


On the Land

Agricultural Fire Management Guidelines

CFA®

An initiative of the Victorian Bushfire Inquiry

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Foreword

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Fire management on agricultural land is important to protect the safety and well-being of people and communities and to protect agricultural industries that are vital to Victoria.

'On the Land' provides practical fire management advice for people living and working on cropping, grazing, plantation timber and rural lifestyle properties, particularly those who are undertaking property planning or are new to farming.

CFA appreciates the time and effort that a range of individuals and organisations have given to this project to help ensure that these guidelines are effective.

CFA also appreciates the support of the State Government, as a result of the Victorian Bushfire Inquiry, in developing these guidelines.

This document will be a useful reference for anyone involved in planning or promoting fire management on agricultural land in Victoria.

Using This Document

All public and private landowners and managers in Victoria have legislated responsibilities regarding fire management and fire extinguishment. Most of these responsibilities arise from the *Country Fire Authority Act 1958*, *Forests Act 1958*, *Summary Offences Act 1966* and *Crimes Act 1958*. Landowners and managers may have additional responsibilities under other State or Federal legislation or local government requirements.

This document integrates the legal responsibilities arising from relevant fire management legislation with advice to help landowners and managers form an overall picture of what is needed to achieve fire safety on rural properties.

It is designed to be used for a number of purposes, such as planning fire management, as a tool in information or training courses and improving general community knowledge about fire management.

Section 1 provides a general framework for fire management on private land. This has been used as the structure for more detailed advice in Section 3. Section 2 sets out some key concepts that help to explain fire management and fire management planning.

In this document:

- 'have a responsibility', 'in accordance with legislation', 'are required to' or 'must' means the information being provided is a legislated responsibility;
- 'advised to' and 'encouraged to' means the advice being provided is good practice but not a legal requirement;
- 'wildfire' means both bushfires and grassfires;
- 'taking reasonable steps' includes consideration of fire safety, legal requirements, environmental issues, safety responsibilities and the long-term sustainability of the property; and
- '◆' indicates other documents that may provide more information.

This document provides general advice that may not be relevant in all circumstances. Landowners and managers are always encouraged to seek additional expert advice about fire management on their property where required.

Section 1
Agricultural Fire Management Guidelines

People can minimise the risk of wildfire to achieve improved personal and community safety, protect assets including the environment, and meet legal requirements by addressing the following objectives and guidelines:

Objective 1: Plan for and undertake fire safety, asset protection and asset recovery activities, with safety as a priority

a. All individuals have a responsibility for their own personal fire safety. Landowners and managers have an additional responsibility for the safety of all people living or working on or visiting their property.

b. When planning and undertaking fire management, landowners and managers are advised to:

- consider safety, practical, environmental and legal issues and the long-term sustainability of the property, with safety as a priority;
- take into account that it may not be possible to protect all assets from fire or have fire suppression services available in all circumstances;
- consult and work with adjacent public and private landowners, managers and users, where practical, to achieve fire safety benefits for all properties; and
- locate fire management works for the property within the property boundary unless the works are part of a cooperative approach to fire management.

c. Landowners and managers are advised to develop and implement a fire management plan that identifies and removes or reduces fire risks on their property and addresses recovery from a fire.

Objective 2: Take reasonable steps to prevent unplanned fires starting and planned fires escaping

a. All individuals and authorities have a responsibility to minimise the risk that they may start an unplanned fire, particularly when they are operating machinery, vehicles and equipment or using fire.

b. Landowners and managers are advised to consider fire risk before harvesting, grinding and welding, slashing and mowing, or driving vehicles and motorbikes through dry grass or crop. Consider avoiding these activities at times of extreme fire danger.

c. Landowner and managers have a responsibility to ensure that private powerlines will not start a fire.

Objective 3: Take reasonable steps to limit the spread of unplanned fire

a. During the Fire Danger Period, landowners and managers have a responsibility to extinguish unplanned fire on their property and to report the fire if it appears that they will be unable to extinguish it.

b. Anyone finding a fire burning in the Fire Danger Period must report it as soon as possible.

c. Landowners and managers are encouraged to have strategic fuel breaks for their property. They are required to implement fire prevention works set out in planning permits or fire prevention notices.

d. Anyone operating machinery and equipment in rural areas is advised to have access to appropriate firefighting equipment in addition to that required under legislation.

Objective 4: Take reasonable steps to provide access to property and assets and to water for firefighting

a. Landowners and managers are advised to provide access to property, assets and water for firefighting. They must provide this access if it is a requirement of a permit.

Objective 5: Participate in community-based groups to minimise the impact of fire

a. People living and working in rural areas are encouraged to join their local fire brigade and other community groups to help improve fire safety on their property and in their community.

Section 2

Understanding Fire Management (Background)

Figure 1: Stubble burning

Fire management involves fire protection and using fire for land management purposes such as stubble burning, weed control or the management of native vegetation. Fire behaviour is how fire spreads and burns given differences in fuel, weather and topography (shape of the land). This section provides general information that may be useful when considering and planning fire management.

1. Fire behaviour

Fire spread

Fire spreads in three main ways: direct flame contact, heat transfer and from embers. Heat is transferred through hot air currents and as radiant heat.

The role of embers is sometimes underestimated in the spread of fire. Embers can be carried forward by wind and air currents. These start new spot fires well ahead of the main fire front (spotting). Embers can carry fire across a fuel break.

Embers can also land on fine fuels such as leaf litter near buildings and start small fires that can grow and ignite heavier building materials. Indeed, most houses that burn down during a wildfire ignite from ember attack.

Trees, shrubs and tall grasses can produce embers and should be considered when planning fire management.

Some trees with fibrous bark, such as stringybark, may cause significant short-distance spotting, while trees with ribbons of bark may cause long-distance spotting under some circumstances.

The impact of radiant heat is also important when considering how fire spreads. Radiant heat can preheat unburnt material so that ignition by embers or flames is easier.

The amount of radiant heat people or objects receive varies with distance from the fire. If this distance is halved the amount of heat received will increase by approximately four times.

- *Grassfires: Fuel, Weather and Fire Behaviour (Cheney and Sullivan 1997)*
- *Bushfires in Australia (Luke and McArthur 1978)*
- *Overall Fuel Hazard Guide (McCarthy, Tolhurst and Chatto 1999)*

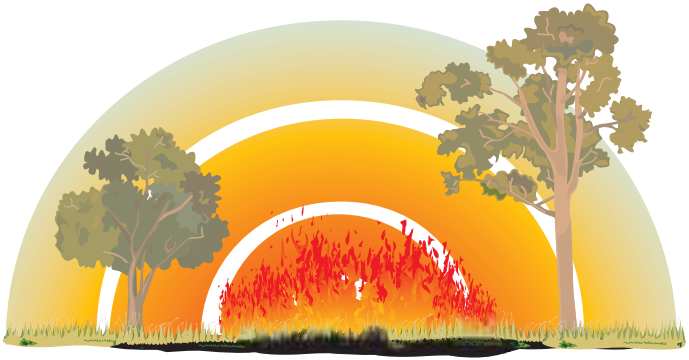

Figure 2: Radiant heat

Fuel

Fire behaviour is influenced by three main factors. These are fuel, weather and topography. Consideration of these factors is important when considering fire management.

Wildfire can occur in any type of vegetation, such as grasslands, trees, crops or shrubs. How hot a fire burns and how quickly it spreads depend on the size, quantity, type, arrangement and moisture content of the fuel being burnt.

Fuel load

The fuel load is the quantity of fuel per unit area. It is commonly expressed as tonnes per hectare. Reducing fuel loads can help to protect assets from fire and make fires easier to suppress.

Fuel size

Fine fuels (less than 6 mm in diameter), such as leaves, twigs, grass and bark, dry out rapidly and burn quickly.

Because fine fuels burn easily, they contribute most to the heat of a fire front. Consequently, minimise the quantities of fine fuels near key assets to minimise the risk of radiant heat and direct flame contact.

Heavier fuels like branches and logs (greater than 25 mm in diameter) can also provide fuel for wildfires. However, they are slower to ignite than fine fuels and give off heat more slowly.

While heavy fuels do not contribute to the heat of the initial fire front, they do need to be put out after the fire front has passed to prevent them being a continuing source of fire.

Drought conditions

When planning fire management, consider the impact of drought and dry conditions. While grass paddocks tend to be heavily grazed in these situations, fire management still needs to be undertaken as fire can still travel across paddocks with very short grass.

During very dry conditions trees often shed leaves and the leaf litter dries out, increasing the amount of fuel available to burn in timbered areas, including plantations. Dry soil conditions associated with drought also increase the chance of tree roots igniting. These fires are difficult to suppress.

Figure 3: Fine fuels less than 6 mm in diameter contribute most to the heat of a fire front

Weather

Weather is a major factor in the ignition and spread of fire. Preparing for common weather patterns, as well as unusual weather events, will assist landholders to minimise fire risk.

Temperature and humidity

Temperature and humidity impact on fire fuels, especially fine fuels, which more rapidly gain and lose moisture than heavy fuels. The higher the air temperature and the lower the humidity the more easily fuel will burn.

Wind speed

Wind influences fire behaviour significantly. As wind becomes stronger, a fire can burn hotter because the wind makes the flames lean forward, increasing flame contact with dry fuel. This makes the fire spread faster.

Wind direction

In Victoria hot dry winds often come from the north and northwest and are often followed by a southwest wind change. In this situation the side of the fire can quickly become a much larger fire front (head of the fire).

Given these common wind patterns, it is often important to give priority to fire management on the northern and western sides of your property and assets. However, as fire can come from any direction, some level of preparation for fire is still needed for the whole property.

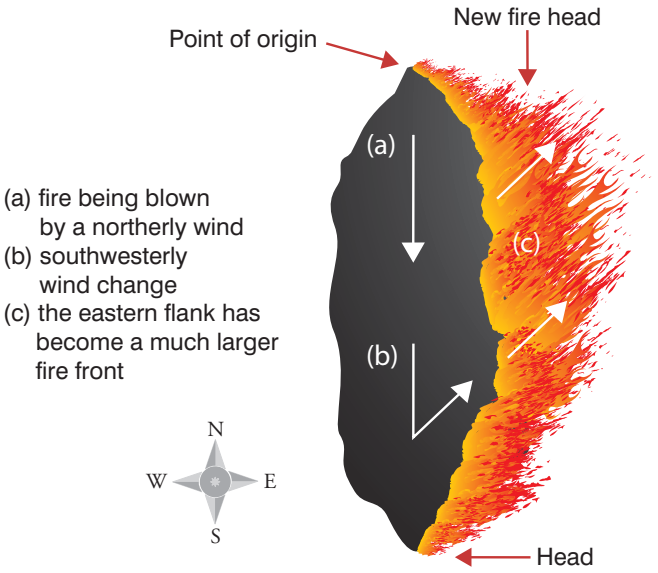

Figure 4: The fire risk from a southwest wind change

Topography

The shape of the land needs to be considered when planning fire management.

Fire travels faster upslope than downslope because when it is moving upslope the flames are closer to the unburnt fuel. This preheats the fuels, making them easier to ignite.

The rate of fire spread upslope approximately doubles for every 10 degrees of slope. Consequently, greater distances may be required between key assets and vegetation when building on a slope.

Aspect is the direction that a feature, such as a building or slope, faces. Northern and westerly aspects usually receive more sun and will therefore usually be warmer and drier and tend to burn more easily than other aspects.

Topography can also influence how the wind behaves. As wind passes over an object, such as a hill or windbreak, the wind can tumble, creating turbulence. Wind turbulence produces erratic winds, causing unpredictable fire behaviour.

Valleys and gullies can channel and strengthen winds, increasing the rate of spread of a fire and its intensity.

Be aware of local wind conditions. New landowners should ask neighbours and previous owners about local winds when planning fire management on their property.

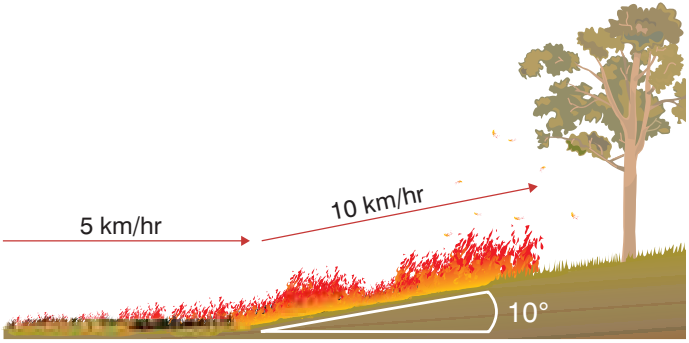

Figure 5: The effects of slope

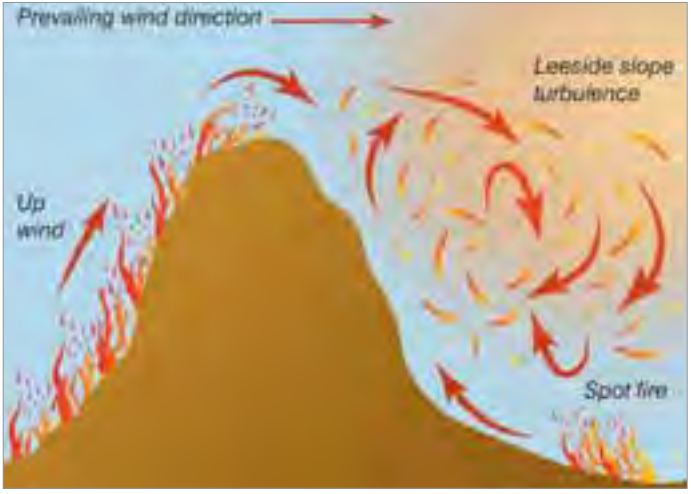

Figure 6: Wind turbulence

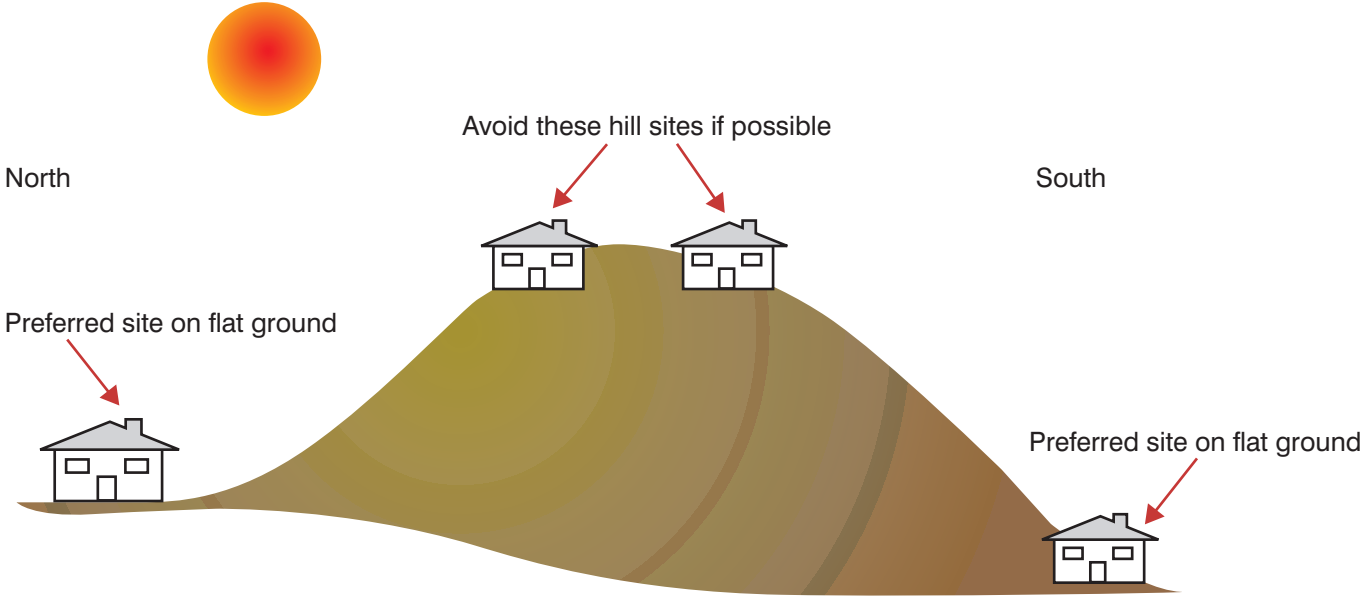

Figure 7: Locating a building in hilly country

2. Fire management planning process

Fire management planning

Effective fire management is a continual process that involves:

- planning for fire safety;
- implementing these plans;
- checking that what was planned has been done and is effective; and
- reviewing and changing these plans when necessary.

This type of continual process (see Figure 8 and Property fire management plans, page 31) occurs both at a property scale and at a larger public scale. Both scales are important to secure fire safety across the rural landscape.

Government authorities undertake fire management planning as part of their responsibility for public safety and to support communities and industries. This includes developing and implementing plans and documents such as municipal and regional fire prevention plans and the *Code of Practice for Fire Management on Public Land* (DSE 2006).

Figure 8: The continuous improvement cycle

At a property level, fire management may range from developing and undertaking simple unwritten plans to more complex documented plans, depending on the risks present.

Rural landowners and managers are encouraged to have a written plan so that it is easier for them to consider fire risk issues on their property and to communicate these issues to others.

Risk management

The concept of risk management underpins all decisions in fire management. It involves identifying fire risks and balancing the likelihood of a fire against the consequences should one occur. For example, while an event like a fire may be unlikely to happen, its consequences can be major or even catastrophic. Consequently, plans are needed to minimise risk.

When planning fire management, it is important to think about economic, environmental and social risks (risks to people). The impact of both fire prevention activities and fire itself can affect safety, the environment and the long-term sustainability of a property.

Property fire management planning process

Step 1: Plan

Identify and assess risks

- Identify what the plan is trying to achieve.
- Identify key assets and key fire safety risks, including those from adjacent properties and features.
- Consider other risks such as economic, environmental and legal risks.
- Assess whether the risks identified are relevant and/or significant to the property by considering the likelihood and consequences of these risks happening.

Plan to minimise risk

- Select treatments that minimise the identified risks.
- Include consideration of safety, environmental and economic issues and the long-term sustainability of the property and/or enterprises, with safety as a priority.
- Consider impacts on adjacent properties and features.
- Consider it may not always be possible to protect all assets from fire or have fire suppression services available.
- Consult and work with adjacent public and private landowners, managers and land users to achieve fire safety benefits for all involved.
- Locate fire management works for the property within the property boundary, unless they are part of a cooperative approach, to ensure they are there when they are needed.

Plan for recovery

- Plan for recovery issues, such as insurance, weed problems, the long-term sustainability of the property and enterprises.

Step 2: Do

Implement the plan

- Implement the property fire management plan. A written plan will help to consider and communicate fire risks.

Step 3: Check

Check the plan

- Check that the fire management works have been undertaken, are still effective and have not had unintended consequences.

Step 4: Review

Review the plan

- Review the plan regularly to ensure that it is still current and effective. It should also be reviewed when beginning new enterprises, undertaking a substantial change in existing enterprises, or changing the property layout or infrastructure, such as sheds or fences.

3. Fire management concepts

The following concepts are important to consider when planning fire management. The detail to support these concepts in contained in Section 3 of this document.

Stay and defend or leave early

Most houses can survive a fire front if the building and surrounding area are well prepared and actively defended by suitably equipped people.

The decision to stay and defend a property or leave early is a decision that shapes fire management planning on most rural properties.

CFA recommends that where people decide to leave their homes they should do so before a fire threatens and road travel becomes hazardous.

Under Victorian law, residents have the right to decide for themselves if they will stay with their property in a wildfire if they have a pecuniary (financial) interest in the property.

However, once people have left their property, or if they are away from home at the time of the fire, they may be prevented from returning by the police.

- *Living in the Bush (CFA 2004)*
- *Advice to the Community Before and During a Wildfire (CFA 2006)*

Defendable space

Given the importance of key assets, such as homes and sheds, it is important to plan fire management to help minimise the risk that they will be affected by fire. An important part of this is maintaining a defendable space around these important features.

Figure 9: Cleaning up to create a defendable space

Defendable space is an area surrounding a building that is managed to have significantly reduced continuous vegetation or other fuels (see Vegetation management, page 35).

Carefully managing the vegetation in this space limits the ability of a moving fire to ignite a building through flame contact or radiant heat. Defendable space also provides a relatively safe area from which to defend buildings from ember attack.

A number of factors, including design, materials and construction, siting, slope and vegetation type, influence the amount of defendable space required.

Defendable space = inner zone + outer zone.

The inner zone is an area with low fire fuel for approximately 10 m from buildings (see Figure 10). This reduces the risk of ember attack, radiant heat and direct flame contact.

The outer zone is an area where fuels, such as vegetation, are carefully managed to a width of approximately 20 m to 85 m past the inner zone, depending on such factors as topography and vegetation type.

Sometimes it is not practical or responsible to defend a property or to have the distances suggested for defendable space. Options are available to reduce the amount of vegetation clearance required to obtain the required fire protection. Permits may also be required to remove native vegetation in some circumstances.

- *Building in a Wildfire Management Overlay Applicants Kit (CFA 2002)*

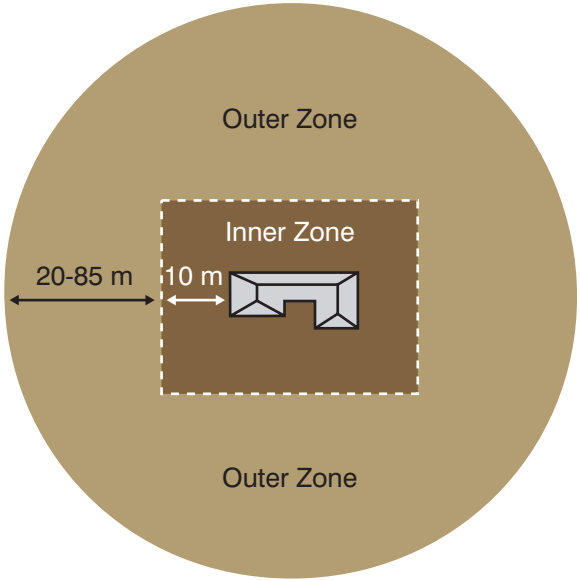

Figure 10: Defendable space

Protecting the environment

To help secure the long-term sustainability of a property, all fire management planning needs to include consideration of fire safety, legal requirements, economic and environmental issues.

Protecting and improving the environment is an important part of sound fire management planning (see Environmental protection, page 36). This is increasingly being recognised in the management of rural land. For example, fire management is often part of agricultural quality assurance systems.

Looking after the environment when undertaking fire management includes:

- identifying environmental assets (air, water, land and vegetation) and how they might be affected by fire and fire management activities;
- avoiding environmental harm;
- minimising harm where it cannot be avoided;
- repairing environmental harm if it occurs; and
- considering the use of fire to improve the health of native vegetation (ecological burning).

Care needs to be taken to ensure that fire management does not cause unintended consequences such as a loss of vegetation, wildlife and scenic quality, weed invasion, erosion and water quality problems.

As part of helping to protect the environment, permits are often required to remove native vegetation. There are some exemptions for fire safety. More information about these permits and exemptions is available at local councils.

Sometimes fire management can have both fire safety and environmental benefits. The wick wiper machine pictured below is used to apply herbicide to taller introduced grasses (such as phalaris) leaving shorter native grasses (such as kangaroo grass) that have a lower fuel load.

Figure 11: A wick wiper used to wipe herbicide on tall grasses for environmental and fire safety benefits

Fire danger terms

The following terms are commonly used when considering fire safety issues.

Total Fire Bans

Total Fire Bans are declared on all land (both public and private land) in different districts in Victoria on days when the fire danger is extremely high. The use of fire during a Total Fire Ban is very restricted and needs a special permit. Any normal permits already issued are suspended.

Fire danger rating

Fire danger refers to how difficult a fire will be to control given certain weather and fuel conditions. Fire danger is expressed as a Fire Danger Index.

Because they burn differently, separate fire danger rating systems have been developed for forests and grasslands. Fires in extreme fire danger conditions are very difficult to control, even by well-equipped firefighters.

The likelihood of a fire being successfully suppressed depends on the tools and people available and the weather and fuel conditions. Even where the fire danger rating is moderate, a fire will still be difficult to control without enough people and adequate firefighting equipment.

- *Grassfires: Fuel, Weather and Fire Behaviour (Cheney and Sullivan 1997)*
- *Bushfires in Australia (Luke and McArthur 1978)*

Fire danger information is available from the Australian Bureau of Meteorology website for all Victorian districts during the Fire Danger Period. Follow the prompts to all Victorian forecasts and then select bushfire danger.

- *Australian Bureau of Meteorology website (www.bom.gov.au)*

Fire Danger Period

The Fire Danger Period is declared each summer in each municipality and stays in place until May 1, unless otherwise stated. During this time there are restrictions on fire use in the open and the operation of machinery and equipment.

In Fire Protected Areas, including state forests, national parks, protected public lands and other reserves, fire restrictions remain in place all year.

In some areas, land within 1.5 km of a Fire Protected Area (marginal mile) is also in the Fire Protected Area. Fire restrictions on this land are declared every year depending on the fire risk present. The Department of Sustainability and Environment and Parks Victoria offices can provide more information on Fire Protected Areas.

Figure 12: Fire danger meter

Figure 13: Total Fire Ban Districts

4. Fuel breaks

The use of fuel breaks is often an important part of fire management on rural properties. Fuel breaks are any natural or constructed breaks in fuel used to stop or control the spread of wildfire.

There are different types of fuel breaks. Some stop fire spreading horizontally at or near ground level; others stop fire spreading vertically into trees. An understanding of the likelihood of a fuel break being effective is an important part of planning fire management.

The effectiveness of fuel breaks

The effectiveness of fuel breaks depends on the weather conditions at the time, the width of the break and whether embers are being produced.

In grasslands, wider fuel breaks will stop a greater range of fires than narrow ones. Narrow breaks (under 3 m) are ineffective except under the mildest of conditions.

Most fuel breaks can have some effect at slowing the progress of a fire, in particular if the break:

- is close to the source of fire ignition so that the fire has not built to its maximum potential;
- is approached by the side (flank) of the fire, because the flank has lower fire intensity than the front (head) of the fire;
- effectively disrupts the vertical and/or horizontal continuity of the fuel, thereby reducing fire intensity and making the fire easier to suppress; or
- provides access for suppression.

Figure 14: Fuel breaks are less effective with trees nearby

Figure 15: Fuel breaks can be effective if embers cannot cross the break

Types of fuel breaks

Bare earth breaks

Bare earth breaks:

- can be ploughed, graded, burnt and/or sprayed to ensure they are clear of fuel;
- may stop a fire under low fire danger conditions without anyone being present to fight the fire;
- will behave more like slashed breaks if there is some fuel left sitting on the surface. Fire will often move across slashed or mown breaks unless someone actively puts it out;
- are less effective if nearby trees are producing embers that can be blown across the break; and
- may require a permit if they remove native vegetation.

◆ *Grassfires: Fuel, Weather and Fire Behaviour (Cheney and Sullivan 1997)*

Fuel reduction burning

Properly conducted fuel reduction burning can be effective in providing a fuel break. Fuel reduction burning should only be carried out with appropriate permits, with consideration of environmental issues and by people with experience in burning operations.

Slashing and mowing

Slashing and mowing are common ways to reduce fire hazards. The rate of fire spread in dry slashed grass is about the same as in dry standing grass. However, the flame height is approximately halved in the slashed grass, making a fire in slashed grass easier to control.

Figure 16: Crop that has been cut and baled, providing hay and a fuel break

Vertical breaks in timbered areas

In plantations and farm forestry, gaps can be made in the vertical continuity of fuel by pruning, slashing, bark management and careful selection and placement of shrubs. This minimises the risk of fire moving to the crowns of trees, thereby reducing the risk of embers being produced. Crown fires are intense and difficult to suppress.

Bark that is a fire risk can be managed to reduce this risk. Long ribbon bark can sometimes be simply removed from the tree.

Figure 17: In some plantations pruning lower branches can have production and fire safety benefits

The bark of some trees can be burnt to reduce the risk of embers spotting and to reduce the risk of fire travelling from the surface to the crowns of trees. Seek specialist advice before burning or removing bark.

While fuel breaks inside timber plantations and farm forestry plantations can limit the spread of a low-intensity fire and the spread of the sides of higher-intensity fires, they might increase the fire activity near these gaps by increasing the speed of the wind near these gaps.

Despite these limitations, internal breaks in timber plantations and farm forestry plantations are still useful to help access fire when it is small and to assist in fire control.

Herbicide use

Herbicide can be used to create a fuel break. This could be a bare earth break or a break where dry fuel is still present but the fuel load has been reduced.

Herbicide can also be used to reduce fuel loads to make fuel reduction burning safer and to keep fences, including electric fences, clear of weeds and grass.

The most effective time to apply herbicide is in early spring before grasses and weeds have grown. Take care with the use of herbicides that weeds do not become herbicide resistant.

- *Code of Practice for Farm Chemical Spray Application (DNRE 1999)*

Section 3
Fire Management Advice

Using this section

This section provides practical advice for planning and undertaking fire management on rural properties, with additional advice for fire management on grazing, cropping, and timber plantations.

This additional advice is indicated by the following symbols. Where there is no symbol used the advice being provided applies to all properties.

Cropping 

Grazing 

Timber plantations 

Figure 18: Breaks in farm forestry for fire access

Questions to consider

This list can be used as a prompt to consider fire safety issues and assist in the preparation of property fire management plans. More detail is provided in this section on the pages indicated in the following tables. Responses to these questions could be 'Yes', 'No', 'Unsure', or that the question is 'Not Relevant' to the property being considered.

	All				Achieving Objective 1 – Planning	Response
1. Personal safety	page 30				a. Have you planned for the fire safety of people living on, working on, or visiting this property?	
	30				b. Do you have the necessary communication equipment available?	
	30				c. Are you prepared when fighting fires on your property or other properties?	
2. Property fire management plans	31				a. Do you have a fire management plan for your property?	
	31				b. Does your property have special needs to be identified in a relevant CFA brigade plan?	
	31				c. Do you plan for the long term by considering future fire risks, such as when trees have fully grown?	
				31	d. Are you aware of the relevant codes of practice or permits needed to establish a plantation?	

	All				Achieving Objective 1 – Planning	Response
3. Recovery planning	page 32				a. Have you considered how people and your property can recover after a fire?	
		32			b. Have you planned how your pasture should be managed after a fire?	
		32			c. Have you considered the care of stock if your property is affected by fire?	
4. Property and building design and maintenance	34				a. Is fire safety a part of the layout and building design of your property?	
	34				b. Is your property in a Wildfire Management Overlay or Bushfire Prone Area?	
	34				c. Do you have a maintenance program to protect your property against fire?	
5. Vegetation management	35				a. Is vegetation kept away from key assets and buildings?	
	35				b. Is fire safety considered when selecting plants for your property?	
6. Environmental protection	36				a. Is consideration of environmental risks and benefits part of planning fire management on your property?	
	36				b. Are you aware of the need for a permit to lop, destroy or remove native vegetation?	
	36				c. Would you like to know more about ecological burning and whether it is relevant to your property?	

	All				Achieving Objective 2 – Prevent fires starting	Response
7. Operating vehicles, machinery and equipment	page 37				a. Would you consider stopping high-risk fire activities at times of extreme fire danger?	
	37				b. Do you stop and check when operating machinery and equipment?	
	37				c. Have you minimised the risk that your vehicles and motorbikes will start a fire?	
	37				d. Are you aware of what is required to operate machinery during the Fire Danger Period?	
	38				e. Are you aware of what is required to operate equipment during the Fire Danger Period?	
	38				f. Are you aware of the restrictions on operating some equipment during a Total Fire Ban?	
			39		g. Have you considered stopping harvesting at times of extreme fire danger?	
		39			h. Do you protect hay from the exhaust systems when carting and cutting hay?	
				39	i. Is timber harvesting scaled back or stopped when the fire danger rises?	
8. Using fire safely	40				a & b. Do you plan ahead and consider safety and smoke issues when using fire?	
	40				c. Does your local council have requirements for, or restrictions on, using fire on your property?	

	All				Achieving Objective 2 – Prevent fires starting	Response
9. Fire use regulations	page 41				a. Do you know what Total Fire Ban District your property is in?	
	41				b. Do you know what is required when using fire during the Fire Danger Period?	
	42				c. Is your property in a Fire Protected Area? Do you know what is required when using fire in these areas?	
	42				d. Do you burn rubbish and use an incinerator safely?	
	43				e. Do you know what is required to use fire safely outside the Fire Danger Period?	
10. Fire prevention issues	44				a. Do you know what fire prevention notices are?	
	44				b & c. Are there private powerlines and electric fences on your property? Are they maintained for fire safety?	
	44				d. Do you store fuel, chemicals and gas correctly?	
	45				e. Do you minimise fire risk in large compost and manure heaps?	
				45	f. Do you have smoking and public access policies for your plantation?	
		45			g. Do you locate and store hay to minimise fire risk?	

	All				Achieving Objective 3 – Limit fires spreading	Response
11. Fuel breaks	page 46				a. Do you know what permits may be required when creating fuel breaks?	
	46				b. Do you have perimeter breaks? Where required, do these incorporate an access track?	
	46				c. Does your property require, and if necessary have, internal fuel breaks?	
	46				d. Have you included existing features, such as water bodies, as fuel breaks in your fire management plan.	
	46				e. Do you have fenced off areas that need fire management?	
	47				f. Do you have fuel management in planted timber areas to minimise the risk of fire spreading?	
				47	g. Have you incorporated fuel breaks into your plantation?	

	All				Achieving Objective 3 – Limit fires spreading	Response
12. Reporting and extinguishing fires	page 48				a. Do you know your responsibilities to report and extinguish fires?	
13. Fire suppression	49				a. Do you have adequate equipment to stop the spread of fire on your property?	
	49				b. Do you have a plan for how to respond to a fire on your property?	
				49	c. Are you required to form, or be part of, a Forest Industry Brigade?	
				49	d. Do you have a preparedness and response plan for your plantation?	

	All				Achieving Objective 4 – Access	Response
14. Building and property access	page 50				a. Is there adequate tanker access to and around your buildings and property?	
	50				b. Are your access tracks suitable for CFA tankers?	
	51				c. Are gates to be used for CFA tanker access at least 3 m wide?	
	51				d. Do you have fire access breaks in planted timber areas?	
	51				e. Are your crossing points for tankers capable of bearing a load of at least 15 tonnes?	
				51	f. Is there adequate access for firefighting on your plantation?	
			51		g. Is there adequate access for firefighting around your raised bed crops?	
15. Water supply access	52				a. Is there an adequate and identified firefighting water supply for your property?	
	52				b. Is there an adequate and identified firefighting water supply for your buildings?	
	53				c. Do you have CFA compatible fittings on your tanks?	

	All				Achieving Objective 5 – Community groups	Response
16. Community groups	page 54				a. Have you considered joining your local CFA and/or becoming involved in other fire awareness groups?	
	54				b. Would you consider raising fire safety issues with other groups?	

Figure 19: Community group

1. Personal safety

The most important aspect of fire management is the safety of people.

a. Bushfire survival plan

While all individuals have a responsibility for their own safety, landowners and managers have an additional responsibility for the safety of people living on, working on and visiting their property and are encouraged to develop a bushfire survival plan (see Stay and defend or leave early, page 12).

During wildfire, a significant threat to personal safety is radiant heat. Radiant heat cannot penetrate through solid objects, so the best way to avoid the dangers of radiant heat is to shelter inside a building as the fire front passes. You are also advised to wear appropriate protective clothing made of natural fibres.

Radiant heat from fire kills people who are caught out in the open. Often the people most at risk are those who undertake last-minute actions, such as moving livestock.

When working in locations without easy access to buildings or homes, people are encouraged to have a fire blanket, suitable wire cutters, water and a simple plan about where they would shelter if they were caught in a wildfire. Cars do not provide adequate shelter from radiant heat; however, sheltering in a car is better than being caught without any shelter at all.

- *Living in the Bush (CFA 2004)*
- *Radiant Heat (CFA 1998)*
- *The Complete Bushfire Safety Book (Webster 2000)*
- *The Australian Bushfire Safety Guide (Schauble 2004)*

b. Maintaining communication

For safety reasons, it is important for those working on rural properties to stay in contact with others. Individuals are encouraged to carry communication equipment, such as a UHF radio or mobile phone, when undertaking any farming activities and to tune to ABC Radio or a relevant local radio on days of high fire danger.

c. Private firefighting

People are advised to be well prepared when undertaking private firefighting activities.

- *Guidelines for Operating Private Equipment at Fires (CFA 2004)*

2. Property fire management plans

Landowners and managers are advised to develop and implement an effective property fire management plan that identifies and addresses fire risks present on their property, including how to respond to and recover from a fire.

a. Typical plan contents

A property fire management plan should include plans for personal safety, fire prevention, asset protection, fire suppression and recovery from fire (see Fire management planning process, pages 10 and 11).

- *Living in the Bush (CFA 2004)*
- *Environmental Best Management Practice on Farms (DPI 2006)*
- *Roadside Fire Management Guidelines (CFA reprinted 2005)*

b. Identifying special needs

Landowners and managers with special requirements for fire suppression on their property, such as organic farms, are encouraged to contact their regional CFA office and ensure that their requirements are entered into CFA brigade plans.

- *Class A Foam, Wetting Agent and Your Property (CFA 2003)*

c. Planning for the long term

Fire management needs to be planned for the long term to be effective.

Each stage of a pasture, crop or plantation will have different fuel load and different fuel arrangement characteristics. Plan for the stage where the fuel hazard will be greatest. For example, plan ahead to minimise the fire risk when trees or crops have fully grown.

d. Plantation establishment

In accordance with legislation, commercial forests on private land must be established and harvested in accordance with the *Code of Forest Practices for Timber Production* (DSE 2006).

When establishing new plantations, landowners and managers are encouraged to contact their local council about planning scheme requirements, such as permits, setbacks from dwellings and buildings, and plantation development notices.

3. Recovery planning

Planning for recovery is an important part of minimising the impact of fire. The period following a fire can be difficult, but it can also provide an opportunity to implement change.

a. Recovery planning

Landowners and managers are encouraged to plan for recovery as part of an overall plan for fire management on their property (see Fire management planning process, pages 10 and 11).

Issues to consider in recovery plans include:

- the welfare of people;
- weed management, erosion control, environmental issues;
- stock management;
- insurance needs (personal and business); and
- possible changes to fencing, sheds and property layout and enterprises.

A number of organisations provide assistance before and after a fire has happened:

- Local councils coordinate the recovery of the community after fire. They are often the initial contact point for recovery issues.
- The Department of Human Services assists in meeting the welfare needs of people.
- The Department of Primary Industries provides technical agricultural advice before and after a fire.
- The Department of Sustainability and Environment provides environmental advice.

b. Pasture management

Landowners and managers are encouraged to plan ahead to manage pasture after fire.

- *Pasture Recovery after Fire (Agriculture Note, DPI 1995)*

c. Stock management plan

Have a low-fuel area for stock during a wildfire situation. This could be a grazed or green paddock or a grazed laneway. Consider having a central laneway to manage stock and move them before fire threatens. Consider trucking out important stock where practical.

Plan a containment area where stock can be fed after a fire. This reduces the risk of weed spread across the property. Monitor this area for weeds.

- *Horses and Bushfires (Agriculture Note, DPI 1999)*
- *Living in the Bush (CFA 2004)*

Figure 20: Plan ahead to protect key assets such as stock

4. Property and building design and maintenance

Careful property layout and building design can provide long-lasting fire safety benefits.

a. Property layout and building design

Consider property layout to minimise the chance that fire will impact on key assets.

A key step in maximising the chance that buildings, such as houses and sheds, will survive a wildfire is to minimise the impact of embers. This may involve such ideas as creating a defendable space around buildings (see Defendable space, pages 12 and 13) and ensuring that there are no gaps between the shed cladding and the ground or slab to prevent embers entering sheds.

Consider using windbreaks to slow wind approaching key assets and to catch embers before they reach these assets. Use vegetation in the windbreaks that produces a minimum of embers.

- *Landscape and Building Design for Bushfire Areas (Ramsay and Rudolph 2003)*
- *The Australian Bushfire Safety Guide (Schauble 2004)*
- *The Complete Bushfire Safety Book (Webster 2000)*
- *Living in the Bush (CFA 2004)*

b. Building in high fire risk areas

Buildings in a Wildfire Management Overlay or Bushfire Prone Area have special building requirements to protect them from fire. Contact local council for more information on this issue.

- *Building in a Wildfire Management Overlay Applicants Kit (CFA 2007)*
- *AS 3959-1999, Construction of Buildings in Bushfire-Prone Areas (Standards Australia 1999)*
- *Building in Bushfire-Prone Areas: Information and Advice (Ramsay and Dawkins 1993)*
- *Property Bushfire Preparation and Native Vegetation Management Case Study (CFA 2004)*

c. Maintenance

Good building and property design is only effective if it is supported by good maintenance. Maintain low fuel loads around buildings and assets by managing vegetation (see Vegetation management, page 35) and locating items such as woodpiles or old tyres away from these assets.

- *Living in the Bush (CFA 2004)*

5. Vegetation management

Vegetation (trees, grasses and shrubs) is an important asset on all properties. Management of vegetation on the property can have fire safety and environmental benefits.

a. Managing vegetation

Protect assets by reducing fuel loads around house blocks and sheds. Protect fences from radiant heat and direct flame contact by keeping them free of vegetation and weeds.

Landowners and managers are advised to:

- keep dense stands of shrubs away from the inner zone, which is 10 m around buildings (see Defendable space, pages 12 and 13);
- use low fire fuel options, such as green lawns, paving and pebble mulch near buildings;
- consider having clumps of vegetation rather than continuous vegetation; and
- design vegetation layout near buildings so that fire is not funnelled towards key assets.

- *Landscape and Building Design for Bushfire Areas (Ramsay and Rudolph 2003)*
- *The Australian Bushfire Safety Guide (Schauble 2004)*
- *The Complete Bushfire Safety Book (Webster 2000)*
- *Living in the Bush (CFA 2004)*

b. Selecting vegetation

To protect the long-term value of property, consider planting vegetation that regenerates or reshoots after a fire.

It is difficult and complex to suggest specific plants for fire safety because the way a plant burns depends on such issues as how old it is, how well watered and managed it is, and what is growing nearby.

It is suggested that plants that burn easily and produce embers be located away from buildings. This includes plants that:

- create dry, dead debris;
- have loose flaky bark;
- have a lot of fine leaves, particularly if they are continuous from the ground up; and
- have very low moisture content.

While some plants may burn more readily than others, under the right conditions all plants will burn. Consequently, do not rely solely on plants being fire resistant for fire safety.

6. Environmental protection

As part of a fire management plan, consider how to protect the property from environmental damage and promote environmental assets, such as native vegetation (see Protecting the environment, page 14).

a. Environmental planning

Landowners and managers are encouraged to:

- identify environmental assets that require protection from wildfire or from fire management works, such as fuel-reduction burning. This may include such areas as waterways, habitat for native fauna, and revegetation sites;
- ensure that fire management works do not result in large areas of bare ground that may cause erosion and encourage the growth of weeds;
- remove weeds that have high fuel loads for fire safety and environmental benefits;
- minimise soil disturbance around trees to protect the health of trees;
- consider protecting trees with hollows that are habitat for native fauna;
- where necessary, rehabilitate areas as soon as possible after a fire or after undertaking fire management works;
- seek approvals and permits where required; and
- seek advice on how to improve environmental assets on your property.

b. Native vegetation removal

Native vegetation is an important asset on most rural properties. Sometimes native vegetation needs to be managed or removed for fire safety reasons.

In accordance with legislation, a planning permit is required to remove, lop or destroy native vegetation unless an exemption applies. Contact local councils for more information on these exemptions.

- *Native Vegetation Removal, Section 52.17, Victorian planning schemes*

c. Ecological burning

When used in appropriate cycles, fire is a powerful tool that can be used to promote the health of native vegetation. This is called ecological burning.

- *Fire and environment information on Department of Sustainability and Environment website (www.dse.vic.gov.au)*

7. Operating vehicles, machinery and equipment

Anyone operating vehicles, machinery and equipment has a responsibility to ensure that they do not start a fire.

a. Extreme fire danger days

Consider fire risk before harvesting, grinding and welding, slashing and mowing, or driving vehicles and motorbikes through dry grass or crop. Driving vehicles with catalytic converters through dry grass and crops is particularly hazardous.

b. Checking for fire risks

Anyone operating vehicles, machinery and equipment is encouraged to take regular breaks to check such items as straw or grass build-up and hot bearings and to regularly look behind for fire. Operators are encouraged to check that machinery and equipment will not start a fire before leaving them unattended.

c. Vehicles and motorbikes

In accordance with legislation, vehicles and motorbikes propelled with an internal combustion engine must not contact any type of vegetation during the Fire Danger Period (including days of Total Fire Ban) unless they are fitted with a system that takes all of the exhaust from the engine through the silencing system.

- *CFA Act 1958, s50*

d. Machinery

In accordance with legislation, machinery incorporating a heat engine operating during the Fire Danger Period (including days of Total Fire Ban) in contact with, or within 9 m of, crop, grass, stubble, weeds, undergrowth or other vegetation must:

- be free from faults and defects that could cause fires;
- be fitted with a working and maintained appropriate spark arrestor (except if fitted with a turbocharger or an aspirated exhaust air cleaner); and
- carry a working water fire extinguisher or knapsack of at least 9 litres capacity.

- *CFA Act 1958, s50*
- *CFA Regulations 2004, r.109*
- *Can I Can't I (CFA 2006)*

In addition to water required under legislation, people are encouraged to carry a dry chemical fire extinguisher on machinery that is suitable for A class fires (normal combustible materials), B class fires (fuels and other flammable liquids) and electrical fires.

e. Equipment

In accordance with legislation, equipment incorporating non-vehicle heat engines should only be used in the open if it is fitted with a spark arrester, except if the equipment is being used to cut green vegetation.

Non-vehicle heat engines operating in the open during the Fire Danger Period must also have:

- an area around the heat engine clear of flammable material for a radius of at least 3 m; or
- a person in attendance at all times the heat engine is operating (unless operating with a special exemption); and they have a working water fire extinguisher or knapsack of at least 9 litres capacity.

While this equipment can be used on days of Total Fire Ban, consider postponing this work.

- *CFA Regulations 2004 r.110*
- *Can I Can't I (CFA 2006)*

f. Cutting, welding and grinding equipment

In accordance with legislation, cutting, welding, soldering and grinding type of equipment can be used during the Fire Danger Period provided that:

- a fire-resistant shield or guard is placed to stop sparks and hot material;
- an area of at least 1.5 m from the operation is clear of flammable material or wet down enough to prevent the spread of fire;
- there is a water supply or an effective water knapsack of at least 9 litres capacity available for immediate use; and
- cut-offs and electrode stubs are placed directly in a fireproof container.
- *CFA Act 1958, s38A(c)*

In accordance with legislation, cutting and welding equipment that produces fire and heat, such as welders, gas cutting, soldering, grinding or charring equipment, cannot be used on days of Total Fire Ban in the open air without a special permit obtained from CFA regional offices.

- *CFA Act 1958, s40*

g. Grain harvesting

Harvesting is a high fire risk activity that requires particular care. As part of helping to protect the community from fire consider avoiding harvesting at times of extreme fire danger.

Anyone harvesting is encouraged to have access to private firefighting equipment during harvesting operations in addition to that required under legislation.

h. Hay cutting and carting

Consider the fire risk conditions present when cutting hay. Anyone carting hay is encouraged to have a fire-resistant cover on the load or have a spark shield behind the exhaust.

Alternatively, have an exhaust system that is located under the body of the vehicle to ensure that the exhaust emissions are away from the hay.

Figure 21: Crop harvesting

i. Harvesting timber

In accordance with the *Code of Forest Practices for Timber Production* (DSE 2006), timber harvesting is required to be based on a Timber Harvesting Plan. This plan may include fire protection restrictions.

Consider scaling down harvesting operations when the Forest Fire Danger Index increases above 30 in hilly country and above 45 on flat land.

8. Using fire safely

Fire is a normal part of farming activities. The safe use of fire is encouraged.

a. Planning fire use

Before burning, anyone using fire is encouraged to:

- be clear about what the burning will achieve;
- identify risks and how they will be managed;
- ensure that weather conditions are and will remain safe for burning;
- have fuel breaks to contain the fire;
- have sufficient resources on hand to control the fire;
- obtain permits to burn (see Fire use regulations, pages 41 to 43) and/or remove native vegetation where necessary;
- notify VicFire (see VicFire burnoff notifications options, page 62) and neighbours if required, or if the burning may affect them; and
- seek advice on fire safety, flora and fauna, and weed management issues.

After using fire, people are encouraged to:

- check to ensure that the fire is completely out;
- monitor the site for fire over the next few days; and
- where necessary, rehabilitate the burn site or control lines as soon as practical.

◆ *Synopsis of the Knowledge Used in Prescribed Burning in Victoria (DNRE 1999)*

It is an offence to intentionally or recklessly cause a fire and recklessly allow a fire to spread to vegetation on another person's property.

◆ *Crimes Act 1958, s201A*

b. Smoke management

Anyone using fire is required to consult with the relevant road authority (council or VicRoads) if the proposed burning may impact on road safety.

Anyone using fire is encouraged to minimise the impact of smoke on air quality by burning when the fuel is dry and when the wind will not blow smoke towards neighbours, towns or settlements.

c. Local council permits

Local government often has local laws regarding lighting fires and burning rubbish in their municipality, especially near townships or in built-up areas.

Landowners and managers are encouraged to check with their local council about local laws regarding the use of fire in their area.

9. Fire use regulations

Regulations about the safe use of fire help keep the community safe from unplanned fire.

- *Can I Can't I (CFA 2006)*

a. Total Fire Ban days

In accordance with legislation, where a Total Fire Ban applies, it is an offence to:

- light a fire in the open air;
- allow a fire in the open air to remain alight; or
- use or leave in operation any producer-gas equipment on or in connection with any vehicle.

There are restricted exemptions to these requirements and for fires with a special permit. Contact CFA for more information on these exemptions.

Any permits issued for the general Fire Danger Period by a municipal fire prevention officer are automatically suspended on Total Fire Ban days.

- *CFA Act 1958, s40*

See page 16 of this document for a map of Total Fire Ban Districts.

b. Lighting a fire in the Fire Danger Period

In accordance with legislation, fires can only be lit in the open in the Country Area of Victoria during the Fire Danger Period provided:

- a permit for the fire has been issued by a municipal fire prevention officer;
- the conditions of that permit are complied with; and
- a person is in attendance at all times while the fire is alight.

- *Schedule 12 permit for brigades to burn including on behalf of individuals*
- *Schedule 13 permits for individuals to burn*

A special Schedule 14 permit is required from CFA regional headquarters for a fire that is likely to burn beyond dawn to dusk on any one day.

There are a number of exemptions to the requirement to have a permit for lighting a fire in the Fire Danger Period. These relate to using fire for cooking, campfires, incinerators and certain trade-related activities.

Anyone with a permit to burn is required to notify VicFire before undertaking the burning activity (see Vicfire burnoff notifications options, page 62).

- *CFA Act 1958, s37, 38, 39*

c. Lighting a fire in a Fire Protected Area

In accordance with legislation, a permit is needed from the Department of Sustainability and Environment during the Prohibited Period (see Fire danger terms, page 15, and the Glossary, page 57) to light a fire in Fire Protected Areas.

Fire Protected Areas are parks and forests managed by the Department of Sustainability and Environment and some land within 1.5 km of this public land (see Glossary, page 56).

However, a permit is not usually required for such activities as campfires and barbeques if they meet the requirements outlined in the relevant regulations. Contact the Department of Sustainability and Environment for more information.

- *Forests (Fire Protection) Regulations 2004*

d. Burning rubbish in the Fire Danger Period

In accordance with legislation, a fire can only be lit in an incinerator during the Fire Danger Period without a permit if:

- the fire is restricted to the incinerator;
- the air movement is no stronger than 10 kph;
- the area 3 m around and above the incinerator is cleared of flammable material;
- a supply of water sufficient to extinguish the fire is available; and
- a person is in attendance at all times while the fire is alight.

- *CFA Act 1958, s38A(b), 39*

Before burning rubbish at any time of the year, check that there are no local council requirements or restrictions and consider whether there are better alternatives, such as recycling or disposal at a registered landfill. Some local councils do not permit incinerators to be used in some areas at all.

e. Lighting a fire outside the Fire Danger Period

In accordance with legislation, outside the Fire Danger Period a person must not:

- light or use fire in the open air or carry lighted flammable material that destroys, damages or endangers the life or property of others; or
- leave a fire in the open air that they have lit or are in charge of without leaving another person in charge of the fire, unless:
  - a landowner or occupier (or someone acting under their direction) is burning flammable material on their land; and
  - there is a firebreak of not less than 3 m and cleared of all flammable material around the perimeter of the area of land; and
  - at least 2 hours' notice is given to adjoining landowners or occupiers.

◆ *Summary Offences Act 1966, s11*

Anyone lighting a fire that is likely to come to the attention of the fire service is encouraged to notify VicFire before undertaking the burning activity (see VicFire burnoff notification options, page 62).

Figure 22: Using fire for property management

10. Fire prevention issues

Preventing fires starting is an important part of fire safety for individuals and the community.

a. Fire prevention notices

In accordance with legislation, landowners and managers are required to undertake any fire prevention activities directed in a fire prevention notice. These notices are issued by local council municipal fire prevention officers.

- *CFA Act 1958, s41*

There are rights to appeal a fire prevention notice. However, an objection to the notice must be lodged in writing to the authority issuing the notice within 7 days or this appeal is no longer available.

b. Powerlines

In accordance with legislation, landowners and managers need to ensure that private powerlines are maintained in sound condition and that they are clear of vegetation. Detailed information on these requirements can be found by contacting Energy Safe Victoria or visiting its website and following the links to bushfire.

- *Energy Safe Victoria (www.esv.vic.gov.au/community/platrees.html)*
- *Electricity Safety (Electrical Line Clearance) Regulations 2005*
- *Fire Hazard Ratings for the Electricity Safety Act 1998 (an interactive DVD-ROM produced by CFA, Metropolitan Fire Brigade and Energy Safe Victoria) 2006.*

c. Electric fencing

Electric fences can cause fires. This generally occurs when sparks jump from one wire to another in the presence of dry vegetation.

Ensure electric fences are free of wire, grass, weeds and other vegetation. Operate electric fences according to manufacturers' advice. It is a common practice to switch off electric fences at times of extreme fire danger.

d. Dangerous goods

Landowners and managers are advised to store fuel and chemicals away from vegetation and key assets in tanks or containers that are in good condition. This will minimise the risk of fire starting in, or spreading from, these areas.

Consider how fuel spillage can be controlled so that it does not pollute land or waterways.

Consider minimising the risk associated with dangerous goods by minimising the amount of these items being stored on rural properties.

Turn gas supplies off if the property is threatened by a fire.

Store and install gas cylinders in a protected location, upright on a firm surface with pressure relief valves (or venting valve) facing away from the house or building.

Do not place any foreign materials such as wet blankets on or around gas cylinders.

e. Compost and manure

Landowners and managers are encouraged to manage compost and manure heaps to minimise the risk of fire.

Manure and compost heaps may spontaneously ignite if they are large enough.

- *Compost (Agriculture Note, DPI 2000)*

Large lumps of dried manure can smoulder for several days. Consider harrowing manure across paddocks or removing manure prior to the Fire Danger Period.

f. Fire safety policies

Consider having policies restricting public access to plantations and restricting such activities as smoking on or near plantations during the Fire Danger Period.

g. Hay and silage storage

Landowners and managers are encouraged to store hay and silage:

- in a number of different places on the property rather than in one location to reduce the risk of losing all of their hay and silage in a fire;
- away from other key assets, such as sheds and powerlines, to reduce the impact of high fuel loads on these assets;
- away from roadsides that have a history of fire starts;
- away from vegetation that may be a source of embers; and
- in areas that are not likely to flood and in sheds that are in good repair so that the moisture content of the hay remains at safe levels.

Storing hay below 20% moisture content will help minimise the risk of haystack fires. To be safe, it is recommended that hay is stored between 12% and 18% moisture content.

Consider using temporary fencing to allow stock to graze close to hay and silage stores to reduce fuel loads near these assets.

- *What Happens When Hay Heats (Agriculture Note, DPI 1999)*

11. Fuel breaks

Fuel breaks may help increase the effectiveness of firefighting and be used to protect key assets from fire (see Fuel breaks, pages 17 to 19).

a. Creating fuel breaks

Permits may be required from local councils if native vegetation is removed.

Contact the relevant municipal fire prevention officer about roadside fire management and municipal fire prevention planning issues.

Any work on roadsides apart from mowing needs the written consent of the relevant coordinating road authority (local council or VicRoads).

Contact the Department of Sustainability and Environment fire management officer about fire management in forests and parks.

b. Perimeter breaks

Where practical and environmentally responsible, landowners and managers are encouraged to have a natural or constructed perimeter (boundary) fuel break between neighbouring properties including neighbouring public land such as roadsides.

Landowners and managers are encouraged to have perimeter breaks that reflect fire risk factors such as aspect, slope, local weather conditions and fuel loads on adjoining land (see Fire behaviour, pages 5 to 9). Consider whether these breaks can be used as access tracks as well as fuel breaks.

With agreement between neighbours or a relevant public authority, perimeter fuel breaks could be located all or in part on a neighbouring property.

c. Internal breaks

Consider the use of internal fuel breaks to minimise the travel of fire across the property. Consider whether these breaks can incorporate an access track.

Consider having internal fuel breaks between different enterprises, such as farm forestry and cropping.

d. Existing features

Where available, consider using existing features such as water bodies or green crops, as fuel breaks.

e. Fuel reduction in fenced-off areas

Landowners and managers are encouraged to manage weeds in fenced-off areas to minimise fuel loads, particularly if they are near key assets. Options include strategic grazing, slashing and herbicide use.

f. Fuel management in planted timber areas

Fuel reduction in and around timbered areas such as timber plantation, woodlots, farm forestry, windbreaks and shelter belts may help prevent fires moving to the crowns of trees.

Options to reduce fuel loads include:

- slashing, ploughing and grazing in early spring in and around timbered areas;
- mulching or chopper rolling of waste thinning, pruning or harvesting material to keep it low to the ground and help the decomposition process;
- burning waste material; and
- managing weeds.

Options to break the continuity of fuel from the surface to the treetops include:

- pruning lower branches to around 2 to 2.5 m;
- bark management for some types of trees (usually only practical on a small scale);
- management of the shrub layer; and
- grazing and slashing.

Consider pruning and thinning the first few rows of trees to increase the effectiveness of fuel breaks, especially on fire-prone aspects.

The effectiveness of windbreaks (shelterbelts) in regards to wind protection may be reduced when lower branches are removed or pruned. For windbreaks, consider options such as increasing the size of fuel breaks and reducing fuel loads adjacent to windbreaks rather than pruning or thinning.

- *Fire Risk Management for Farm Forestry (Agriculture Notes, DPI 2002)*

g. Fuel breaks in timber plantations

In addition to the advice for all properties regarding perimeter breaks, while the width of perimeter breaks will vary depending on fire management needs, as a general guide landowners and managers are encouraged to have perimeter breaks in timber plantations free of trees for at least 10 m and incorporating an access track.

Consider modifying and/or reducing fuel loads in plantations and on adjacent land to increase the effectiveness of fuel breaks.

Consider developing a mosaic of compartments of different ages to avoid heavy continuous fuel accumulation.

12. Reporting and extinguishing fires

a. Reporting and extinguishing fire

In accordance with legislation, during the Fire Danger Period owners, occupiers or managers of land must take all possible steps to extinguish fire on land under their management and inform CFA, a forest officer or police about the existence and location of the fire if they are unable to extinguish it.

- *CFA Act 1958, s34*

Anyone finding a fire burning during the Fire Danger Period must report it as soon as possible.

- *CFA Act 1958, s39*

Figure 23: The use of private firefighting equipment is an important part of fire safety on rural properties

13. Fire suppression

Having the capacity for a fast fire-suppression response is an important way to help protect properties from fire.

a. Private firefighting equipment

Anyone operating vehicles, machinery and equipment is required to have some firefighting equipment (see Operating vehicles, machinery and equipment, pages 37 to 39).

In addition to this, landowners and managers are encouraged to have access to additional private firefighting equipment to stop the spread of fire. This may range from such simple tools as rakes and shovels to fire extinguishers, farm firefighting units, slip-ons, or tankers depending on the type of fire risks present.

- *Guidelines for Operating Private Equipment at Fires (CFA 2004)*

b. Response planning

Landowners and managers are encouraged to have a fire response plan for their property as part of an overall property fire plan.

c. Forest Industry Brigades

In accordance with legislation, plantation owners with an aggregate of more than 500 ha of plantation within a radius area of 25 km may be required to form a Forest Industry Brigade or form a partnership with other plantation owners to form such a brigade.

- *CFA Regulations 2004, Part 5*

d. Preparedness and response plans

Plantation owners and managers are encouraged to have access to heavy equipment, such as bulldozers, graders and excavators, for firefighting purposes. It is advised that this access be documented and that the range of equipment available can be scaled up or down as needed.

Include Department of Sustainability and Environment in the development of a fire response plan if the plantation is near a Fire Protected Area.

Consider using early fire detection systems, such as lookouts and aerial and ground patrols.

Seek advice for helidam requirements when planning to use helicopters for fire suppression.

14. Building and property access

Good building and property access for fire fighting is important for effective fire suppression.

a. Building and property access

For good tanker access to buildings and key assets, maintain a turning circle with a minimum radius of 10 m or a T or Y turning area with each leg of the turning area at least 8 m long.

- *Building in a Wildfire Management Overlay Applicants Kit (CFA 2007)*

Where practical, ensure that the property number is clearly visible at the property entrance for emergency services.

Where practical and environmentally responsible, ensure that fire tankers can access each part of a property. This may not be practical in some terrain or with some blocks of native vegetation.

b. Access tracks

Generally, access tracks should:

- be free of overhanging trees and shrubs to a height of 4 m;
- be at least 7 m wide to allow two tankers to pass, or be 4 m wide and have passing bays every 200 m that are 6 m wide and 20 m long;
- have an average slope of no more than 1 in 7 (8.1 degrees) with a maximum grade of no more than 1 in 5 (11.3 degrees) for no more than 50 m;
- have dips with no more than 1 in 8 (7.1 degrees) entry and exit angles;
- be capable of a load limit of at least 15 tonnes;
- be aligned to provide straight through access at junctions; and
- be sign posted if visibility is poor due to terrain or vegetation.

- *Building in a Wildfire Management Overlay Applicants Kit (CFA 2007)*

Allow for, or manage, the growth of trees and branches when planning access tracks.

Reducing adjacent fuel loads can increase the benefits and safety of access tracks. Consider the opportunity for access tracks to double as fuel breaks.

c. Gates

Gates need to be at least 3 m wide for tankers to fit through. Consider marking gates with a pole for easy identification if it is not obvious that a gate is present.

Consider providing a gate into fenced-off areas of vegetation for firefighting access and for access to manage these areas.

d. Woodlots, windbreaks (shelterbelts) and farm forestry

Providing good access around and within planted timber areas provides benefits for fire protection and access for general management and harvesting activities.

Consider having access breaks, at least 4 m wide and free of overhanging trees to a height of 4 m, across long blocks of farm forestry, windbreaks or woodlots.

- *Fire Risk Management for Farm Forestry (Agriculture Notes, DPI 2002)*

e. Crossings

All bridges, culverts and creek crossings need to have a load-bearing capacity of at least 15 tonnes where tanker fire suppression services are required.

f. Access in plantations

It is encouraged that each point within the plantation be no more than 300 m from an access track, perimeter break or open paddock.

Wherever possible, plantation estates should be divided into blocks no greater than 400 ha by access tracks similar to perimeter breaks.

g. Raised beds

It can be difficult for firefighting tankers to travel safely across raised beds. Landowners and managers with raised-bed crops are encouraged to have a perimeter access track or non-raised-bed section (headland) around the perimeter of raised-bed paddocks.

This should generally be at least 7 m wide and free of overhanging trees to a height of 4 m to allow tanker access.

15. Water supply access

Access to water will assist in securing fire safety.

a. Property water supply

Generally, water supplies should:

- be obvious to or known to local fire suppression services (signs or property plans may be necessary);
- be located in an open and clear flat area with a hard-standing area allowing a fire suppression pump to be within 4 m of the water supply;
- have a turning circle loop or turn-around point;
- where tanks are used, have couplings or adaptors that enable farm firefighting equipment and CFA brigades to fill from the tanks (see Figure 24 on page 53);
- be available even when water levels are low during summer months; and
- be independent of mains power supply.

Water supplies could be from a dam, tank, mains water system, helicopter, or private water tanker. Bores and standpipes may also be suitable if flow rates are sufficient.

Consider having a water supply and water distribution system that operates independently of mains power.

A suitable water supply may be available from a nearby property or water source with agreement from the relevant owner or manager.

- *Firefighting Guidelines for Pipeline Schemes (CFA 2003)*
- *Minimum Firefighting Requirements for Pipeline Schemes (CFA 2003)*
- *Building in a Wildfire Management Overlay Applicants Kit (CFA 2007)*

b. Buildings water supply

To protect homes and sheds, landowners and managers are encouraged to have:

- at least 10 000 litres of water supply available for firefighting that is independent of the reticulated water supply and mains power supply; options include having a dam, tank or pool;
- flame-resistant and heat-resistant or protected water supply pipes; and
- where tanks are used, couplings or adaptors that will allow CFA tankers to be filled (see Figure 24 on page 53).

Regularly maintain and annually check pumps and sprinklers to be used for fire protection.

- *Building in a Wildfire Management Overlay Applicants Kit (CFA 2007)*

c. CFA fittings for tanks

CFA trucks use a special fitting to connect to tanks. There needs to be at least one 64 mm, 3 thread / 25 mm x 50 British Standard Pipe round male coupling (CFA Male End, Pt. No. SE.03.074).

Consider using a 'tee' to allow the CFA fitting on one side of the branch and personal firefighting fittings on the other side of the pipe, as shown in Figure 24.

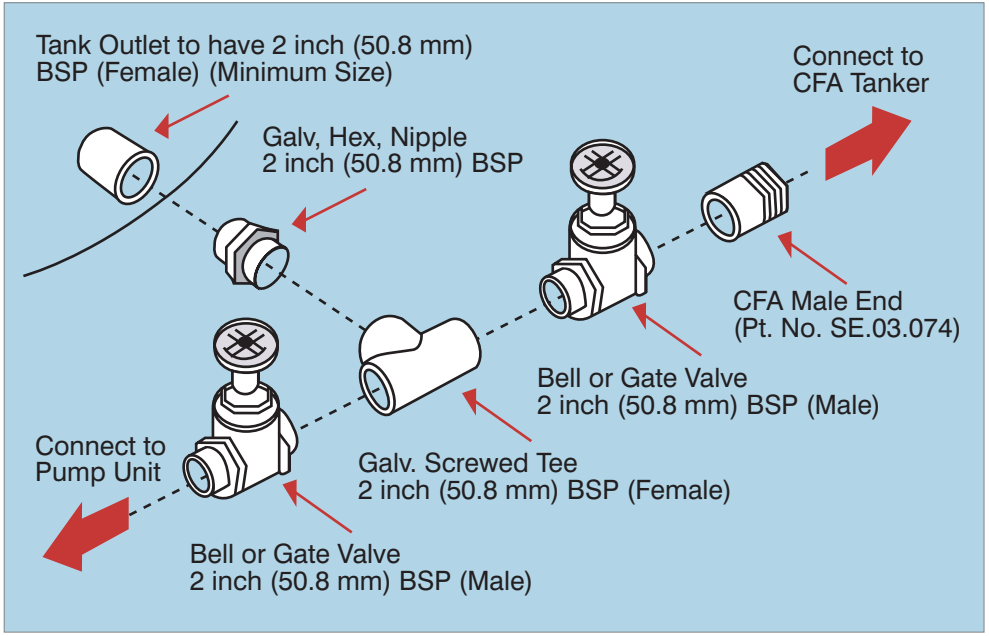

Figure 24: Tank fittings to connect to CFA tankers

16. Community groups

While personal fire safety is an individual responsibility, fire safety is also an important community issue.

a. CFA

People living and working in rural areas are encouraged to join their local fire brigade to help improve fire safety on their property and in their community.

Opportunities to discuss local fire issues, including fire safety and fire management of public land, are provided by CFA and the Department of Sustainability and Environment through a joint program called Fire Ready Victoria.

More information on joining local fire brigades and community-based fire safety groups is available on the CFA website (www.cfa.vic.gov.au) or by contacting CFA.

b. Other community groups

Other groups, such as Landcare and local community and farm-management groups, will often provide opportunities for local communities to work together to improve fire management as part of caring for their local area.

Other non-government organisations and wildlife rescue groups can provide opportunities for people to work together to help communities recover from the effects of fire.

Figure 25: Fire suppression

Section 4
Appendices

Appendix 1
Glossary

aspect The direction towards which a slope or feature faces.

Country Area of Victoria That part of Victoria which lies outside the metropolitan fire district, but does not include any state forest, national park or protected public land.

control line A natural or constructed barrier, or treated fire edge, used in fire suppression and prescribed burning to limit the spread of fire.

crown fire A fire burning in the crowns of trees and usually supported by fire in ground fuels.

embers (firebrands) A piece of burning material, commonly bark from eucalypts.

farm forestry The incorporation of commercial tree crops into farming systems to complement conventional agriculture.

fine fuel Grass, leaves, bark and twigs less than 6 mm in diameter.

fire access track A track constructed and/or maintained for fire management purposes.

fire behaviour The manner in which a fire reacts to the variables of fuel, weather and topography.

Fire Danger Index A relative number indicating rate of fire spread or suppression difficulty for specific combinations of fuel, fuel moisture and wind speed.

Fire Danger Period This is declared each summer in each municipality in the Country Area of Victoria. This period stays in place until May 1 unless otherwise stated. During this time fires in the open (not in a permanent structure) are restricted.

fire management All activities associated with the management of fire prone land, including the use of fire to meet land management goals and objectives.

fire prevention All activities associated with minimising the incidence of wildfire, particularly those of human origin.

Fire Protected Area The area of land over which Department of Sustainability and Environment has fire prevention or suppression responsibilities. This includes all parks and forests managed by this department and any land within 1.5 km of their boundaries, unless it has been excised.

fire suppression All activities associated with putting out a fire. Fire suppression includes activities associated with managing a fire and also using wet or dry firefighting methods.

fuel Any material such as grass, leaf litter, dead and live vegetation which can be ignited and sustains a fire.

fuel break (firebreak) Any natural or constructed discontinuity in a fuel bed used to segregate, stop, and control the spread of wildfire, or to provide a control line from which to suppress a fire.

fuel load (fuel quantity) The oven dry weight of fuel per unit area, commonly expressed as tonnes per hectare.

heat engine Any internal combustion engine, steam engine or any other engine in which any furnace, fire or spark or any burning or exploding oil or vapour is used in driving the engine.

heavy fuels Dead woody material greater than 25 mm in diameter in contact with the soil surface (fallen trees and branches).

Prohibited Period The period when Forests Act fire restrictions are in force within the Fire Protected Area (Forest Act 1958). The Prohibited Period applies the whole year within any State forest, protected public land or national park and is in force for the summer fire season for adjacent land (within 1.5 km) in some parts of Victoria.

rate of spread The forward progress per unit of time of the fire head (front) or another specified part of the fire perimeter.

Total Fire Ban Total Fire Ban is declared on those days when the danger of fires occurring is extremely high. The use of fire is extremely restricted and subject to a special permit. Any normal permits issued for use in the Fire Danger Period are suspended for the time the Total Fire Ban operates.

Appendix 2
Useful information

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Appendix 3
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Appendix 4
Contacts

Country Fire Authority (CFA Headquarters)
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East Burwood
PO Box 701
Mt Waverley 3149
Phone: (03) 9262 8444
www.cfa.vic.gov.au

Victorian Bushfire Information Line
Phone: 1800 240 667
www.cfa.vic.gov.au/incidents/vbil.htm

VicFire
(Emergency Services Telecommunications Authority)
Phone: 1800 668 511
www.esta.vic.gov.au

VicFire burnoff notification options
Phone: 1800 668 511
Facsimile: (03) 5337 3501
Email: burnoffs@esta.vic.gov.au

Australian Bureau of Meteorology
Phone: (03) 9669 4000 (Melbourne office)
www.bom.gov.au

Department of Sustainability and Environment (DSE)
Phone: 136 186
www.dse.vic.gov.au

Department of Primary Industries (DPI)
Phone: 136 186
www.dpi.vic.gov.au

Department of Human Services (DHS)
Phone: 1300 650 172
www.dhs.vic.gov.au/emergency

Parks Victoria
Phone: 131 963
www.parkweb.vic.gov.au

Energy Safe Victoria (ESV)
Phone: (03) 9203 9700
www.esv.vic.gov.au

Environment Protection Authority (EPA)
Phone: (03) 9695 2722
www.epa.vic.gov.au

Landcare Groups
www.landcarevic.net.au

VicRoads
Phone: 131 171
www.vicroads.vic.gov.au

www.cfa.vic.gov.au

Figure 26: Harvester cleaning for fire safety




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