in the frames.

VEHICLE ACCESS DOORS

Vehicle access doors must comply with the following:

- (a) The portion of the vehicle access door that is within 400mm of the finished ground or paving when the door is closed must be made from -
 - (i) non-*combustible* material; or
 - (ii) bushfire-resisting-timber; or
 - (iii) fibre-cement sheet with a minimum thickness of 6mm; or
 - (iv) a combination of (i), (ii) or (iii).
- (b) Panel lift, tilt doors or side-hung doors must be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3mm.
- (c) Roller doors must have guide tracks with a maximum gap no greater than 3mm and must be fitted with a nylon brush that is in contact with the door.
- (d) Vehicle access doors must not include ventilation slots.

3. BAL – 19

SIDE HUNG DOORS

As per the **BAL – 12.5** requirements of this table with the following variations –

- (a) Aluminium mesh must not be used in the door screens.
- (b) Where the doors incorporate glazing, the glazing must be toughened glass with a minimum thickness of 5mm.

SLIDING DOORS

As per the **BAL – 12.5** requirements of this table with the following variations –

- (a) Aluminium mesh must not be used in the door screens.
- (b) Any glazing incorporated in sliding doors must be toughened glass with a minimum thickness of 5mm.

VEHICLE ACCESS DOORS

Vehicle access doors must comply with the **BAL – 12.5** requirements of this table.

4. BAL – 29

SIDE HUNG DOORS

Side-hung external doors must comply with one or a combination of the following:

- (a) They must be completely protected by a bushfire shutter that complies with **F8.2(g)** and is *non-combustible*.
- (b) They must be completely protected externally by screens complying with **F8.2(h)**, with the exception that aluminium mesh must not be used in the door screens.
- (c) They must comply with the following –
 - (i) Doors must be –
 - (A) *non-combustible*; or
 - (B) a solid-core door with a minimum thickness of 35mm
 - (ii) Externally fitted hardware that supports the panel in its functions of opening and closing must be metal.
 - (iii) Where doors incorporate glazing, the glazing must be toughened glass with a minimum thickness of 6mm.
 - (iv) Door frames must be made from one of the following:
 - (A) bushfire-resisting-timber; or
 - (B) metal; or
 - (C) metal-reinforced PVC-U. The reinforcing members must be made from aluminium, stainless steel or corrosion-resistant steel and the frame and sash must satisfy the design load, performance and structural strength of the member.
 - (v) Doors must be tight-fitting to the door frame and to an abutting door, if applicable.
 - (vi) Weather strips, draught excluders or draught seals must be installed at the base of side-hung external doors.

SLIDING DOORS

Sliding doors must comply with one or a combination of the following:

- (a) They must be completely protected by a bushfire shutter that complies with **F8.2(g)** and is made from *non-combustible* material.
- (b) They must be completely protected externally by screens complying with **F8.2(h)**, with the exception that aluminium mesh must not be used in the door screens.
- (c) They must comply with the following:
 - (i) Both the door frame supporting the sliding door and the framing surrounding any glazing must be –
 - (A) bushfire-resisting-timber; or
 - (B) metal; or
 - (C) metal-reinforced PVC-U. The reinforcing members must be made from aluminium, stainless steel or corrosion-resistant steel and the frame and sash must satisfy the design load, performance and structural strength of the member.
 - (ii) Externally fitted hardware that supports the panel in its functions of opening and closing must be metal.
 - (iii) Where doors incorporate glazing, the glazing must be toughened glass with a minimum thickness of 6mm, except where both the fixed and openable portions of doors are screened externally with screens that comply with **F8.2(h)**, with the exception that aluminium mesh must not be used in the door screens.
 - (iv) Sliding doors must be tight-fitting in the frames.

VEHICLE ACCESS DOORS

Vehicle access doors must comply with the **BAL – 12.5** requirements of this table.

5. BAL – 40

SIDE HUNG DOORS

Side hung doors must comply with one or a combination of the following:

- (a) They must be protected by a shutter that complies with **F8.2(g)** and is *non-combustible*.
- (b) They must comply with the following:
 - (i) Doors must be –
 - (A) *non-combustible*; or
 - (B) a solid-core door with a minimum thickness of 35mm.
 - (ii) Externally fitted hardware that supports the panel in its functions of opening and closing must be made of materials that have an FRL of at least -/30/-.
 - (iii) Where doors incorporate glazing, the glazing must be toughened glass with a minimum thickness of 6mm and both the fixed and openable portions of doors must be screened externally with screens that comply with **F8.2(h)**, with the exception that aluminium mesh must not be used in the door screens.
 - (iv) Seals to stiles, heads and sills or threshold must be manufactured from materials with a *flammability index* no greater than 5 or from silicone.
 - (v) Door frames must be metal.
 - (vi) Doors must be tight-fitting to the door frame and to an abutting door, if applicable.
 - (vii) Weather strips, draught excluders or draught seals must be installed at the base of side-hung external doors.

SLIDING DOORS

Sliding doors must be one or a combination of the following:

- (a) They must be protected by a shutter that complies with **F8.2(g)** and is *non-combustible*.
- (b) They must comply with the following:
 - (i) Both the door frame supporting the sliding door and the framing surrounding any glazing must be metal.
 - (ii) Externally fitted hardware that supports the panel in its functions of opening and closing must be metal.
 - (iii) Where sliding doors incorporate glazing, the glazing must be toughened glass with a minimum thickness of 6mm and both the fixed and openable portions of doors must be screened externally with screens that comply with **F8.2(h)**, with the exception that aluminium mesh must not be used in the door screens.
 - (iv) Seals to stiles, heads and sills or threshold must be manufactured from materials with a *flammability index* no greater than 5 or from silicone.
 - (v) Sliding doors must be tight-fitting in the frames.

VEHICLE ACCESS DOORS

Vehicle access doors must comply with the **BAL – 12.5** requirements of this table with the following variation:

- (a) They must be *non-combustible*.

6. BAL- FZ

SIDE HUNG DOORS

Side hung doors must comply with one or a combination of the following:

- (a) They must be protected by a shutter that complies with **F8.2(g)** with the exception that perforations are not acceptable over the door system, and AS 1530.8.2 when tested from the outside.
- (b) They must comply with the following:
 - (i) All door systems, including door frames and doors with glazed panels, must –
 - (A) have an FRL of at least -/30/-; or
 - (B) comply with AS 1530.8.2 when tested from the outside.
 - (ii) Doors must be tight-fitting to the door frame and to an abutting door, if applicable.
 - (iii) Weather strips, draught excluders or draught seals must be installed at the base of side-hung external doors.
 - (iv) Seals must not compromise the FRL or the performance achieved in AS 1530.4.

SLIDING DOORS

Sliding doors must comply with one or a combination of the following:

- (a) They must be protected by a shutter that complies with **F8.2(g)** with the exception that perforations are not acceptable over the door system, and AS 1530.8.2 when tested from the outside.
- (b) They must comply with the following:
 - (i) All sliding door systems, including those with glazed panels must –
 - (A) have an FRL of at least -/30/-; or
 - (B) comply with AS 1530.8.2 when tested from the outside.
 - (ii) Sliding doors must be tight-fitting in the frames.

VEHICLE ACCESS DOORS

Vehicle access doors must comply with the **BAL – 40** requirements of this table with the following variation -

- (a) Where the garage is attached to the building, the requirements of **F8.2(b)(ii)** must apply.

VENTS AND WEEPHOLES

(including vents and weepholes located in *external walls* and sub-floor spaces)

1. BAL - Low

Vents to sub-floor spaces and weepholes must be fitted with ember guards made from corrosion-resistant steel, bronze or aluminium mesh or perforated sheet with a maximum aperture size of 2mm.

2. BAL – 12.5

As per the **BAL – Low** requirements of this table

3. BAL – 19

As per the **BAL – 12.5** requirements of this table with the following variation –

(a) Aluminium mesh or perforated sheet must not be used for the ember guards.

4. BAL – 29

As per the **BAL – 19** requirements of this table

5. BAL – 40

As per the **BAL – 19** requirements of this table

6. BAL – FZ

As per the **BAL – 19** requirements of this table

ROOFS

(including verandahs and attached carport roofs, eaves linings, fascias, gables)

1. BAL – Low

No requirements

2. BAL - 12.5

Roofs must comply with one or a combination of the following:

(a) Roof tiles, roof sheets and roof-covering accessories must be *non-combustible*.

(b) The roof/wall junction must be sealed to prevent openings greater than 3mm, either by the use of fascia and eaves linings or by sealing between the top of the wall and the underside of the roof and between the rafters at the line of the wall. Refer **Figure F8.2.3**

(c) Roof ventilation openings, such as gable and roof vents, must be fitted with ember guards made from corrosion-resistant steel or bronze mesh or perforated sheet with a maximum aperture of 2mm.

(d) Tiled roofs must be –

(i) fully sarked over the entire roof area, including the ridge. The *sarking-type-material* must have a *flammability index* of not more than 5; and

(ii) located directly below the roof battens; and

(iii) cover the entire roof area including the ridge; and

(iii) installed so that there are no gaps that will allow entry of embers where the *sarking-type-material* meets fascias, gutters, valleys and the like.

(e) Sheets roofs (metal or fibre-cement sheet) must be –

(i) fully sarked in accordance with (d)(i); or

(ii) have any gaps greater than 3mm, under corrugations or ribs of sheet roofing and between roof components, sealed at the fascia or wall line and at valleys, hips and ridges by –

(A) corrosion-resistant steel or bronze mesh or perforated sheet with a maximum aperture of 2mm; or

(B) mineral wool; or

(C) other *non-combustible* material; or

(D) a combination of **(A), (B) or (C)**.

(f) A verandah, carport or awning roof –

(i) forming part of the main roof space, must meet all the requirements of the main roof.

(ii) separated from the main roof space by an *external wall* complying with the **BAL - 12.5** requirements of this table, must have a *non-combustible* roof covering.

(g) Gables must comply with the **BAL – 12.5** requirements of this table for *external walls*.

(h) Eaves penetrations must be protected in accordance with the **BAL – 12.5** requirements of this table for roof penetrations.

(i) Eaves ventilation openings greater than 3mm must be fitted with ember guards made from *non-combustible* material or corrosion-resistant steel or bronze mesh or perforated sheet with a maximum aperture of 2mm.

(j) Joints in eaves linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds.

3. BAL – 19

As per the **BAL – 12.5** requirements of this table with the following variations –

- (a) Sheet roofs (metal or fibre-cement sheet) must be fully sarked in accordance with (d)(i).
- (b) A verandah, carport or awning roof –
 - (i) forming part of the main roof space, must meet all the requirements of the main roof.
 - (ii) separated from the main roof space by an *external wall* complying with the **BAL – 19** requirements of this table, must have a non-combustible roof covering.
- (c) Gables must comply with the **BAL – 19** requirements of this table for *external walls*.
- (d) Eaves penetrations must be protected in accordance with the **BAL – 19** requirements of this table for roof penetrations.
- (e) Eaves linings must be –
 - (i) fibre-cement sheet, with a minimum thickness of 4.5mm; or
 - (ii) bushfire-resisting-timber; or
 - (iii) a combination of (i) and (ii).
- (f) Joining strips in eaves linings, fascias and gables strips must be of bushfire-resisting-timber.
- (g) Fascias and bargeboards must be –
 - (i) non-combustible or;
 - (ii) bushfire-resisting timber; or
 - (iii) a combination of (i) and (ii).

4. BAL – 29

As per the **BAL – 19** requirements of this table with the following variations–

- (a) A pipe or conduit that penetrates the roof covering must be non-combustible.
- (b) *Sarking-type-material* installed in tiled roofs must extend into gutters and valleys.
- (c) A verandah, carport or awning roof –
 - (i) forming part of the main roof space, must meet all the requirements of the main roof.
 - (ii) separated from the main roof space by an *external wall* complying with the **BAL – 29** requirements of this table, must have a non-combustible roof covering and the support structure must be –
 - (A) non-combustible material; or
 - (B) bushfire-resisting-timber; or
 - (C) timber rafters lined on the underside with fibre-cement sheeting with a minimum thickness of 6mm, or with material complying with AS 1530.8.1; or
 - (D) a combination of (A), (B) or (C).
- (d) Gables must comply with the **BAL – 29** requirements of this table for *external walls*.
- (e) Eaves penetrations must be protected in accordance with the **BAL – 29** requirements of this table for roof penetrations.
- (f) Fibre-reinforced cement or aluminium must not be used for roof sheeting or fascias.
- (g) Aluminium must not be used for eaves linings.

5. BAL – 40

As per the **BAL – 29** requirements of this table with the following variations –

- (a) A verandah, carport or awning roof –
 - (i) forming part of the main roof space, must meet all the requirements of the main roof.
 - (ii) separated from the main roof space by an *external wall* complying with the **BAL – 40** requirements of this table, must have a non-combustible roof covering and the support structure must be –
 - (A) non-combustible material; or
 - (B) timber rafters lined on the underside with fibre-cement sheeting with a minimum thickness of 6mm, or with material complying with AS 1530.8.1; or
 - (C) a system complying with AS 1530.8.1; or
 - (D) a combination of (A), (B) or (C).
- (b) Gables must comply with the **BAL – 40** requirements of this table for *external walls*.
- (c) Fascias and bargeboards must comply with AS 1530.8.1.
- (d) Eaves penetrations must be protected in accordance with the **BAL – 40** requirements of this table for roof penetrations.
- (e) Eaves linings must be –
 - (i) fibre-cement sheet with a minimum 6mm thickness; or
 - (ii) calcium silicate sheet with a minimum 6mm thickness; or
 - (iii) a combination of (i) and (ii).

Note: Roof-mounted evaporative coolers are excluded from the **BAL – 40** level.

6. BAL – FZ

As per the **BAL – 40** requirements of this table with the following variations -

- (a) The roof or roofing system must comply with AS 1530.8.2 when tested from the outside.
- (b) A pipe or conduit that penetrates the roof covering must be metal, excluding aluminium.
- (c) A verandah, carport or awning roof –
 - (i) forming part of the main roof space, must meet all the requirements of the main roof.
 - (ii) separated from the main roof space by an *external wall* complying with the **BAL – FZ** requirements of this table, must have a non-combustible roof covering and the support structure must be –
 - (A) non-combustible material; or
 - (B) timber rafters lined on the underside with fibre-cement sheeting with a minimum thickness of 6mm, or with material complying with AS 1530.8.2; or
 - (C) a system complying with AS 1530.8.2; or
 - (D) a combination of **(A)**, **(B)** or **(C)**.
- (d) Gables must comply with the **BAL – FZ** requirements of this table for *external walls*.
- (e) Fascias and bargeboards must comply with AS 1530.8.2.
- (f) Eaves penetrations must be protected in accordance with the **BAL – FZ** requirements of this table for roof penetrations.
- (g) Eaves linings must be –
 - (i) a system with an FRL of -/30/30; or
 - (ii) a system complying with AS 1530.8.2; or
 - (iii) a combination of **(i)** and **(ii)**.

Note: Roof-mounted evaporative coolers are excluded from the **BAL – FZ** level.

ROOF LIGHTS

(including vented roof lights and skylights)

1. BAL – Low

No requirements

2. BAL – 12.5

- (a) *Roof lights* and associated shafts through the roof space must be sealed –
 - (i) with a non-combustible sleeve or lining; and
 - (ii) at the roof penetration with non-combustible material to prevent gaps greater than 3mm.
- (b) Openings in vented *roof lights* must be fitted with ember guards made from corrosion-resistant steel or bronze mesh or perforated sheet with a maximum aperture of 2mm
- (c) All overhead glazing must be Grade A safety glazing complying with AS 1288.
- (d) Glazed elements in *roof lights* and skylights may be of polymer provided a Grade A safety glass diffuser, complying with AS 1288, is installed under the glazing. Where glazing is an insulating glazing unit (IGU), a minimum 4mm Grade A toughened safety glass, must be used in the outer pane of the IGU.
- (e) *Flashing* elements of tubular skylights may be of fire-retardant material, provided the roof integrity is maintained by an under-flashing of a material having a *flammability index* not more than 5.

3. BAL – 19

As per the **BAL – 12.5** requirements of this table

4. BAL – 29

As per the **BAL – 12.5** requirements of this table with the following variation –

- (a) Where *roof lights* are installed in roofs having a pitch of less than 18 degrees to the horizontal, the glazing must be protected with ember guards made from corrosion-resistant steel or bronze mesh or perforated sheet with a maximum aperture of 2mm.

5. BAL – 40 (vented roof lights not permitted)

As per the **BAL – 29** requirements of this table with the following variation –

- (a) glazed assemblies for *roof lights* and skylights must have an FRL of -/30/-.

6. BAL – FZ

As per the **BAL – 40** requirements of this table with the following variations-

- (a) *Roof lights* and associated shafts must be sealed at the roof penetration with mineral fibre to prevent gaps greater than 3mm.
- (b) *Roof lights* must be one of the following -
 - (i) a system complying with AS 1530.8.2 when tested from the outside; or
 - (ii) a system with an FRL of 30/30/30 or -/30/30 when tested from the outside.

ROOF-MOUNTED EVAPORATIVE COOLING UNITS

1. BAL – Low

No requirements

2. BAL - 12.5

Evaporative coolers must be –

- (a) sealed at the roof penetration with non-*combustible* material to prevent gaps greater than 3mm; and
- (b) fitted with –
 - (i) butterfly closers at or near the ceiling level; or
 - (ii) non-*combustible* covers made from corrosion-resistant steel or bronze mesh or perforated sheet with a maximum aperture of 2mm.

3. BAL – 19

As per the **BAL – 12.5** requirements of this table

4. BAL – 29

As per the **BAL – 12.5** requirements of this table

5. BAL – 40

Evaporative coolers must not be used installed in **BAL – 40**

6. BAL – FZ

Evaporative coolers must not be used installed in **BAL – FZ**

OTHER ROOF PENETRATIONS

(including roof ventilators, aerials, vent pipes and supports for solar collectors)

1. BAL – Low

No requirements

2. BAL - 12.5

- (a) All components of roof ventilators (including rotary ventilators), aerials, vent pipes and supports for solar collectors must be –
 - (i) of non-*combustible* material; and
 - (ii) be sealed at the roof penetration with non-*combustible* material to prevent gaps greater than 3mm.
- (b) Openings in roof ventilators and vent pipes must be fitted with ember guards made from corrosion-resistant steel or bronze mesh or perforated sheet with a maximum aperture of 2mm.
- (c) Vent pipes made from PVC are permitted.

3. BAL – 19

As per the **BAL – 12.5** requirements of this table - not including (c)

4. BAL – 29

As per the **BAL – 12.5** requirements of this table

5. BAL – 40

- (a) All components of roof ventilators (including rotary ventilators), aerials, vent pipes and supports for solar collectors must be –
 - (i) of non-*combustible* material; and
 - (ii) be sealed at the roof penetration with non-*combustible* material to prevent gaps greater than 3mm.

6. BAL – FZ

- (a) All components of aerials, vent pipes and supports for solar collectors must be –
 - (i) of non-*combustible* material; and
 - (ii) be sealed at the roof penetration with non-*combustible* material to prevent gaps greater than 3mm.
- (b) Roof ventilators must be one of the following -
 - (i) a system complying with AS 1530.8.2 when tested from the outside; or
 - (ii) a system with an FRL of 30/30/30 or -/30/30 when tested from the outside.

GUTTERS AND DOWNPIPES

1. BAL – Low

No requirements

2. BAL - 12.5

- (a) Gutter and valley leaf guards must be non-*combustible*.
- (b) Box gutters must be non-*combustible* and flashed at the junction with the roof with non-*combustible* material.

3. BAL – 19

As per the **BAL – 12.5** requirements of this table

4. BAL – 29
As per the BAL – 12.5 requirements of this table with the following variation – (a) Gutters, other than box gutters, must be metal or PVC-U.
5. BAL – 40
As per the BAL – 12.5 requirements of this table with the following variation – (a) Gutters must be non-combustible.
6. BAL – FZ
As per the BAL – 40 requirements of this table
WATER AND GAS SUPPLY PIPES
1. BAL – Low
No requirements
2. BAL - 12.5
Above-ground, exposed water and gas supply pipes must be metal.
3. BAL – 19
As per the BAL – 12.5 requirements of this table
4. BAL – 29
As per the BAL – 12.5 requirements of this table
5. BAL – 40
As per the BAL – 12.5 requirements of this table
6. BAL – FZ
As per the BAL – 12.5 requirements of this table
VERANDAHS, DECKS, STEPS, RAMPS AND LANDINGS (including balustrades, handrails or other barriers)
1. BAL – Low
Verandahs, decks, steps and the trafficable surfaces of ramps and landings must comply with one or a combination of the following: (a) A concrete slab-on-ground. (b) A suspended concrete slab. (c) Any supporting posts or columns must comply with the BAL – Low requirements of this table for supporting posts, columns, stumps, piers and poles. (d) Any supporting walls must comply with the BAL – 12.5 requirements of this table for <i>external walls</i> . (e) Where sheeted or tongued and grooved solid flooring is used, the flooring system must comply with the BAL – Low requirements of this table for FLOORING SYSTEMS . (f) Where a timber deck is used – (i) The gap between the timber deck flooring must be not less than 5mm; and (ii) To facilitate access for extinguishment, the perimeter of the deck must not be enclosed or access to the space beneath the deck impeded; and (iii) The timber deck flooring must be separated from the remainder of the building in a manner that will not spread the fire into the building.
2. BAL - 12.5
Verandahs, decks, steps and the trafficable surfaces of ramps and landings must comply with the BAL – Low requirements of this table with the following variations - (a) Any supporting posts or columns must comply with the BAL – 12.5 requirements of this table for supporting posts, columns, stumps, piers and poles. (b) Where sheeted or tongued and grooved solid flooring is used, the flooring system must comply with the BAL – 12.5 requirements of this table for FLOORING SYSTEMS .
3. BAL – 19
Verandahs, decks, steps and the trafficable surfaces of ramps and landings must comply with the BAL – Low requirements of this table with the following variations - (a) Any supporting posts or columns must comply with the BAL – 19 requirements of this table for supporting posts, column stumps, piers and poles. (b) Any supporting walls must comply with the BAL – 19 requirements of this table for <i>external walls</i> . (c) Where sheeted or tongued and grooved solid flooring is used, the flooring system must comply with the BAL – 19 requirements of this table for FLOORING SYSTEMS . (d) Where spaced timber deck flooring is used, bushfire-resisting-timber must be used for the decking material.

4. BAL – 29

Verandahs, decks, steps and the trafficable surfaces of ramps and landings must comply with the **BAL – Low** requirements of this table with the following variations -

- (a) Any supporting posts or columns must comply with the **BAL – 29** requirements of this table for supporting posts, columns, stumps, piers and poles.
- (b) Any supporting walls must comply with the **BAL – 29** requirements of this table for *external walls*.
- (c) Where sheeted or tongued and grooved solid flooring is used, the flooring system must comply with the **BAL – 29** requirements of this table for **FLOORING SYSTEMS**.
- (d) Where spaced timber deck flooring is used, bushfire-resisting-timber must be used for the decking material.
- (e) Balustrades and handrails must be *non-combustible*, or if timber is used, it must be bushfire-resisting timber.

5. BAL – 40

Verandahs, decks, steps and the trafficable surfaces of ramps and landings must comply with the **BAL – Low** requirements of this table with the following variations -

- (a) Any supporting posts or columns must comply with the **BAL – 40** requirements of this table for supporting posts, column stumps, piers and poles.
- (b) Any supporting walls must comply with the **BAL – 40** requirements of this table for *external walls*.
- (c) Where sheeted or tongued and grooved solid flooring is used, the flooring system must comply with the **BAL – 40** requirements of this table for **FLOORING SYSTEMS**.
- (d) Decking must not be spaced and must be of –
 - (i) a *non-combustible* material; or
 - (ii) a system complying with AS 1530.8.1; or
 - (iii) a combination of (i) and (ii).
- (e) Balustrades and handrails must be *non-combustible*.

6. BAL – FZ

Verandahs, decks, steps and the trafficable surfaces of ramps and landings must comply with the **BAL – Low** requirements of this table with the following variations -

- (a) Any supporting posts or columns must comply with the **BAL – FZ** requirements of this table for supporting posts, column stumps, piers and poles.
- (b) Any supporting walls must comply with the **BAL – FZ** requirements of this table for *external walls*.
- (c) Where sheeted or tongued and grooved solid flooring is used, the flooring system must comply with the **BAL – FZ** requirements of this table for **FLOORING SYSTEMS**.
- (d) Decking must not be spaced and must be of –
 - (i) a *non-combustible* material; or
 - (ii) a system complying with AS 1530.8.2; or
 - (iii) a combination of (i) and (ii).
- (e) Balustrades and handrails must be *non-combustible*.

Seal between rafters with non-combustible material

Roof cladding

Rafter

Wall cladding

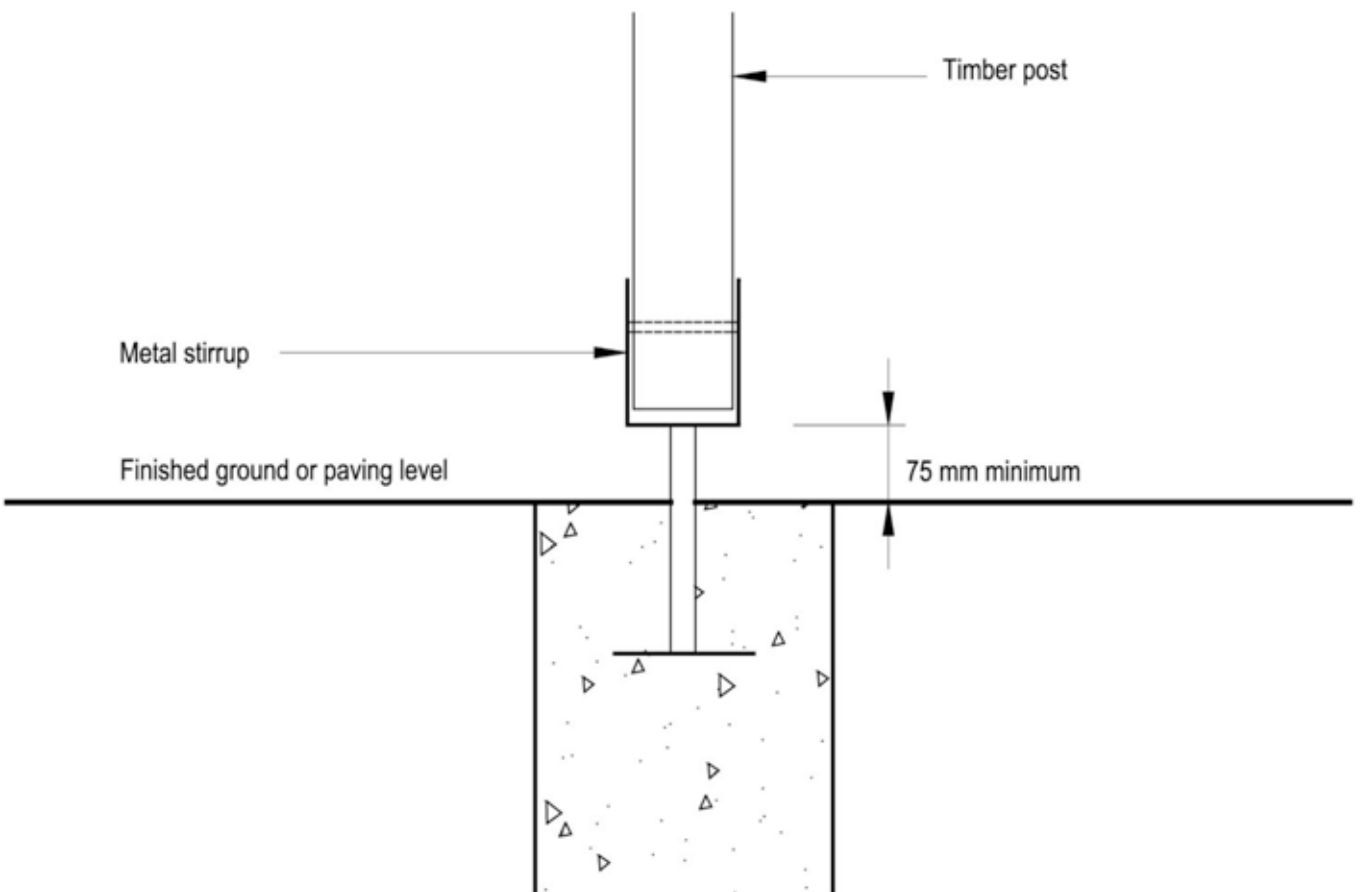
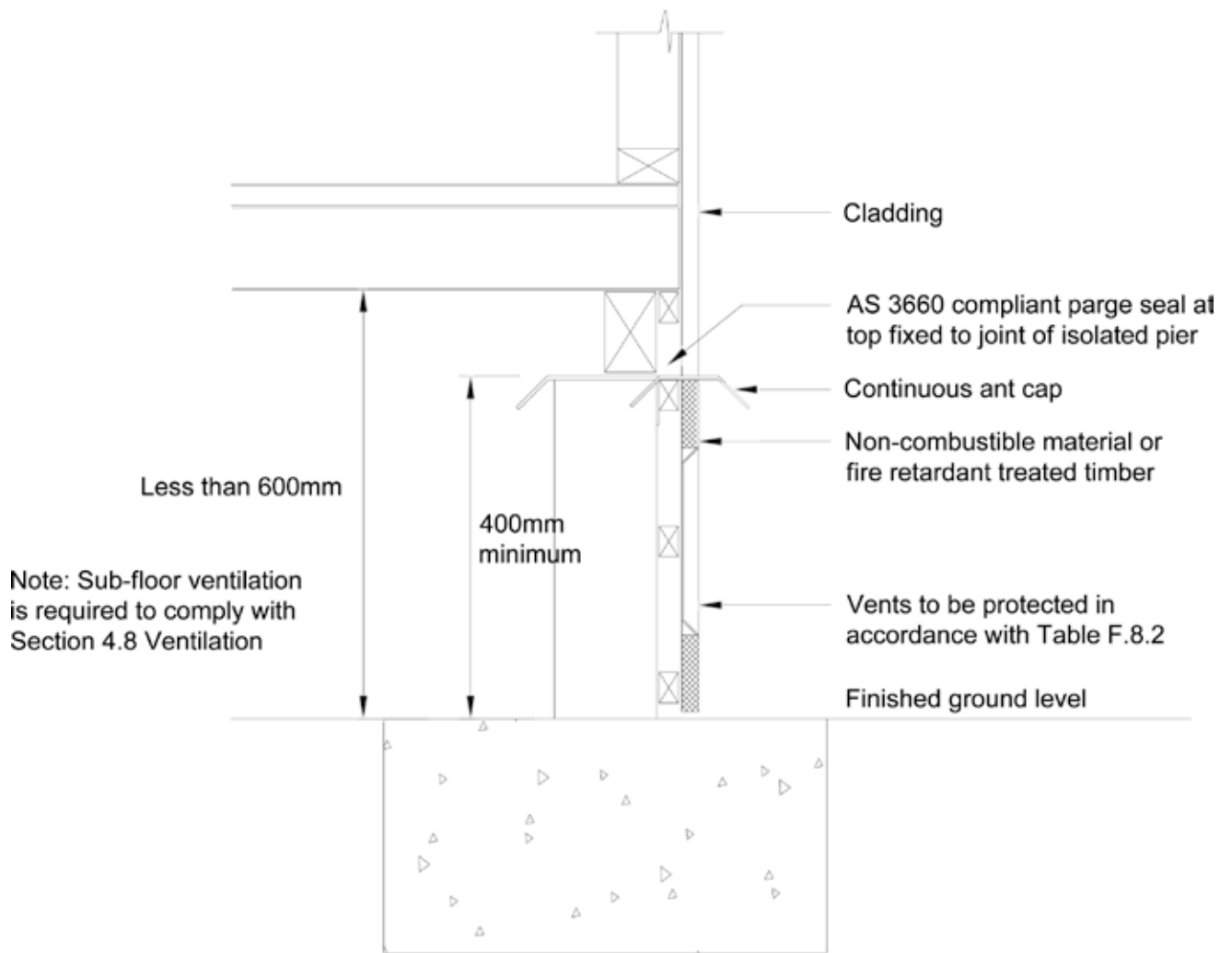
Gaps under corrugations sealed

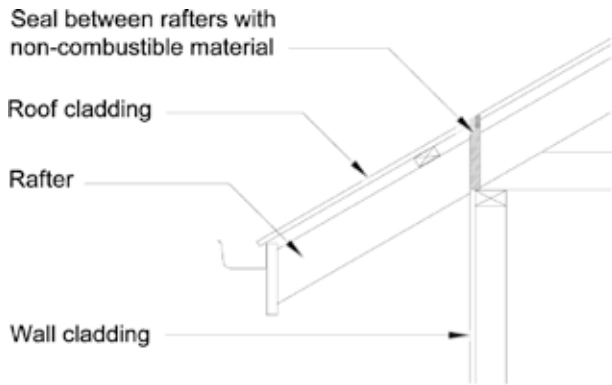
Fascia (non-combustible or fire-retardant treated timber in BAL 19, 29, 40 and FZ)

Eaves lining and jointing (non-combustible or fire-retardant treated timber in BAL 19, 29, 40 and FZ)

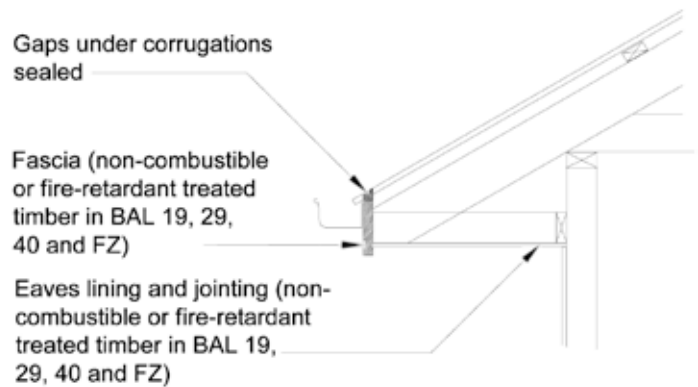
SEALING BETWEEN RAFTERS

SEALING WITH EAVES LINING AND FASCIA





SEALING BETWEEN RAFTERS



SEALING WITH EAVES LINING AND FASCIA

The “Ministers Code” applies to –

- Land Division in Bushfire protection areas,
- Development applications for Dwellings, Tourist accommodation or other habitable buildings (*including any alterations & additions to these buildings*).

Development applications for the above listed buildings are lodged with Council and then referred to SA Country Fire Service Development Assessment Unit for analysis and direction. The CFS DA Unit has a statutory period of **SIX WEEKS** to prepare a report to direct Council to approve (*with or without conditions*) or refuse the application.



Cut down the impact of bushfires Managing native vegetation to protect a building

(See separate information sheet on 'Managing native vegetation to protect a structure')

Asset Protection Zones

An Asset Protection Zone aims to provide the highest level of protection to human life and built, or other, assets. The goal for an Asset Protection Zone is to reduce the overall fuel hazard to a level of *moderate*¹. This means that they generally contain highly modified vegetation, such as a cultivated garden or grassland areas that will reduce the radiant heat impact during a bushfire. Asset Protection Zones provide a defensible space to allow residents and firefighters some degree of safety before, during and after the passage of the fire front.

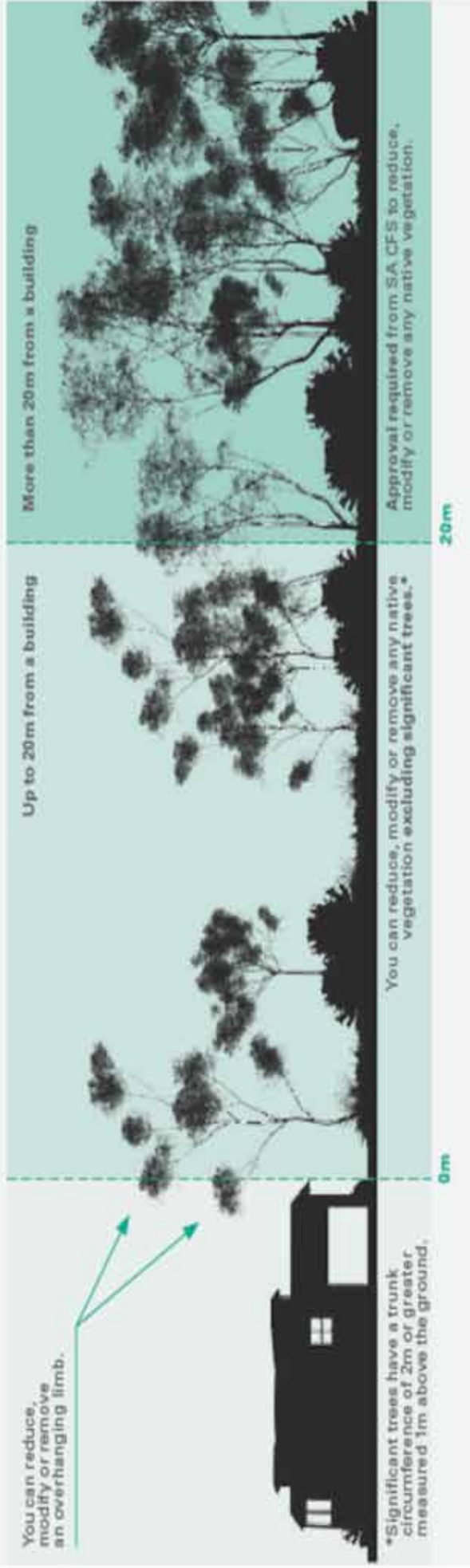
Management of vegetation within an Asset Protection Zone alone cannot provide complete protection during a bushfire and should be accompanied by other measures to maximise your safety in bushfires. These can include:

- implementation of Bushfire Buffer Zones to further reduce fuel loads and minimise ember attack,
- appropriate building location, design, construction and maintenance;
- use of appropriate building materials, and
- installation and use of sprinklers.

For more information on these you can contact your local SA CFS Office (see www.cfs.sa.gov.au for contact details).

Things you will need to consider:

- If you want to remove or modify a Significant Tree you will need approval as outlined in the *Development Regulations 2008*. You need to identify if you have a Significant Tree and contact your Local Council for further information on how to apply.
- If you want to remove a large overhanging limb you should contact an arborist for advice.



You can reduce, modify or remove an overhanging limb.

Up to 20m from a building

More than 20m from a building

¹Significant trees have a trunk circumference of 2m or greater measured 1m above the ground.

You can reduce, modify or remove any native vegetation excluding significant trees.*

Approval required from SA CFS to reduce, modify or remove any native vegetation.

0m

20m

Documentation lodged for assessment purposes should indicate:

- the location and diameter of trees and their distance from the proposed buildings any areas of the site that may increase the risk of, or assist the spread of fire. This may include dense, combustible vegetation or flammable plant debris
- the methods proposed to minimise the risk of fire such as the thinning or clearing of vegetation; removal of trees or branches overhanging any buildings or the planting of vegetation that is fire resistant. Trees and shrubs should not be planted closer to any building or overhanging powerlines than a distance equivalent to their mature height.

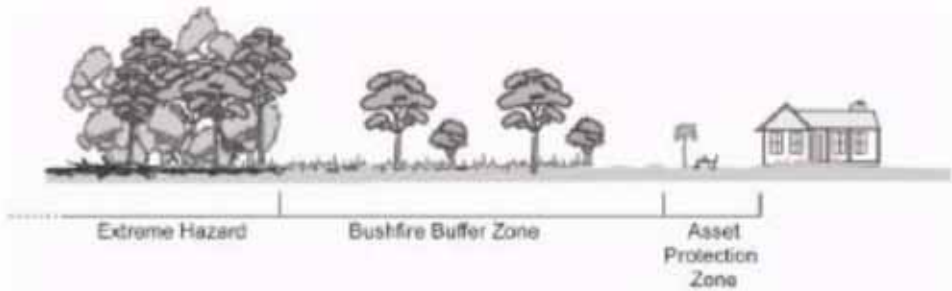


Figure 6
Asset protection zone (minimum 20 metres wide)

2.2.2 PROPOSED MEANS OF ENTRY TO AND EXIT FROM AN ALLOTMENT

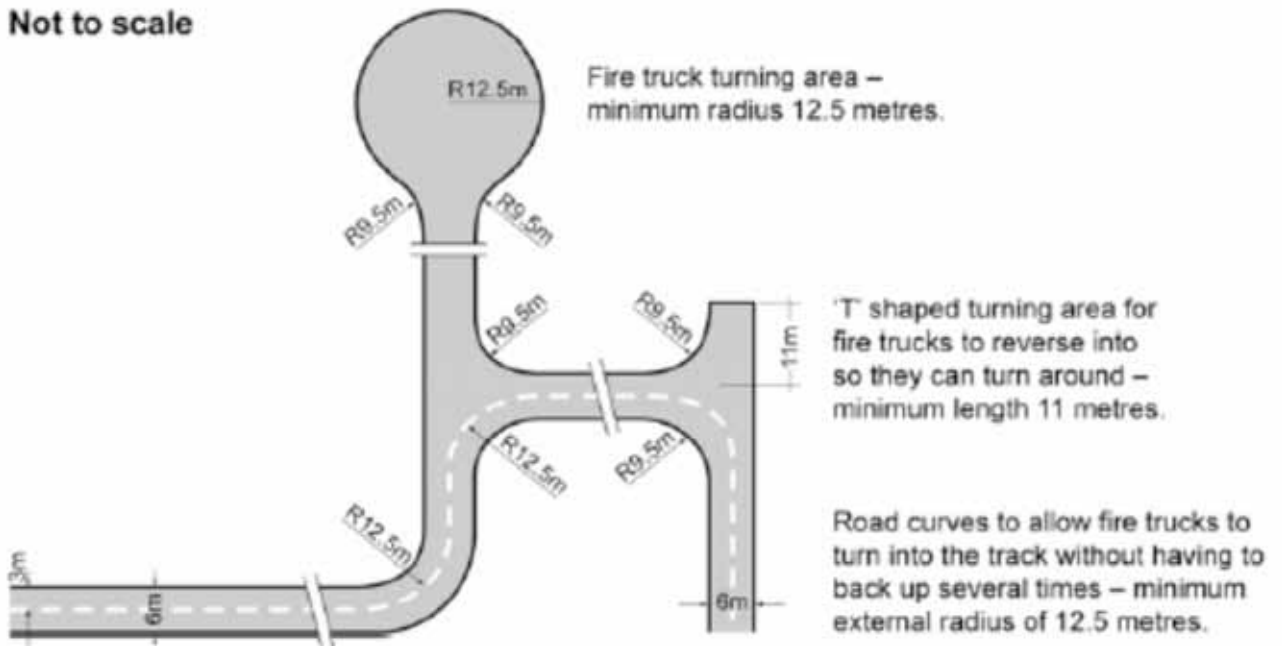
(Mandatory provision of the Code for Development Plan Consent purposes)

It is essential that all residents in Bushfire Protection Areas, as well as fire-fighting and emergency services personnel and vehicles, can safely enter and exit the allotments proposed to be created by the land division. For this reason public roads created by land divisions shall:

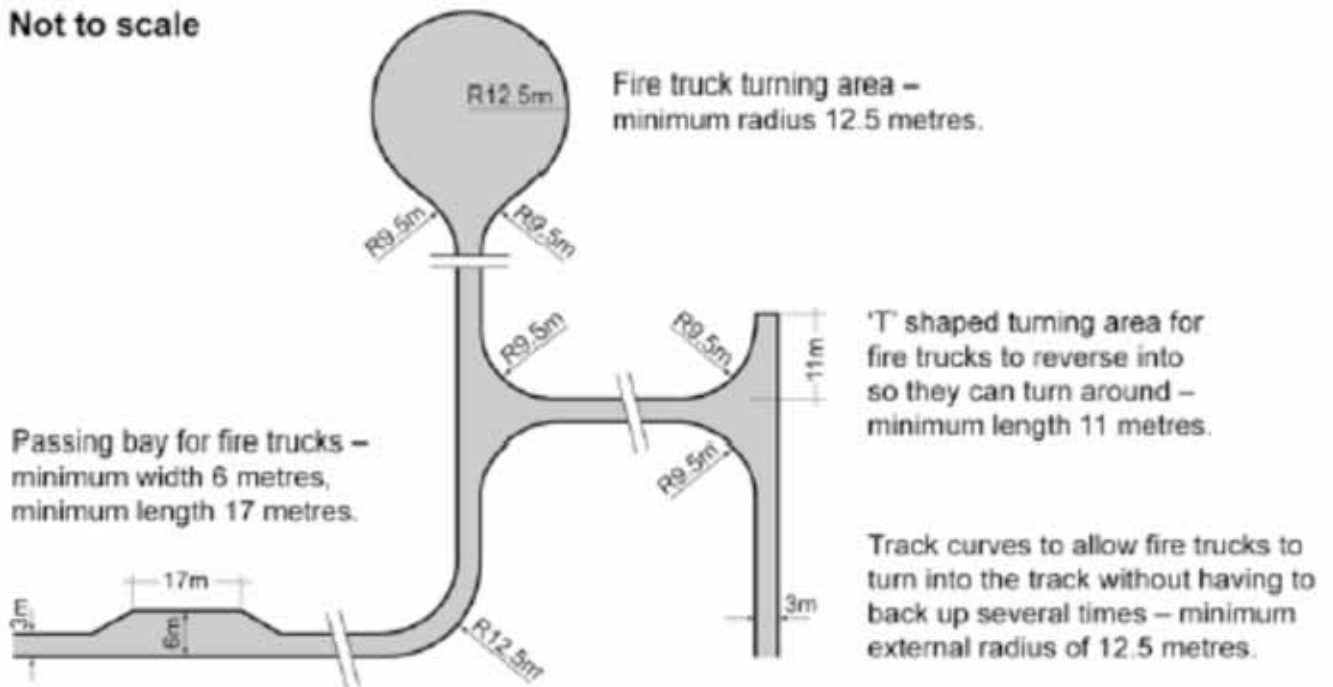
- have a gradient of not more than 16 degrees (i.e. a maximum slope of 1:3.5) at any point along the road or driveway
- allow fire-fighting vehicles to travel in a continuous forward movement around road curves by constructing the curves with a minimum external radius of 12.5 metres
- incorporate solid, all-weather crossings that are capable of supporting fire-fighting vehicles with a gross vehicle mass (GVM) of 21 tonnes, over any watercourse identified on either a current State Government topographic map (1: 50 000) or otherwise identified as a crossing required to provide appropriate access for fire-fighting vehicles.



Not to scale



Not to scale



PART 5: CHECKLIST OF INFORMATION REQUIRED FOR DEVELOPMENT IN BUSHFIRE PROTECTION AREAS

SUMMARY

STEP 1

Consult with local council and relevant agencies

STEP 2

Prepare development application

STEP 3

Lodge application with relevant authority (usually the local council)

STEP 4

Development Plan Consent

STEP 5

Building Rules Consent
Land Division Consent

STEP 6

Development Approval decision

Hint: Use this checklist as a guide to ensure that all key information is included in your application. This will avoid delays in processing your application

The following information is required when lodging a development application for land division, to build a new dwelling(s), tourist accommodation or other habitable building (including the alteration and addition to any of these buildings) in Bushfire Protection Areas.

- Completed development application form
- Application fee
- Copy of Certificate of Title (current to within 3 months)

Council requires three copies of plans showing the proposed development, at least one set of which is A3 in size. These plans should be to scale (metric).

An application for land division must be lodged with the Development Assessment Commission and must be in a form prescribed by the *Development Regulations 2008*. Further information on land division applications can be found in the 'Land Division Guide', which is available from the Department of Planning and Local Government (www.planning.sa.gov.au)

INFORMATION REQUIRED FOR DEVELOPMENT PLAN CONSENT

Site plan

A site plan must clearly show the location of the proposed development or activity and should:

- Have a minimum scale of 1:500 (or greater) and a north point
- Show all property or site boundaries (include dimensions in metres or centimetres)
- Show the location, size and nature of existing and proposed structures (including fences and retaining walls), activities and easements
- Show existing trees and vegetation
- Show the extent of tree and vegetation removal proposed (Native Vegetation Council approval may be required)
- Identify the key topographical features (for example creek lines, drainage lines, slope of the land, direction of flow of stormwater, flood plains)
- Where appropriate, identify the location of traffic access points, adjoining roads, vehicle turning circles and access arrangements for emergency vehicles

- Identify the location of existing dams or bores
- Provide the location, size and details of the dedicated available water supply (for example, rainwater tanks, dams, pools) for fire fighting purposes
- Provide scaled elevation sketches showing external building materials, finishes and colours to be used
- Provide internal floor layout plans (existing and proposed) indicating areas of use
- Show the location of dedicated water supply, fire hose reel and fuel-driven pump, where necessary.

Description of the surrounding area

The description of the surrounding area should explain the possible impacts of the proposed development and may range from a detailed report to a simple plan. It should include the following information:

- Location of the property or site relative to surrounding properties
- Location of public roads and their condition, including undeveloped road reserves (indicate main site access)
- Location of and distance to nearest neighbours, and the nature of neighbouring land uses (for example residential, industrial, farming, retail) on all sides of the site
- Detail of any potential conflicts with neighbouring land uses
- Location of surface water (for example lakes, creeks, dams) within 500m of the site
- Details of any sites of erosion risk.

Description of the proposed development

A description in words of the proposed development must be provided. It should discuss:

- The proposal and the capability of the site to sustain that use
- The ways in which the applicant will minimise the potential bushfire risk of the development such as siting, access, water supply and vegetation management (for example pre-application advice from the SA Country Fire Service Development Assessment Unit)
- Any design techniques to reduce the potential for trapping burning debris against proposed buildings or structures (for example enclosing gaps between the dwelling floor and the ground)

- The type of surface material used for existing and proposed roads (for example bitumen, concrete, gravel, compacted rubble)
- Any excavation, earthworks and embankments required for the proposed development, including details of how soil erosion will be prevented
- The visual impact of the proposed building(s), including colour and type of external materials to be used (include elevations of structures to give a visual impression of the proposed development).

Additional information for land division proposals

- The proposed number of allotments including their dimensions and area
- The area to be covered by proposed and or existing buildings
- The nature and location of bushfire buffer and asset protection zones
- The location of easements.

INFORMATION REQUIRED FOR BUILDING RULES CONSENT

Specific construction details of the proposed building will be required, including:

- The type of flooring system to be used (concrete, metal, timber) and the method of enclosing the sub-floor space, if required. The distance between the ground level and the underside of the floor framing should be indicated if the building is elevated.
- The materials used for any supporting posts, columns, stumps, piers and poles.
- Details of any post supports and their distance above ground/paving level.
- The materials used for external walls. Information should be provided about the type of sarking if the external walls are framed walls.
- Information about the type of windows (including louvres), external doors and screens/shutters to be installed. External doors must be fitted with draught protection devices and leadlight windows require special protection.
- Information about the material used to protect vents and weepholes from sparks and embers.

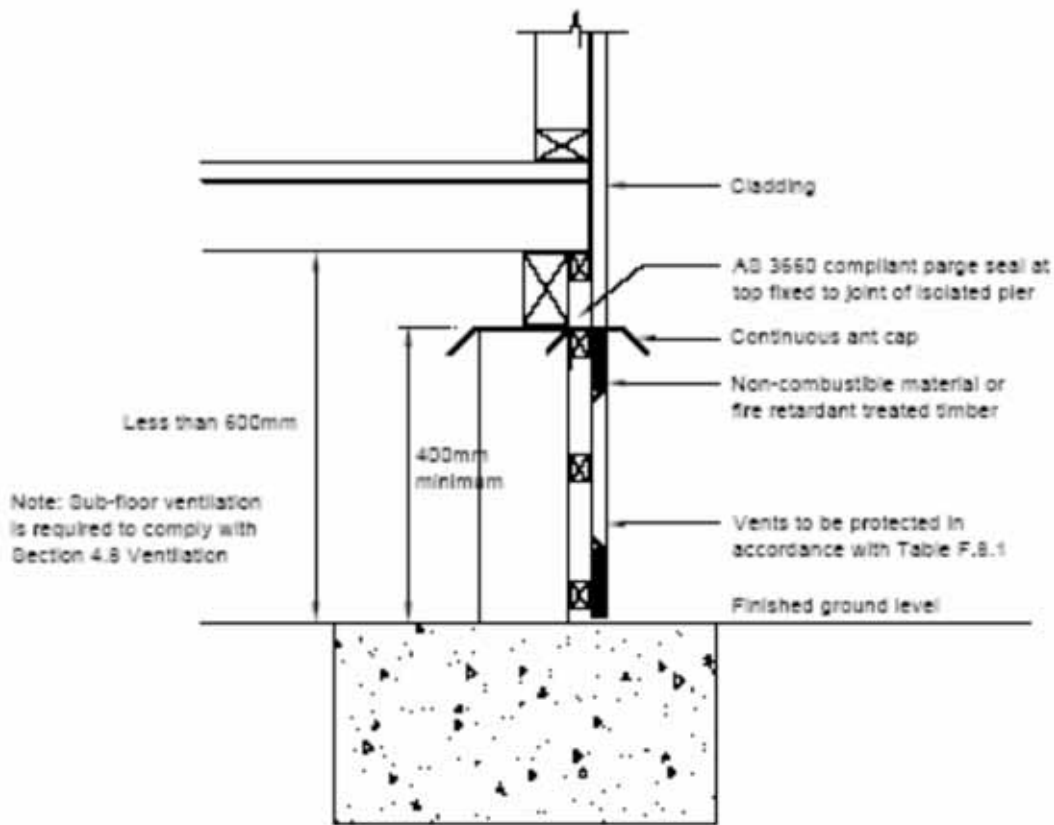


FIGURE F.8.2.1 Protection of sub-floor spaces with less than 600mm clearance

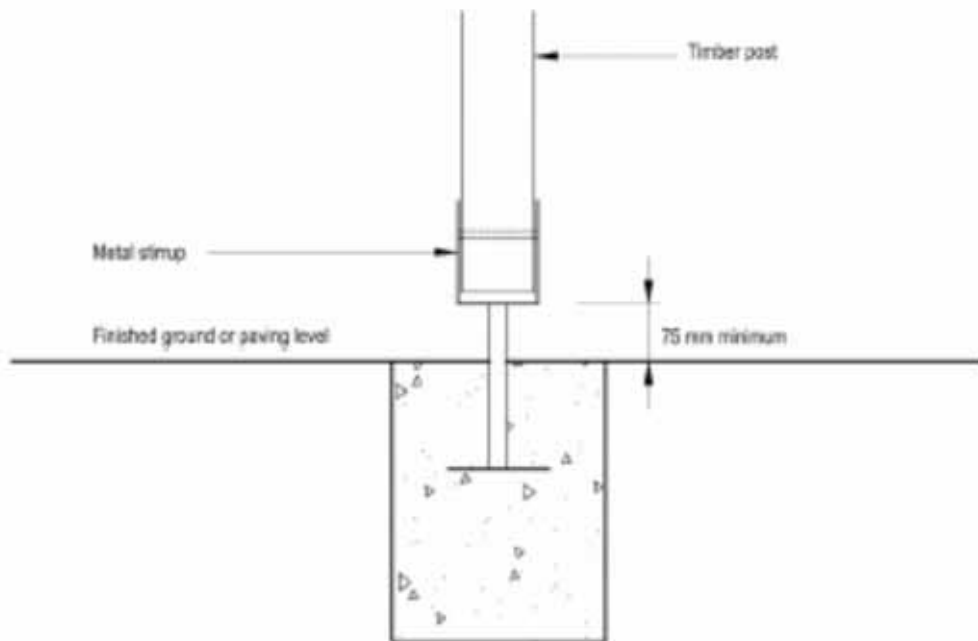


FIGURE F.8.2.2 Metal stirrup clearance

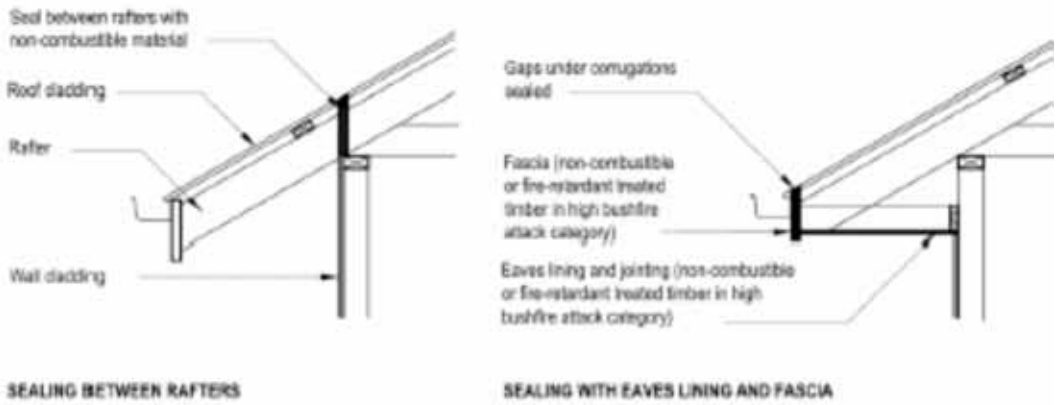


FIGURE F.8.2.3 Sealing roof/wall junction

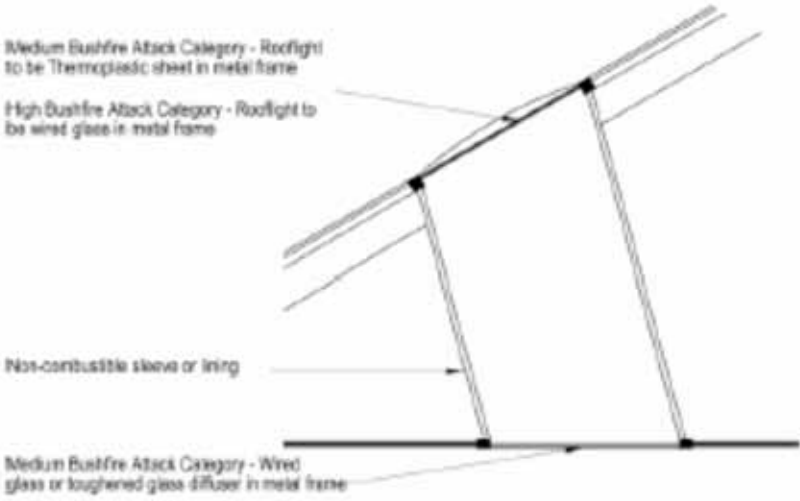



FIGURE F.8.2.4 Rooflights


Development Act 1993

Minister's Specification SA 78
 July 2001

**Bushfire fighting
 equipment and water
 supply requirements in
 designated bushfire prone
 areas**


 Planning SA

ACCEPTABLE CONSTRUCTION PRACTICES

The provision of the minimum requirements of independent water supply, adequate pumping system, pipework and hoses for fire fighting as contained in the following acceptable construction practices are deemed-to-satisfy the performance requirements of this Minister's Specification.

1 Tanks

- 1.1** Where the minimum bushfire water supply is held in a closed tank, fire authority access to the water shall be by –
- (i) a fire service adaptor fitted in the tank wall, near the bottom of the tank with a minimum outlet of 50mm terminating in a 64mm male London round thread; and
 - (ii) where fire appliance access is available immediately adjacent to the tank, through the removable 'inspection lid' on the top of the tank.
- 1.2** Bushfire water supply tanks (including any tank support structure) shall be constructed of **non-combustible** material.

2 Pumps

- 2.1** The water supply used for bushfire fighting, shall be pressurised by
- (a) a pump that has -
 - (i) a minimum inlet diameter of 38mm; and
 - (ii) is powered by a petrol or diesel engine with a power rating of at least 3.7 kW (5hp); or
 - (b) a system that operates independently of mains electricity and is capable of pressurising the water for bushfire fighting purposes.
- 2.2** The fire fighting pump and any flexible connections to the water supply shall be protected by a *non-combustible* cover that allows adequate air circulation and ventilation for efficient pump operation.

3 Pipework

- 3.1** All water pipes and connections between the water supply and pump shall be no smaller in diameter than the diameter of the pump inlet.
- 3.2** All non-metal water supply pipes for bushfire fighting purposes (other than flexible connections and hoses for fire fighting) shall be buried to a minimum depth below ground of 300mm.

4 Hoses for Fire Fighting

- 4.1** A hose (or hoses) used for fire fighting shall -
- (a) be located so that all parts of the building shall be within the reach of the nozzle end of the hose (or hoses) and if more than one hose is required they should be positioned to provide maximum coverage of the building and surrounds (ie at opposite ends of the residence); and
 - (b) be capable of withstanding the pressures of the supplied water; and
 - (c) be of reinforced construction manufactured in accordance with AS 2620 or AS 1221; and
 - (d) have a minimum nominal internal diameter of 18mm; and
 - (e) have an adjustable metal nozzle; or an adjustable PVC nozzle manufactured in accordance with AS 1221; and
 - (f) have a maximum length of 30m; and
 - (g) be readily available at all times