

COFFS HARBOUR CITY COUNCIL



**DEVELOPMENT SPECIFICATION
DESIGN**

0013 Bushfire protection

Version 1 01 January 2009

0013 BUSHFIRE PROTECTION

1 SCOPE AND GENERAL

1.1 SCOPE

This worksection covers the design of bushfire protection facilities.

Designs shall be carried out to satisfy requirements of the NSW Rural Fires Act 1997, Council and any guidelines published by the State's Rural Fire Service or equivalent.

1.2 OBJECTIVES

This worksection's objective is to minimise bushfire hazard. The requirements are particularly pertinent to rural developments but should be an integral part of urbanised development as well. The concepts proposed need to be incorporated at an early stage of development design.

1.3 REFERENCED DOCUMENTS

The following documents referred in this worksection are: **Other publications**

Environment Planning and Assessment Act 1979—Section 94

NSW Rural Fires Act, 1997

NSW Rural Fire Service

Planning for Bushfire Protection. A Guide for Councils Fire Authorities and Developers 2006.

1.4 BIBLIOGRAPHY

Worksection

0281 *Perimeter tracks for bushfire protection*

Other publications

Department of Land and Water Conservation (formerly Land Management)

Soil Conservation Service 1994. Guidelines for Planning, Construction and Maintenance of Tracks

Ministry of Urban Affairs (formerly Environment) and Planning

Planning Guidelines for Subdivisions in Bushfire Prone Areas, 1985

NSW Department of Urban Affairs (formerly Environment) and Planning

Circular 74: Planning in Fire Prone Areas, 1984

Board of Fire Commissioners

Hazard Reduction for the Protection of Buildings in Bushland Areas, 1984

Californian Department of Forestry

Fire Safety Guides for Residential Development in California, 1980

Insurance Council of Australia

Bushfire Safety in Urban Fringe Areas

Luke, R.H

Luke, R.H. Before the Fires Start

2 DESIGN CRITERIA

2.1 GENERAL

Perimeter tracks

Where a subdivision will abut unimproved timber in a bushfire prone area (as classified by Council), perimeter tracks shall be located immediately between the created allotment and the bushland within a minimum cleared width of 6 m, and have a minimum formed width of 4 m. Such roads shall be adequately drained to provide all weather access for fire fighting vehicles.

Reservations and easements

The perimeter track shall be contained within a 20 m reservation or easement which borders those allotments abutting the bushfire prone area. Such a reserve shall serve as a basis for fire protection measures to be undertaken and will not be considered as part of the public reserve dedication applicable to the subdivision.

Access

Access is to be provided from the above described reservation from the local road system at regular intervals in a system of 'loops'.

Fire hydrants

For those subdivisions receiving reticulated water, fire hydrants shall be situated at appropriate intervals or near where potential fire hazard areas exist as determined by Council.

Consultation

Council shall be consulted for technical advice in relation to bushfire protection of subdivisions.

Fire protection zones access tracks and perimeter tracks shall be clearly indicated on the subdivision plan. Erosion control features and revegetation requirements shall also be indicated in the subdivision plan.

2.2 FIRE PROTECTION ZONES

Primary purpose

The primary purpose of FPZs is to ensure that a progressive reduction of fuel occurs between the bush fire hazard and any combustible structures within the development.

Location

The provision of Fire Protection Zones (FPZs) shall occur as part of the development of the subdivision pattern. Each individual allotment shall have adequate space for the main building (usually a dwelling), an area of open space (front, back or side yard) and the FPZ (which may include part of the yard area and/or neighbouring properties). Figure 2.1 illustrates a typical FPZ.

FPZs shall be required for any development fronting a bush fire hazard area, whether a single dwelling, a group of isolated dwellings or an urban subdivision. They act as a buffer zone between the development and the fuel.

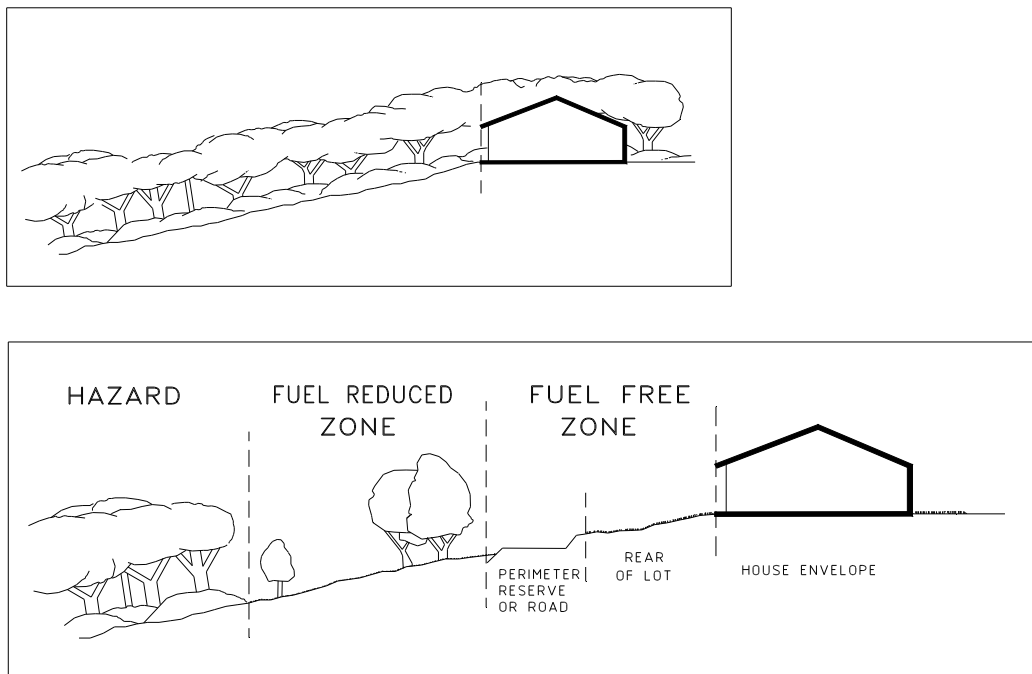


Figure 2.1 Fire protection zone

Other design considerations

Apart from its primary purpose the FPZ serves a number of other important purposes, dependent upon local fire fighting policy. The FPZ shall be designed to:

- maximise the separation distance between high intensity fire and any structure, thereby reducing the radiation and direct flame contact;
- provide an area where embers can fall with minimal opportunity to create further fire outbreaks;
- provide a safe access to a structure for fire fighters by reducing the heat level from the main fire;
- provide a safe retreat for fire fighters; and
- provide a clear control line from which to begin back burning or hazard reduction operations.

Safety requirements sometimes dictate that fires are fought from the property itself rather than along the perimeter track.

Components

The FPZ incorporates up to three separate components:

- Fuel Reduced Zone (FRZ); and
- Fuel Free Zone (FFZ) incorporating:
 - . a perimeter road or reserve (which incorporates an access track); and
 - . a set-back (currently defined by minimum lot depths), which is usually part of the allotment.

2.3 FUEL REDUCED ZONE

Location

The fuel reduced zone (FRZ) is located adjacent to the hazard.

Reduced fuel loadings

Fuel loadings can be reduced through thinning of vegetation, mechanical clearing, hazard reduction burning or location of suitable developments such as playing fields or car parks (provided it is wide enough).

Minimum fuel loadings

Fuel loadings within the FRZ shall be kept to a level where the fire intensity expected will not impact on adjacent developments. In the absence of any policy to the contrary, 8 tonnes per hectare of total fuel is commonly used.

Cost of fire protection

The FRZ should always be part of the development so that dedication of land or monetary contribution through Section 94 of the NSW Environment Planning and Assessment Act ensures that the cost of fire protection is met by the Developer, not by the general community.

Steep slopes

For slopes greater than 20 degrees, the environmental consequences of ground clearing (erosion) may not be acceptable. Developments abutting such slopes shall avoid both the ridge and the slope.

2.4 FUEL FREE ZONE

Location

The fuel free zone is located adjacent to, or is part of, the development and comprises a perimeter road and a set-back.

Perimeter roads and tracks

Location: The perimeter road or access trail lies between the FRZ and the boundary of the allotments.

Concept: The concept of a perimeter road requires that one side of the road has no fuel. Perimeter roads are not fire breaks in the same sense as used in fire fighting operations. Their main purpose relates to reduction of radiation and provision of access. Without a fuel source on the other side, perimeter roads can however prove very effective fire breaks.

Form: The form that the perimeter road or track takes will depend on Council policy in regard to both road construction and fire fighting. In many instances, a perimeter reserve will be preferred due to cost. The reserve should be a minimum of 20 m wide, with a 6 m access track and passing bays about every 200 m.

Width: In designing for a perimeter road or track, the distance required may not seem very great. Given that the probability of fire jumping a fire break increases as the width decreases, then areas where the highest intensity fires are likely should have fire breaks of greatest width.

Costs and benefits of perimeter roads and tracks:

- Perimeter roads can be less economic than roads which service two frontages unless some innovative designs are incorporated into the subdivision. Figure 2.2 illustrates perimeter roads and perimeter tracks.
- Perimeter roads that do not require clearing or maintenance (compared to tracks), can be cheapest in the long term. Ultimately the decision between a road or track depends on the Council's subdivision and bush fire fighting policies.
- Tracks shall be constructed to Soil Conservation Service (1983) guidelines.

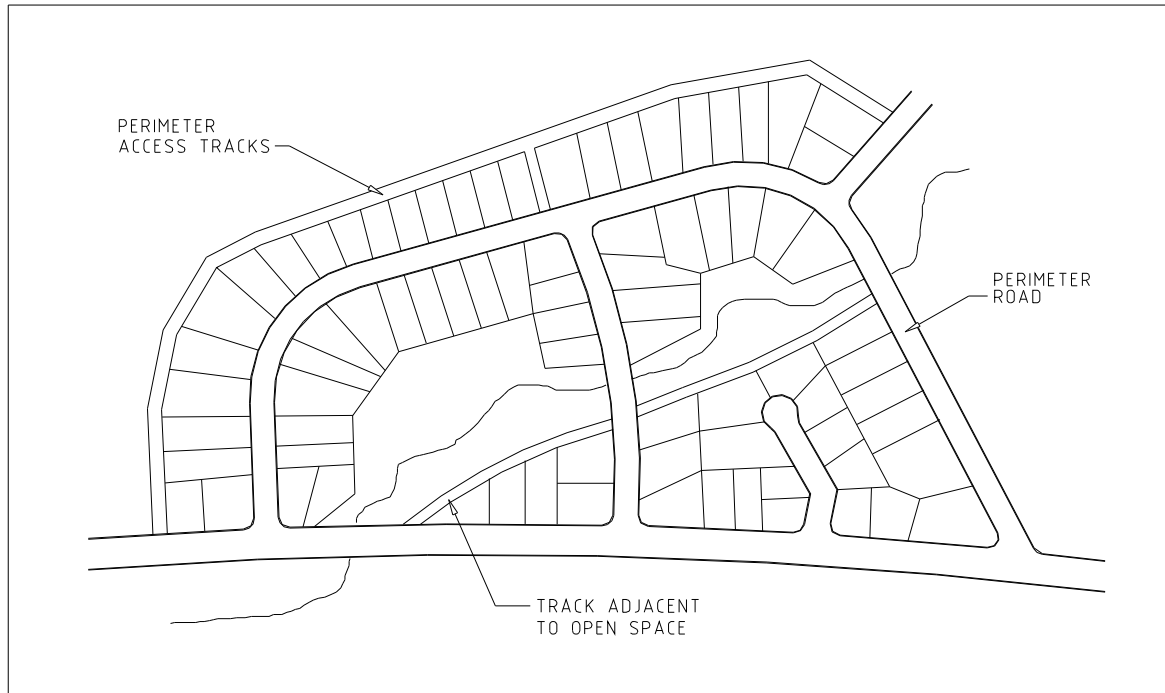


Figure 2.2 Perimeter road track

Set-back

Minimum lot depth: Part of the allotment can be used as a section of the buffer by setting a minimum lot depth and rear setback. This can ensure that sufficient room (30–35 m) is available to allow for erection of a dwelling that does not encroach upon the rear of the allotment.

Alternative policy: The policy previously required a minimum of 40 m lot depth in order to be consistent with the average minimum lot depth in bushland residential developments. Based on the requirement to maximise the distance between hazard and structures on reasonable grounds (as developed above) and a 30 m wide building envelope which includes the surrounding yard, there is no justification for a 40 m minimum lot depth in some instances.

2.5 MODIFICATIONS TO FUEL REDUCED AND FUEL FREE ZONES

Approval

Modifications to the width of either the FRZ or the FFZ shall only be made under written approval from Council and based on an examination of the particular cases rather than according to any formula.

Adjacent development

Modifications would need to take account of adjacent or proposed development. Some difficulties arise where new development abuts existing development that is a fire hazard because of the nature of its usage (e.g. forests, parks etc.). The general principle is that fire protection should be shared by both users which may require a certain level of negotiation outside the planning system.

Even without an extensive area of fuel outside the FRZ, intense fires can develop if the FRZ has not been hazard-reduced and if the fire begins as a line ignition from spotting embers.

Under adverse conditions fires moving up a slope may not be slowed by the presence of rocky outcrops and ledges, even though the continuity of the fuel bed may be broken.

2.6 INTERNAL ACCESS FROM SUBDIVISION ROADS

The provision of adequate internal access is also controlled by subdivision design. Subdivision roads shall incorporate the following features:

- width, vertical clearances and any dips and crests which allow the two way movement of firefighting appliances;
- construction standards of roads and any bridges which allow for the carrying of fully loaded fire appliances (28 tonnes or 8 tonnes per axle);
- curves which have a minimum inner radius of 12 m and are minimal in number;
- maximum grades which do not exceed 15% (1:7) and preferably not more than 10% (1:10);
- clearly signposted roads;
- dead end roads which do not exceed 200 metres in length;
- dead ends which incorporate a minimum turning circle of 12.5 m diameter; and
- a road network which connects regularly to any access tracks.

2.7 STAGING WORKS

When considering the rate of development, designers shall provide for initial development to occur on the hazard perimeter of the development. A line of dwellings will tend to minimise the threat to the entire subdivision by limiting the hazard interface.

Scattered developments allow a continuous network of fuel to threaten individual buildings until development is substantially underway.

New developments should be 'tacked' onto old developments to minimise the hazard perimeter.

It is important that much of the bush fire protection is incorporated into the design of the development, rather than into individual allotments.