

4.1 Planning controls for residential and rural residential subdivisions

4.1.1 What is subdivision?

The term “subdivision” is defined in the EP&A Act (see [Dictionary](#), page 73).

Subdivision of land for a residential or rural-residential purpose is the subdivision of any land on which the zoning permits the construction of a Class 1, 2, 3 or 4 building under the BCA. For example, many industrial and commercial subdivisions permit a residential house (caretaker’s residence) to be constructed. Such subdivisions are considered residential and should be assessed.

A boundary adjustment is also considered subdivision.

The consolidation of two or more lots into one is not defined as subdivision and is not captured under [section 100B](#) of the RF Act as requiring a BFSAs.

(a) Residential subdivision

Residential subdivision can consist of large to medium scale “releases” of land for extension of urban areas or smaller scale “local” subdivision and is usually associated with single dwelling houses - though dual occupancy and multi-unit developments may be permissible. Development consent is required from the council for subdivision and a BFSAs is required from RFS. Development consent, or a Complying Development Certificate, is then

required for individual dwellings.

In new subdivisions an appropriate combination of BPMs, especially an APZ, should be provided.

(b) Rural-Residential Developments

Rural-residential developments include blocks often associated with lifestyle choices rather than focusing on some form of primary production. Where agricultural pursuits are undertaken they are considered secondary to the residential component of the use of the land.

Consideration should be given, where practical, to grouping of rural-residential buildings into clusters which allow for the establishment of APZs around a group of dwellings rather than having to ensure individual protection for a large number of scattered dwellings. The clustering of dwellings provides for better protection with reduced vegetation clearance and hence less environmental impact.

(c) Isolated Rural Developments

Subdivision for the creation of isolated rural developments, particularly in rugged, heavily timbered country, poses additional problems in the provision of adequate levels of protection from bush fires. Where developments are located in these areas, occupants and firefighters may have to travel large distances through bush fire prone vegetation. In addition, the isolation means that, if a fire impacts on the development, occupants may also be a long way from firefighting assistance.



Perimeter roads should be the normal arrangement for urban areas and not perimeter fire trails.

The major issues for isolated rural developments arise from the need to protect firefighters as well as residents in less accessible areas. As a result greater emphasis is placed on:

- the provision of safe access/egress to the property so occupants leaving, and firefighters/rescuers accessing the property, can do so in relative safety;
- the provision of adequate APZs to create an area where occupants and firefighters remaining on site will have a good chance of survival; and
- water supplies and fire protection systems such as spray systems. In such cases dedicated water supplies may exceed standard requirements.

To achieve the required level of protection, dedicated static water supplies will need to be extended beyond the specification recommended in this document. This requirement will need to be determined based on the extent of the hazard faced and the isolation and access arrangements of the development.

Travel distances of 200 metres or more are particularly problematic in that it is difficult to

traverse with dense smoke and reduced vision as well as the increased chance of being isolated by the advancing fire. Trees close to the access track become obstacles in the hazy environment. For these reasons, where access is greater than 200 metres from a main road or refuge suitable for occupants and firefighters, a second access arrangement is required which provides alternative access in a different direction from the main access.

(d) Detailed subdivision design

The subdivision stage of land development provides an opportunity for early consideration of siting and access and for the incorporation of a preferred combination of bush fire protection measures.

PBP promotes detailed site analysis to minimise the potential for bush fire attack. Wide variation across the state, in terms of local climatic conditions is acknowledged, as well as local site characteristics such as slope and vegetation types. These site characteristics are embodied in the APZ and construction level tables set out in [Appendices 2 and 3](#).

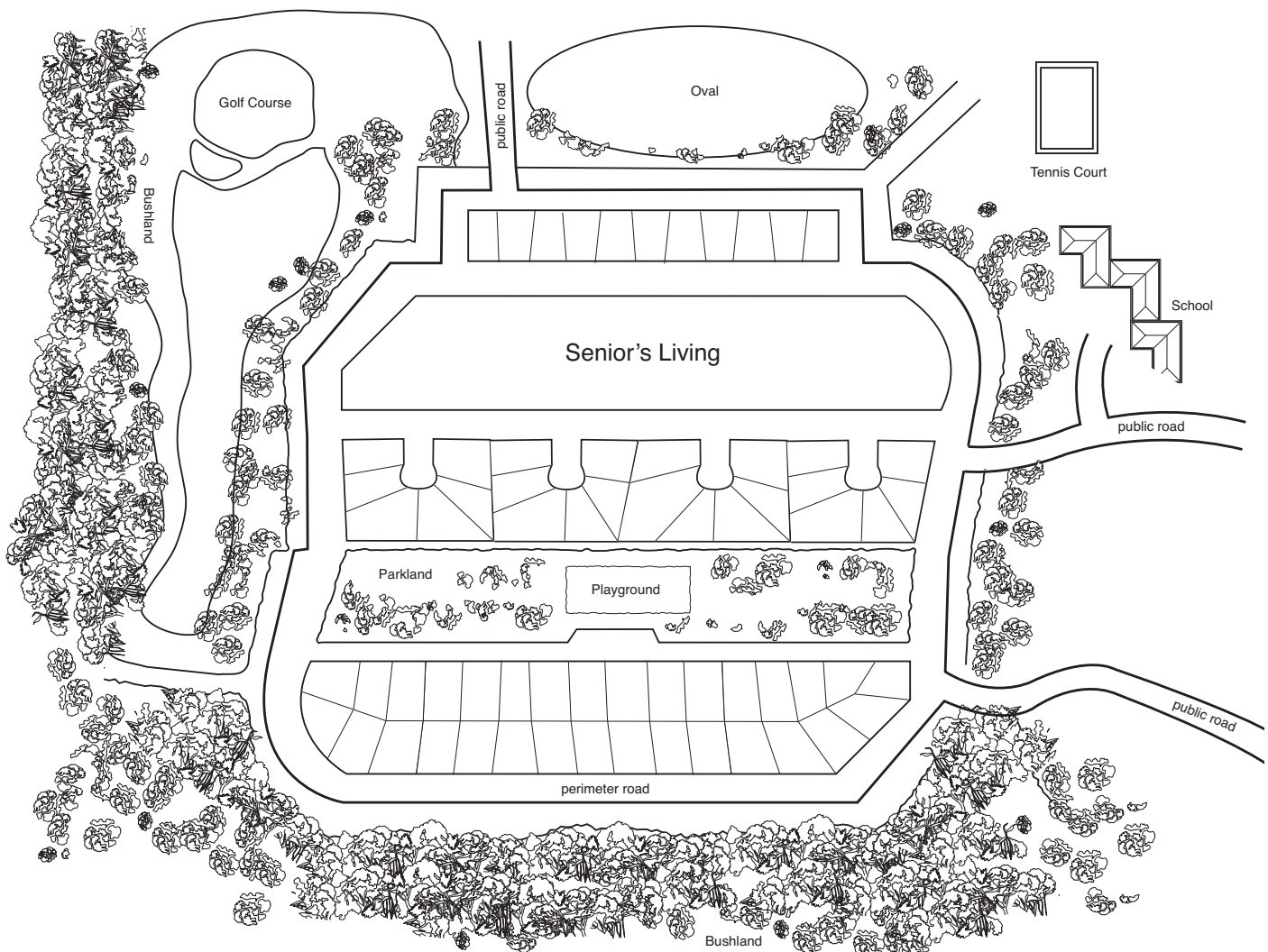


Figure 4.1 Detailed site analysis for residential subdivision

4.1.2 Specific Objectives for Subdivisions

The specific objectives for residential and rural residential subdivision are to:

- minimise perimeters of the subdivision exposed to the bush fire hazard. Hourglass shapes, which maximise perimeters and create bottlenecks, should be avoided.
- minimise bushland corridors that permit the passage of bush fire
- provide for the siting of future dwellings away from ridge-tops and steep slopes - particularly up-slopes, within saddles and narrow ridge crests.
- ensure that separation distances (APZ) between a bush fire hazard and future dwellings enable conformity with the deemed-to-satisfy requirements of the BCA. In a staged development, the APZ may be absorbed by future stages.

- provide and locate, where the scale of development permits, open space and public recreation areas as accessible public refuge areas or buffers (APZs)
- ensure the ongoing maintenance of asset protection zones
- provide clear and ready access from all properties to the public road system for residents and emergency services
- ensure the provision of and adequate supply of water and other services to facilitate effective firefighting.

As indicated in Chapter 3, an **appropriate combination of BPMs, commencing with an APZ**, is to be provided to satisfy the above objectives (and the general aim and objectives of PBP). In addition, the performance criteria that follows (for each measure) must be satisfied.

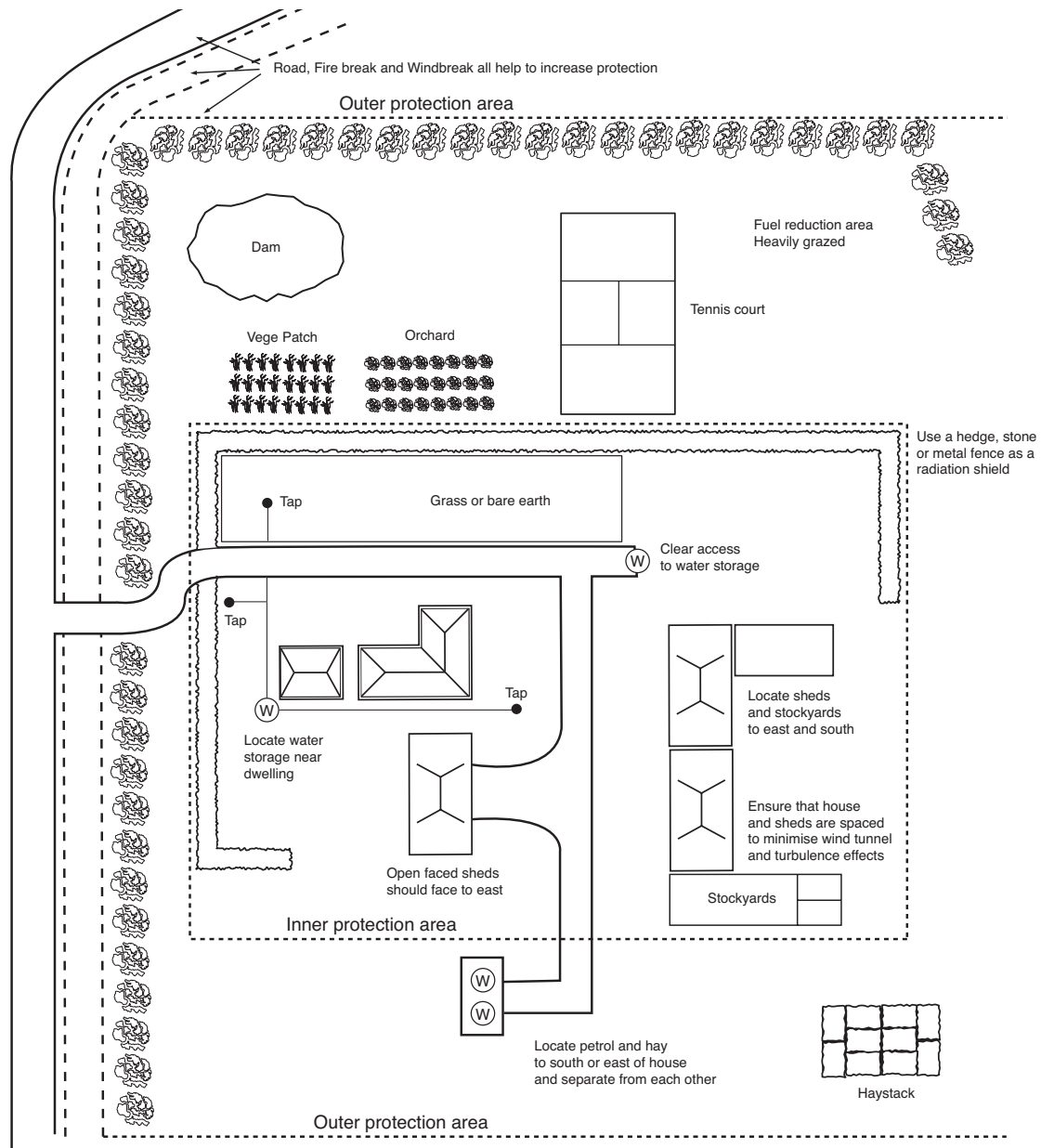


Figure 4.2 Bush fire protection measures for rural property

4.1.3 Standards for Bush Fire Protection Measures for Residential and Rural Residential Subdivisions

Asset Protection Zones

Intent of measures: to provide sufficient space and maintain reduced fuel loads, so as to ensure radiant heat levels at buildings are below critical limits and to prevent direct flame contact with a building.

Background

The APZ ensures that buildings are separated from the hazard and is designed to minimize the presence of fuels, which could become involved in a fire. Therefore, the impact of direct flame contact, radiant heat and ember attack on the development is minimised.

The APZ standards are designed to ensure that future buildings can conform to the deemed-to-satisfy arrangements under the BCA. (i.e. the provisions for Level 3 construction of [AS 3959](#) and this document).

Residential subdivisions should not offset bush fire protection measures to neighbouring land. Bush fire protection measures that are essential to a development should occur on the site of the proposed development unless exceptional circumstances apply.

A proponent should not diminish the ecological integrity of adjoining bushland, and APZs should be designed to minimise the impacts on any environmental features in the landscape.

The RFS will generally not approve the subdivision of land for a residential or rural-residential subdivision purpose when the building footprint is unable to meet the necessary setbacks for an asset protection zone.

Where a bush fire hazard exists **on or adjacent to** a development site, an APZ is to be established on the hazard side of the development in accordance with [Appendix 2](#) and as indicated in Figure 4.3.

As a condition of development consent, the consent authority is required to ensure that a mechanism is established for the maintenance of APZs over the life of the development. Options include a levy on property owners to fund ongoing maintenance, body corporate or community title schemes and positive covenants (under [s.88B](#) of the [Conveyancing Act 1919](#)) at the development stage.

Components of an Asset Protection Zone

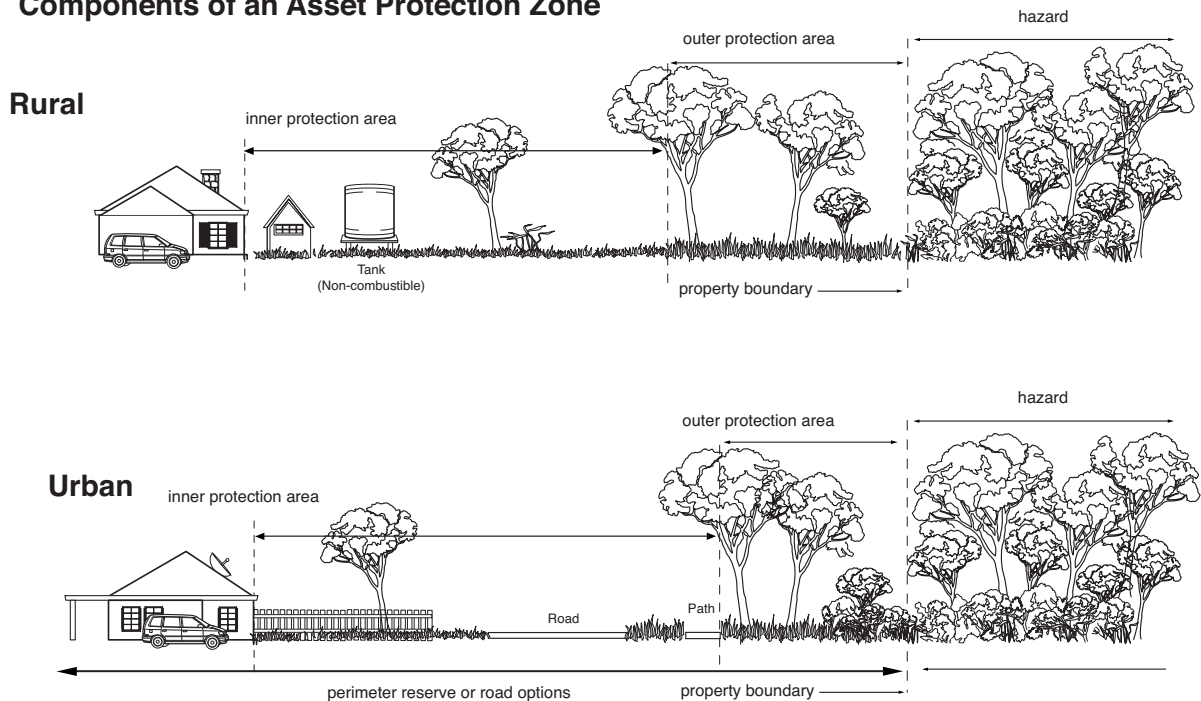


Figure 4.3 APZs and progressive reduction in fuel loads

Performance Criteria	Acceptable solutions
<p>The intent may be achieved where:</p>	
<ul style="list-style-type: none"> radiant heat levels at any point on a proposed building will not exceed 29 kW/m² 	<ul style="list-style-type: none"> an APZ is provided in accordance with the relevant tables/figures in Appendix 2 of this document the APZ is wholly within the boundaries of the development site. Exceptional circumstances may apply (see section 3.3)
<ul style="list-style-type: none"> APZs are managed and maintained to prevent the spread of a fire towards the building. 	<ul style="list-style-type: none"> in accordance with the requirements of Standards for Asset Protection Zones (RFS, 2005) <p><i>Note: A Monitoring and Fuel Management Program should be required as a condition of development consent.</i></p>
<ul style="list-style-type: none"> APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated 	<ul style="list-style-type: none"> the APZ is located on lands with a slope less than 18 degrees.



Some past planning practices have provided no effective protection to life and property in the event of a severe bush fire.

Access (1) – Public Roads

Intent of measures: to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

Background

Public roads include the perimeter road and the internal road system of any urban subdivision as well as public roads in rural-residential subdivisions.

A **perimeter road** is the preferred option to separate bushland from urban areas. Fire trails will only be considered acceptable in exceptional circumstances. This is based on the difficulties and costs associated with maintaining fire trails on private land. A perimeter fire trail cannot be imposed on the adjoining land and should not cross a number of residential allotments.

The perimeter road forms part of the APZ and is required to provide a separation between the building and the boundary of the bush fire hazard.

The purpose of the public road system is to:

- provide firefighters with easier access to structures, allowing more efficient use of firefighting resources;
- provide a safe retreat for firefighters; and
- provide a clear control line from which to conduct hazard reduction or back burning operations.

Roads should provide sufficient width to allow firefighting vehicle crews to work with firefighting equipment about the vehicle.

Where staged development occurs or development operates under an approved Masterplan, the RFS will consider temporary perimeter roading subject to availability of reticulated water supply.

Table 4.1 provides the minimum widths for public roads that are not perimeter roads for the safe access of fire fighting vehicles in urban areas.

Curve radius (inside edge) (metres)	Swept Path (metres width)	Single lane (metres width)	Two way (metres width)
<40	3.5	4.5	8.0
40-69	3.0	3.9	7.5
70-100	2.7	3.6	6.9
>100	2.5	3.5	6.5

Source: [AS 2890.2 – 2002](#).

Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle)

Figure 4.4 provides the dimensions for the curvature of roads (inner and outer turning circles) to be used for access roads (both public and private) and fire trails.

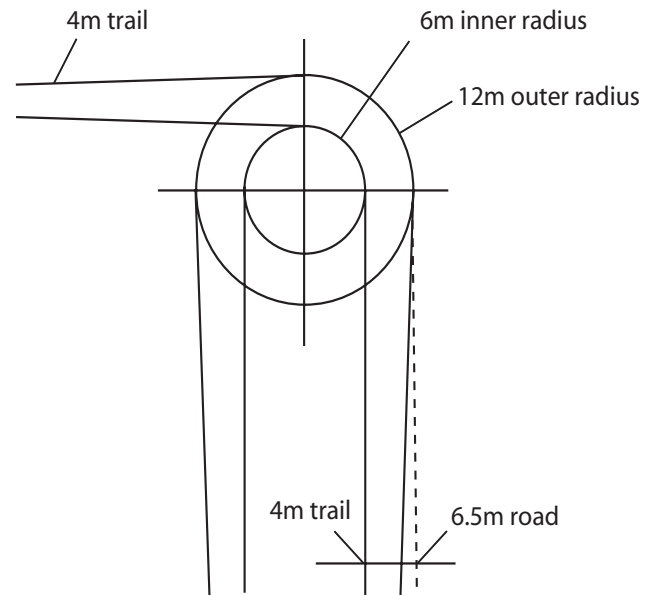


Figure 4.4 Dimensions for inner and outer turning circle radius for (public and private access) roads and fire trails.



Examples of public road access arrangements that do not facilitate bush fire fighting.

Performance Criteria	Acceptable solutions
The intent may be achieved where:	
<ul style="list-style-type: none"> firefighters are provided with safe all weather access to structures (thus allowing more efficient use of firefighting resources) 	<ul style="list-style-type: none"> public roads are two-wheel drive, all weather roads.
<ul style="list-style-type: none"> public road widths and design that allow safe access for firefighters while residents are evacuating an area. 	<ul style="list-style-type: none"> urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions. Non perimeter roads comply with Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle). the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas. traffic management devices are constructed to facilitate access by emergency services vehicles. public roads have a cross fall not exceeding 3 degrees. all roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end and direct traffic away from the hazard. curves of roads (other than perimeter roads) are a minimum inner radius of six metres and minimal in number, to allow for rapid access and egress. the minimum distance between inner and outer curves is six metres. maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient. there is a minimum vertical clearance to a height of four metres above the road at all times.
<ul style="list-style-type: none"> the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles. 	<ul style="list-style-type: none"> the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas). Bridges clearly indicate load rating.
<ul style="list-style-type: none"> roads that are clearly sign-posted (with easily distinguishable names) and buildings/properties that are clearly numbered. 	<ul style="list-style-type: none"> public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression. public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression.
<ul style="list-style-type: none"> there is clear access to reticulated water supply 	<ul style="list-style-type: none"> public roads up to 6.5 metres wide provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression. one way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.
<ul style="list-style-type: none"> parking does not obstruct the minimum paved width 	<ul style="list-style-type: none"> parking bays are a minimum of 2.6 metres wide from kerb edge to road pavement. No services or hydrants are located within the parking bays. public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road.

Access (2) – Property Access

Intent of measures: to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupants faced with evacuation.

Background

The public road system in a bush fire prone area should provide alternative access or egress for firefighters and residents during a bush fire emergency if part of the road system is cut by fire.

Property access is access from a public road system onto private land and access to the habitable building by fire fighters.

A distinction is drawn between rural private access roads and those in urban areas.

In rural areas, in particular isolated rural properties, operational difficulties can be experienced in accessing buildings. Examples include water crossings, roads being cut by fire and hazardous conditions. As a result, the location

and standards of property access roads should be carefully considered.

Where property access is required across other land, the owner's consent to legally binding arrangements covering access and ongoing maintenance are required prior to lodging a development application.

Short property access roads are preferable to long ones for the safety of evacuating residents and emergency service personnel, and therefore it is preferable to site dwellings as close as possible to public through roads.

By comparison, urban areas have an existing infrastructure and requirements are generally less of a problem. In addition, it is acknowledged that fire appliances will generally operate from the public road system.

Where a property access road provides internal access arrangements for community title or similar subdivision arrangements, the provisions of [4.2.7](#) in relation to internal roads also apply.

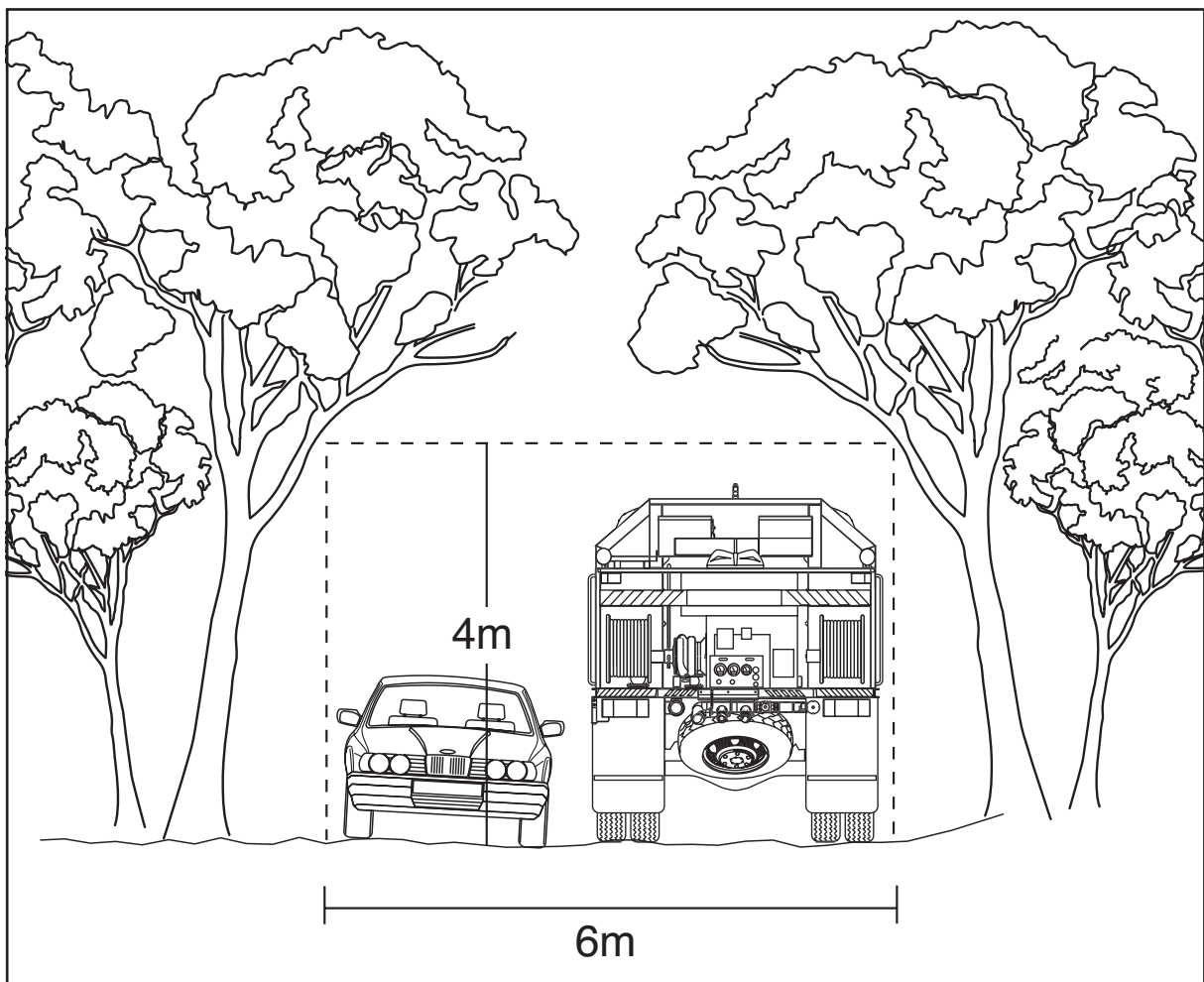


Figure 4.5 Property access road requirements (rural areas)

Performance Criteria	Acceptable solutions
<p>The intent may be achieved where:</p>	
<ul style="list-style-type: none"> access to properties is provided in recognition of the risk to fire fighters and/ or evacuating occupants. 	<ul style="list-style-type: none"> at least one alternative property access road is provided for individual dwellings (or groups of dwellings) that are located more than 200 metres from a public through road
<ul style="list-style-type: none"> the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles. all weather access is provided. 	<ul style="list-style-type: none"> bridges clearly indicate load rating and pavements and bridges are capable of carrying a load of 15 tonnes roads do not traverse a wetland or other land potentially subject to periodic inundation (other than a flood or storm surge).
<ul style="list-style-type: none"> road widths and design enable safe access for vehicles 	<ul style="list-style-type: none"> a minimum carriageway width of four metres for rural-residential areas, rural landholdings or urban areas with a distance of greater than 70 metres from the nearest hydrant point to the most external part of a proposed building (or footprint). <p><i>Note: No specific access requirements apply in a urban area where a 70 metres unobstructed path can be demonstrated between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles (i.e. a hydrant or water supply).</i></p> <ul style="list-style-type: none"> in forest, woodland and heath situations, rural property access roads have passing bays every 200 metres that are 20 metres long by two metres wide, making a minimum trafficable width of six metres at the passing bay. a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches. internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum 12 metre outer radius. curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress. the minimum distance between inner and outer curves is six metres. the crossfall is not more than 10 degrees. maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads. <p><i>Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m), extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.</i></p> <ul style="list-style-type: none"> access to a development comprising more than three dwellings have formalised access by dedication of a road and not by right of way.

Access (3) – Fire Trails

Intent of measures: to provide suitable access for fire management purposes and maintenance of APZs

Background

Fire trails are used as access for firefighters, as fire control lines and for APZ maintenance.

In rural-residential subdivisions, they may surround isolated dwellings or groups of dwellings and can form part of the IPA around individual or groups of dwellings.

In suburban subdivisions they may function as a strategic control line around the hazard side of the IPA, if they are connected to the public road system at frequent intervals.

A fire trail is not a substitute for a perimeter road

and any proposals will need to demonstrate clear benefits over the use of a perimeter road. Fire trails are expensive to maintain and can only be effective in the context of a strategic advantage and access for hazard reduction operations.

At the time of subdivision, if fire trails are part of the development, they should be under council management to ensure that maintenance occurs. From time to time this may not be possible, in which case they can occur as easements and rights of way over private land. In these circumstances, the NSW RFS will generally require a community title arrangement to ensure ongoing maintenance.

If fire trails are placed under council management, council is liable for the ongoing costs of maintenance. Given limited funding within many councils, this arrangement does not ensure that maintenance occurs and may place a liability on a council. Where a fire trail is proposed to be vested in council, ongoing funding of maintenance should be considered.

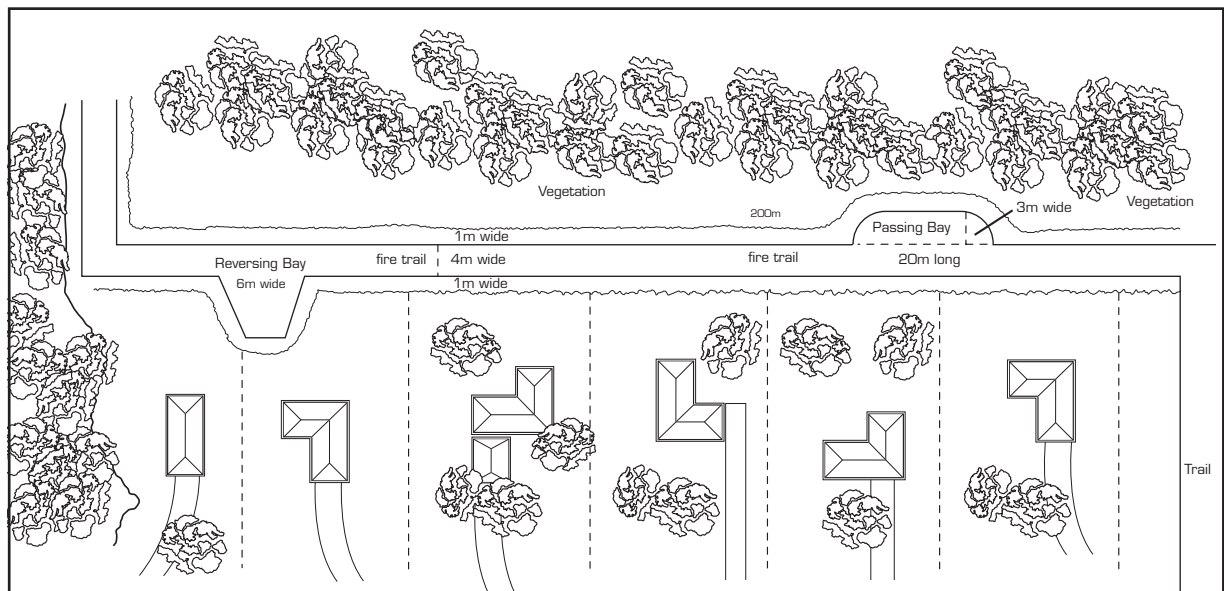


Figure 4.6 Fire Trails may function as strategic control lines if they are connected to the road system at frequent intervals



Fire trail gates are to be provided.

Performance Criteria	Acceptable solutions
<p>The intent may be achieved where:</p>	
<ul style="list-style-type: none"> the width and design of the fire trails enables safe and ready access for firefighting vehicles 	<ul style="list-style-type: none"> a minimum carriageway width of four metres with an additional one metre wide strip on each side of the trail (clear of bushes and long grass) is provided. the trail is a maximum grade of 15 degrees if sealed and not more than 10 degrees if unsealed. a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches is provided. the crossfall of the trail is not more than 10 degrees. the trail has the capacity for passing by: <ul style="list-style-type: none"> reversing bays using the access to properties to reverse fire tankers, which are six metres wide and eight metres deep to any gates, with an inner minimum turning radius of six metres and outer minimum radius of 12 metres; and/or a passing bay every 200 metres, 20 metres long by three metres wide, making a minimum trafficable width of seven metres at the passing bay. <p><i>Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m) and extend for no more than 30m and where obstruction cannot be reasonably avoided or removed.</i></p>
<ul style="list-style-type: none"> fire trails are trafficable under all weather conditions. Where the fire trail joins a public road, access shall be controlled to prevent use by non authorised persons. 	<ul style="list-style-type: none"> the fire trail is accessible to firefighters and maintained in a serviceable condition by the owner of the land. appropriate drainage and erosion controls are provided. the fire trail system is connected to the property access road and/or to the through road system at frequent intervals of 200 metres or less. fire trails do not traverse a wetlands or other land potentially subject to periodic inundation (other than a flood or storm surge). gates for fire trails are provided and locked with a key/lock system authorized by the local RFS.
<ul style="list-style-type: none"> fire trails designed to prevent weed infestation, soil erosion and other land degradation 	<ul style="list-style-type: none"> fire trail design does not adversely impact on natural hydrological flows. fire trail design acts as an effective barrier to the spread of weeds and nutrients. fire trail construction does not expose acid-sulphate soils.

Services – Water, electricity and gas

Intent of measures: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building

Background

During major bush fire events, the preparedness of the dwelling and its occupants may be seriously jeopardised with the loss of basic services (particularly water and electricity).

As part of the development consent process for the construction of a dwelling, it may be necessary to specify the provision of certain services.

Adequate water supply is critical for any firefighting operation, particularly where property protection is envisaged. The amount of water to be supplied may vary with differing geographical and topographical conditions.

In addition, significantly increased densities may draw upon existing water supplies which, if not supplemented, may prove inadequate in the face



Do not use plastic water storage tanks in bush fire prone areas.

of a major bush fire event. This requires careful consideration at the subdivision stage to ensure adequate water will be available. Where reticulated supply is inadequate, water can be supplemented with the provision of a dedicated static water supply in the form of tank storage. Where supplementary supplies of water are required, swimming pools, creeks and dams should not be used as a substitute for a dedicated static supply. These sources of water are not considered reliable during drought conditions.

The determination of a guaranteed water supply is one that can only be made by the water supply authority where mains water supply is available.

In rural areas and areas not serviced by reticulated water supplies, the provision of dedicated static water supply is essential. The amount of water is determined on the basis of lot sizes and density of development. Larger subdivisions of smaller lot sizes require less water than developments involving larger lots spread over a large area. Table 4.2 should be used for determining dedicated static water supply requirements based on lot size and character of development.

Maintaining a dedicated water supply for firefighting purposes in rural areas provides opportunities for water replenishment for firefighting tankers and ensures availability of water for property protection by adequately prepared owners.

As protective measures, hose reels and sprinkler systems are encouraged but are considered to be active measures. They must generally be considered as additional to, rather than a substitute for other bush fire protection measures.

Development type	Water requirement
Residential Lots (<1,000m ²)	5,000 l/lot
Rural-residential Lots (1,000 – 10,000m ²)	10,000 l/lot
Large Rural/Lifestyle Lots (>10,000 m ²)	20,000 l/lot
Dual Occupancy	2,500 l/unit
Townhouse/Unit Style (eg Flats)	5,000 l/unit up to 20,000 l maximum.

Table 4.2 – Dedicated water supply requirements for various non reticulated subdivision developments

Performance Criteria	Acceptable solutions
<p>The intent may be achieved where:</p>	
<p>Reticulated water supplies</p> <ul style="list-style-type: none"> water supplies are easily accessible and located at regular intervals 	<ul style="list-style-type: none"> reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads. fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles. hydrants are not located within any road carriageway all above ground water and gas service pipes external to the building are metal, including and up to any taps. the provisions of parking on public roads are met.
<p>Non-reticulated water supply areas</p> <ul style="list-style-type: none"> for rural-residential and rural developments (or settlements) in bush fire prone areas, a water supply reserve dedicated to firefighting purposes is installed and maintained. The supply of water can be an amalgam of minimum quantities for each lot in the subdivision (community titled subdivisions), or held individually on each lot 	<ul style="list-style-type: none"> the minimum dedicated water supply required for firefighting purposes for each occupied building excluding drenching systems, is provided in accordance with Table 4.2. a suitable connection for firefighting purposes is made available and located within the IPA and away from the structure. A 65mm Storz outlet with a Gate or Ball valve is provided. Gate or Ball valve and pipes are adequate for water flow and are metal rather than plastic. underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck access is supplied within 4 metres of the access hole. above ground tanks are manufactured of concrete or metal and raised tanks have their stands protected. Plastic tanks are not used. Tanks on the hazard side of a building are provided with adequate shielding for the protection of fire fighters. all above ground water pipes external to the building are metal including and up to any taps. Pumps are shielded.
<p>Electricity Services</p> <ul style="list-style-type: none"> location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings regular inspection of lines is undertaken to ensure they are not fouled by branches. 	<ul style="list-style-type: none"> where practicable, electrical transmission lines are underground. where overhead electrical transmission lines are proposed: <ul style="list-style-type: none"> lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002).
<p>Gas services</p> <ul style="list-style-type: none"> location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings 	<ul style="list-style-type: none"> reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used. all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation. if gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal. polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.

4.2 Planning controls for Special Fire Protection Purposes

4.2.1 Introduction

Special Fire Protection Purpose (SFPP) developments are required to obtain a BFSA from the RFS under [section 100B](#) of the RF Act. Such developments are also “integrated developments” under [section 91](#) of the EP&A Act.

The nature of SFPPs means that occupants may be more vulnerable to bush fire attack for one or more of the following reasons:

- They may be less educated in relation to bush fire impacts;
- They may have reduced capacity to evaluate risk and to respond adequately to the bush fire threat;
- They may present organisational difficulties for evacuation and or management;
- They may be more vulnerable through stress and anxiety arising from bush fire threat and smoke;
- There may be significant communication barriers;
- Supervision during a bush fire may be difficult; and
- Logistical arrangements for the numbers of residents may be complicated in terms of alternate accommodation, transport, healthcare and food supplies.

4.2.2 Types of Special Fire Protection Purpose Developments

In NSW, SFPPs have been identified as:

- (a) a school,
- (b) a child care centre,
- (c) a hospital (including a hospital for the mentally ill or mentally disordered),
- (d) a hotel, motel or other tourist accommodation,
- (e) a building wholly or principally used as a home or other establishment for mentally incapacitated persons,
- (f) housing for older people or people with disabilities within the meaning of [State Environmental Planning Policy No 5 - Housing for Older People or People with a Disability \(now State Environmental Planning Policy \(Seniors Living\)\)](#) .,
- (g) a group home within the meaning of [State Environmental Planning Policy No 9 - Group Homes](#),
- (h) a retirement village,
- (i) any other purpose prescribed by the regulations. ([Section 100B \(6\)](#) of the RF Act).

4.2.3 Specific Objectives for Special Fire Protection Purpose Developments

While the “measures in combination” continues as a principle, there is more reliance on space around buildings (as defensible space and APZs for fuel load control) and less reliance on construction standards. The specific objectives at [4.1.2](#) relating

to the provision of road access, water supply and other services also apply to SFPPs as they do to residential subdivisions.

The specific objectives for SFPP developments are to :

- provide for the special characteristics and needs of occupants. Unlike residential subdivisions, which can be built to a construction standard to withstand the fire event, enabling occupants and firefighters to provide property protection after the passage of fire, occupants of SFPP developments may not be able to assist in property protection. They are more likely to be adversely affected by smoke or heat while being evacuated.
- provide for safe emergency evacuation procedures. SFPP Developments are highly dependent on suitable emergency evacuation arrangements, which require greater separation from bush fire threats.

During emergencies, the risk to firefighters and other emergency services personnel can be high through prolonged exposure, where door-to-door warnings are being given and exposure to the bush fire is imminent.

A bush fire emergency management plan should minimise risks to emergency services personnel and exits should be located away from the hazard side of a building. It is for this reason that setbacks for special fire protection purposes are larger than most normal residential buildings, as the radiant heat exposure can be unacceptable for emergency workers assisting residents in the open compared to being inside the building.

In all cases the intent and performance criteria of each BPM must be satisfied, as per the Performance Tables that follow ([see section 4.2.7](#)). Exceptional circumstances must be demonstrated for reductions in APZ (required by [Appendix 2](#)) or APZ on adjoining land ([see section 3.3](#)).

4.2.4 Matters for consideration for specific SFPPs

The following commentary outlines particular matters for consideration for specific types of SFPP developments.

a) Schools

While schools are usually associated with primary and secondary students, the description covers all school purposes and includes any development in which schooling can take place.

This includes schools for religious instruction as well as child learning centres.

Universities and technical colleges are not defined as a school within an LEP, however these require careful consideration, and the specific objectives above should be applied.

Schools are particularly prone to traffic-generated congestion on roads at start and finish times. This is heightened when parents believe that their children are likely to be exposed to bush fire and in seeking to reach the school, cause road congestion and hamper the firefighting effort.

In general, office buildings for administration are not afforded the same protection as classrooms or assembly point buildings used for evacuation. Likewise, toilet blocks can be located within the APZ area.

Sporting fields, and amenities blocks should form part of the APZ between the hazard and classrooms. Car parking should be near a clear exit away from the bush fire threat.

Efforts must be made to improve the resilience of buildings, and new classrooms should not be extended towards bushland where they do not comply with the setback requirements of [Appendix 2](#). Where existing schools do not meet setback requirements any upgrades should incorporate improved bush fire protection measures within existing building footprints.

b) Child care centres

Child care centres often have fixed ratios of staff to children that are based on supervision rather than emergency response and evacuation requirements. It is one of the reasons that child care centres are considered special fire protection purpose developments. Of particular concern is where buildings such as dwellings are proposed to be converted to child care centres, as existing housing stock is unlikely to meet basic ember protection in a bush fire prone area.

When extending or upgrading the buildings of an existing child care centre, no part of a building should be located closer to the fire threat than permitted by the applicable construction standard ([AS 3959-1999](#)). This may result in a level of retrofitting of existing buildings to ensure improved safety.

c) Hospitals (including hospitals for the mentally ill or mentally disordered)

Hospitals can vary significantly in size and purpose. They may be larger public hospitals or smaller private day surgery premises.

Hospitals are harder to design with bush fire protection in mind. They require ease of access for emergency patients arriving by ambulance or car with larger doorways that are difficult to ember proof.

Patients can have a range of physical conditions and most emergency plans are based on fire within the building rather than bush fire threat. In many cases patients could suffer from asthma, emphysema or obstructive diseases and smoke may exacerbate these conditions. People with emotional or psychological problems may suffer increased anxiety and unwarranted stress during a

bush fire, making evacuation arrangements difficult to coordinate and implement. A building wholly or principally used as a home or other establishment for mentally incapacitated persons has the same difficulties.

d) Hotels, motels and other tourist accommodation

This class of development includes large hotels, motel accommodation, bed and breakfast establishments (B&Bs), caravan parks (and mobile home estates), lodges, religious and health retreats and camping grounds.



Caravan parks and mobile homes (relocatable) estates are considered SFPP.

The biggest challenge is evacuation of people who may have no comprehension of the danger or knowledge of the area in which they find themselves. Tourists staying in tourist accommodation have been known to evacuate late or travel down inappropriate roads with fatal results. A better strategy may either be staying within a resilient building as a refuge or having coordinated escorted evacuation.

In some cases, the attraction of the site as a bush land setting conflicts with the need for adequate APZs, however, this should not lead to a lower standard of construction or unsuitable access being provided.

Eco-tourism

A major challenge arises with 'eco-tourism' facilities in which accommodation has traditionally been built into a remote bushland environment. Eco-tourism aims to foster environmental and cultural understanding, appreciation and conservation, be ecologically sustainable and based on relatively undisturbed natural areas.

Clearly this can conflict with bush fire safety objectives, which aim to reduce a building's vulnerability to ignition from heat radiation, flame or embers and to provide safe access and a minimum defensible space for firefighter safety. Access can also be problematic and the requirements for access possibly across adjoining properties will need to be carefully assessed. This should recognise the risk faced by fire fighters trying to gain access and occupants trying to evacuate to safer areas ([see page 39](#)).

e) State Environmental Planning Policy (SEPP) – Seniors Living

The policy aims to increase the supply and diversity of housing to meet the needs of older people or people with a disability, while making efficient use of existing infrastructure and services. The policy does not apply to land described as 'environmentally sensitive land' which can include land identified as being bush fire prone land. Consequently [SEPP Seniors Living](#) proposals may not be permitted in these areas.

The nature of Seniors Living developments determines that a relatively less mobile residential population is present and, as such, creates difficulties when evacuation is required. These residents cannot generally be expected to defend the property from bush fire attack.

[SEPP Seniors Living](#) can be accessed on the NSW Parliamentary Legislation website at www.legislation.nsw.gov.au.

The consent authority is also required under the Policy to consider **additional matters** for SEPP Seniors Living developments in the vicinity of bush fire prone land and take into consideration the means of access to the general location and other relevant matters.

In these cases, the consent authority must also consult with the Commissioner of the RFS. The requirements on this type of development are of a higher order than other special fire protection purpose developments.

In addition, it should be noted that some consent authorities deal with seniors living facilities through the provisions of their LEP.



Senior living and retirement/nursing homes require special consideration in relation to APZs

f) State Environmental Planning Policy No 9 - Group Homes

The aim of the [SEPP 9 Policy](#) is to facilitate the establishment of:

“(a) permanent group homes in which disabled persons or socially disadvantaged persons may lead as normal a life as possible by living permanently in an ordinary residential household environment, instead of in an institutional environment, and (b) transitional group homes which provide temporary accommodation for disabled persons or socially disadvantaged persons in an ordinary residential household environment instead of in an institutional environment for purposes such as alcohol or drug rehabilitation, “half-way” rehabilitation for persons formerly living in institutions and refuges for men, women or young people.”

As with other SFPP developments, major issues relate to evacuation planning arrangements and access to the property. Although having higher population densities than most residential homes, [SEPP 9](#) developments tend not to be as intense as hospitals or other special fire protection purpose developments. Group Home developments approved under an LEP, are also captured as SFPP developments.

g) Retirement villages

Retirement villages have the same issues as SEPP ([Seniors Living](#)) developments, often with various levels of care available from totally independent living to daily care arrangements.

4.2.5 SFPPs as infill

In circumstances where alterations or additions to existing SFPP's facilities are proposed, the RFS requires an appropriate combination of bush fire protection measures and compliance with the intent and performance criteria of each measure within [section 4.3.5](#).

However, it is also acknowledged that existing circumstances may make the preferred standards difficult to achieve. In such cases, the specific objectives in [Section 4.2.3](#) are to be followed.

Alterations and additions to existing SFPP's (i.e. approved prior to 1st August 2002), including their external appearance or finish, which may involve an increase in size and footprint of the building or redevelopment of an existing building are considered to be infill development.

This type of development should also seek to achieve a better bush fire risk outcome (such as improved construction standards) than if the development did not proceed. The new building work should comply with [AS 3959 - 1999](#) (and [Appendix 3](#) of PBP) or be no closer to the hazard than the existing building. Existing facilities such as water supply should also be upgraded.

a) Alpine resorts

The NSW Alpine resort areas are:

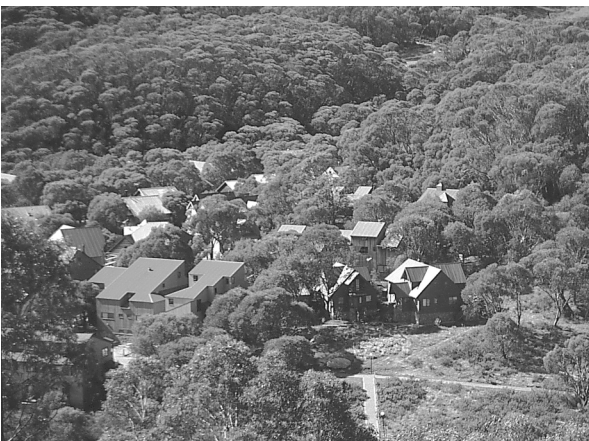
- The Perisher Range – Perisher, Smiggin Holes, Blue Cow and Guthega.
- Thredbo Alpine Village
- Charlottes Pass
- Mount Selwyn
- Ski Rider
- Kosciuszko Mountain Retreat
- Sponars Chalet
- Bullocks Flat

These resort areas, located in the Kosciuszko National Park (KNP), are leased from the Department of Environment and Conservation (DEC) and are unique in NSW. They are centres of intensive, seasonally based recreation that have different types of habitable buildings used principally for short term tourist accommodation, with the maximum numbers of visitors coming to the area in winter.

Due to the elevation of the resort areas, vegetation types, slope and climate of the area the bushfire risks are inherently different to those experienced on the eastern seaboard. The normal fire season within the KNP extends for a short period from January through to March.

Land surrounding the developed lease areas is under the management of DEC and contains areas of habitat for vulnerable and endangered flora and fauna. As a result, fuel reduction strategies and asset protection zones need to be handled carefully to avoid inconsistency with the objectives of [SEPP 73](#) and the [National Parks and Wildlife Act 1974](#).

Additionally, infill development in these areas would include alterations or variations to lease boundaries that did not result in the construction of new buildings.



Alpine resorts still require an appropriate combination of bush fire protection measures. ([Table A3.5 applies, page 65](#))

b) Bed and Breakfasts and Holiday Lets

When an application is made for a change of use for the establishment of B&Bs and holiday lets, these fall within the SFPP definition. Access and water are critical for such developments and where these do not provide suitable access away from the fire hazard, these developments should not be allowed.

Where conversion to a B&B or holiday let is proposed in an area with reticulated water, it does not back onto public reserves, and the setback and construction requirements of [AS 3959 - 1999](#) can be applied (or are shielded by other forms of development), they should be treated as an infill arrangement.

4.2.6 Applying SFPP objectives to other types of development

Many Class 9 buildings under the BCA are considered 'assembly areas' and may attract significant numbers of people for various purposes including entertainment, religious instruction, sport or education. Prisons, churches, tertiary education institutions (eg universities) and similar land uses also fall within this definition and all accommodate large numbers of persons of various physical capabilities. The major issue in these situations is to determine whether staff or other occupants have a capacity for firefighting response and /or adequate emergency and evacuation planning in place.

Churches, in particular, have lower occupancy periods being largely occupied on weekends or for shorter periods during the week. In the past it was often the rectories that were lost rather than churches, possibly associated with the stone or brick construction materials used.

These types of developments (ie Class 9 buildings) should be considered on their merits under [sections 79BA and 79C of the EP&A Act](#), with consideration of the specific objectives listed in [4.2.3](#).

Overall, those Class 9 buildings not being a SFPP should be considered as if they were a SFPP.

These buildings will not have specific bush fire provisions applying under the BCA, but their location should be carefully considered.

In such cases the aim and objectives of PBP should be used to assess the merits of the proposal.

4.2.7 Standards for Bush Fire Protection Measures for Special Fire Protection Purpose Developments

Asset protection zones

Intent of measures: to provide sufficient space for firefighters and other emergency services personnel, ensuring radiant heat levels permit operations under critical conditions of radiant heat, smoke and embers, while supporting or evacuating occupants.

Background

Experience has shown that certain types of developments have occupants who are highly vulnerable to the effects of bush fire events. This arises from their susceptibility to the effects of fire, lower mobility, adverse health effects, lack of comprehension of the risk being faced during a fire or, simply, high levels of care during an emergency event.

In the event of a bush fire, these residents may be difficult to evacuate and/or more susceptible to smoke impacts. They are also generally unable to assist with property protection.

It is for these reasons that the concept of SFPP development was introduced and that APZ distances are the key BPM.

Some developments such as [SEPP Seniors Living](#) developments are often marketed to those who are not necessarily considered vulnerable although the development may be designed specifically for aged persons or persons with a disability. Clearly a conservative approach is required.

It is also anticipated that certain types of development are hard to ember proof due to the access arrangements needed. Schools and hospitals are good examples.

Radiant heat levels of $>10\text{kW}/\text{m}^2$ must not be experienced by emergency services workers aiding residents within a special fire protection purpose development. Where ember protection is not feasible, then setbacks greater than 100 metres from bushland should be adopted.



The intent of an APZ is to provide sufficient space for firefighters and other emergency services personnel, ensuring radiant heat levels permit operations under critical conditions of radiant heat, smoke and embers, while supporting or evacuating occupants.

Performance Criteria	Acceptable solutions
<p>The intent may be achieved where:</p>	
<ul style="list-style-type: none"> radiant heat levels of greater than 10kW/m² will not be experienced by occupants or emergency services workers entering or exiting a building. 	<ul style="list-style-type: none"> an APZ is provided in accordance with the relevant tables and figures in Appendix 2 of this document. exits are located away from the hazard side of the building. the APZ is wholly within the boundaries of the development site. Exceptional circumstances may apply (see section 3.3)
<ul style="list-style-type: none"> applicants demonstrate that issues relating to slope are addressed: maintenance is practical, soil stability is not compromised and the potential for crown fires is negated. 	<ul style="list-style-type: none"> mechanisms are in place to provide for the maintenance of the APZ over the life of the development. the APZ is not located on lands with a slope exceeding 18 degrees.
<ul style="list-style-type: none"> APZs are managed and maintained to prevent the spread of a fire towards the building. 	<ul style="list-style-type: none"> in accordance with the requirements of 'Standards for Asset Protection Zones (RFS 2005). <p><i>Note - a Monitoring and Fuel Management Program should be required as a condition of development consent.</i></p>
<ul style="list-style-type: none"> vegetation is managed to prevent flame contact and reduce radiant heat to buildings, minimise the potential for wind driven embers to cause ignition and reduce the effect of smoke on residents and fire-fighters. 	<ul style="list-style-type: none"> compliance with Appendix 5.

Access – Internal Roads

Intent of measures: to provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area

Background

The public road system in a bush fire prone area should provide alternative access or egress for firefighters and residents during a bush fire emergency if part of the road system is cut by fire. This is of critical importance for areas with the higher densities associated with SFPP developments.

Where those developments are being established, the requirements for public roads and car parking apply in the same way as new residential subdivisions. (See Section 4.1.3, Access - Public Roads)

The impact of increased traffic and traffic management in the neighbouring areas also needs to be considered and an assessment of impact on fire fighting capacity undertaken.

For internal roads, at least one alternative access road needs to be provided for individual dwellings or groups of dwellings more than 200 metres from a public through road. The routes of these roads should be selected to ensure that both roads are unlikely to be simultaneously cut by a fire.

Short access roads are preferable to long ones for the safe evacuation of residents and for emergency service personnel. Therefore dwellings should be sited as close as possible to public through roads.

Large numbers of vehicles may be attempting to simultaneously enter or leave an area, congesting roads and restricting fire services and other emergency services personnel accessing an area. For this reason, roads should be planned for suitable widths to permit access into and out of the area during such situations.



Hydrants should not be placed in parking areas (top photo) but within footpaths (middle photo). Access including road curvatures should allow ready movement of fire fighting vehicles.

Performance Criteria	Acceptable solutions
<p>The intent may be achieved where:</p>	
<ul style="list-style-type: none"> internal road widths and design enable safe access for emergency services and allow crews to work with equipment about the vehicle. 	<ul style="list-style-type: none"> internal roads are two-wheel drive, sealed, all-weather roads; internal perimeter roads are provided with at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb) and shoulders on each side, allowing traffic to pass in opposite directions; roads are through roads. Dead end roads are not more than 100 metres in length from a through road, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; traffic management devices are constructed to facilitate access by emergency services vehicles. a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches, is provided. curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress. the minimum distance between inner and outer curves is six metres. maximum grades do not exceed 15 degrees and average grades are not more than 10 degrees. crossfall of the pavement is not more than 10 degrees. roads do not traverse through a wetland or other land potentially subject to periodic inundation (other than flood or storm surge). roads are clearly sign-posted and bridges clearly indicate load ratings. the internal road surfaces and bridges have a capacity to carry fully-loaded firefighting vehicles (15 tonnes).



Property access should not restrict firefighting access. Bridge loadings should be clearly marked.

Services – Water, gas and electricity

Intent of measures: to provide adequate water services for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to buildings

Background

During major bush fire events, the protection and preparedness of SFPP developments and their occupants may be seriously jeopardised by the loss of basic services. This is particularly important

where residents rely on the use of medical equipment for their welfare or survival.

Adequate water supply is critical for any firefighting operation and particularly where property protection is envisaged. Water supplies must be easily accessible and located at regular intervals. The amount of water to be supplied may vary with differing geographical and topographical conditions.

In SFPP areas, reticulated water should be available for firefighting purposes and fire hydrants should be regularly spaced and comply with Australian Standards ([AS 2419.1 - 2005](#)). Where mains water supply is available, the determination of a guaranteed water supply can only be made by the water supply authority.



Pumps and other fittings need to be shielded and made of non-combustible materials.

Performance Criteria	Acceptable solutions
<p>The intent may be achieved where:</p>	
<p>Reticulated water supplies</p> <ul style="list-style-type: none"> water supplies are easily accessible and located at regular intervals. 	<ul style="list-style-type: none"> access points for reticulated water supply to SFPP developments incorporate a ring main system for all internal roads. fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority, once development has been completed. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles. the provisions of public roads in section 4.1.3 in relation to parking are met.
<p>Non-reticulated water supply area.</p> <ul style="list-style-type: none"> a water supply reserve dedicated to firefighting purposes is installed and maintained. The supply of water can be an amalgam of minimum quantities for each lot in the development and be reticulated within dedicated firefighting lines. 	<ul style="list-style-type: none"> 10,000 litres is the minimum dedicated water supply required for firefighting purposes for each occupied building, excluding drenching systems. the provision for suitable connection for RFS and/or NSW Fire Brigades purposes in section 4.1.3 in relation to water supplies is made available.
<p>Electricity</p> <ul style="list-style-type: none"> location of electricity services will not lead to ignition of surrounding bushland or the fabric of buildings or risk to life from damaged electrical infrastructure. 	<ul style="list-style-type: none"> electrical transmission lines are underground.
<p>Gas</p> <ul style="list-style-type: none"> location of gas services will not lead to ignition of surrounding bush land or the fabric of buildings. 	<ul style="list-style-type: none"> reticulated or bottled gas is installed and maintained in accordance with AS 1596 - 2002 and the requirements of relevant authorities. Metal piping is to be used. all fixed LPG tanks are kept clear of all flammable materials and located on the non hazard side of the development. If gas cylinders need to be kept close to the building, the release valves must be directed away from the building and away from any combustible material, so that they do not act as catalysts to combustion. polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

Emergency and evacuation planning

Intent of measures: to provide suitable emergency and evacuation (and relocation) arrangements for occupants of special fire protection purpose developments.

Background

A decision to stay and defend a well-prepared property or to leave early should be made well in advance of the arrival of a bush fire, and people who intend to relocate themselves should do so as early as possible.

It is also recognised that people who cannot cope with bush fire should relocate well before a fire impacts on their location, and that there should be an identified 'trigger' used to initiate an emergency or relocation plan. Relocation in advance of a bush fire is not always possible however.

Appropriately prepared and constructed buildings offer protection during bush fires reducing the likelihood of bush fire related injury and fatality.



Evacuation at the last minute ahead of a bush fire is very dangerous, and potentially exposes people to smoke, radiant heat and embers. It is for this reason that SFPP developments have increased setback requirements to meet evacuation/relocation and emergency planning objectives and also have a requirement for site specific emergency plans.

This is particularly important where the affected people are very young or aged, or where the population is poorly prepared for the bush fire event, either because of a lack of understanding (e.g. tourists) or limited language skills (e.g. recent migrants).

SEPP Seniors Living, schools, hospitals, child care, nursing homes and other SFPPs should all have suitable management arrangements and structures capable of developing and implementing an emergency plan. This should also be the case for 'community title' type arrangements.

Where eco-tourist facilities are planned they should have low accommodation levels (generally less than 12 persons) so as to facilitate relocation and emergency planning, and be located within 100 metres of a public road or 50 metres from a major refuge away from any forested or heathland areas.



Arrangements should be included for communications with local fire fighting e.g. RFS control centres so that fire activity can be monitored by trained fire service staff.

The Emergency and Evacuation Plan embodies a risk assessment and the necessary procedures to minimize the potential impact of a bush fire. An emergency/evacuation plan provides employees and residents with the procedures to either enable premises to be suitable refuges or to evacuate or relocate, as appropriate, in the event of a bush fire.

Performance Criteria	Acceptable solutions
<p>The intent may be achieved where:</p>	
<ul style="list-style-type: none"> an Emergency and Evacuation Management Plan is approved by the relevant fire authority for the area. 	<ul style="list-style-type: none"> an emergency/evacuation plan is prepared consistent with the RFS Guidelines for the Preparation of Emergency/Evacuation Plan. compliance with AS 3745-2002 'Emergency control organisation and procedures for buildings, structures and workplaces' for residential accommodation'. compliance with AS 4083-1997 'Planning for emergencies - for health care facilities'. <p><i>Note: The developer should provide a copy of the above document to the local Bush Fire Management Committee for their information prior to the occupation of any accommodation of a special fire protection purpose or community title subdivision.</i></p>
<ul style="list-style-type: none"> suitable management arrangements are established for consultation and implementation of the emergency and evacuation plan. 	<ul style="list-style-type: none"> an Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual. detailed plans of all Emergency Assembly Areas including "onsite" and "offsite" arrangements as stated in AS 3745-2002 are clearly displayed, and an annual (as a minimum) trial emergency evacuation is conducted.
<p>In relation to eco-tourist accommodation:</p> <ul style="list-style-type: none"> suitable refuge areas and evacuation/management arrangements are in place commensurate with the bush fire risk. 	<ul style="list-style-type: none"> at least one building should be used as a local refuge area and comply with the APZ's and construction requirements for residential buildings. cabins are within 50 metres of a refuge building and are clearly signposted. the paths from cabins to the refuge area are safe, with management of surface fuels to ≤ 4 tonnes/ha. the overall accommodation for tourists does not exceed 12 persons. a mechanism for the relocation of occupants on days of a total fire ban or adverse fire activity is provided in the local area in which the development operates.

4.3 Planning controls for infill and other developments on bush fire prone land

4.3.1 Introduction

[Section 79BA](#) of the EP&A Act requires compliance with PBP for all development proposals on bush fire prone land. Those types of development covered in [Sections 4.1](#) and [4.2](#) are special, requiring compliance. They also require a [s100B](#) BFSa from the RFS under the RF Act.

Development other than such subdivisions or SFPPs would often be classed as infill development (as defined). This includes new houses, alterations and additions in existing subdivisions.

Other types of development on bush fire prone land (e.g. commercial, industrial, other subdivisions) are also addressed through the aim and objectives of this document ([see section 1.1](#)). In some cases, specific advice is provided.

There is considerable common ground between "other" development and subdivision or SFPP developments:

- the same range of bush fire protection measures can apply; and
- APZ is the principal element, especially its subset, defensible space.

There are also key differences. Because most applications will be infill, consideration of existing circumstances and the need for careful site analysis is crucial.

4.3.2 Specific Objectives for infill

Proposals for infill development are to:

- ensure that the bush fire risk to adjoining lands is not increased;
- provide a minimum defensible space;
- provide better bush fire protection, on a re-development site, than the existing situation. This should not result in new works being exposed to greater risk than an existing building;
- ensure that the footprint of the proposed building does not extend towards the hazard beyond existing building lines on neighboring land;
- not result in an increased bush fire management and maintenance responsibility on adjoining land owners unless they have agreed to the development; and
- ensure building design and construction enhance the chances of occupant and building survival.

Ideally, APZs, access and service supply standards for infill developments should be provided in accordance with the acceptable solutions applied to residential subdivision ([see section 4.1](#)).



Other types of development (e.g. commercial, industrial) are also addressed through the aim and objectives of this document ([see section 1.1](#))

However, in most cases, infill development proposals will be constrained by existing situations – pre-existing subdivision patterns and existing built forms surrounding the subject site. Consequently, each proposal must be considered on its merits and in accordance with the intent and performance criteria for infill development ([section 4.3.5](#)).

An underlying principle is that the larger the scale of development, the greater the need to comply with the APZ, access and service requirements.

4.3.3 Consultation with the RFS

Residential infill development that does not comply with the acceptable solutions within the performance table in [section 4.3.5](#) (e.g. construction requirements within [Appendix 3](#)) should be referred by the consent authority to the Commissioner of the RFS for advice under [section 79BA](#) of the EP&A Act ([see section 2.7](#)).



Consultation with RFS Officers

The purpose of consultation under section 79BA of the EP&A Act is to consider an appropriate performance based solution. The onus is still on the applicant to develop such a solution.

4.3.4 The role of construction standards for residential infill

The provisions of the BCA in NSW (and therefore [Appendix 3](#) of this document) apply to residential development, Classes 1, 2 and 4 (Class 3 buildings will usually be an SFPP).

In preparing a development application under [section 79BA](#), the applicant may consider the provision of higher-level construction standards as a level of equivalence for the inability to provide the required APZ. Consideration may also be given to additional measures such as drenching systems, radiant heat shields and shutters to satisfy the performance criteria.

As discussed in [section 2.6](#), this commits applicants to the construction level or performance solution for the associated Construction Certificate (CC).



Additions and extensions need to meet construction requirements associated with the main building

4.3.5 Specifications and Requirements for Bush Fire Protection Measures for Infill Development

Infill Development

Intent of measures: to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

Background

The requirement to address bush fire protection for subdivision (and other development) was introduced on 1 August, 2002. As a result, pre-existing subdivisions may not provide the levels of protection currently required.

Where a development expectation arises from the zoning of the land to build, rebuild, alter or add to a dwelling(s) in pre-existing subdivisions, attempts should be made to find a solution taking into account the level of risk present. The expectation of building or altering a house is recognised even though the ability to provide for APZs or access requirements now required for residential development may not be possible.

Proposals to reduce APZ requirements or utilise adjoining lands need to consider the advice on exceptional circumstances in [section 3.3](#).

In such circumstances, greater emphasis may be placed on siting, design, construction standards and landscaping and the maintenance of these systems. Vegetation management practices may be required to ensure improved levels of protection are afforded the development, its occupants and firefighters.

Where a development falls 'outside of the scope' of the construction requirements of PBP (ie the deemed-to-satisfy arrangements of the BCA applicable in NSW), then a performance solution will need to be developed for the construction aspects of the building. In some circumstances, the proposed building's scale and size may need to be modified to ensure a defensible space and reduce bush fire attack.

Increasing densities within bush fire prone areas is not of itself considered to be an exceptional circumstance. Where three or more dwellings are proposed for a single allotment the development will be treated as being subject to subdivision and hence the requirements of [section 4.1](#) will be applied.

In general, additions, alterations or extensions to a building will be treated as infill for class 1, 2, 3 and 4 buildings not being a SFPP.

The design of a building can be of critical importance in terms of the potential for accumulation of debris and exposure of the building to bush fire attack.

The higher the building and greater its bulk, the greater the exposure of the building to radiant heat, wind turbulence and ember attack. Reduction in the area of exposure may be important for critical elements such as windows, doors, roofs and wall claddings. Clearly some cladding materials such as brickwork are more robust.

Intricate forms of design can trap debris and influence wind turbulence. Re-entrant corners may aid the architectural interest of the building but readily accumulate debris and some roof designs are unnecessarily complicated. For two storey buildings, the use of gutters on the upper story makes debris removal more difficult. Many people are hospitalised as the result of falling off roofs whilst attempting last minute maintenance in awkward areas or to higher gutters in the face of an impending bush fire. The use of box gutters, flat roofs and variations in the angle of the roof should be avoided.

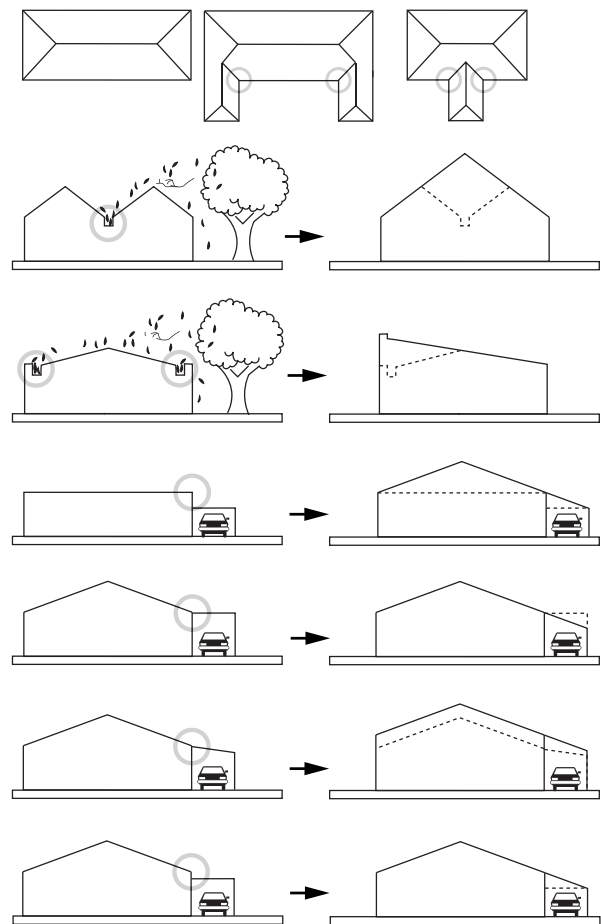
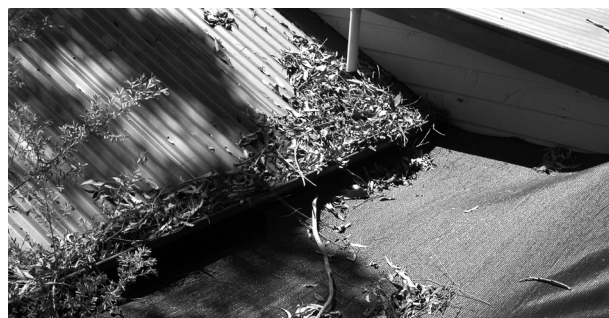


Figure 4.7 Design aspects for buildings (adapted from Ramsay, C and Rudolph, 2003)

Some design features can enhance the protection of a building, including limiting glazing on exposed facades and barriers, eg courtyard or fenced off area for gardens, BBQ areas and the like, can be incorporated into building design. Glazing is one element of a building that is highly susceptible to the impacts of radiant heat and flying debris. In addition, a large proportion of radiant heat can pass through a window and heat internal furnishings such as carpets, curtains or furniture.

Performance Criteria	Acceptable solutions
The intent may be achieved where:	
in relation to Asset Protection Zones: <ul style="list-style-type: none"> a defensible space is provided onsite. an asset protection zone is provided and maintained for the life of the development. 	<ul style="list-style-type: none"> APZ determined in accordance with Appendix 2.
in relation to siting and design: <ul style="list-style-type: none"> buildings are sited and designed to minimise the risk of bush fire attack. 	<ul style="list-style-type: none"> buildings are designed and sited in accordance with the siting and design principles in this section (see also figure 4.7).
in relation to construction standards: <ul style="list-style-type: none"> it is demonstrated that the proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact . 	<ul style="list-style-type: none"> construction determined in accordance with Appendix 3 and the <i>Requirements for attached garages and others structures</i> in this section. <p><i>Note: provisions in relation to Class 10a buildings may also apply.</i></p>
in relation to access requirements: <ul style="list-style-type: none"> safe, operational access is provided (and maintained) for emergency services personnel in suppressing a bush fire while residents are seeking to relocate, in advance of a bush fire, (satisfying the intent and performance criteria for access roads in sections 4.1.3 and 4.2.7). 	<ul style="list-style-type: none"> compliance with section 4.1.3 for property access roads. compliance with section 4.2.7 for access standards for internal roads.
in relation to water and utility services: <ul style="list-style-type: none"> adequate water and electricity services are provided for firefighting operations gas and electricity services are located so as not to contribute to the risk of fire to a building. 	<ul style="list-style-type: none"> compliance with section 4.1.3 for services - water, electricity and gas.
in relation to landscaping: <ul style="list-style-type: none"> it is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause ignitions. 	<ul style="list-style-type: none"> compliance with Appendix 5.

Note: the above specifications and requirements only apply in relation to infill developments and not “other” developments referred to in [section 4.3.6](#). However, the above specifications and requirements may be used to guide in the development of bush fire protection measures for “other” developments.



Poor design does not aid flushing of debris

Where the internal radiant heat exposure of furnishing rises to a level in excess of $10\text{kW}/\text{m}^2$, the possibility of the establishment of an internal fire increases. In many cases, barriers may be incorporated into the building design.

The performance of a building should be enhanced through the following siting and design principles:

- avoid building on ridge tops and saddles;
- building on level ground wherever possible;
- where buildings must be constructed on sloping land, they are built on cut-in benches rather than elevated or above fill;
- avoid raised floors, utilise concrete slabs (raft construction);
- locating the habitable buildings near the property entrance for easier access/egress;
- the use of non-combustible fencing (or other class 10a buildings) which is located within close proximity to the main building;
- reducing the bulk of a building (height and width) facing a bush fire hazard;
- simplifying the design of buildings to reduce the numbers of re-entrant corners;
- providing more simplified rooflines;
- guttering and gutter valleys being:
 - ♦ installed with gutter guarding having a flammability index of not more than 5, when tested to [AS 1530.2](#);
 - ♦ limited to the lowest possible levels (bottom fascia) to improve access and maintenance; and
 - ♦ covered with a mesh of aluminium bronze or stainless steel with a maximum aperture of 5 mm fixed to the outer edge of the gutter (or valley) and be located beneath the second (or higher) row of tiles or roof sheeting for a distance of 250mm;

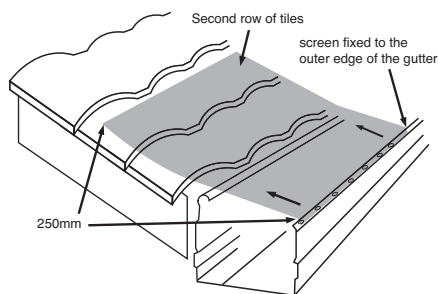


Figure 4.8
Leafless gutters enhance building performance

- use of barriers (e.g. courtyards, fenced off areas for gardens, BBQ areas and the like); and
- where garages are located under the roofline of the main building, garage doors are to be ember proofed and employ ember traps and or brushes to prevent the entry of embers into the garage area (see requirements for garages and other structures in adjacent text box);

Where free standing vegetation is located upslope of the dwelling, provision of a radiant heat barrier should be close to the building for additional protection. For vegetation located downslope of the structure the radiant heat barrier is most

effective when it is located along the boundary and is up to two metres in height.

Requirements for attached garages and other structures

Where a garage or other attached structure has a common roof space with a building required to comply with any level of construction, the entire garage, carport, veranda or similar roofed structure is assessed as part of the building and must comply with the relevant construction requirements as if it were the subject building,

Adjacent structures

Where any garage, carport, veranda or similar roofed structure is not attached to a building required to comply with a level of construction, the entire garage, carport, veranda or similar roofed structure is to be—

- assessed as if it were a building required to comply with the appropriate level of construction; or
- separated by a distance of greater than 10 metres from the building required to comply with the appropriate level of construction.

Garage Doors

Garage doors are to be:

- tight fitting to door frames and jambs with gaps no greater than 5 mm when closed; and
- where a roller shutter door is installed it shall be provided with an ember protection device at the top of the shutter that captures any embers where a gap of 2.0 mm on the external surface exists.

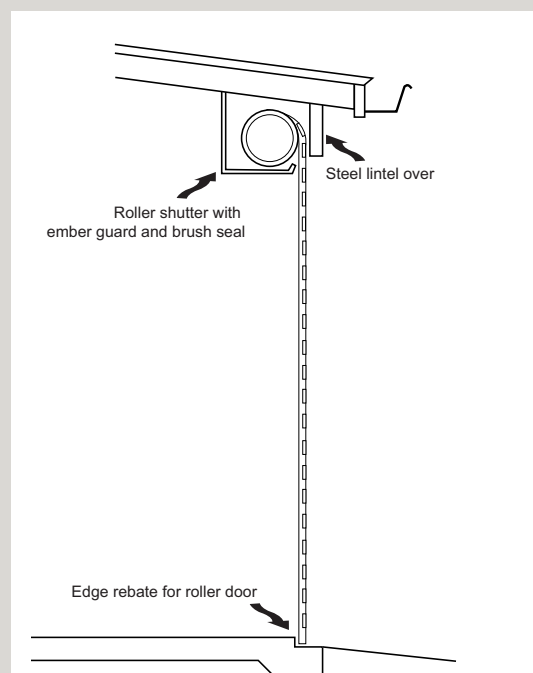


Figure 4.9
Example of a roller shutter door installation

4.3.6 PBP and other development

Applications for developments that are not residential/rural residential subdivisions, SFPPs or residential infill should:

- note the range of available bush fire protection measures (in [Chapter 3](#));
- satisfy the aim and objectives of PBP (see [section 1.1](#));
- consider any matters listed for the specific purpose below; and
- propose an appropriate combination of bush fire protection measures, with evidence that the intent of each measure (with reference to the relevant Tables in [sections 4.1.3](#) and [4.2.7](#)) is satisfied.

For example, ensuring that a defensible space is provided, that proposed measures (in combination) minimise radiant heat levels, and that access and services are adequate.

The following discussion provides **specific advice** on some development types.

a) Dual occupancy

Key issues with dual occupancy are satisfaction of APZ (as with a single dwelling) and relative location/subdivision arrangements.

Where one building already exists and the second building can otherwise comply with APZ setbacks and appropriate construction levels, some attempt at retrofitting to ensure the integrity of the existing dwelling should also be made. This may be in the form of increased APZs (within the boundary of the development), ember proofing such as sarking under roofs, window screens, improved water availability, and suitable access.

In general, dual occupancy should be discouraged in isolated locations with poor access and inadequate water.

Where the erection of a dual occupancy is proposed, it is assumed that the proposal will be subdivided and as such will be assessed as if submitted under [section 100B](#) of the RF Act for a BFSA. A dual occupancy assessed under [section 100B](#) of the RF Act will not be required to be reassessed under [section 79BA](#) of the EP&A Act.

b) Strata subdivision of existing buildings

Some existing buildings are submitted for strata subdivision, to be managed under a body corporate. Where such developments are proposed, consideration should be made as to whether the strata arrangement will lead to increased densities (compared to current arrangement) and the vulnerability of the future residents. Emergency planning is critical and should be implemented prior to formal adoption of the strata arrangements. The existing building(s) conformity with APZs and construction standards should also be assessed. In cases where no

existing fire protection systems are evident or conformity with APZs is not proposed, property management plans as well as retrofitting for ember protection (screening and sarking) of exposed windows or roofs should be implemented.

Where there is any chance of deficiency in water supply or APZs then the suitability of the strata subdivision must be questioned unless supplementary water can be provided.

Where a Class 2 building has been assessed under [section 79BA](#) of the EP&A Act, a proposal for strata subdivision will not require a bush fire safety authority under [section 100B](#) of the RF Act.

c) Conversion of an existing building to a new use

Over time, developments catering for some uses may need to be upgraded, redeveloped or changed in line with movements in socio-economic or demographic factors. Where such changes result in significantly increased densities for residential uses or where new structures need to be erected, the provisions of this document should be addressed. This will include, but is not restricted to, construction standards, setbacks, water supply, and emergency planning.

The conversion of an existing building to a new use brings with it special considerations. An example is the conversion of warehousing to residential uses.

Where the conversion increases the density of vulnerable residents, added caution should apply. Such arrangements are generally unsuitable at the bushland interface and should not be encouraged. Nonetheless, the use of bush fire protection measures in combination will still apply.

d) Historic buildings

In relation to land identified as having heritage significance, the usual requirements for bush fire protection may conflict with the conservation of significant heritage fabric and its setting. Development affecting heritage places, which proposes the intensification of residential uses should be considered on an individual basis. The application of PBP is to be considered in the context of the conservation principles, processes and practices of the Illustrated Burra Charter (Australia ICOMOS, 2004)

e) [State Environmental Planning Policy No. 15 \(Rural Landsharing Communities\)](#)

These developments are often referred to as multiple occupancies. Multiple occupancy is defined as the “collective management and sharing of un-subdivided land, facilities and resources.” This aims to encourage community based, environmentally sensitive approaches to rural settlement. In this type of development, for example, there may be a common dining area although each family unit has separate sleeping quarters.

Good access, fire management planning (for hazard reduction and internal response capability), provision of plentiful water supplies and overall emergency planning are crucial for such developments.

Because of the nature of the development and the overall community approach, such developments are encouraged to have the residents prepared for firefighting and to provide an easily accessible and highly resilient building, capable of being a refuge in the face of a bush fire event.

SEPP 15 developments may include dwellings which will not comply with the construction standards of AS 3959 - 1999. In recognition of the aims of such developments, but still maintaining the objectives of this document, at least one building within the development must comply with the setback distances in Appendix 3 for the associated construction standard. The provisions of this document relating to rural-residential development for a safe refuge should also apply to rural landsharing communities.

Where buildings are not clustered and do not provide mutual protection, each dwelling will need to comply with the appropriate setbacks and construction requirements (set out in AS 3959 - 1999). The performance requirements for eco-tourism (see page 39) apply to SEPP 15 type developments.

f) Buildings of Class 5 to 8 and 10 of the BCA

The definition of Class 5 – 8 and 10 buildings of the BCA can be found in Appendix 1. These classes of buildings include offices, factories, warehouses, public car parks and other commercial or industrial facilities.

The BCA does not provide for any bush fire specific performance requirements and as such AS 3959 does not apply as a set of 'deemed to satisfy' provisions. The general fire safety construction provisions are taken as acceptable solutions, but the aim and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management.

In circumstances where the aim and objectives of PBP (section 1.1) are not met, then the construction requirements for bush fire protection will need to be considered on a case-by-case basis.

In many instances, these types of developments will require on-site parking and loading areas. In such cases, it is prudent to place these facilities in the most appropriate location in order to establish defensible space for fire fighting purposes.

Class 10b buildings include a fence, mast, antenna, retaining or free-standing wall, swimming pool, or the like.

At the planning level, class 10b buildings in bush fire prone areas (e.g. fencing) should be non-combustible and where an above ground swimming pool is erected it should not adjoin or be attached directly onto a wall of a building of class 1-4 or SFPP Class 9.

Where a Class 10a building (e.g. shed) is constructed in proximity to another residential class of building the Class 10a should meet the requirements of that Class or be located >10 metres away from the main building.



Class 10a buildings such as sheds should be located >10 metres from a building of another class unless they also comply with the relevant construction requirement of the main building under AS 3959 - 1999 and the BCA.