

3.1 Bush Fire Protection Measures

In general terms, an acceptable level of protection from bush fires is achieved through a combination of strategies which:

- Control the types of development permissible in bush fire prone areas (see Box);
- Minimise the impact of radiant heat and direct flame contact by separating the development from the bush fire hazard;
- Reduce the rate of heat output (intensity) of a bush fire close to a development through control of fuel levels;
- Minimise the vulnerability of buildings to ignition from radiation and ember attack;
- Enable relatively safe access for the public and facilitate fire-fighting operations;
- Provide adequate water supplies for bush fire suppression operations;
- Implement community education programs, focusing on property preparedness, including emergency planning and property maintenance requirements; and
- Facilitate the maintenance of APZs, fire trails, access for firefighting and on-site equipment for fire suppression.



Community education programs



Access for firefighting should be safe.

Controlling Development Types.

Developments which should not be permitted on bush fire grounds, including those that may start bush fires or are a potential hazard to adjacent areas or to fire fighters if they are impacted upon by a bush fire:

- *Power generating works*
- *Sawmills*
- *Junk yards*
- *Liquid fuel depots*
- *Offensive and hazardous industries*
- *Chemical industries*
- *Service stations*
- *Ammunition storage/manufacture*
- *Fire works manufacture/storage*

In a development assessment context, there are six key Bush Fire Protection Measures (BPMs):

- a) The provision of clear separation of buildings and bush fire hazards, in the form of fuel-reduced APZ (and their subsets, inner and outer protection areas and defensible space);
- b) Construction standards and design;
- c) Appropriate access standards for residents, fire fighters, emergency service workers and those involved in evacuation;
- d) Adequate water supply and pressure;
- e) Emergency management arrangements for fire protection and/or evacuation; and
- f) Suitable landscaping, to limit fire spreading to a building.



Reduce the vulnerability of buildings to ignition from radiation and ember attack

The BPMs are described as follows:

(a) Asset protection zones and defensible space

An APZ is a buffer zone between a bush fire hazard and buildings, which is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack. The appropriate APZ is based on vegetation type, slope and levels of construction (and for SFPPs the nature of development). The APZ can include **perimeter roads** in new subdivisions. For other development, existing roads, other buildings or managed properties can be considered as part of the APZ.

For forest and woodland vegetation, the APZ consists of two areas:

- **Inner Protection Area**, closest to buildings, incorporating the defensible space and for managing heat intensities at the building surface; and
- **Outer Protection Area**, for reducing the potential length of flames by slowing the rate of spread, filtering embers and suppressing the crown fire.

Appendix 2 provides the required methodology for calculating the APZ and is based on vegetation type, slope and assumed construction levels (see below – bush fire protection measures in combination).

A defensible space, a subset of the APZ, is required as a workable area in which firefighters, emergency services personnel, residents and others can undertake property protection after the passage of a bush fire.

For **Special Fire Protection Purposes**, such a workable and defensible space is required for firefighters and other emergency services personnel to operate under critical conditions of radiant heat, smoke and embers, while assisting or evacuating occupants or other vulnerable members of the community with restricted mobility due to age, disability or other incapacity.

b) Construction standards and design

For development on bush fire prone land preliminary consideration of construction levels is necessary at DA stage:

- to ensure reasonable building requirements (and costs) following residential and rural/residential subdivision. Deemed to satisfy BCA construction standards should be applied in accordance with Appendix 3;
- as assumptions (for performance requirements) underpinning the APZ in Appendix 2 are met; and
- as a potential argument, by applicants, to minimize APZ.

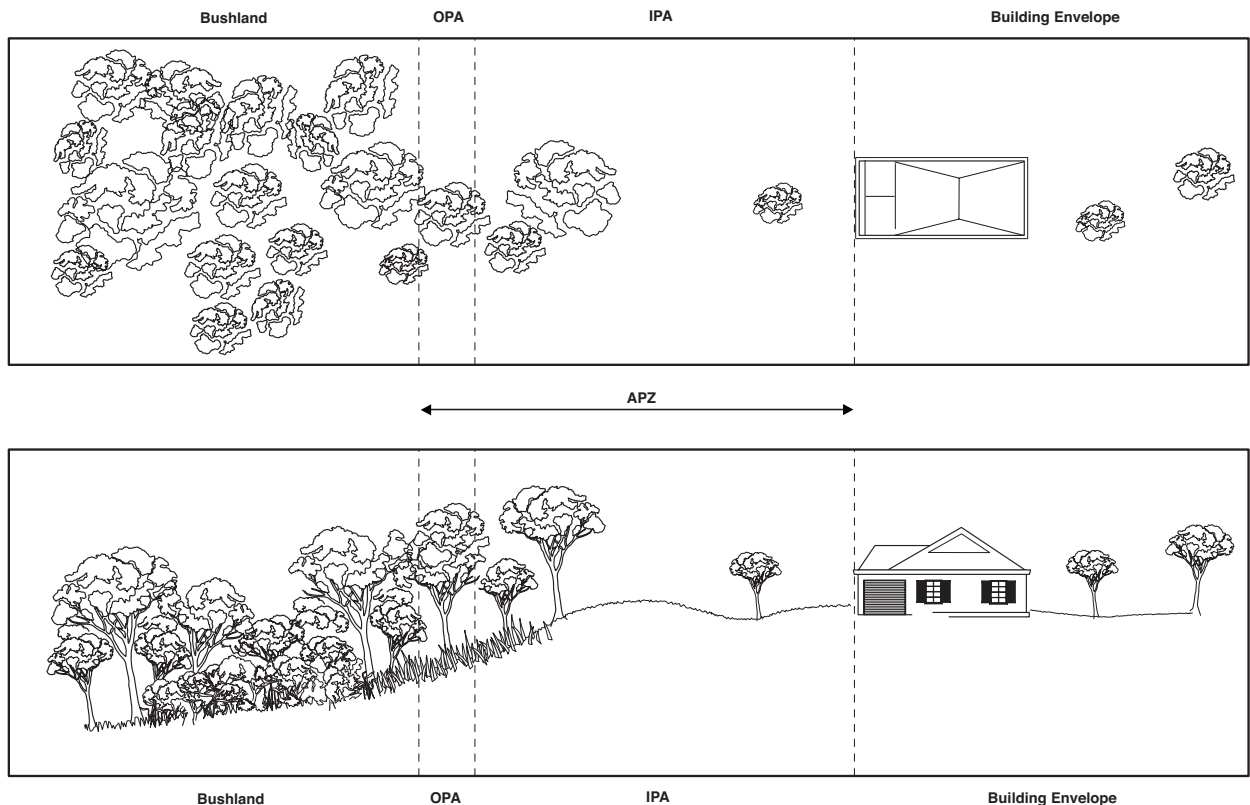


Figure 3.1 shows the APZ, IPA and OPA graphically.

In infill situations, where flame contact is also possible, design considerations need to be addressed to ensure some types of building elements (e.g. windows) are protected.

(c) Access standards (public roads, private access and fire trails)

For new subdivisions and large scale SFPPs, design of public and property access roads should enable safe access, egress and defensible space for emergency services. Fire trails enable access for management of APZs. These principles also apply for other developments but greater emphasis on landscaping, construction and other BPMs may be necessary.



Fire fighting vehicles need access to the urban bushland interface.

(d) Water Supply and Utility Services

Adequate supply of water is essential for fire fighting purposes when considering all forms of development. In addition, gas and electricity should be located so as not to contribute to the risk of fire or impede the fire fighting effort.



Services can be cut during a bush fire

(e) Emergency management arrangements

Emergency and evacuation arrangements e.g. procedures, routines and consideration of safe havens, are of particular relevance to SFPPs.

(f) Landscaping

In considering all DAs, the type, location and ongoing maintenance of landscaping, within the APZ is a necessary bush fire protection measure. Appendix 5 provides advice.



Maintaining the property and landscaping is of critical importance

3.2 The bush fire protection measures (BPMs) in combination

A significant part of the State is classified as bush fire prone land and local circumstances vary widely as do potential land uses. PBP recognises this and promotes detailed site analysis and the application of a combination of bush fire protection measures to achieve an acceptable outcome.

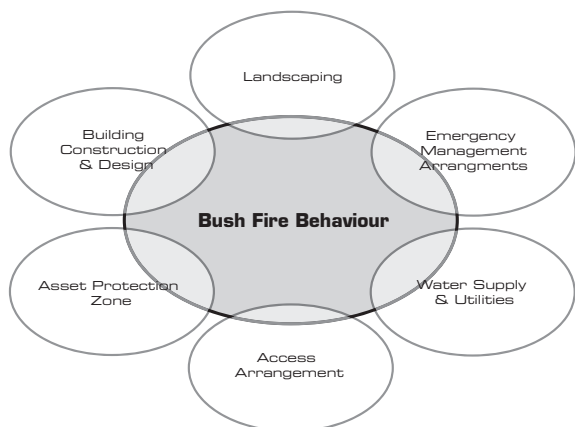


Figure 3.2 Bush Fire Protection Measures in combination

Appropriate combinations not only depend upon geographic location and site circumstances but also on the nature of the proposed use. The legal framework (see Chapter 2) distinguishes between:

- Residential and rural-residential subdivision;
- Special Fire Protection Purposes; and
- Infill (and other developments).

The introduction to each section of Chapter 4 provides specific objectives relating to each of these development types.

The starting point is the provision of an asset protection zone. A fuel-reduced, physical separation between buildings and bush fire hazards is the key element in the suite of measures. A wealth of detailed scientific research on bush fire behaviour under a range of location, weather, vegetation and slope conditions has demonstrated the significance of reduced fuel loads and distance in limiting bush fire threat (from ember attack through to direct flame contact). This detail is embodied in the provisions of Appendix 2.

APZ requirements are based on keeping radiant heat levels at buildings (other than SFPPs) below 29kW/m². For SFPPs, the type of occupants requires a different approach. In order for emergency services to operate in support of those occupants with limited mobility, the requirements for APZs are higher, with 10kW/m² as the target exposure on all sides of the building where there are access points. The APZ tables are based

on this requirement. This is to allow an area for firefighters to defend the property and allow access to and from the building.

A subset of the APZ and an essential component of infill developments is the provision of a defendable space. This is a space to ensure the safety of fire fighters and residents following the passage of a fire front.

Once the APZ standard is achieved, required construction standards can then be met in accordance with Appendix 3. The provision, design and location of other measures can then be detailed.

The acceptable solutions in this document, which incorporate the detailed methodology and Appendices, acknowledge that the measures work in combination to achieve good bush fire protection, while not needlessly reducing lot yields/site coverage or threatening environmental sustainability.

For instance:

- for residential subdivision, required APZ is calculated for level 3 construction (at the interface), thus minimising APZ, maximizing lot yield and minimising habitat destruction. To pursue further reductions in APZ, alternate solutions for building construction and use of other elements could be argued (subject to evidence noted above) that meet the performance criteria; and
- for SFPPs, where the characteristics of occupants require special care (e.g. elderly or school children), construction standards are less significant and the required APZ is crucial for emergency services to operate in support of those occupants. It is possible, however, that some SFPPs, such as tourist accommodation (e.g. eco-tourism or local B&Bs) are occupied by able-bodied persons and that evacuation plans or refuge are appropriate alternative options.

In relation to detailed building design and consideration of ingress and egress the “measures in combination” approach also applies. For instance, facing the building away from a hazard can enable a variation in the defendable space and construction standards.

In summary, the provision of an APZ, clearly separating buildings from hazards, and reducing fuel loads, is the first step. In exceptional circumstances, trading off APZ for increased construction standards and/or evacuation measures can be proposed, but how these will meet the objectives of PBP and the intent/performance criteria of each element must be clearly demonstrated.

3.3 Exceptional circumstances for APZs

Reduced APZs and the use of adjoining lands for meeting APZ requirements will only be permitted in exceptional circumstances based on the merits of the particular development.

It is not possible to be definitive about the full range of such circumstances. However, through previous Land and Environment Court cases and experience it is possible to give examples of the type of situations that could be considered exceptional.

Consideration is on a case-by-case basis and the applicant should provide clear evidence that, because of the circumstances of the case e.g. location or type of use, strict prescriptive compliance is unreasonable and unnecessary.

For exceptional circumstances to apply, the following principles should be demonstrated:

- the existing form of development will obtain a better bush fire risk outcome than if the development did not proceed (eg through increased construction standards);
- the building line should be no closer to the hazard than neighbouring properties;
- the extensions should be no closer to the hazard than the existing building footprint;
- an upgrade of existing facilities may be required; and
- the proposal is an infill arrangement and site constraints do not allow APZ requirements to be met.

An increase in residential densities is not, by itself, considered an exceptional circumstance.

(a) Reduced APZ

Where the required APZ cannot be provided, or a reduction is proposed, the applicant must:

- provide for a defensible space;
- demonstrate that the intent and performance criteria for the APZ (for the type of development in Chapter 4) will be satisfied; and
- demonstrate that other measures, in combination, will meet the relevant radiant heat levels specified in the performance criteria for APZs and will achieve the aim and objectives of PBP (see section 1.1).

Clearly, it is not acceptable to neglect bush fire measures at subdivision and LEP stage with the aim of solely relying on construction standards to provide protection from bush fires. APZs, designed to separate the hazard from the development, and adequate access provisions must be incorporated at all stages of the development.

For existing subdivisions, where bush fire protection measures were not incorporated at

the development application stage, it may not be possible to achieve an APZ of the required width between the building site and the bush fire hazard. Development in these areas therefore poses some difficulties and higher levels of construction standards may be needed.

There may be situations where a combination of poor access, rugged topography, remote location and an inability to provide an adequate APZ would pose an unacceptable bush fire risk, even if the building was constructed in accordance with the strictest construction standards. In these cases, there is a strong argument for refusal of the development application. An essential requirement is the provision of a defensible space from any boundary that interfaces with the bushland.

(b) APZs on adjoining lands

Neither the RFS nor a council has the power to impose an APZ on an adjoining landowner. It is therefore the developer's responsibility to negotiate with adjoining land owner/s as part of the development application process. Details of the proposed easement and the adjoining owners consent should be submitted with the development application.

The DA must demonstrate that exceptional circumstances apply to the land to be developed prior to approval for the establishment of an easement. The requirement for an easement will then be included in the conditions of approval for the issuing of a BFS/development consent.

The owner/occupier of the land who has benefited from the easement shall be responsible for maintaining the APZ.

Where an APZ easement has been established to the benefit of a community title, it shall be maintained in accordance with a plan of management (Part 5 of the Management Statement) for the community titled land.

Easements should not be considered where the adjoining land is used for a public purpose, where vegetation management is not likely or cannot be legally granted (eg National Park, council bushland reserve, SEPP 14 or SEPP 26, critical habitat). Existing easements for power and other services will be considered on their merits.

Examples of acceptable exceptional circumstances

The following are considered to be exceptional circumstances that may apply to a development application for an APZ to be located on adjoining land in bush fire prone areas.

- Where it can be demonstrated that there is a strong likelihood of the adjoining land being developed for future residential or other compatible purposes (eg staged development or Urban Development Program or Strategies with supporting development control plans).
- Where a development was approved prior to 1 August 2002 and the applicant is only proposing alterations and/or additions to existing buildings and the existing APZ does not comply with current APZ requirements. The alterations/additions should lead to increased construction standards up to and beyond BCA (AS 3959) Level 3 construction.
- Where easements are also required on adjoining land for the purposes of providing access for utilities, right of way, as fire trails, and drainage. These are to be kept clear of free standing vegetation. In such circumstances, the proponent will need to obtain written confirmation from the relevant authority that the easement will continue to be maintained in a suitable manner.
- Where the proposal is considered 'infill development' for a single residential building and existing residential areas will also (or currently) benefit from improved APZs on the same adjoining land holding.

In all cases, the adjoining owner's consent is required to be lodged with the development application for an easement.

(c) Location on Slopes over 18 Degrees

An APZ should not be located on land steeper than 18 degrees as:

- some management practices are impossible and all become difficult;
- the environmental consequences of ground clearing (destabilization of the slope resulting

in landslip, slump, erosion or landslide) may not be acceptable; and

- the canopy fuels in forests and woodlands are more readily available to a fire, significantly reducing the advantage of having an APZ.

Developments abutting such slopes should be located so that both the APZ and the development are not located on wooded slopes steeper than 18 degrees. Where slopes steeper than 18 degrees are predominantly grassland with sparse trees, a distance of 20 metres should be provided from the edge of the sloping land.

Where it can be demonstrated that these issues can be effectively managed, APZs on steeper slopes will be considered as an exceptional circumstance.

APZ tables in Appendix 2 are provided for acceptable solutions with slopes up to 18 degrees. Effective slopes in excess of 18 degrees will require a detailed performance assessment.

(d) APZs in Split Zones

In some cases, a development may be proposed on land with a split zoning (e.g. Rural Residential/ Environmental Protection). Bush fire protection measures may not necessarily be compatible with one of the zones. It should not be assumed that an APZ can extend into an adjoining non compatible zone and the suitability of this should be checked with the local council.

Where environmental values such as endangered ecological communities are to be cleared, the proposal will need to be carefully considered in the light of the impact of the requirements for asset protection zones on these values.

As with easements, a suitable covenant may be proposed as an exceptional circumstance which protects environmental values and provides suitable bush fire protection measures.

