



# PREPARE. ACT. SURVIVE.

FIRE READY KIT





# FOREWORD

The fire season poses a significant threat to all those living, working or travelling in Victoria. Preparation and planning ahead can save you and your family from being killed by fire.

The *FireReady Kit* has been developed by CFA as a valuable resource. It will help you prepare your Bushfire Survival Plan. Remember, even if you did a plan last year you must review and update it.

CFA urges all residents to have a written survival plan that takes into account family members, visitors and pets. If you work or intend to travel in a high-risk fire area you are also encouraged to prepare a plan.

Understanding the risks that lead to bushfire, how bushfires behave and identifying your 'triggers' are key. Undertaking preparations or works around your property is an important part of becoming ready for the fire season.

You are not alone in your preparations. Advice and support is available with details provided throughout this kit. Draw on these resources to make this bushfire season a safe one.



**Euan Ferguson AFSM**  
Chief Officer

CFA makes this information available on the understanding that you take reasonable care when using it. If you have any uncertainty about the application of the information to your particular circumstance, you should obtain further professional advice.

CFA does not accept responsibility for how you apply, or rely on the information in this publication.

FRK 10/2011



**Cover:** The residents of this house have left early due to a **Code Red** fire danger day.

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# SECTION 01

# AM I AT RISK?



## **NEED SOME HELP?**

- Visit [cfa.vic.gov.au](http://cfa.vic.gov.au)
- Call the Victorian Bushfire Information Line on **1800 240 667** or via National Relay Service on **1800 555 677**

## SECTION 01 AM I AT RISK?

**Victoria is one of the most fire-prone areas in the world. Understanding your level of risk is the first step in developing your Bushfire Survival Plan.**

It only takes two weeks of hot, dry and windy weather to create dangerous fire conditions. So, if you live, work or travel in Victoria this summer, you may be at risk of bushfire.

If you live near or visit areas that are heavily forested, have thick bush or long, dry grass, or coastal areas with lots of scrub you are at risk of fire.

Fires can occur where suburbs meet the bush or in urban areas where houses have grassland, bush or parkland around them.





## ➤ WHAT CREATES BUSHFIRE RISK?

### VEGETATION

The intensity of a bushfire will be affected by the amount and type of vegetation around your home. Local terrain, such as hills and valleys, also plays a role.

Bushfire will behave differently depending on the environment it is burning in. These environments include:

- grass or paddocks
- forest and woodland
- coastal scrub
- bush and grassland fringes.

Have a look at pages 8-13 for more information about high-risk environments.

### WEATHER

Extreme heat, gusting winds and low rainfall dramatically increases the level of bushfire risk. The combination of dry conditions with hot, dry and windy days means bushfires can quickly become uncontrollable. This places lives and property at risk.

A change in wind direction is one of the most dangerous influences on fire behaviour. Many people who die in bushfires get caught during or after a wind change.

Have a look at page 25 for more information.

### TOPOGRAPHY

Topography influences the speed and intensity of a fire.

A fire will burn faster up a hill. As a fire moves up a hill it will intensify in speed and heat. Being on top of a hill in a bushfire makes you more vulnerable.

As wind passes over a hill or windbreak the wind can tumble, creating turbulence and erratic fire behaviour. Valleys and gullies can channel and strengthen wind.

**Poor road access, such as narrow streets in hilly areas, may make it difficult for firetrucks to get in and for residents to leave.**



### WHAT IS AN EMBER ATTACK?

- Embers are burning twigs, leaves and pieces of debris.
- Ember attack occurs when twigs and leaves are carried by the wind and land on or around a house.
- Embers can land on top of debris in your gutters and set fire to your house.
- Ember attack is the most common way houses catch fire during bushfires.
- Ember attack can happen before, during and after the bushfire.

Leaves



Sticks



Bark

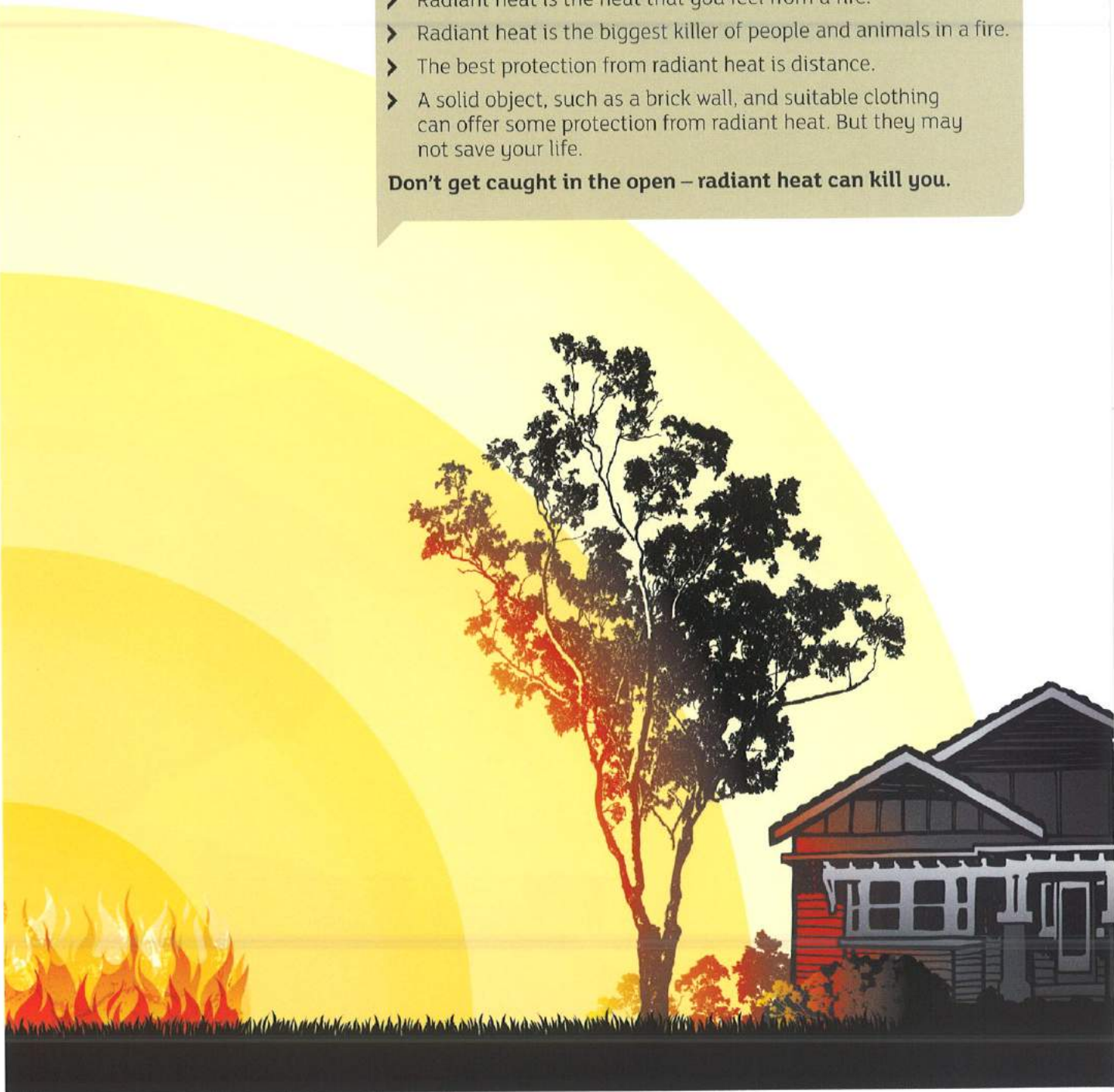




### WHAT IS RADIANT HEAT?

- Radiant heat is the heat that you feel from a fire.
- Radiant heat is the biggest killer of people and animals in a fire.
- The best protection from radiant heat is distance.
- A solid object, such as a brick wall, and suitable clothing can offer some protection from radiant heat. But they may not save your life.

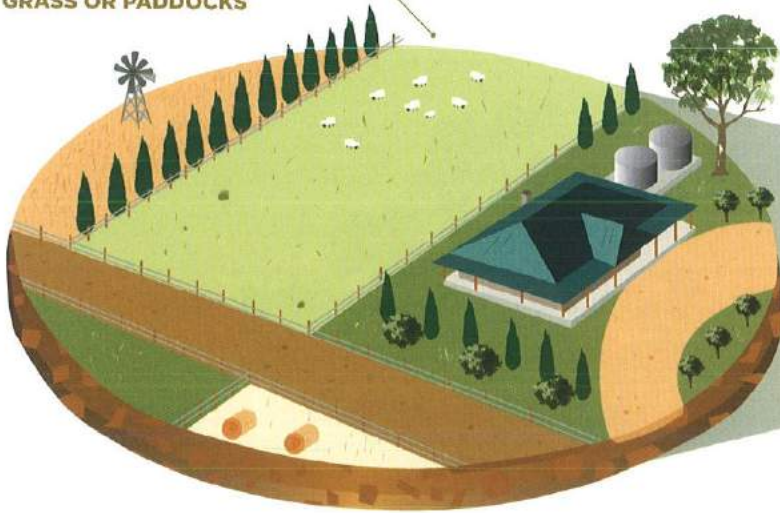
**Don't get caught in the open – radiant heat can kill you.**



**> LIVING IN A HIGH-RISK ENVIRONMENT  
WHAT YOU CAN EXPECT?**

You are at risk if you live in any of these environments.

**A**  
CLOSE TO OR AMONG  
GRASS OR PADDOCKS



**C**  
NEAR COASTAL SCRUB





**B**  
CLOSE TO OR AMONG  
FOREST AND WOODLAND

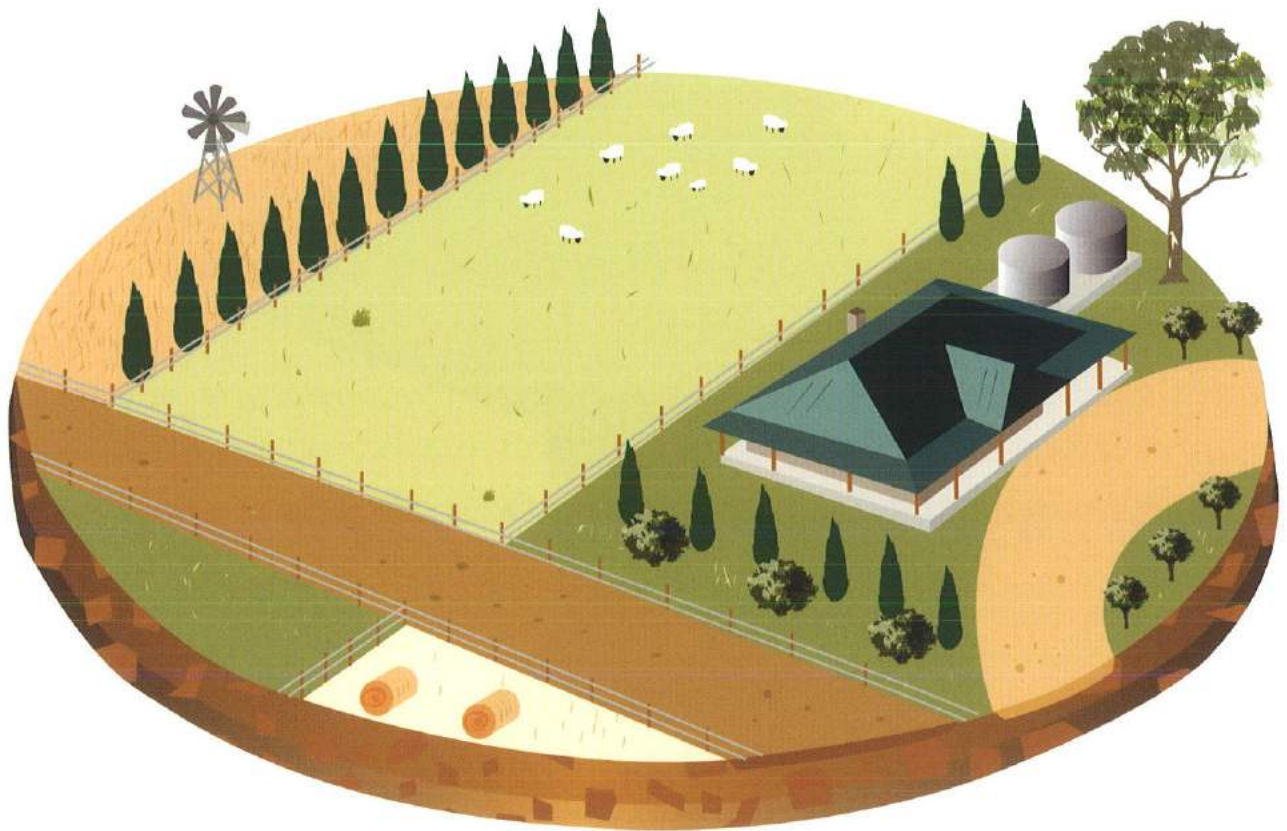


**D**  
WHERE SUBURBS MEET  
THE BUSH OR GRASSLANDS



## A. Close to or among grass or paddocks

Grassfires can be extremely dangerous – people can die in grassfires.

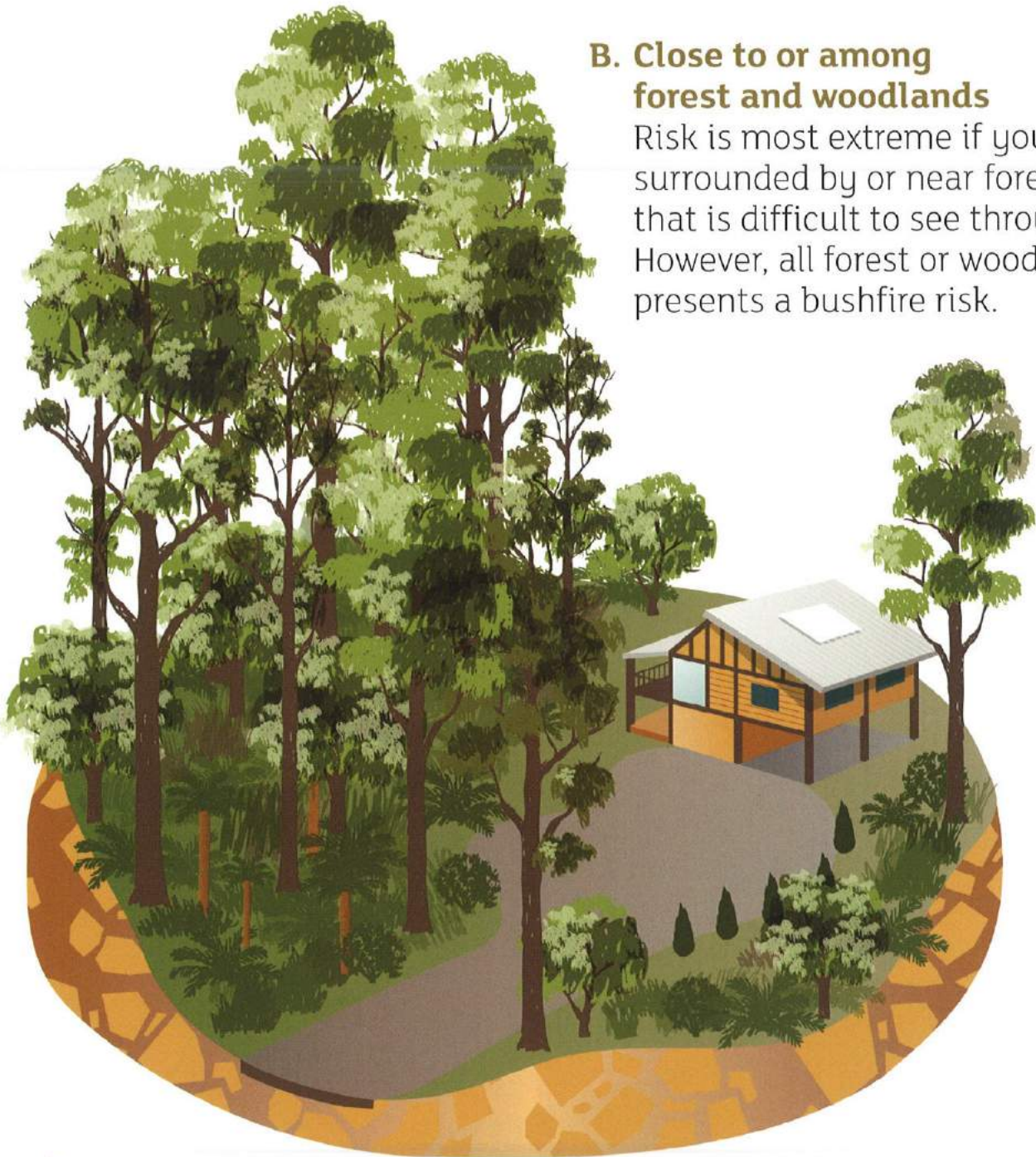


### WHAT CAN YOU EXPECT?

- ✓ Dry and brown grass that easily catches fire.
- ✓ Grass more than 10 centimetres tall will have a higher flame height and intensity.
- ✓ Faster burning than through forests as grass is a finer fuel.
- ✓ Large amounts of radiant heat.
- ✓ Fires that can start early in the day.
- ✓ Faster moving fires that travel up to 25 kilometres per hour. In open grassland speed increases up to 60 kilometres per hour.

## B. Close to or among forest and woodlands

Risk is most extreme if you live surrounded by or near forest that is difficult to see through. However, all forest or woodland presents a bushfire risk.



### WHAT CAN YOU EXPECT?

- ✓ Very hot fire and many embers.
- ✓ Embers such as twigs, bark and debris arriving from far away.
- ✓ Dangerous levels of radiant heat and fire intensity.
- ✓ Trees falling in high winds.
- ✓ Embers landing for a long time after the fire has passed.
- ✓ Fine fuels (the thickness of a pencil or less) that burn very quickly.
- ✓ Heavy fuels that will burn very hot for long periods of time.
- ✓ A reduction in visibility due to very thick smoke.

### C. Near coastal scrub

Burning scrub, heath or other coastal vegetation can create hot, dangerous bushfires. If you live by, work by or travel to the coast you are at risk. Beaches, foreshores and shallow waters may not be safe or protect you from radiant heat (see page 7). Often a fire will be burning between you and the beach.

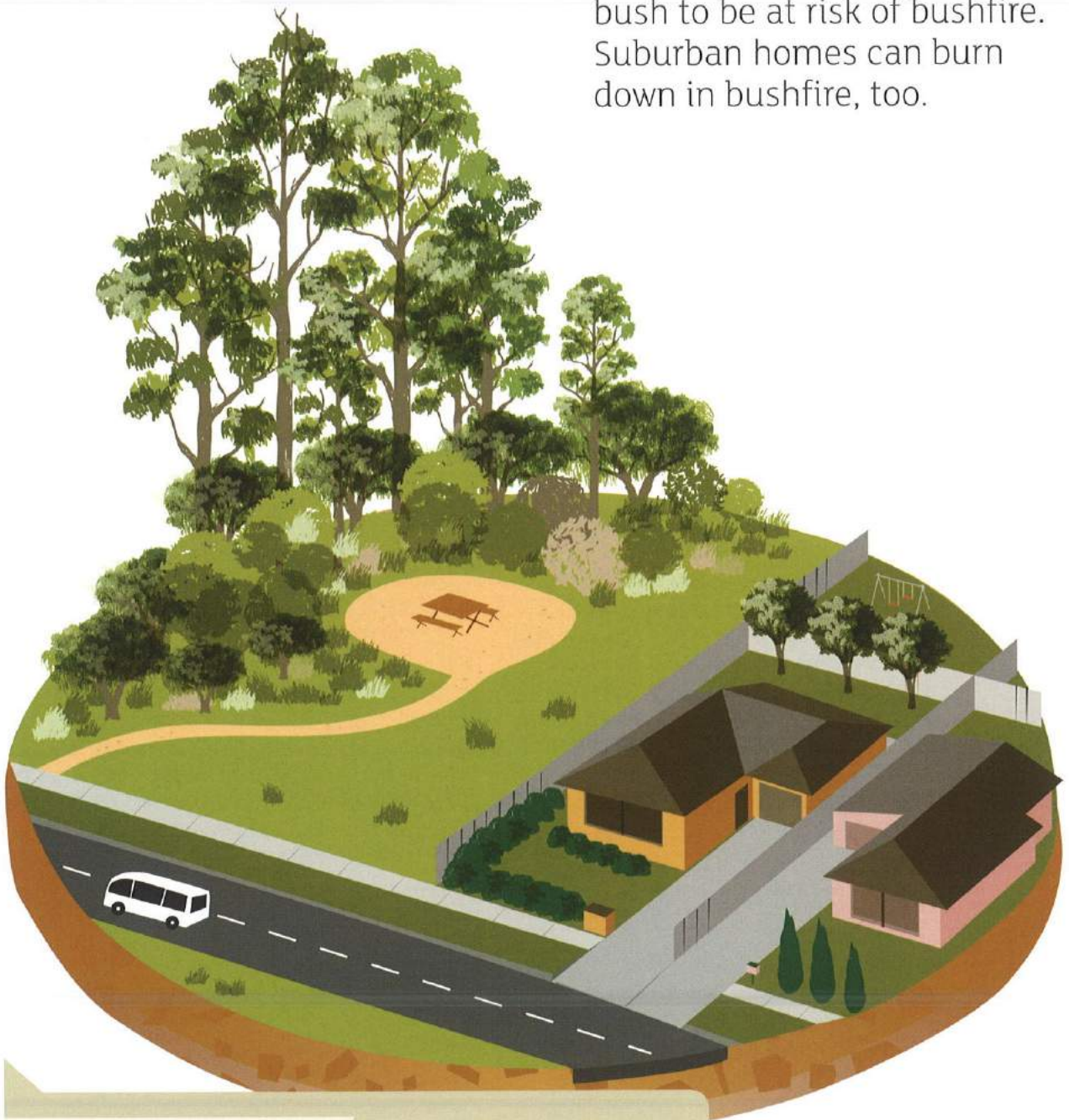


#### WHAT CAN YOU EXPECT?

- ✓ Very hot and fast-moving fires.
- ✓ Gusty ocean winds causing fire to behave erratically.
- ✓ A lot of embers.
- ✓ Fire reaching houses quickly.
- ✓ Busy, congested coastal roads.

## D. Where suburbs meet the bush or grasslands

You do not have to live in the bush to be at risk of bushfire. Suburban homes can burn down in bushfire, too.



### WHAT CAN YOU EXPECT?

- ✓ Scrub, forest and grass catching fire.
- ✓ A fire in a park or reserve quickly spreading to timber fences and gardens.
- ✓ Fire spreading from house to house once houses start to burn.
- ✓ A high risk of ember attack if the house is near dense bushland environments.
- ✓ Embers falling close to or on your house starting a new fire.
- ✓ Strong winds that bring embers from far away.

# STAY AWARE OF THE FIRE DANGER RATING AND KNOW WHAT TO DO.

The Fire Danger Rating predicts how a fire would behave if started, including how difficult it would be to put out.

The higher the rating, the more dangerous the conditions. The rating is your trigger to act, so to stay safe you need to stay aware of the Fire Danger Rating in your district.

During the fire season, the Fire Danger Rating will feature in weather forecasts, be broadcast on radio and TV, and appear in some newspapers.

It can also be found on the websites of CFA, Department of Sustainability and Environment and Bureau of Meteorology, by calling the Victorian Bushfire Information Line on 1800 240 667 or via National Relay Service on 1800 555 677.



## WHAT DOES IT MEAN?

- These are the worst conditions for a bush or grassfire.
- Homes are not designed or constructed to withstand fires in these conditions.
- The safest place to be is away from high-risk bushfire areas.

## WHAT SHOULD I DO?

- Leaving high-risk bushfire areas the night before or early in the day is your safest option – do not wait and see.
- Avoid forested areas, thick bush or long, dry grass.
- Know your trigger – make a decision about:
  - when you will leave
  - where you will go
  - how you will get there
  - when you will return
  - what you will do if you cannot leave.

### CODE RED

- Expect extremely hot, dry and windy conditions.
- If a fire starts and takes hold, it will be uncontrollable, unpredictable and fast moving. Spot fires will start, move quickly and come from many directions.
- Homes that are situated and constructed or modified to withstand a bushfire, that are well prepared and actively defended, may provide safety.
- You must be physically and mentally prepared to defend in these conditions.

- Consider staying with your property only if you are prepared to the highest level. This means your home needs to be situated and constructed or modified to withstand a bushfire, you are well prepared and you can actively defend your home if a fire starts.
- If you are not prepared to the highest level, leaving high-risk bushfire areas early in the day is your safest option.
- Be aware of local conditions. Seek information by listening to ABC local radio, commercial and designated community radio stations, or watch Sky News TV, visit [cfa.vic.gov.au](http://cfa.vic.gov.au), call the Victorian Bushfire Information Line on **1800 240 667** or via National Relay Service on **1800 555 677**.

### EXTREME

### SEVERE

- Expect hot, dry and possibly windy conditions.
- If a fire starts and takes hold, it may be uncontrollable.
- Well prepared homes that are actively defended can provide safety.
- You must be physically and mentally prepared to defend in these conditions.

- Well-prepared homes that are actively defended can provide safety – check your Bushfire Survival Plan.
- If you are not prepared, leaving bushfire-prone areas early in the day is your safest option.
- Be aware of local conditions. Seek information by listening to ABC local radio, commercial and designated community radio stations, or watch Sky News TV, visit [cfa.vic.gov.au](http://cfa.vic.gov.au), call the Victorian Bushfire Information Line on **1800 240 667** or via National Relay Service on **1800 555 677**.

### VERY HIGH

- If a fire starts, it can most likely be controlled in these conditions.

- Check your Bushfire Survival Plan.

### HIGH

- Be aware of how fires can start and minimise the risk.

- Monitor conditions.

### LOW-MODERATE

- Controlled burning off may occur in these conditions if it is safe – check to see if permits apply.

- Action may be needed.

- Leave if necessary.



# SECTION 02

# PREPARE FOR BUSHFIRE

LEAVING EARLY IS THE SAFEST OPTION



## NEED SOME HELP?

- Visit [cfa.vic.gov.au](http://cfa.vic.gov.au)
- Call the Victorian Bushfire Information Line on **1800 240 667** or via National Relay Service on **1800 555 677**

## SECTION 02 PREPARE FOR BUSHFIRE

### LEAVING EARLY IS THE SAFEST OPTION

### Bushfires are extremely unpredictable.

In a bushfire, people may be confused, disoriented and physically or psychologically stressed. In these conditions, making sound decisions becomes very difficult.

Leaving early is the safest way to survive a bushfire. People die trying to leave their homes at the last minute.

### BEFORE THE BUSHFIRE SEASON

You need a Bushfire Survival Plan if you plan to leave. Use the *Bushfire Survival Planning Template: Leaving Early* tearout (at the back of this section) to help you prepare your plan.

Decide now what you are going to do on fire risk days – it could save your life.

#### SHARING YOUR BUSHFIRE SURVIVAL PLAN

Once you have prepared your Bushfire Survival Plan, it is a good idea to share the details of your plan with family, friends and neighbours. Doing so will save everyone a lot of distress when there is a bushfire as they will know that you are prepared and know where to find you.

Remember to update everyone about any changes to your agreed plan of action.

#### YOUR IMPORTANT INFORMATION

Keep your important items and information in a safe place during the bushfire season. Scan important information and photos and store them on a CD or memory stick.

Make sure your plan is flexible to account for different situations such as:

- weekends
- school holidays
- a work day
- when you are away from home.

How will these situations affect your ability to put your Bushfire Survival Plan into action?

### LEAVING EARLY

In high-risk areas, leaving early is your safest option. This is particularly so on **Code Red**, **Extreme** and **Severe** days. Fires on these days can be dangerous.

Even people who are extremely well prepared can die fighting fires at home.

#### WHY YOU SHOULD LEAVE EARLY

- ✔ If you live in a high-risk bushfire area, your home will not be defensible on a **Code Red** day.
- ✔ **Code Red** is the highest Fire Danger Rating. These are the worst conditions for a bush or grassfire.
- ✔ Houses are not designed or constructed to withstand fires in **Code Red** conditions.
- ✔ On a **Code Red** day, leaving high-risk bushfire areas the night before or early in the morning is the safest option.

- ✔ If you live in a high-risk bushfire area, your home may not be defensible on **Extreme** or **Severe** fire risk days.
- ✔ Most homes in high-risk bushfire areas are not built to withstand bushfire.
- ✔ Defending your home is very risky – you could die or be seriously injured.
- ✔ Defending a property requires at least two able-bodied, fit and determined adults who are physically and mentally prepared to work long and hard in arduous and difficult conditions.
- ✔ Children, the elderly, people with special needs or disability should be well away from the threat.

#### KNOW YOUR TRIGGER TO LEAVE

The safest option is to leave high-risk bushfire areas the night before or early on **Code Red** days. Do not wait and see.

**Code Red** days are rare. When they are forecast they are **very** serious.

Know the Fire Danger Rating in your area. The Fire Danger Rating is your 'trigger' to act. The higher the rating, the more dangerous the situation if a fire starts.

For more information on Fire Danger Ratings, see page 14.



## WHAT YOU WILL DO IF YOU CANNOT LEAVE

In recent fires, people who planned to leave took longer to get ready than they had expected. This resulted in them being delayed and leaving when fire was upon them – often with tragic consequences.

Fires are unpredictable and plans can fail. Having a backup plan can save your life if you are caught in a fire.

If you cannot leave the area consider shelter options close by that may protect you. These may include:

- a well-prepared home (yours or a neighbour) that you can actively defend
- a private bunker (that meets current regulations)
- a designated community shelter or refuge.

Last resort options could include:

- a Neighbourhood Safer Place (**Place of Last Resort**)
- a stationary car in a cleared area
- a ploughed paddock or reserve
- a body of water (such as the beach, pool, dam or river). This does not include a water tank. Dams may not be reliable as their water levels fluctuate and they may be empty in summer.

**Note that last resort options carry a high risk of trauma, injury or death.**

See page 38 for more information on your survival options.

If, as a last resort, you leave when there are signs of fire in your area, exercise extreme caution.

Driving during a bushfire is a last resort. A drive that will normally take five minutes may take two hours in the event of a fire.

It may become difficult to leave owing to dangerous road conditions. There may be road closures, smoke, fallen trees and embers.

You may become trapped by fire and exposed to dangerous radiant heat.

## KNOW WHEN IT IS SAFE TO RETURN HOME

Check with police, fire authorities and your local emergency services before trying to go home. Even if the fire has been controlled, there may be other safety issues that you are unaware of that may affect your ability to return home. These include:

- fallen trees
- disruptions to essential services
- potential crime scenes.

Bushfires do not arrive at convenient times. Many bushfires start late in the afternoon.

What will you do if you have visitors staying with you? Will any family members be away on business or holiday?

Also make sure you revise your Bushfire Survival Plan whenever your circumstances change.

## ➤ DURING A FIRE

### ALERT MESSAGES AND WARNINGS

During a bushfire, alert messages are used to give you an indication of the level of threat from a fire. For alerts and warnings:

- visit [cfa.vic.gov.au](http://cfa.vic.gov.au)
- tune in to your emergency broadcasters – ABC local radio, commercial radio and designated community radio stations
- Sky News television
- call the Victorian Bushfire Information Line on 1800 240 667 or via National Relay Service on 1800 555 677
- via the CFA\_Updates Twitter account.

For some fires, you may hear the Standard Emergency Warning Signal (SEWS) before the alert message over your radio or television.

An emergency alert telephone warning may also be sent to your mobile and landline phone based on your billing address. This means if you live in the city and you are travelling in the country when a bushfire happens you will not receive a telephone warning by mobile phone.

## THERE ARE THREE BUSHFIRE ALERT LEVELS

### Advice

- General information to keep you up-to-date with developments.

### Watch and Act

- A fire is approaching you.
- Conditions are changing and you need to start taking action now to protect your life and your family.

### Emergency Warning

- You are in immediate danger and need to take action immediately.
- You will be impacted by fire.



**Do not rely on an official warning to leave. Bushfires can start quickly and threaten homes and lives within minutes.**

Keep a map of your local area. You can look at the map to see where the fire is.

If you are travelling through Victoria, you need to monitor conditions. Reconsider visiting high-risk bushfire areas on fire risk days.

### CAUTION

If you receive a bushfire alert, you must take it seriously. Failure to take action may result in death or injury to you or your family members.

Bushfire alerts are not always given in the above order. As an example, the first alert you receive may be Watch and Act.

Look and listen for alerts issued for surrounding towns as your suburb or town may not be mentioned.



## EVACUATION

Evacuation is not a substitute for planning ahead or choosing to leave a high-risk bushfire area early – before fire threatens.

In high-risk bushfire areas on **Code Red** days, it is always safer to leave the night before or early in the morning.

If you live with children, elderly or vulnerable people, they should be well away from any threat.

Leaving early should be part of your Bushfire Survival Plan.

## EVACUATION

Evacuation is the planned relocation of people from a dangerous area to a safer place.

In some fires the Incident Controller may decide to issue a Recommendation to Evacuate for:

- individuals
- a house
- a street
- a large institution (such as a school or hospital)
- a suburb
- a town
- a large area of the state.

A Recommendation to Evacuate depends on a number of factors, such as:

- safety considerations
- the location and type of fire
- access routes and the local environment.

A Recommendation to Evacuate may identify:

- the location you need to travel to
- travel information
- the length of time in which it is safe to travel.

Sometimes it is not possible for an Incident Controller to issue a Recommendation to Evacuate. You should not rely on receiving one.

While CFA will do its best to provide official warnings, bushfires can threaten lives and homes in minutes.

Just because you do not receive a warning does not mean there is not a threat.

The safest option is to leave early.



## ➤ BUSHFIRE EDUCATION SERVICES AND RESOURCES

Each summer CFA runs programs and services to help residents prepare and plan for their safety.

A calendar of activities is advertised through pamphlets, local newspapers, sign boards and [cfa.vic.gov.au](http://cfa.vic.gov.au)

These are delivered free of charge in high-risk bushfire areas and include:

### FIREREADY VICTORIA MEETINGS

These are held on street corners, in local halls and at shows and events from October until the end of the fire season.

Meetings take about one hour and provide information on local risk and personal survival. You will have an opportunity to discuss local concerns.

### COMMUNITY FIREGUARD PROGRAM

Work together with your neighbours to improve knowledge and bushfire safety skills.

CFA provides local facilitators to assist in:

- understanding your bushfire risk
- enabling you to develop your Bushfire Survival Plan.

Community Fireguard operates in extremely high-risk bushfire areas. Check to see if it is available in your area.

### HOME BUSHFIRE ADVICE SERVICE

A member of CFA will assess your property and provide a range of options to assist you to develop your Bushfire Survival Plan.

This service is free and offered all year round. Appointments take approximately one hour. Priority is given to people in high bushfire risk areas.

### BUSHFIRE PLANNING WORKSHOPS

These are designed for those who have some understanding of their bushfire risk but need more support to develop their plans.

Structured as one-off, practical sessions, you and your family can work on your Bushfire Survival Plan with the help of a trained CFA facilitator.

### HOUSE BUSHFIRE SELF ASSESSMENT TOOL (HBSAT)

This online resource is designed to help you assess the risk of vegetation and topography around your property.

The tool takes into account factors such as:

- vegetation
- topography
- the surrounding landscape for a 100-metre zone around houses.

### TOWNSHIP PROTECTION PLANS

Township Protection Plans are a key source of information for you and your community.

They are important tools that highlight the shared responsibility between your community, fire services and local government.

Plans have been developed for a number of high bushfire risk communities across Victoria.

They provide important local information for you and your family to assist with planning before, during and after a fire.

Township Protection Plans are updated regularly.

Please visit [cfa.vic.gov.au](http://cfa.vic.gov.au) to ensure that you have the latest Township Protection Plan for your town.

**Note: Some townships will not have a Township Protection Plan.**

For more information about CFA's community education programs and services, contact your nearest regional office or visit [cfa.vic.gov.au](http://cfa.vic.gov.au).



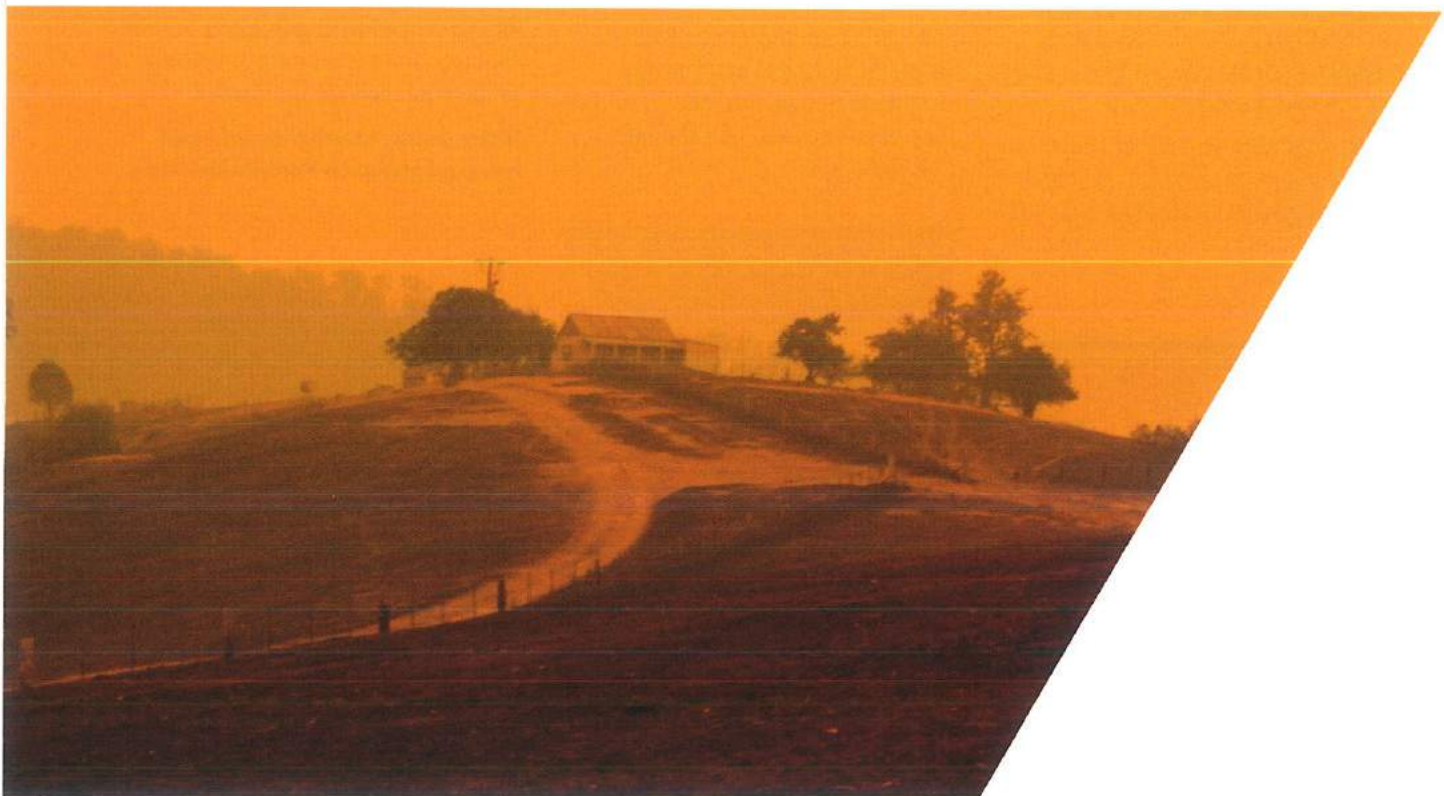
## STILL WITHOUT A PLAN?

Research shows 75 per cent of people living in high-risk areas do not have a detailed Bushfire Survival Plan.

Don't have a plan? You are not alone. Advice and support are available.

You can:

- attend a CFA FireReady Victoria Meeting or Bushfire Planning Workshop
- join a Community Fireguard group
- book a free property assessment to assess your fire risk
- visit [cfa.vic.gov.au](http://cfa.vic.gov.au)
- call the Victorian Bushfire Information Line on 1800 240 667 or via National Relay Service on 1800 555 677
- talk to your local CFA brigade about how to plan for bushfire.





# SECTION 03

# YOUR PROPERTY

HOW PREPARED IS IT?



## NEED SOME HELP?

- > Visit [cfa.vic.gov.au](http://cfa.vic.gov.au)
- > Call the Victorian Bushfire Information Line on **1800 240 667** or via National Relay Service on **1800 555 677**

**This section outlines what you must do as a minimum to reduce the effects of bushfire on your property.**

This involves:

- understanding how fire behaves in your environment
- knowing the steps to take to prepare your home and property before the fire season.

You need to prepare your property for the best chance of survival during a bushfire.

## ➤ FIRE BEHAVIOUR

Victoria has a great diversity of vegetation, topography and weather. Environments that are high-risk for fire are:

- where suburbs meet the bush
- close to forest and woodlands
- close to grass or paddocks
- near coastal scrub.

Knowing how a fire behaves in your environment will help you to better prepare your property.

Bushfires are influenced by:

- vegetation (fuel)
- topography
- weather conditions.

### VEGETATION (FUEL)

There are two fuel types – fine and heavy. By removing fine fuels from your property you can reduce the amount of heavy fuels that burn.

#### A. FINE FUELS

- ✓ These are fuels that are the thickness of a pencil or less.
- ✓ They ignite quickly and burn easily, so they drive a fire's speed.
- ✓ Branches, twigs and leaves and other fine fuels found on the ground can also burn easily.
- ✓ Types of scrub and trees drop leaves and twigs on the ground around them. These give off far more heat when they burn.
- ✓ Fibrous and dry tree bark can carry fire to the treetops, break away and spread fire.

#### B. HEAVY FUELS

- ✓ These are greater than the width of a pencil.
- ✓ They take longer to ignite but will burn for longer.
- ✓ Branches, trees and logs are examples of heavy fuels.
- ✓ They create an extremely hot fire.

### VEGETATION MANAGEMENT

Vegetation includes all the plants, foliage and mulch around your home.

By managing the vegetation around your property you can create space around your home. This will reduce bushfire intensity.

This helps protect your house from direct flame contact and reduces the radiant heat to which your house will be exposed.

While ember attack will still occur, vegetation management around your house is important. You can reduce the likelihood of embers starting new fires near your house.



## TOPOGRAPHY

### Fires burning uphill

A fire will burn faster uphill. This is because the flames can reach more unburnt fuel in front of the fire.

As a general rule, for every 10° slope, the fire will double its speed as it travels uphill.

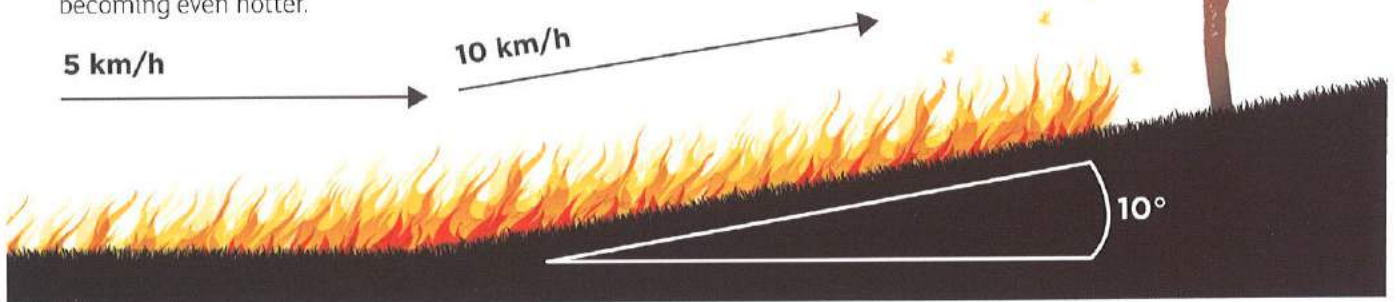
For example, if a fire is travelling at five kilometres an hour along flat ground and it hits a 10° slope it will double in speed to 10 kilometres an hour up that hill.

By increasing in speed the fire also increases in intensity, becoming even hotter.

### Fires burning downhill

As a fire travels downhill it reduces in speed and intensity. The flames reach less fuel and less radiant heat pre-heats the fuel in front of the fire.

For every 10° of downhill slope, the fire will halve its speed. Fires tend to move more slowly as the slope decreases.



## WEATHER CONDITIONS

Bushfires can vary greatly according to weather conditions. They often start on hot, dry and windy days.

### Temperature

A string of hot days will dry out vegetation, making it easier to burn. This can be made even worse by underlying dry conditions. The drier the vegetation the easier it will burn. A bushfire spreads as a result of burning embers, radiant heat and direct flame contact.

### Wind speed

Wind has a significant influence on the:

- ✓ **speed** at which a fire spreads
- ✓ **direction** in which a fire travels and the **size** of the fire front
- ✓ **intensity** of a fire, by providing more oxygen

- ✓ likelihood of **spotting**. Burning pieces of leaves, twigs and bark (embers) are carried ahead of the fire by winds, causing new fires to ignite. These are known as spot fires.

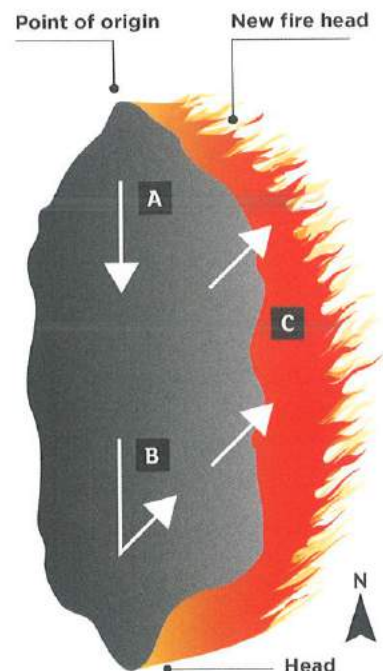
### Wind change

A change in wind direction is one of the most dangerous influences on fire behaviour. Many people who die in bushfires get caught during or after the wind change.

In Victoria, hot, dry winds typically 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.

A change in wind direction can change the size of the fire front. This makes wind a very dangerous ingredient in a bushfire.

- A** Fire being blown by a northerly wind
- B** Southwesterly wind change
- C** The eastern flank has become a much larger fire front



Fire spread

## HOW RADIANT HEAT AND DIRECT FLAME CONTACT IGNITE HOUSES

The heat that radiates from a bushfire is very intense. Radiant heat can ignite exposed surfaces without direct flame contact.

Radiant heat can also crack or break windows, allowing embers to enter a building. Plastics such as wall cladding can distort or melt, exposing timber framing. Radiant heat is extremely dangerous to people if they are unprotected by a building, shelter or barrier.

The distance between vegetation and the house will determine how much direct flame contact and/or radiant heat the house is subject to.

If the distance from the fire is doubled, the radiant heat load on the building can be reduced by four times.

The chance of direct flame contacting a house is increased when vegetation close to a house is ignited.

You can greatly reduce radiant heat and direct flame contact by carefully managing the vegetation around your home.



## CAN YOUR PROPERTY REALLY WITHSTAND A BUSHFIRE?

Everyone in Victoria who lives near dense forest, bush, grassland or the coast needs to prepare their property for bushfire. Even if your plan is to leave early on fire risk days, you need to prepare your property.

A well-prepared house where the vegetation is well managed has a greater chance of not catching alight in a bushfire. Regardless of property preparation, most homes will not be able to withstand fires in **Code Red** conditions.

You need to consider the materials that your house is made with and its design. By making modifications you can improve the likelihood that your house will survive bushfire.

Information on construction and renovation can be found in *A Guide to Retrofit Your Home for Better Protection from a Bushfire*. This publication is available at [cfa.vic.gov.au](http://cfa.vic.gov.au)

*“Even with enough managed vegetation, the safest option is to leave high-risk bushfires areas early on **Severe, Extreme and Code Red** days.”*



## ➤ **PREPARING YOUR PROPERTY**

You can reduce the impact of bushfire on your home by preparing your property.

These preparations must begin well before the bushfire season.

You should prepare your property even if your plan is to leave early on days of fire risk.

This will give your house a greater chance of getting through undamaged.

You will have to consider:

- A** how you will manage vegetation (pages 30-32)
- B** if your home is constructed or modified to withstand a bushfire (Houses are not designed to withstand **Code Red** conditions). (page 33)
- C** whether it is possible to improve the safety of your house with modifications and maintenance (pages 34-35).

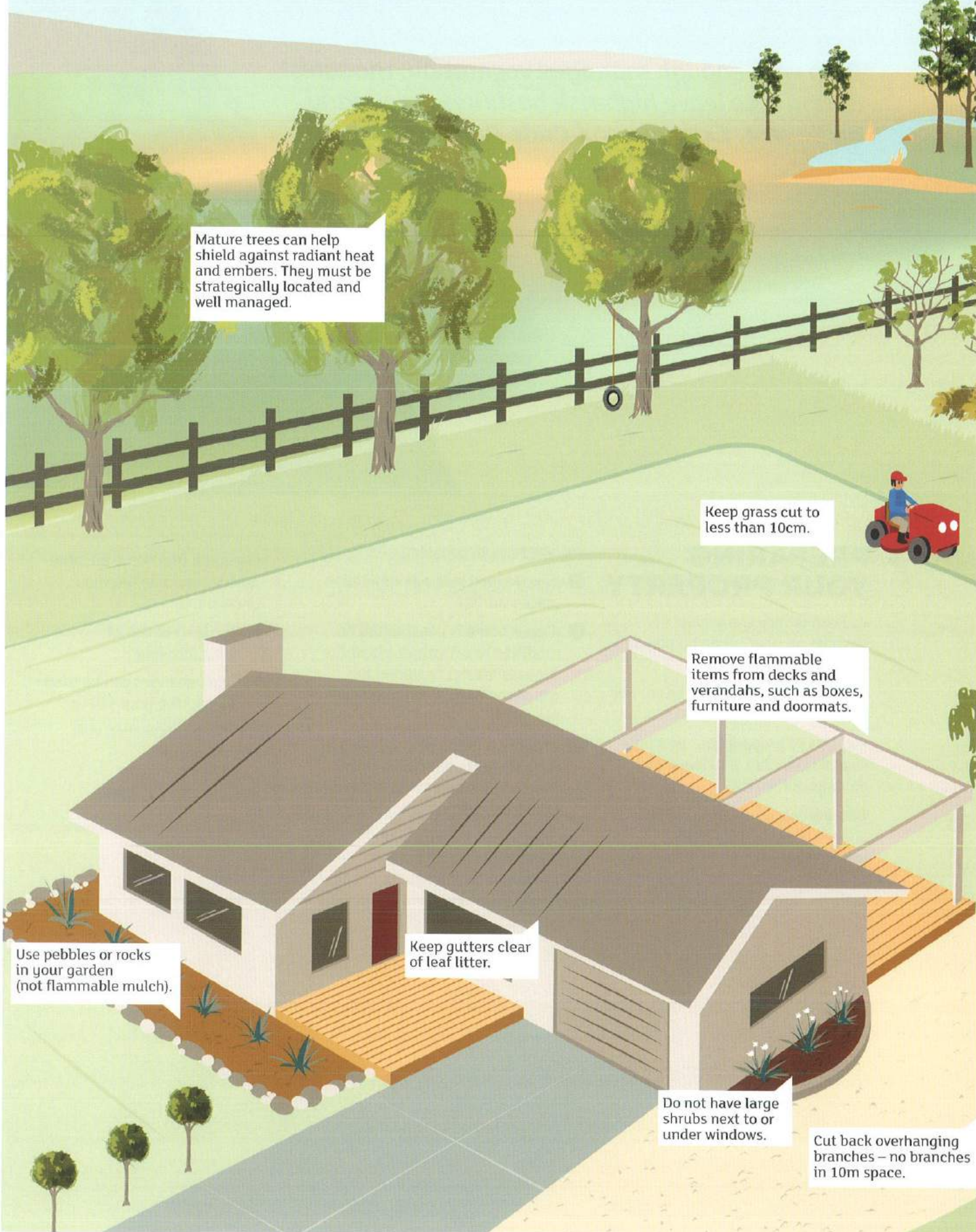
The illustration on pages 28–29 shows an example of a well-prepared property with managed vegetation.

CFA has a free Home Bushfire Advice Service to help you understand:

- the level of risk at your property
- what changes can be made to improve your safety.

For more information visit **[cfa.vic.gov.au](http://cfa.vic.gov.au)**, call 1800 240 667 or 1800 555 677(NRS).

# THE WELL-PREPARED PROPERTY



Mature trees can help shield against radiant heat and embers. They must be strategically located and well managed.

Keep grass cut to less than 10cm.

Remove flammable items from decks and verandahs, such as boxes, furniture and doormats.

Use pebbles or rocks in your garden (not flammable mulch).

Keep gutters clear of leaf litter.

Do not have large shrubs next to or under windows.

Cut back overhanging branches – no branches in 10m space.



Keep woodpiles away from house.

Store flammable liquids away from house.

Get rid of dry grass, leaves, twigs and loose bark.

Prune lower branches of shrubs to separate from surface fuels underneath.

Prune shrubs well away from tree branches.

## A. MANAGING VEGETATION

Managing the vegetation on your property will reduce a bushfire's intensity.

By having managed vegetation, you will reduce the amount of direct flame contact and radiant heat on your house.

As a general rule you may need to undertake more vegetation management if there is dense forest all around you.

For example:

- Keep grass short – no more than 10 centimetres high.
- Make space between plants and trees.
- Keep fallen leaves no more than two centimetres deep.



Keep in mind that mature trees can sometimes help shield against radiant heat and embers and can play a useful role in the protection of your home against bushfires.

Managing the vegetation around your home has four main purposes:

1. To give your house the best possible chance of surviving the passage of the fire front.
2. To reduce the chance of direct flame contact and radiant heat igniting your home.
3. To help you protect your home from ember attack.
4. To provide some level of shelter as a last resort if you and your family get caught.

Whatever the type of vegetation that surrounds your home, you need to consider how it will burn during a bushfire. In general:

- homes located in a dense forest are more likely to experience high-intensity fires
- homes located in more open country may experience lower intensity, but fast moving, grassfires.

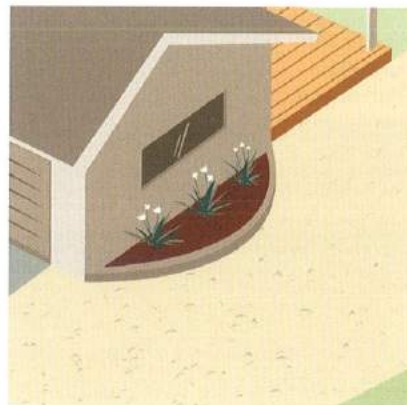
If you live in a rural environment, also consider other property assets such as sheds or fences that you want to protect.

## Use the layout of your property

Fire always follows a path where fuel is located. It does not spread easily over low-fuel areas.

Manage vegetation around your home and on your property and use the following to help reduce fire intensity:

- driveways
- pools
- tennis courts
- cultivated soil or gravelled areas
- mown lawns
- grazed paddocks
- dams and natural water features.





### Trees and bushfire

A fire will only burn trees where there is sufficient surface and elevated fuel to carry the fire into the tree canopy.

The fire front is often carried by undergrowth, such as shrubs and tall grasses, but loose, flaky or ribbon bark can contribute to ember attack.

What is growing under your trees? Consider how easily fire might be able to spread from the ground into the tree tops.

Fine fuels that are continuous from ground to treetop (known as ladder fuels) can assist the spread of fire from the ground up into the treetops.

You can reduce fuel ladders by:

- ✓ removing lower branches of trees
- ✓ pruning shrubs so that their tops are well away from the lower branches of trees
- ✓ pruning the lower branches of shrubs to separate the foliage from the surface fuels underneath
- ✓ reducing accumulated debris such as loose flaky bark, dead twigs, leaves or needles from within the branches of plants.



### Lawns and grass

- Grass needs to be kept less than 10 centimetres high. Higher than that and fire can use the grass as a ladder to other vegetation.
- You do not need to cut green lawns any shorter than five centimetres otherwise you risk causing the grass to dry out.
- Lawns between 5–10 centimetres shade the root zone and retain moisture.



### Remove weeds

Weeds are commonly found in residential bushland areas and contribute significantly to bushfire risk.

Give priority to removing and controlling them. This will help reduce potential fire fuel on your property.

Your council can help you identify weeds in your local area and provide ideas on how to remove them.

### Mulching

Mulch, such as wood chips or pea straw, is a fine fuel and can ignite during ember attack. It is extremely dangerous if used within a **10-metre** radius of your home especially under windows.

Instead:

- Use non-flammable mulch alternatives, such as pebbles, sand or rocks.
- Use weed matting cut to fit around plants and secured with rocks, pebbles or soil. It can be used to help retain soil moisture in garden beds.
- If you must use flammable (plant-based) mulch, apply it immediately after the fire season. This will allow it to break down over winter. Decomposed mulch still provides good moisture retention during summer. It is less likely to ignite than more recently laid mulch.
- If plant-based mulch is still dry at the beginning of the fire season, keep it wetted down or cover it with soil or sand during the fire season.



### Burning off and fire restrictions

Burning off dried fine fuels and cutting back vegetation is one way to prepare your property.

If you are planning to do a small burn-off on your property, you must do this well before the fire restrictions come into force.

For more information visit [cfa.vic.gov.au](http://cfa.vic.gov.au) or your local council.

### Plant selection

When planning your garden and property, consider the types of plants you use.

No plant is completely fire-resistant as given the right conditions all plants will burn. However, some are more flammable than others.

To help you select plants that are suitable for your local environment:

- check with your local council
- visit the Department of Sustainability and Environment at [dse.vic.gov.au](http://dse.vic.gov.au)
- consult CFA's forthcoming fire-smart landscaping publication at [cfa.vic.gov.au](http://cfa.vic.gov.au)



### The '10/30 right'

Under the '10/30 right', no planning permit is required to reduce fuel, including native vegetation, around your home.

However, as the right does not exist in all municipalities, you should check with your council – before removing any vegetation.

The '10/30 right' planning exemptions give residents who own their property in certain areas the right to:

- ✓ remove, destroy or lop any vegetation within 10 metres of a building used for accommodation
- ✓ remove, destroy or lop any vegetation, except for trees (i.e. ground fuel), within 30 metres of a building used for accommodation
- ✓ remove, destroy or lop any vegetation for a combined maximum width of four metres either side of boundary fences.

You need to have prior written permission from the landowner for clearance on their side of the fence.

### The '10/50 right'

For land subject to a Bushfire Management Overlay, the 30-metre provisions are extended to 50 metres. Clearance over and above these two planning exemptions requires a planning permit.

For further information on the 10/30 and 10/50 rights, please visit [dse.vic.gov.au](http://dse.vic.gov.au)

*“As part of your preparation, check that you have adequate home and contents insurance.”*



## **B. YOUR HOME'S STRUCTURE AND BUILDING DESIGN**

To reduce the impact of embers on your home there are some important building improvements that are recommended. These measures will assist in ember-proofing your house, making it more difficult for embers to enter the house or burn against the house.

The number of improvements will depend on the type of house you have. Research shows there are areas around your house that can contribute more to the overall bushfire risk than others. These include decks, windows, doors and roof areas.

CFA and the Building Commission's *A Guide to Retrofit Your Home for Better Protection from a Bushfire* includes building and renovation ideas to better prepare your home.

Anywhere embers can lodge or enter your house can start a fire.

- **Is your house above-ground on stumps or on a concrete slab? Do you have a timber deck or veranda?**

Protect underfloor spaces with non-combustible sheeting or metal mesh. This will prevent embers from landing under the house and starting small spot fires. Remove any combustible materials stored beneath the floor.

- **Is your house constructed from bricks, timber, cladding or a mixture?**

Roughly sawn timber or badly maintained brick work can catch embers. Ensure any external timber cladding is regularly maintained and all gaps are sealed. Seal or repair any holes, cracks or damage to flooring and walls. Cover all external vents with metal mesh (not aluminium) and keep clear of debris to prevent embers from entering your home.

- **Are your window and door frames well sealed?**

Place weather stripping around the inside of doors and windows to eliminate any gaps.

- **Do you have any skylights or evaporative coolers?**

Make non-combustible fire screens to cover external skylights. Protect evaporative coolers with metal mesh screens. You will need to check with your evaporative cooler supplier to ensure the performance of the system is not compromised by installing the mesh.

## **CURRENT STANDARD FOR THE CONSTRUCTION OF HOUSES IN RESPONSE TO BUSHFIRE RISK**

Following the 2009 bushfires the Victorian Government brought forward the introduction of the new Australian Standard AS3959-2009 – Design and Construction of Buildings in Bushfire Prone Areas.

The standard requires houses in higher bushfire areas to be built to modified specifications.

The standard applies to all new homes to be built in Victoria.

For more information about the construction of new homes or the modification of existing homes please:

- visit [cfa.vic.gov.au](http://cfa.vic.gov.au) or [buildingcommission.com.au](http://buildingcommission.com.au)
- contact your local council planning or building department for further information.

## C. HOUSE MAINTENANCE AND IMPROVEMENT

### ROOF

Gaps in the roof pose a high risk for ember penetration.

*“Greatly reduce the risk of embers entering your house. Seal all gaps around your house and roof, or install fine fly wire mesh around larger areas that cannot be sealed.”*

#### Sarking (reflective non-combustible sheeting)

Sarking is an effective treatment to prevent embers from entering through your roof. Unless installed at construction stage this can become very expensive.

#### Seal gaps by using compressed mineral wool insulation

This can be a cheap and effective solution for existing homes. Careful installation is required to ensure all gaps are sealed. Sealing gaps is an effective defence against burning embers.

#### Bushfire sprinklers

Sprinklers may help protect your house but have limitations. You need to ensure:

- all openings on the roof are protected for the duration of the ember attack. Sarking or gap sealing can be more effective.
- that the sprinklers fully cover the area of your house exposed to fire. This includes roofs, doors, windows and decks.

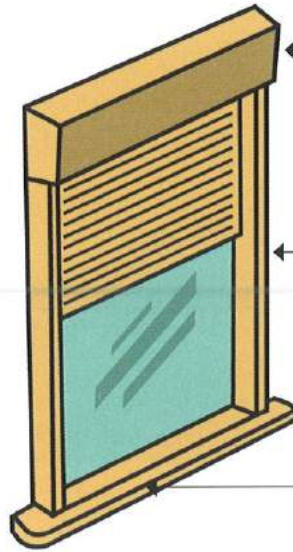
**Important:** Seek professional advice for selecting and installing the appropriate sprinkler system for your building.

## WINDOWS

Open and unscreened windows pose an extreme risk.

### Screened windows and sills

Installing wire mesh screens (not aluminium) with 1.5-millimetre holes over both the window and frame can prevent embers touching the glass or timber. This can also be an effective method for reflecting radiant heat.



### Shutters

Installing shutters over both the window and frame will protect windows from cracking from flying embers.

### Seal gaps around window frames

This is an effective treatment for existing metal window frames. The sealant should be a fire-retardant product.

### Maintenance of window sills

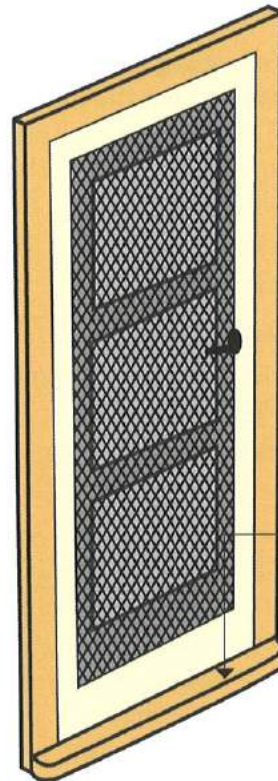
Embers lodging on combustible window sills pose a high risk. Maintain window sills so there is no flaking paint.

## DOORS

Open and unscreened doors pose an extreme risk. Embers lodging on combustible door sills and gaps around door frames pose a high risk.

### Screened doors

Installing metal screen doors over timber doors will reduce the chance of an ember igniting the door.



### Seal gaps around door frames

If the door is non-combustible then sealing the gaps around the door will prevent embers from entering into your home.

### Non-combustible door sill

Replacing combustible door sills with a non-combustible product will reduce the chance of an ember igniting.

### Separation from the dwelling to prevent fire spread

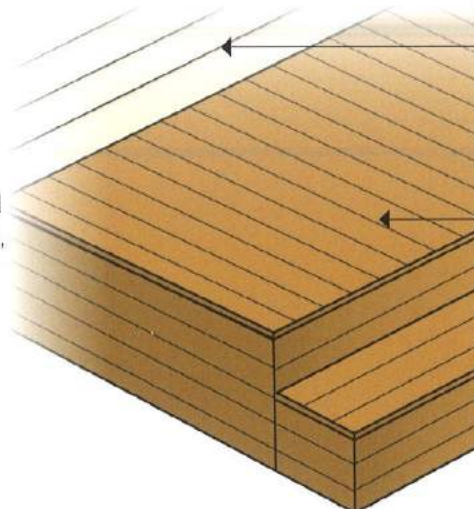
If the deck is built with combustible material, non-combustible material should be placed between the deck and the house. This will reduce the possibility of the fire spreading between the deck and the house.

## DECKS

Embers lodging on decks pose a very high risk of ignition

### Non-combustible decking materials

Non-combustible decking material will not burn. Use concrete stumps, metal framing and fire-retardant-treated timber.



### Construct with gaps between decking materials

Leaving gaps between the decking timbers will allow most embers to fall through. However, there is still a possibility of embers igniting at timber junction points. Ensure there is no fuel under the decking and that you have access to put out any spot fires underneath.



## FIRE AND THE ENVIRONMENT

### Vegetation management outside your property

Private landholders must always obtain permission from their local council (or VicRoads for most main roads) for any works on roadsides, including fire management and planting.

Local residents do not need a permit to remove fallen wood from roadside areas scheduled for burns within two weeks of a planned burn.

Department of Sustainability and Environment (DSE) and Parks Victoria may undertake planned burns and build fuel breaks to manage vegetation on public land.

A **fuel break** is a strip of land where vegetation has been reduced or removed.

### Environmentally friendly ways of managing your fire safety

Identify the environmental assets that you would like to protect from fire or fuel reduction.

These may include:

- waterways
- erosion-prone areas
- shrubs that provide screening or bird habitat
- hollow trees that provide nesting sites
- rare species
- bushland that you have regenerated.

Design your fire management using the following environmental management principles:

- Where practical, avoid damaging the environment. Consider things you can do to help keep embers from entering your buildings before you consider vegetation removal.

- Reduce the fuels by methods that avoid exposing the soil and encouraging weed growth. Consider raking and slashing fuels.
- Offset or compensate changes to the natural environment. Replace removed vegetation with vegetation of the same type and quality elsewhere on your land.

Seek appropriate advice on managing your soil, vegetation and waterways from your local council or (DSE).

### Using fire

Using fire for ecological or fuel reduction purposes is a complex and specialist tool.

You should seek advice from your local council, CFA Regional Office or local DSE office.

# SECTION 04

# PLAN FOR SURVIVAL



## **NEED SOME HELP?**

- Visit [cfa.vic.gov.au](http://cfa.vic.gov.au)
- Call the Victorian Bushfire Information Line on **1800 240 667** or via National Relay Service on **1800 555 677**

## SECTION 04 PLAN FOR SURVIVAL

### In high-risk areas, leaving early is your only safe option on Code Red fire danger days.

Leaving early is also your best option on **Extreme** and **Severe** fire danger days. Fires are unpredictable and plans can fail.

Having a backup plan can save your life if you are caught in a fire.

Know the Fire Danger Ratings at your location. The Fire Danger Rating is your trigger to act. The higher the rating, the more dangerous the situation if a fire starts. For more about Fire Danger Ratings, see page 14.

### ➤ KNOW YOUR SURVIVAL OPTIONS

#### SHELTER CLOSE BY

If you cannot leave the area it is critical to consider what shelter options are close by.

Shelter options may include a:

- well-prepared home (yours or a neighbour) that you can actively defend
- private bunker (that meets current regulations)
- designated community shelter or refuge.

If sheltering in a building during a bushfire, make sure you have a point of exit in every room used as a shelter.

Do not shelter in the bathroom as it typically has:

- only one door out
- a small window that is often frosted.

In a bushfire, it is critical to maintain visibility to know what is happening outside with the fire.



#### DON'T GET TRAPPED

- For your safety, you need to be active while sheltering. Know if you need to move to a safer position.
- If you are not able to see what is going on, you are placing yourself in a potentially life-threatening situation.

#### NEIGHBOURHOOD SAFER PLACE (PLACE OF LAST RESORT)

Neighbourhood Safer Places (NSPs) are places of last resort when all other plans have failed.

They can provide some protection from direct flame and radiant heat during a fire.

Neighbourhood Safer Places:

- may still be subject to ember attack
- are not relief centres
- do not guarantee safety
- have limited facilities
- do not provide support or services
- are not places to relocate to when leaving early
- are listed at [cfa.vic.gov.au](http://cfa.vic.gov.au)
- are not in every town. You will need to identify other shelter options in your area.

#### SAFETY IN THE CAR

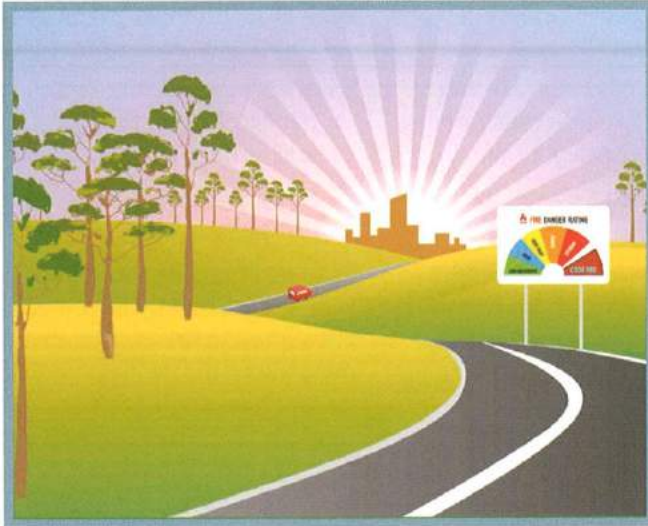
Cars are a very dangerous place to be during a bushfire. They offer very little protection from radiant heat. If you get caught on the road, this is a very dangerous situation.

To increase your protection from radiant heat:

- ✔ park behind a solid structure to block as much heat as you can. If this is not possible, then pull over to the side of the road into a clear area, well away from debris that may ignite
- ✔ wind up your car windows, close the vents, put on your hazard lights and headlights, leave the engine running and air-conditioning on recirculate
- ✔ get down as low as possible below window level
- ✔ cover up with a wool blanket until the fire front passes. If you have water, drink it
- ✔ get out of the car once the fire has gone.



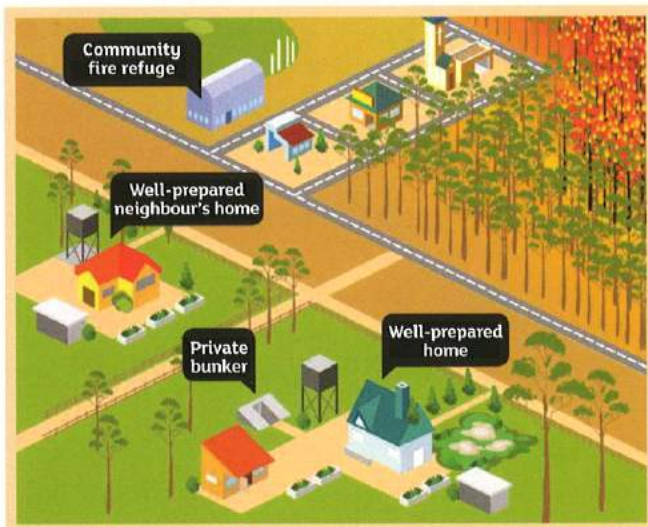
## YOUR BUSHFIRE SURVIVAL: WHAT TO CONSIDER



### Leave Early

- When the Fire Danger Rating is **Code Red**, leaving early is always the safest option.
- Leave early destinations could include homes of families and friends who live outside the risk area, a nearby town or other built-up area.

### Always the safest option

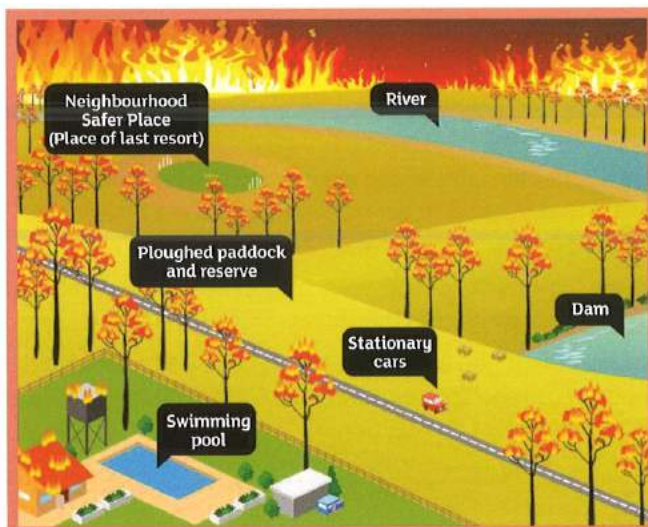


### Well Prepared

If leaving the high-risk area is no longer an option, there may be options close to where you are that could protect you. These include:

- a well-prepared home (yours or a neighbour) that you can actively defend
- private bushfire shelter (bunker) that meets current regulations
- designated community fire refuge.

### Your safety is not guaranteed



### Last Resort

In situations where no other options are available to you, taking shelter in one of the below may protect from radiant heat:

- Neighbourhood Safer Place (place of last resort)
- stationary car in a clear area
- ploughed paddock or reserve
- body of water\* (such as the beach, swimming pool, dam or river).

**High risk of trauma, injury or death. These are last resort options and do not guarantee your survival.**

\* This does not include a water tank. Dams may not be reliable as their water levels fluctuate and they may be empty in summer.



## PROTECT YOURSELF FROM RADIANT HEAT

Radiant heat is the biggest killer in a fire.

The following clothing can offer some protection from radiant heat but it may not save your life.

Keep a set ready for each member of the family:

- ✓ a long-sleeved, collared shirt and pants made from cotton or some other natural fibre.
- ✓ sturdy boots and woollen socks.
- ✓ tough leather garden gloves – not rubber or synthetic.
- ✓ a wide-brimmed hat to protect your head.
- ✓ a 'P2' type mask or cotton scarf/hankerchief for face protection and to filter smoke.
- ✓ eye protection such as smoke goggles to shield your eyes.

You need to make sure all your skin is covered. Cover up as soon as you are alerted to fire in your area. Read more about the destructive force of radiant heat on pages 7 and 26.

## STAY AND DEFEND

- If you live in a high-risk bushfire area, your home will not be defensible on a **Code Red** day.
- Even people who are extremely well prepared can die fighting fires at home. The best way to survive a bushfire is to be away from the threat.
- Most homes in high-risk bushfire areas are not built to withstand bushfire.
- Many homes close to or surrounded by heavily forested land are extremely difficult to defend.
- Defending your home is very risky – you could be seriously injured or die.
- Survival must be your main priority.
- Defending a house requires at least two able-bodied, fit and determined adults who are physically and mentally prepared to work long and hard in arduous and difficult conditions.
- Only consider staying with your property on **Extreme** or **Severe** days if you are fully prepared and can actively defend your home. Visit [cfa.vic.gov.au](http://cfa.vic.gov.au) for more information and advice on Fire Danger Ratings (also page 14).
- Discuss your plan with all family members. Everyone should be aware that staying to defend may involve trauma, injury or possibly death.
- Children, the elderly, people with special needs or a disability should be well away from the threat.

If you are confident you are capable and prepared to actively defend your property, use the *Stay and Defend* kit and planning template. They are at the back of this section.