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### **BUSHFIRE THREAT ASSESSMENT – APZ ADVICE**

Cobaki Estate

Part Precincts 5, 15 and 17

Sandy Lane, Cobaki NSW

**Prepared by: Peter Thornton** 

**BPAD – L3 Accredited Practitioner** 

27<sup>th</sup> September 2018

Ref: 18/333

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### **DOCUMENT CONTROL**

Revision	Date	Description	Prepared	Authorised
Α	27.09.18	Final issue	Peter Thornton	Peter Thornton

### **TABLE OF CONTENTS**

1.0	Executive Summary	4
2.0	Significant Environmental Features	5
3.0	Report Details	5
4.0	Bushfire Threat Assessment	5
5.0	Asset Protection Zones and Construction Standards	10
6.0	Landscaping	13
7.0	Conclusion	14
Refe	erences	15
Арр	endices	16

### 1.0 EXECUTIVE SUMMARY

This bushfire advice is provided, as requested, to address the following SEARs (Key Issue No. 9).

Provide a bushfire assessment report that identifies any bushfire impacts on the proposed residential building sites, including their use for residential, tourism and aged care related activities. Where the report identifies any impacts, it shall address the requirements of Planning for Bushfire Protection 2006 and Draft Planning for Bushfire Protection 2017.

The advice however specifically relates to the hatched sections identifying the 8 and 10 storey zones identified in Precincts 5, 15 and 17 only as shown in the plans within the Appendix of this report. The report provides advice in relation to the acceptable solutions of Planning for Bushfire Protection 2006 and current Draft Planning for Bushfire Protection 2018.

The report establishes a 21m asset protection zone (APZ) will be required to forest vegetation located on an upslope, and a 9m APZ to remnant vegetation on flat ground having a direct fire run no greater than 50m in width. It is understood water supply will be provided in the form of compliant street hydrants and public roads will comply with s4.1.3 PBP2006. Figure 1 provides visual identification of the asset protection zone locations for the residential development.

Future Special Fire Protection Purpose (SFPP) developments including aged care facilities, some tourist facilities and schools etc require larger asset protection zones being 67m from forest vegetation on an upslope and 38m from the remnant vegetation located on flat ground. These asset protection zones are based on Draft PBP2018 which is understood to be introduced in May 2019. It is noted the asset protection zones for current PBP2006 for SFPP developments is 60m and 30m respectively.

It is noted, there is considered merit for a future performance solution to reduce the asset protection zone widths in consultation with the NSW RFS if needed.

### 2.0 SIGNIFICANT ENVIRONMENTAL FEATURES

An assessment is to be undertaken with regard to:

- State Environmental Planning Policy No. 44 (Koala Habitat Protection)
- Biodiversity Conservation Act 2016 (NSW)
- Local Land Services Act 2013 (NSW)
- Land Management (Native Vegetation) Code 2017 (NSW)
- National Parks and Wildlife Act 1974 (NSW)
- Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth)

This report **does not** consider the above legislation.

### 3.0 REPORT DETAILS

Report Reference No.: 18/333

Property Address: Part Precincts 5, 15 and 17 Cobaki Lakes Estate

Sandy Lane Cobaki

Client: Leda Manorstead Pty Ltd

Local Government Area: Tweed Shire Council

Proposal: 8 and 10 storey building zones

Drawings: See Appendix A

### 4.0 BUSHFIRE THREAT ASSESSMENT

Tweed Shire Council's bushfire prone mapping identifies the subject site as being bushfire prone (see Figure 3). Aerial mapping and inspection of the site reveals that the bushfire prone land map is reasonably accurate in respect to the current bushfire hazard associated with the proposed development. The 50m wide proposed wildlife corridor however has not been mapped although it will likely be mapped in the future when established.

It is noted that the majority of the land and most of the proposed lots will not be on bushfire prone land.

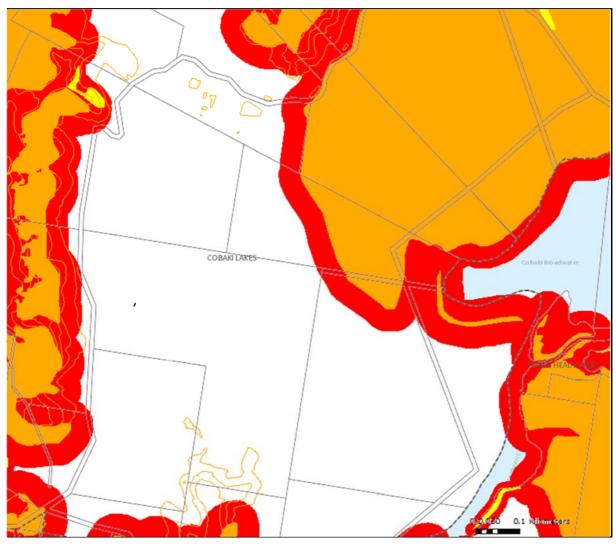


Figure 3 – Tweed Shire Council bushfire prone land map

Note: the bushfire mapping does not show the recently approved subdivision

### PRECINCT No. 5

### **Northern Bushfire Hazard**

The vegetation to the north of the subject area is forest vegetation which is located on a steep upslope, exceeding 10 degrees, for approximately 50m+ leading to a ridge where the topography on which the vegetation is located descends on a downslope varying between 10-15 degrees.



Photo 1 -Forest vegetation to the north located on an upslope

It is considered that given the overall fire run of the hazard being approximately 150m, the final 50m+ of upslope will most significantly influence the bushfire behaviour with regard to the proposed development area to the south. The bushfire slope assessment will be based on a zero degree slope as outlined in AS 3959-2009, PBP2006 and Draft PBP2018.

### **Eastern Bushfire Hazard**

The vegetation to the east is forest vegetation located on a flat topography and therefore a zero degree slope will be applied.

### **Southern Bushfire Hazard**

To the south will be a remnant revegetated corridor having a direct fire run not greater than 50m in length. Planning for Bushfire Protection 2006 and Draft PBP2018 permits this vegetation with a limited fire run as being classified as remnant vegetation thereby attracting the equivalent fuel loadings for that of rainforest vegetation. The slope within this area will essentially be flat and therefore a zero degree slope will be applied.

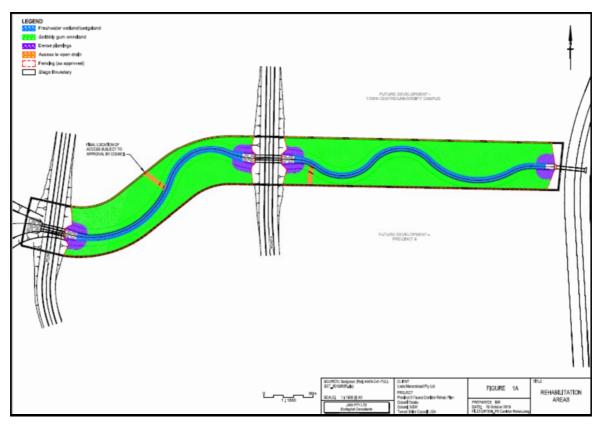


Figure 2: 50m wide revegetation plan to the south

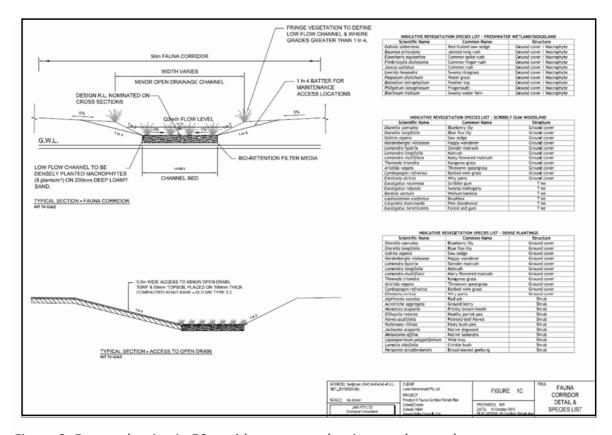


Figure 3: Forest planting in 50m wide remnant plantings to the south

### **Western Bushfire Hazard**

The area to the west of the subject development zone is identified as Open Space and Structured Open Space. Should this area be managed with minimal plantings such that the appearance is "park like" then there would not be any required asset protection zones required to the west.

Table 1: Bushfire Threat Assessment Precinct No. 5.

Aspect	Slope	Vegetation Class	PBP2006	Draft	SFPP	SFPP
				PBP2018	PBP2006	Draft PBP2018
North	Upslope	Forest	21m	20m	60m	67m
West	n/a	Hazard >100m	-	-	-	-
East	flat	Forest	21m	20m	60m	67m
South	flat	Remnant	9m	9m	30m	38m

### PRECINCT No. 15

### **Northern Bushfire Hazard**

The vegetation to the north of the subject area is forest vegetation which is located on an upslope with a limited fire run however the fire run does exceed 50m and therefore does not receive the concession for remnant vegetation.

### **Eastern Bushfire Hazard**

To the east is Precinct No. 14 which will be managed with future development.

### **Southern Bushfire Hazard**

To the south will be a remnant revegetated corridor having a direct fire run not greater than 50m in length. Planning for Bushfire Protection 2006 and Draft PBP2018 permits this vegetation with a limited fire run as being classified as remnant vegetation thereby attracting the equivalent fuel loadings for that of rainforest vegetation. The slope within this area will essentially be flat and therefore a zero degree slope will be applied.

### **Western Bushfire Hazard**

The vegetation to the west is forest on a steep upslope.

Table 2: Bushfire Threat Assessment Precinct No. 15.

Aspect	Slope	<b>Vegetation Class</b>	PBP2006	Draft	SFPP	SFPP
				PBP2018	PBP2006	Draft PBP2018
North	Flat	Forest	21m	20m	60m	67m
West	Upslope	Forest	21m	20m	60m	67m
East	n/a	Hazard >100m	-	-	-	-
South	flat	Remnant	9m	9m	30m	38m

### **PRECINCT No. 17**

### **Northern Bushfire Hazard**

To the northeast is a small isolated area identified as an Environmental Protection Area. The size of this area in conjunction with the area being isolated will allow the vegetation to be assessed as remnant vegetation pursuant to PBP2006.

### **Eastern Bushfire Hazard**

The area to the east of the subject development zone is identified as Open Space and Structured Open Space. Should this area be managed with minimal plantings such that the appearance is "park like" then there would not be any required asset protection zones required to the east.

### Southern Bushfire Hazard

The vegetation to the south of the subject area is forest vegetation which is located on an upslope with a limited fire run however the fire run does exceed 50m and therefore does not receive the concession for remnant vegetation.

### **West Bushfire Hazard**

The vegetation to the west is forest on a steep upslope.

Table 3: Bushfire Threat Assessment Precinct No. 17.

Aspect	Slope	Vegetation Class	PBP2006	Draft	SFPP	SFPP
				PBP2018	PBP2006	Draft PBP2018
North	Flat	Remnant	9m	9m	30m	38m
West	Upslope	Forest	21m	20m	60m	67m
East	n/a	Non-hazard	-	-	-	-
South	Upslope	Forest	21m	20m	60m	67m

### 5.0 ASSET PROTECTION ZONES

Asset Protection Zones are areas established and maintained to ensure that bushfire fuels are progressively reduced between the development and the bushfire hazard. The asset protection zone incorporates an Inner Protection Area (IPA) having reduced fuel loadings of approximately 3t/ha.

The following Tables 4, 5 and 6 provide the required asset protection zone widths as required by PBP2006 and Draft PBP2018. The Tables also include the much larger asset protection zones for Special Fire Protection Purpose developments.

Table 4: Bushfire Threat Assessment Precinct No. 5.

Aspect	PBP2006	Draft PBP2018	SFPP	SFPP
			PBP2006	Draft PBP2018
North	21m	20m	60m	67m
West	-	-	-	-
East	21m	20m	60m	67m
South	9m	9m	30m	38m

Table 5: Bushfire Threat Assessment Precinct No. 15.

Aspect	PBP2006	Draft PBP2018	SFPP	SFPP
			PBP2006	Draft PBP2018
North	21m	20m	60m	67m
West	21m	20m	60m	67m
East	-	-	-	-
South	9m	9m	30m	38m

Table 6: Bushfire Threat Assessment Precinct No. 17.

Aspect	PBP2006	Draft PBP2018	SFPP	SFPP
			PBP2006	Draft PBP2018
North	9m	9m	30m	38m
West	21m	20m	60m	67m
East	-	-	-	-
South	21m	20m	60m	67m

Figures 4 provides a visual illustration (not to scale) of the approximate location of APZs for non-SFPP development. Figure 5 illustrates the location of the larger asset protection zones for Special Fire Protection Purpose (SFPP) development.

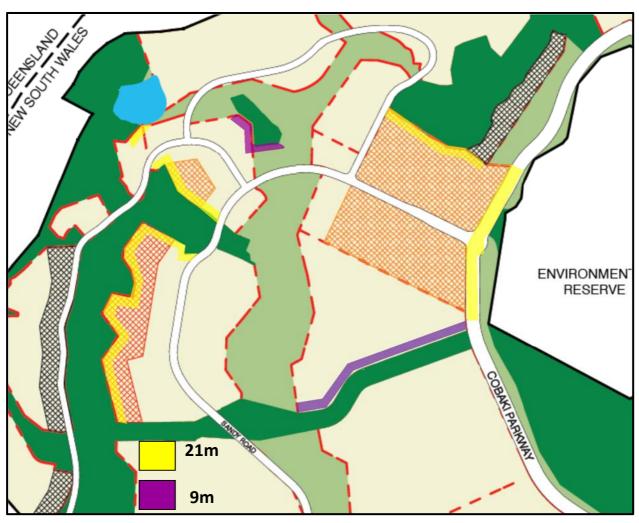


Figure 4 – Locations of APZs for permanent residential development (note to scale).

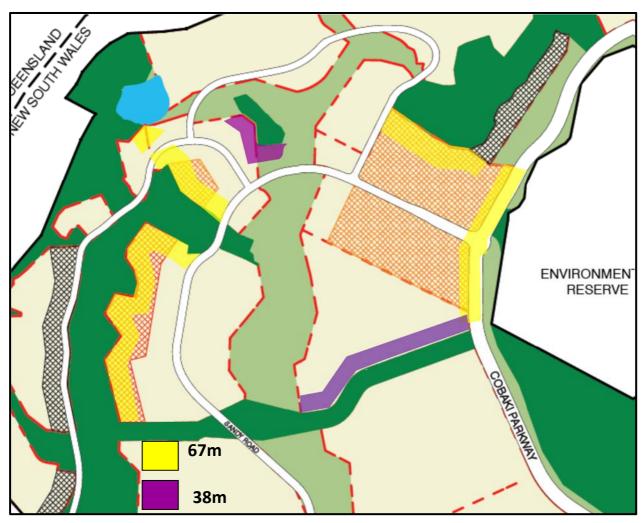


Figure 5 – Locations of APZs for permanent residential development (note to scale).

### 6.0 LANDSCAPING

The majority of buildings adversely impacted upon in a bushfire event happen through ember attack and in this regard combustible material surrounding the building e.g. landscaping can play a significant part during the event. Adequate management of landscaping is critical to the survivability of an asset and for occupant safety during a bushfire.

It is recommended that landscaping is undertaken in accordance Appendix 5 of Planning for Bushfire Protection 2006 and managed and maintained for the life of the development.

### 7.0 CONCLUSION

This assessment demonstrates that the proposed development will be compliant with all aspects (except as mentioned) of *Planning for Bushfire Protection 2006* based on the recommendations contained in Section 1 of this report, and other considerations contained within the report.

### Disclaimer

This report was prepared for the purposes and exclusive use of the stated client for advice relating Precinct 5, 15 and 17 and is not to be used for any other purpose or by any other person or Corporation. BCA Check Pty Ltd accepts no responsibility for any loss or damage suffered howsoever arising to any person or Corporation who may use or rely on this report in contravention of the terms of this clause. The report is not to be used as an assessment tool for individual dwellings and is only to be used for the purpose of this future subdivision.

As identified in Planning for Bushfire Protection 2006 and the Building Code of Australia the report is to provide recommendations to reduce the risk of ignition and does not guarantee the complete protection of the building in the event of bush fire or that the building will not be adversely impacted upon.

Reporting has been based on the relevant Council and Rural Fire Service Guidelines however recommendations or suggestions given in this report are based on our site investigation at the time of reporting. In some cases site conditions may change dramatically within a few years due to rapid vegetation re-growth and invading weed species.

### References

NSW Rural Fire Service and Planning NSW (2006), *Planning for bushfire protection, A guide for councils planners fire authorities developers and homeowners*. Rural Fire Service NSW Australia.

DRAFT NSW Rural Fire Service and Planning NSW (2018), *Planning for bushfire protection, A guide for councils planners fire authorities developers and homeowners*. Rural Fire Service NSW Australia.

Standards Australia, (2009), AS3959 *Construction of buildings in bushfire prone areas,* Australian Standards, Sydney.

### Legislation

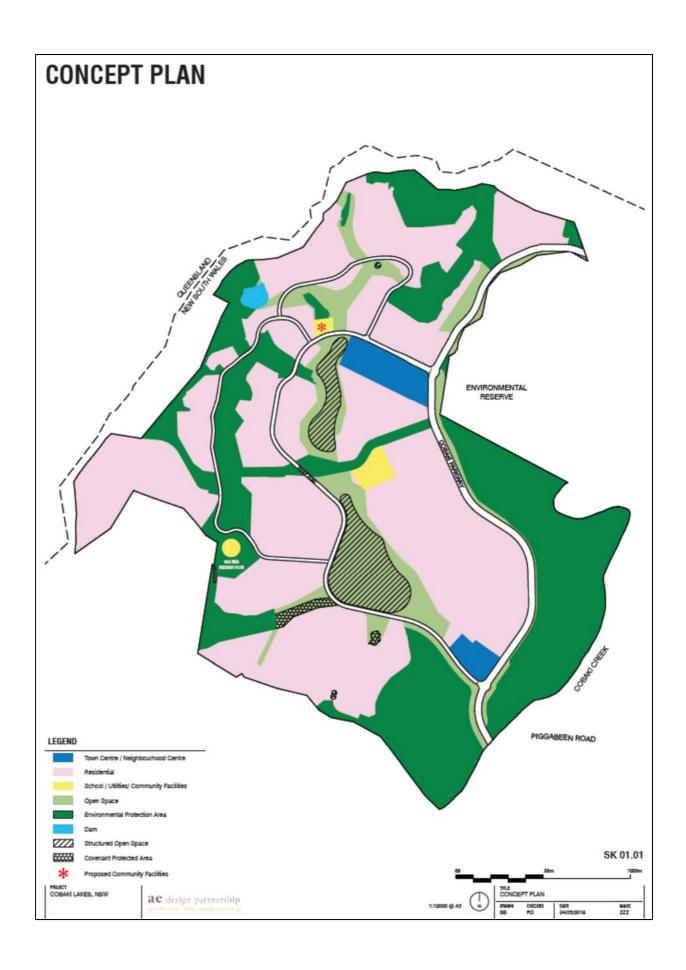
Environmental Planning and Assessment Act 1979 and Regulations 2000. *New South Wales*. Parliamentary Counsel's Office, NSW Government Information Service.

Rural Fires Act 1997. *New South Wales.* Parliamentary Counsel's Office, NSW Government Information Service.

Rural Fires Regulation. *New South Wales.* Parliamentary Counsel's Office, NSW Government Information Service.

### **APPENDIX A**

**Precinct layout plans** 



# **DEVELOPMENT MATRIX**

Concept Plan	Development Uses		Tota	al Area	Inter Busine Busines
Domain	Developm	ent uses	Leda Owned Land	Proposed Road Closures	Urban Design Principles
Town Oentre/ Neighbourhood Centre	Dusiness premises   Cespark   Cespark   Cespark   Child care centre   Community facility   Columnity facility   Education establishment   Emergency senices   facility   Entertainment facility   Environmental facility   Food and drink premises   Fourseal chapse   Food and drink premises   Fourseal chapse   Health services facility   Home business   Intest or motel   Information and aducation facility   Medical centre   Medical centre   Medical centre   Medical centre   Possible Centre   Possi	II Office premises II Place of worship II Pub II Recreation area II Recreation facility (indoor) Residential care facility II Residential types in Development Code II Registered Club II Restaurant II Restal premises II Rosal II Rosal II Restal premises II Rest	14.07 ha	0.00 ha	Urban form controlled by Plan of Development in Precinct approval Building height controlled by Development Code Mixed uses are encouraged Provide legible off-street packing Create form square focus Sporting facilities may be shared between schools and community Buildings facilities may be shared between schools and community Buildings facilities may be shared between schools and community Pedestrian friendly streetscape with amings Create interesting buildings with articulated facades Create interesting buildings with articulated facades Sorten or conceal passarie facades and service areas Soften visual impact of carpark with landscaping Incorporate urban art and public shreetscaping Must demonstrate a sensitive interface with surrounding development Ground floor facing main roads must be non residential use Landscape concept to maintain visibility of retail uses Incorporate passave surveillance and public safety principles
Residential	Carpark Child care centre Child care centre Community facility Environmental facility Environmental facility Environmental facility Environmental facility Home business Home business Neighbourhood shop Recreation area	II Recreation facility (indoor) II Recreation facility (outdoor) II Residential care facility II Residential types in Development Code III Roads III Geniors housing	298.50 ha	4.88 ha	Urban form controlled by Plan of Development in Precinct approval and the Development Code Create diversity of housing choice Designs must optimize residential amenity, privacy and solar access of one streated per character with articulated pathacks Incorporate oratise private recreation areas Garage doors must not dominate streatedpe Incorporate passive surveillance and public safety principles Incorporate public open apace within walkable radius of each dwellin.
Community Facilities/ Education/ Utilities	Carpark Child care centre Community facility Community facility Community facility Informated facility Informated facility Society West Flace of worship	Recreation area Recreation facility (indoor) Recreation facility (indoor) Recreation facility (outdoor) Recade Telecommunication facility Water storage facility	4.91 ha	0.00 ha	Locate school buildings with integrated parking and sharedfacilities Provide adequate safe satisform areas Gopting facilities may be shared between schools and community Must demonstrate sensities infarices with surrounding development Chance community aducation on surrounding anvironment
Public Open Opece	Compark     Community facility     Environmental facility     Food and drink premises     Kosk     Recreation area	Recreation facility (indoor) Recreation facility (outdoor) Reads Savage reticulation system	88.64 ha	1.55 ha	Include range of active and passive uses     Incorporate community facilities appropriate to residents needs such as ovels, amerities and catpacking     Sporting facilities may be shared between schools and community
Environmental Protection Area	II Environmental facilities II Roads II Water storage facility		187.14 ha	5.77 ha	Incorporate low-impact community trails for public and service acces     Provide linkages in accordance with the Pedestrian and Oycle     Network Plan
Total Area			593.25 ha	12.20 ha	

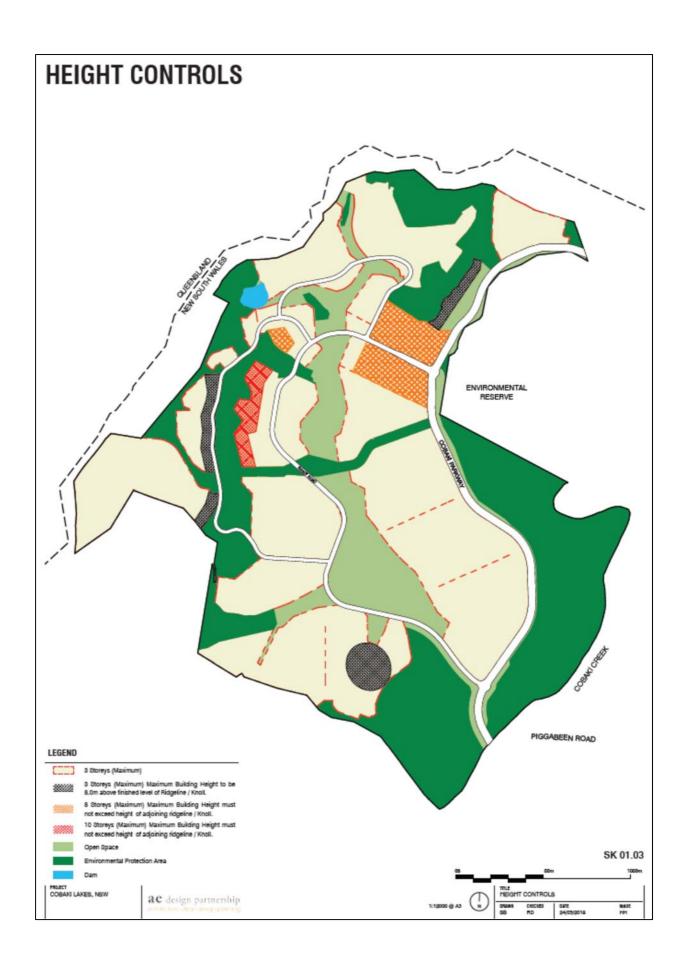
Note: Areas are subject to final design and survey

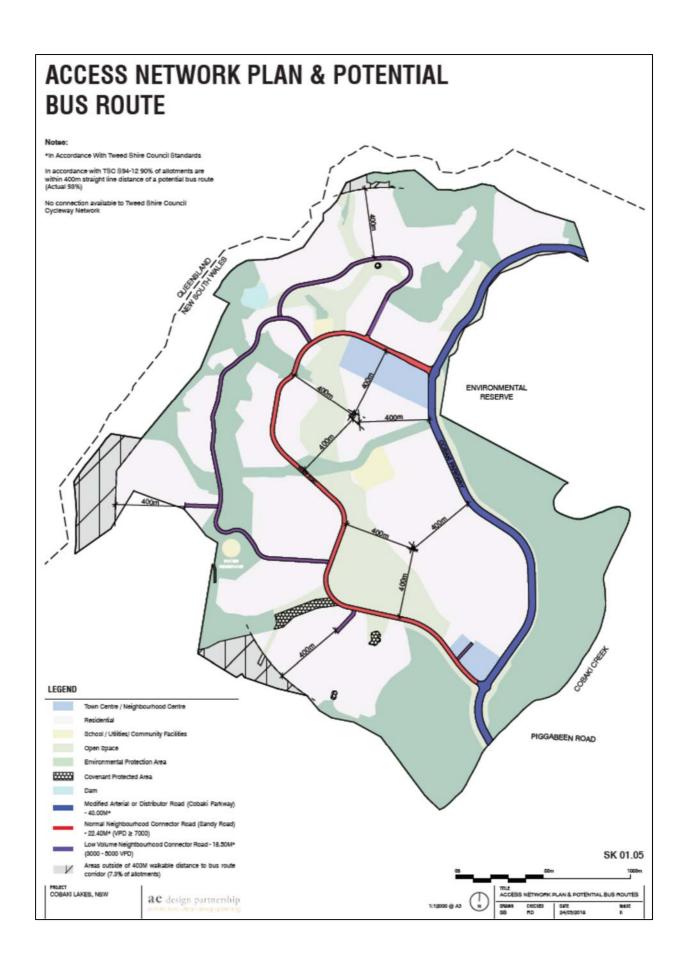
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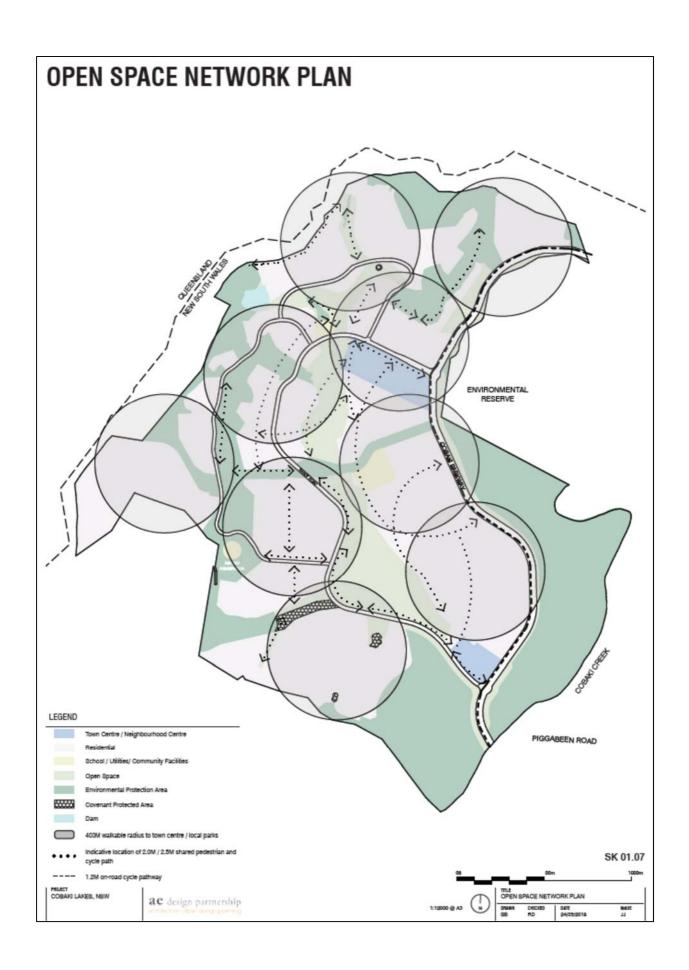
ODBARI LAKES, NSW

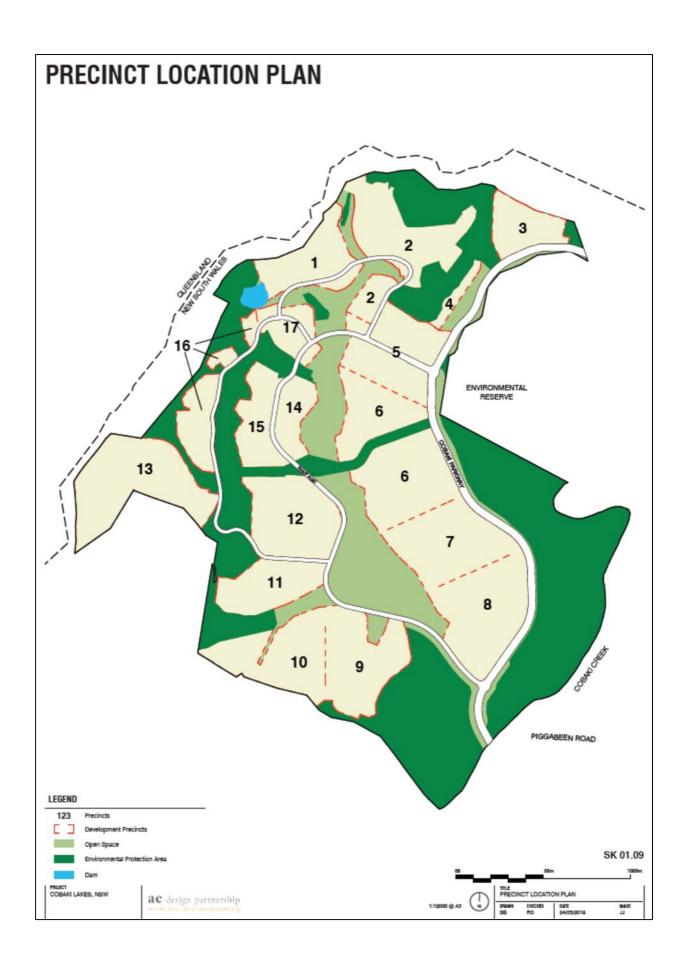
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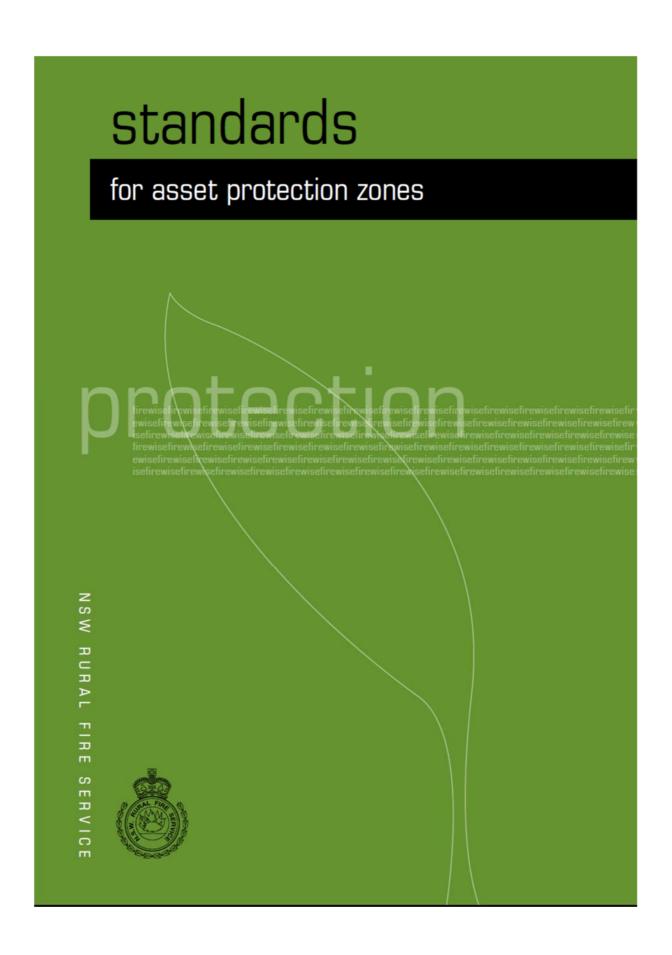






### **APPENDIX B**

**Standards for Asset Protection Zones (RFS 2005)** 



## STANDARDS FOR ASSET PROTECTION ZONES

INTRODUCTION	
WHAT IS AN ASSET PROTECTION ZONE?	
WHAT WILL THE APZ DO?	
WHERE SHOULD I PUT AN APZ?	4
STEP 1. DETERMINE IF AN APZ IS REQUIRED	4
STEP 2. DETERMINE WHAT APPROVALS ARE REQUIRED FOR CO	
STEP 3. DETERMINE ASSET PROTECTION ZONE WIDTH	5
STEP 4. DETERMINE WHAT HAZARD REDUCTION METHOD IS REPORTED BUSH FIRE FUEL IN YOUR APZ	
STEP 5. TAKE MEASURES TO PREVENT SOIL EROSION	9
STEP 6. ONGOING MANAGEMENT AND LANDSCAPING	10
PLANTS FOR BUSH FIRE PRONE GARDENS	10
WIND BREAKS	11

### INTRODUCTION

For thousands of years bush fires have been a natural part of the Australian landscape. They are inevitable and essential, as many Australian plants and animals have adapted to fire as part of their life cycle.

In recent years developments in bushland areas have increased the risk of bush fires harming people and their homes and property. But landowners can significantly reduce the impact of bush fires on their property by identifying and minimising bush fire hazards. There are a number of ways to reduce the level of hazard to your property, but one of the most important is the creation and maintenance of an Asset Protection Zone (APZ).

A well located and maintained APZ should be used in conjunction with other preparations such as good property maintenance, appropriate building materials and developing a family action plan.

### WHAT IS AN ASSET PROTECTION ZONE?

An Asset Protection Zone (APZ) is a fuel reduced area surrounding a built asset or structure. This can include any residential building or major building such as farm and machinery sheds, or industrial, commercial or heritage buildings.

### An APZ provides:

- · a buffer zone between a bush fire hazard and an asset;
- · an area of reduced bush fire fuel that allows suppression of fire;
- · an area from which backburning may be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Potential bush fire fuels should be minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy.

### WHAT WILL THE APZ DO?

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- · direct flame contact on the asset;
- damage to the built asset from intense radiant heat; and
- · ember attack on the asset.

### WHERE SHOULD I PUT AN APZ?

An APZ is located between an asset and a bush fire hazard.

The APZ should be located wholly within your land. You cannot undertake any clearing of vegetation on a neighbour's property, including National Park estate, Crown land or land under the management of your local council, unless you have written approval.

If you believe that the land adjacent to your property is a bush fire hazard and should be part of an APZ, you can have the matter investigated by contacting the NSW Rural Fire Service (RFS).

There are six steps to creating and maintaining an APZ. These are:

- 1. Determine if an APZ is required;
- 2. Determine what approvals are required for constructing your APZ;
- 3. Determine the APZ width required;
- Determine what hazard reduction method is required to reduce bush fire fuel in your APZ;
- 5. Take measures to prevent soil erosion in your APZ; and
- 6. Landscape and regularly monitor in your APZ for fuel regrowth.

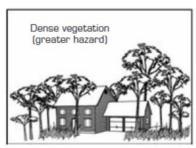
### STEP 1. DETERMINE IF AN APZ IS REQUIRED

Recognising that a bush fire hazard exists is the first step in developing an APZ for your property.

If you have vegetation close to your asset and you live in a bush fire prone or high risk area, you should consider creating and maintaining an APZ.

Generally, the more flammable and dense the vegetation, the greater the hazard will be. However, the hazard potential is also influenced by factors such as slope.

- A large area of continuous vegetation on sloping land may increase the potential bush fire hazard.
- The amount of vegetation around a house will influence the intensity and severity of a bush fire.
- · The higher the available fuel the more intense a fire will be.





Isolated areas of vegetation are generally not a bush fire hazard, as they are not large enough to produce fire of an intensity that will threaten dwellings.

This includes

- bushland areas of less than one hectare that are isolated from large bushland areas; and
- · narrow strips of vegetation along road and river corridors.

If you are not sure if there is a bush fire hazard in or around your property, contact your local NSW Rural Fire Service Fire Control Centre or your local council for advice.

# STEP 2. DETERMINE WHAT APPROVALS ARE REQUIRED FOR CONSTRUCTING YOUR APZ

If you intend to undertake bush fire hazard reduction works to create or maintain an APZ you must gain the written consent of the landowner.

### Subdivided land or construction of a new dwelling

If you are constructing an APZ for a new dwelling you will need to comply with the requirements in *Planning for Bushfire Protection*. Any approvals required will have to be obtained as part of the Development Application process.

### **Existing asset**

If you wish to create or maintain an APZ for an existing structure you may need to obtain an environmental approval. The RFS offers a free environmental assessment and certificate issuing service for essential hazard reduction works. For more information see the RFS document Application Instructions for a Bush Fire Hazard Reduction Certificate or contact your local RFS Fire Control Centre to determine if you can use this approval process.

Bear in mind that all work undertaken must be consistent with any existing land management agreements (e.g. a conservation agreement, or property vegetation plan) entered into by the property owner.

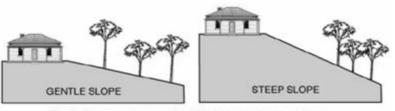
If your current development consent provides for an APZ, you do not need further approvals for works that are consistent with this consent.

If you intend to burn off to reduce fuel levels on your property you may also need to obtain a Fire Permit through the RFS or NSW Fire Brigades. See the RFS document Before You Light That Fire for an explanation of when a permit is required.

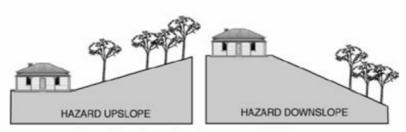
### STEP 3. DETERMINE THE APZ WIDTH

The size of the APZ required around your asset depends on the nature of the asset, the slope of the area, the type and structure of nearby vegetation and whether the vegetation is managed.

Fires burn faster uphill than downhill, so the APZ will need to be larger if the hazard is downslope of the asset.



Gentle slopes require a smaller APZ distance than steep slopes



A hazard downslope will require a greater APZ distance then a hazard upslope of the asset

Different types of vegetation (for example, forests, rainforests, woodlands, grasslands) behave differently during a bush fire. For example, a forest with shrubby understorey is likely to result in a higher intensity fire than a woodland with a grassy understorey and would therefore require a greater APZ width.

A key benefit of an APZ is that it reduces radiant heat and the potential for direct flame contact on homes and other buildings. Residential dwellings require a wider APZ than sheds or stockyards because the dwelling is more likely to be used as a refuge during bush fire.

**Subdivided land or construction of a new dwelling**If you are constructing a new asset, the principles of *Planning for Bushfire Protection* should be applied. Your Development Application approval will detail the exact APZ distance required.

### Existing asset

If you wish to create an APZ around an existing asset and you require environmental approval, the Bush Fire Environmental Assessment Code provides a streamlined assessment process. Your Bush Fire Hazard Reduction Certificate (or alternate environmental approval) will specify the maximum APZ width allowed.

For further information on APZ widths see Planning for Bushfire Protection or the Bush Fire Environmental Assessment Code (available on the RFS website), or contact your local RFS Fire Control Centre.

### STEP 4. DETERMINE WHAT HAZARD REDUCTION METHOD IS REQUIRED TO REDUCE BUSH FIRE FUEL IN YOUR APZ

The intensity of bush fires can be greatly reduced where there is little to no available fuel for burning. In order to control bush fire fuels you can reduce, remove or change the state of the fuel through several means.

Reduction of fuel does not require removal of all vegetation, which would cause environmental damage. Also, trees and plants can provide you with some bush fire protection from strong winds, intense heat and flying embers (by filtering embers) and changing wind patterns. Some ground cover is also needed to prevent soil erosion.

### Fuels can be controlled by:

### 1. raking or manual removal of fine fuels

Ground fuels such as fallen leaves, twigs (less than 6 mm in diameter) and bark should be removed on a regular basis. This is fuel that burns quickly and increases the intensity of a fire.

Fine fuels can be removed by hand or with tools such as rakes, hoes and shovels.

### 2. mowing or grazing of grass

Grass needs to be kept short and, where possible, green.

### 3. removal or pruning of trees, shrubs and understorey

The control of existing vegetation involves both selective fuel reduction (removal, thinning and pruning) and the retention of vegetation.

Prune or remove trees so that you do not have a continuous tree canopy leading from the hazard to the asset. Separate tree crowns by two to five metres. A canopy should not overhang within two to five metres of a dwelling.

Native trees and shrubs should be retained as clumps or islands and should maintain a covering of no more than 20% of the area.

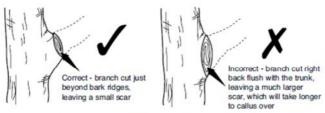
When choosing plants for removal, the following basic rules should be followed:

- Remove noxious and environmental weeds first. Your local council can provide you with a list of environmental weeds or 'undesirable species'. Alternatively, a list of noxious weeds can be obtained at www.agric.nsw.gov.au/ noxweed/;
- Remove more flammable species such as those with rough, flaky or stringy bark; and
- 3 Remove or thin understorey plants, trees and shrubs less than three metres in height

The removal of significant native species should be avoided.

Prune in acordance with the following standards:

- Use sharp tools. These will enable clean cuts and will minimise damage to the tree.
- Decide which branches are to be removed before commencing work. Ensure that you maintain a balanced, natural distribution of foliage and branches.
- · Remove only what is necessary.
- Cut branches just beyond bark ridges, leaving a small scar.
- · Remove smaller branches and deadwood first.



There are three primary methods of pruning trees in APZs:

### 1. Crown lifting (skirting)

Remove the lowest branches (up to two metres from the ground). Crown lifting may inhibit the transfer of fire between the ground fuel and the tree canopy.

### 2. Thinning

Remove smaller secondary branches whilst retaining the main structural branches of the tree. Thinning may minimise the intensity of a fire.

### 3. Selective pruning

Remove branches that are specifically identified as creating a bush fire hazard (such as those overhanging assets or those which create a continuous tree canopy). Selective pruning can be used to prevent direct flame contact between trees and assets.

Your Bush Fire Hazard Reduction Certificate or local council may restrict the amount or method of pruning allowed in your APZ.

See the Australian Standard 4373 (Pruning of Amenity Trees) for more information on tree pruning.

### 4. Slashing and trittering

Slashing and trittering are economical methods of fuel reduction for large APZs that have good access. However, these methods may leave large amounts of slashed fuels (grass clippings etc) which, when dry, may become a fire hazard. For slashing or trittering to be effective, the cut material must be removed or allowed to decompose well before summer starts.

If clippings are removed, dispose of them in a green waste bin if available or compost on site (dumping clippings in the bush is illegal and it increases the bush fire hazard on your or your neighbour's property).

Although slashing and trittering are effective in inhibiting the growth of weeds, it is preferable that weeds are completely removed.

Care must be taken not to leave sharp stakes and stumps that may be a safety hazard.

### 5. Ploughing and grading

Ploughing and grading can produce effective firebreaks. However, in areas where this method is applied, frequent maintenance may be required to minimise the potential for erosion. Loose soil from ploughed or graded ground may erode in steep areas, particularly where there is high rainfall and strong winds.

### 6. Burning (hazard reduction burning)

Hazard reduction burning is a method of removing ground litter and fine fuels by fire. Hazard reduction burning of vegetation is often used by land management agencies for broad area bush fire control, or to provide a fuel reduced buffer appeared upper page.

Any hazard reduction burning, including pile burns, must be planned carefully and carried out with extreme caution under correct weather conditions. Otherwise there is a real danger that the fire will become out of control. More bush fires result from escaped burning off work than from any other single cause.

It is YOUR responsibility to contain any fire lit on your property. If the fire escapes your property boundaries you may be liable for the damage it causes.

Hazard reduction burns must therefore be carefully planned to ensure that they are safe, controlled, effective and environmentally sound. There are many factors that need to be considered in a burn plan. These include smoke control, scorch height, frequency of burning and cut off points (or control lines) for the fire. For further information see the RFS document Standards for Low Intensity Bush Fire Hazard Reduction Burning, or contact your local RFS for advice.

### 7. Burning (pile burning)

In some cases, where fuel removal is impractical due to the terrain, or where material cannot be disposed of by the normal garbage collection or composted on site, you may use pile burning to dispose of material that has been removed in creating or maintaining an APZ.

For further information on pile burning, see the RFS document *Standards for Pile Burning*.

In areas where smoke regulations control burning in the open, you will need to obtain a Bush Fire Hazard Reduction Certificate or written approval from Council for burning. During the bush fire danger period a Fire Permit will also be required. See the RFS document *Before You Light that Fire* for further details.

### STEP 5. TAKE MEASURES TO PREVENT SOIL EROSION

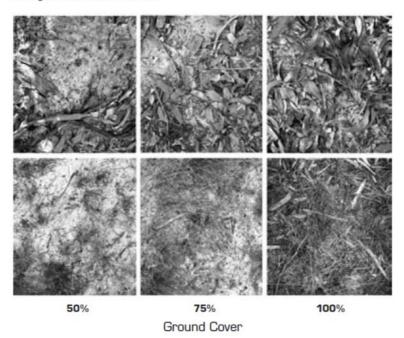
While the removal of fuel is necessary to reduce a bush fire hazard, you also need to consider soil stability, particularly on sloping areas.

Soil erosion can greatly reduce the quality of your land through:

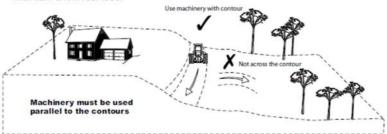
- · loss of top soil, nutrients, vegetation and seeds
- · reduced soil structure, stability and quality
- · blocking and polluting water courses and drainage lines

A small amount of ground cover can greatly improve soil stability and does not constitute a significant bush fire hazard. Ground cover includes any material which directly covers the soil surface such as vegetation, twigs, leaf litter, clippings or rocks. A permanent ground cover should be established (for example, short grass). This will provide an area that is easy to maintain and prevent soil erosion.

When using mechanical hazard reduction methods, you should retain a ground cover of at least 75% to prevent soil erosion. However, if your area is particularly susceptible to soil erosion, your Hazard Reduction Certificate may require that 90% ground cover be retained.



To reduce the incidence of soil erosion caused by the use of heavy machinery such as ploughs, dozers and graders, machinery must be used parallel to the contours. Vegetation should be allowed to regenerate, but be managed to maintain a low fuel load.



### STEP 6. ONGOING MANAGEMENT AND LANDSCAPING

Your home and garden can blend with the natural environment and be landscaped to minimise the impact of fire at the same time. To provide an effective APZ, you need to plan the layout of your garden to include features such as fire resistant plants, radiant heat barriers and windbreaks.

### Layout of gardens in an APZ

When creating and maintaining a garden that is part of an APZ you should:

- · ensure that vegetation does not provide a continuous path to the house;
- remove all noxious and environmental weeds;
- · plant or clear vegetation into clumps rather than continuous rows;
- prune low branches two metres from the ground to prevent a ground fire from spreading into trees;
- locate vegetation far enough away from the asset so that plants will not ignite the asset by direct flame contact or radiant heat emission;
- plant and maintain short green grass around the house as this will slow the fire and reduce fire intensity. Alternatively, provide non-flammable pathways directly around the dwelling;
- ensure that shrubs and other plants do not directly abut the dwelling. Where
  this does occur, gardens should contain low-flammability plants and non
  flammable ground cover such as pebbles and crush tile; and
- avoid erecting brush type fencing and planting "pencil pine" type trees next to buildings, as these are highly flammable.



### Removal of other materials

Woodpiles, wooden sheds, combustible material, storage areas, large quantities of garden mulch, stacked flammable building materials etc. should be located away from the house. These items should preferably be located in a designated cleared location with no direct contact with bush fire hazard vegetation.

### Other protective features

You can also take advantage of existing or proposed protective features such as fire trails, gravel paths, rows of trees, dams, creeks, swimming pools, tennis courts and vegetable gardens as part of the property's APZ.

### PLANTS FOR BUSH FIRE PRONE GARDENS

When designing your garden it is important to consider the type of plant species and their flammability as well as their placement and arrangement.

Given the right conditions, all plants will burn. However, some plants are less flammable than others.

Trees with loose, fibrous or stringy bark should be avoided. These trees can easily ignite and encourage the ground fire to spread up to, and then through, the crown of the trees.

Plants that are less flammable, have the following features:

- · high moisture content
- high levels of salt
- · low volatile oil content of leaves
- smooth barks without "ribbons" hanging from branches or trunks; and
- · dense crown and elevated branches.

When choosing less flammable plants, be sure not to introduce noxious or environmental weed species into your garden that can cause greater long-term environmental damage.

For further information on appropriate plant species for your locality, contact your local council, plant nurseries or plant society.

If you require information on how to care for fire damaged trees, refer to the Firewise brochure *Trees and Fire Resistance; Regeneration and care of fire damaged trees.* 

### WIND BREAKS

Rows of trees can provide a wind break to trap embers and flying debris that could otherwise reach the house or asset.

You need to be aware of local wind conditions associated with bush fires and position the wind break accordingly. Your local RFS Fire Control Centre can provide you with further advice.

When choosing trees and shrubs, make sure you seek advice as to their maximum height. Their height may vary depending on location of planting and local conditions. As a general rule, plant trees at the same distance away from the asset as their maximum height.

When creating a wind break, remember that the object is to slow the wind and to catch embers rather than trying to block the wind. In trying to block the wind, turbulence is created on both sides of the wind break making fire behaviour erratic.

Fire Hazard

Fire

# HOW CAN I FIND OUT MORE? The following documents are available from your local Fire Control Centre and from the NSW RFS website at www.rfs.nsw.gov.au. Before You Light That Fire Standards for Low Intensity Bush Fire Hazard Reduction Burning Standards for Pile Burning Application Instructions for a Bush Fire Hazard Reduction Certificate If you require any further information please contact: your local NSW Rural Fire Service Fire Control Centre. Location details are available on the RFS website or call the NSW RFS Enquiry Line 1800 679 737 (Monday to Friday, 9am to 5pm), or the NSW RFS website at www.rfs.nsw.gov.au. Produced by the NSW Rural Fire Service, Locked Mail Bag 17, GRANVILLE, NSW 2142. Ph. 1800 679 737 www.rfs.nsw.gov.au