Don’t let this happen to you…

THE HOMEOWNER’S BUSH FIRE SURVIVAL MANUAL
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This publication is intended to be a guide only and readers should obtain their own independent advice and make their own necessary inquiries.
This manual has been prepared to help you be better informed about bush fires. It draws together the best advice available on preventing fires and preparing for them. Many of the lessons have been learnt at the tragic cost of loss of possessions and life itself. It is hoped that you will consider how best to apply this information to your own property and help reduce fire damage and the associated human trauma during West Australia’s hot, fire-prone summers.

YOU ARE IN CONTROL

Make your home a fire refuge

On your property, fire safety starts with you. You are in control. It’s in your hands to get rid of fire risks around the home, and build up a garden that will protect you in a fire. This book sets out some useful hints on what to do.

Fire prevention is a family business. There’s a job for even the youngest child—raking up the dead leaves, perhaps, or watering the lawn near the house, to keep it green and safe. For older children, there’s a lot to learn about fire safety—about the role of trees and scrub in a fire; about safety features like hazard separation zones and building protection zones; and about the likely pattern of fires in the area.
Three ways to protect your home

All fires have three ‘weaknesses’—they need fuel, oxygen and heat. If there’s no fuel to burn or no oxygen, the fire will go out. And if the fuel is not dried out sufficiently, it won’t burn.

Most of the fire safety measures in this book are based on reducing fuel, oxygen and/or heat in and around the house.

Fuel

In summer and during the northern dry season, Australia is covered with vegetation that is fuel for fires—long dry grass, parched native shrubs and dead leaves and twigs. Without fire fuel and an ignition source there would be no bush fires.

Fire prevention measures are largely based on reducing these fuels—by cool burning forests and long grass before the fire season, mowing, and slashing and creating fire breaks. When a bush fire is raging, firefighters often create fire breaks around it or burn back towards it to starve the fire of fuel. Likewise, it is essential to remove fuel from around the house in order to reduce fire intensity.

Heat

Bush fires generate unbelievable heat. Much of this goes up in the air, but significant heat levels also radiate out at ground level. This ‘radiant’ heat spreads the fire by drying out vegetation so it will burn. Radiant heat can kill people, plants and animals. That’s why during a fire you need to cover all bare skin with natural-fibre clothing—a shirt with long sleeves, long trousers and gloves. Keep a woollen blanket in the car so you can get under it if you’re trapped in a fire.

Although radiant heat can be fierce, it can be easily deflected by a solid barrier, such as a hedge wall or building. If you’re caught in a bush fire, the safest place is inside a building, away from the radiant heat, particularly if the building is well prepared and has a 20m circle of safety.
Wind breaks and other barriers can slow the effects of radiant heat drying out unburnt vegetation, thereby helping to check the blaze.

Sparks or embers from a bush fire can travel ahead of the main fire and start new blazes. Entry points into the house (such as spaces between the eaves and areas under the house) should be closed to protect your home from these hazards.

**Oxygen**

When a frying pan catches fire, it will go out if you put the lid on the pan. In the same way, a bush fire needs oxygen to keep going—the more there is, the faster the fire burns. Strong winds not only force the fire along but also increase air circulation and provide more oxygen. Therefore, any measure that reduces wind speed will reduce the intensity of the fire. In many instances trees can effectively shelter your house from winds.

Fires usually move faster in grassland than in forests because winds are stronger and the fuels are less dense. Grass fires are generally less intense than bush fires.

The prevailing afternoon breeze in summer presents the most common threat as it fans bushfires when fire fuel is at its driest during the day. But unstable atmospheric conditions that create less common north-west winds in summer can lead to the most destructive bushfires.

**Remember**

**Fuel**
- Reduce the level of fire fuel to lower the intensity of a blaze.

**Heat**
- Protect bare skin from radiant heat.
- Use solid barriers to deflect radiant heat.
- Close off areas where sparks might lodge.

**Oxygen**
- Outside—reduce wind speed with trees.
- Limit air circulation in the house by enclosing areas like the roof cavity.

Flying sparks can easily start new fires.
What have we learnt from bush fires that have occurred in the past?

- Ash Wednesday in Victoria...
- Dwellingup WA, 1961...
- Sydney, 1994...
- Wooroloo WA, 1997...
- Brookton WA, 1997...
- Sydney, 2001...
- New South Wales, 2002...
- Canberra, 2002–2003...
- Victoria, 2002–2003...

We know that... some houses are ill prepared or built too close to a potential bush fire hazard and may not survive a bushfire. They have either been constructed in the wrong way or with less-than-ideal products.

We know that... too many people do not take even the most simple precautions to protect their homes so grass, twigs and dead leaves are allowed to build up around buildings.

And we know that... with sound planning and reasonable effort, houses in fire-prone areas can be made safe from bushfires.
**Keys to survival**

**Key 1—Starve the fire**

There will be no fire if there is nothing to burn. So reduce fuel levels around your house by:

- not having trees overhanging the house. Maintain a minimum two metre gap
- cutting long grass and dense scrub
- raking up leaf litter and twigs under trees, and removing trailing bark
- pruning lower branches (up to two metres off the ground) to stop a ground fire spreading the canopy of trees.
- creating a firebreak along your boundary.

**Check your local government’s firebreak requirements.**

**Key 2—Make a safety zone**

Create a building protection zone (circle of safety) around your buildings that is as big as possible but has at least a 20-metre radius. On the outside edge of the circle, plant a row of fire-resistant trees or build a solid wall or fence to slow the fire’s speed, cut down radiant heat and catch flying embers. Within the safety zone:

- plant trees singularly (not in clumps) and make sure they don’t touch the house. Plant the tree so its crown is at least two metres away from the house. Allow for growth of the tree.
- locate any vegetable garden, lawn, pool, or patio on the side of the house likely to face a fire (for more information, see page three under the heading ‘Oxygen’).
- make sure you’ve cleared away long, dry grass, leaves and other fire fuels.

See: *Gardens, page 16.*
Key 3—Fill all the gaps

In a bush fire, houses are usually ignited by the entry of embers into the roof space, a wall cavity, onto ledges or under the house. Prevent sparks from entering your house by blocking all the gaps.

For example:
- close in spaces between eaves that lead to the roof space and close up gaps that lead under the house.
- place metal fly wire mesh on all vents to keep out sparks.
- check for gaps in walls and the roof itself and fill or block them.


Key 4—Fix the fire-traps

Walk around your property imagining a bush fire is approaching. Are there any fire-traps you’ve overlooked?

Typical fire-traps are:
- The wood-heap—don’t pile it against or near the house.
- All fuel containers need to be in a shed away from the house.
- Rubbish—remove any timber and old junk lying around.
- Overhanging trees—prune branches that overhang the roof or touch the walls. Create a 2-metre wide gap between the tree and the wall.

Key 5—Make sure there’s water

In a bush fire, mains water and power supplies are likely to be cut off. To provide water pressure for hoses in this situation, put in a water tank (the larger the better) and link it with a petrol or diesel pump.


Remember

- Starve the fire by reducing the fuel levels around your house.
- Design your garden as a minimum 20-metre circle of safety building protection zone.
- Prevent sparks from entering your house by blocking all the gaps.
- Fix the fire-traps.
- Make sure there’s a reliable alternative supply of water.
**HOW RISKY IS YOUR LAND?**

Estimate the fire risk in your district by ticking the level of risk you think applicable in each of the eight points on this page. The more high-risk points you have, the more fire protection measures you’re likely to need.

<table>
<thead>
<tr>
<th>Fire season—how long?</th>
<th>Fire Risk</th>
</tr>
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<tbody>
<tr>
<td>High-risk areas have a long fire season—five or more months each year. Low-risk areas have a shorter fire season—only a couple of months.</td>
<td>Low Med High</td>
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<table>
<thead>
<tr>
<th>Slope—how steep?</th>
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<tbody>
<tr>
<td>If you live on or near very steep slopes, it’s a high-risk area. The steeper the slope, the faster a fire will burn up it. A low-risk area will have gentle slopes or be quite flat.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vegetation—how much?</th>
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<tbody>
<tr>
<td>Fires need fuel to burn. If you have a heavy coverage of long grass, forest-floor litter and flammable scrub nearby, you’re in a high-risk area. A low-risk area would have little or no such fire fuel.</td>
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</tbody>
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<thead>
<tr>
<th>Vegetation—how dry?</th>
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<tbody>
<tr>
<td>The drier the vegetation, the greater the fire hazard. Northern slopes are drier than southern slopes in spring and early summer.</td>
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<table>
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<tr>
<th>Bush fires—how often?</th>
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<tbody>
<tr>
<td>Some places have a history of bush fires. The more often fires have occurred in the past, the higher the potential risk.</td>
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<tr>
<th>Houses—how many?</th>
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<tbody>
<tr>
<td>More houses in rural areas present higher fire risk. Low risk is one house for every 50 hectares or more; high risk is one house per 10 hectares or less.</td>
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<tr>
<th>Roads—how good?</th>
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<tbody>
<tr>
<td>Low-risk districts have many good roads providing easy movement through the area. High-risk areas have a single, long dead-end road, or roads that are easily blocked by falling trees.</td>
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<thead>
<tr>
<th>Fire Services—how good?</th>
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</thead>
<tbody>
<tr>
<td>Low risk areas have good firefighting services, a fire brigade within 30 minutes call, several back-up fire brigades, plenty of water supplies and adequate fire access tracks.</td>
</tr>
</tbody>
</table>
The safest place in a bush fire may well be your own home if you've prepared prior to the fire season and followed the advice in this book.

It's safer than being out in the open and it's better than trying to make a dash by car through the fire front on roads blocked by emergency traffic, falling trees or covered in dense smoke.

Think about your home as a fire refuge. Have you filled in all the gaps (between the eaves, under the house and in any nooks and crannies) to keep out sparks? How good is the water supply? Have you put shutters or 'wire' flywire on the windows?

If you feel confident your house would be safe in a fire, you are fit and do not have young children or are caring for people with impairments, make plans to use it as your fire refuge. If you remain, when the fire front has passed—and this may only take 5–10 minutes—you'll be on hand to put out any little fires that have started around the house, before they have time to get a hold. Spot fires have been found to be the primary way bushfires destroy homes.

See: If you decide to stay, page 30.

A refuge in the laundry

During the approach of a bush fire, you should patrol the interior of your house to put out any spot fires caused by embers entering broken windows or ceiling cavities. Attending immediately to any small fires inside the house can save your home and those within it.

If a fire becomes uncontrollable inside your house, sheltering inside it is courting disaster. Preparation, patrolling and quick action may prevent the house from burning uncontrollably, at least until the fire front has passed.

Preparing your refuge

- Establish your refuge on the opposite side of the house to which the fire advances.
- On steep sites, choose your refuge in a room closest to the hilltop since the most severe fires go uphill.
- It is best to have a door leading to a sheltered area outside which has a wall or fence to deflect radiant heat. The area should be paved or have short, green ground cover.
- Plan to keep out heat, smoke, sparks and fumes by placing seals around doors and blocking off vents.
- It is ideal to have a small window which you can use to view the fire’s progress. Use wired glass, for strength.
Safety features
It is best if you choose a room built of strong, low-flammable materials.
Ideally, there should be:
- a concrete floor,
- solid brick walls and
- a protected ceiling.

Ceiling joists should ideally be lined both sides with double-layered, fire-resistant plasterboard. Place metal mesh reinforcing (100m squares) above this to stop falling material going through the ceiling.

If you’re using the laundry, you have the added advantage of a water supply on tap.

Personal protective equipment
Your special refuge room is the place to store:
- fire-resistant clothes (long trousers made from natural fibre, woollen shirts and strong, leather shoes for all the family).

See The Right Clothes, page 31
- home protection equipment—buckets, mop, hoses, rakes, knapsack spray.

See Equipment, page 32.

An example of a laundry used as a fire refuge

Small window of wired glass or fitted with a shutter which can be closed from the inside.
Simple measures such as installing wire or metal flyscreens on windows, placing seals around doors and windows and clearing gutters of leaves can make all the difference in protecting your home in the event of a bushfire. Here are some simple pointers that are just as useful for old houses as for newly built ones. These tasks need to be undertaken before spring and during summer.

PROTECT HOUSE

Screen out the fire

Amazingly, ordinary wire (not synthetic) flyscreens can help save your house. Fitted on every window, they reduce radiant heat (which can shatter glass) and keep out flying embers. Screens are also useful on all doors leading outside. Fine metal flywire covers should be fitted to all vents, to keep out sparks. On chimneys, use a wire-mesh capping outside and a fly wire screen inside, flush with the fireplace. Doors and windows should be weather stripped.

Big windows need shutters

To protect windows from breaking in the heat of a fire, consider fitting fixed or removable shutters over large areas of glass (large windows, sliding doors). In addition to their value in a bushfire, they’ll also keep the house cool on hot days.

Shutters should be flat and made of metal fire-retardant plasterboard, hardboard or fibro-cement. Tight-fitting roll-out aluminium shutters are also fine. If slatted shutters are used, they need covering on the outside with metal flywire mesh, to keep out sparks.

Glazing in windows and doors can also be broken by heat from nearby fuel which has caught fire. Small amounts of fire fuel in the form of trees and shrubs, dead wood and other flammable materials should be kept at least two metres away from glazing.
Placement of large amounts of fire fuel should be much further from buildings. It is important to note that radiant heat can seriously effect objects above and in front of a fire at a distance which is four to five times the flame’s height.

**Leaf-free gutters**

Leaves in the guttering can help a fire enter your roof. You’ll need to keep cleaning out the leaves all through summer. An easier way is to fit a leafless guttering system, leaf guards or have no gutters.

**Plastic pipes have melting moments**

Exposed plastic water pipes and hoses may melt in the heat of a fire—just when you need them most. To avoid this:
- Bury plastic water pipes (PVC and poly pipes) at least 30cm underground.
- Use metal hose fittings rather than plastic fittings.

**Ceiling safety**

Burning embers may get into the roof through cracks under the tiles. You can reduce this fire risk by lining the ceiling space with fire-resistant insulation and attaching a layer of aluminium foil to the underside of the rafters.

**LP gas cylinders**

Locate LP gas cylinders on the side of the house furthest away from the likely direction of bushfires (for more information, see page three under the heading ‘Oxygen’). Don’t place them under the verandah. Make sure the pressure relief valve is directed away from the house and that there is no flammable material in front of the valve for at least six metres. Set the cylinders on a concrete or brick base and fix them to a strong support. Turn the valve off as a fire approaches.

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**Remember**

- Wire screens, shutters and seals around doors and windows keep out sparks.
- Keep leaves out of gutters.
- Water pipes should be made of metal and buried underground.
- Make the ceiling safe.
- Take care with gas cylinders.
NEW HOUSE?

SITE IT WITH FIRE PROTECTION IN MIND

Beware hilltops

The steeper the slope, the faster a fire will travel up it. So it’s risky to build on the top of hills or ridges. The lower down the hill, the safer you are. Flat country is the safest topography.

Size up the countryside

Before you choose a site, weigh up its good and bad points. Is there a wind break you can use to protect your house? Is there a nearby stream or a dam? It may be preferable to build on the side of a body of water which is opposite to likely direction of bushfires (for more information, see page three under the heading ‘Oxygen’). Be aware if the water source dries out in summer as it can provide extra fuel for the fire and increase the risk.

In steep, scrubby, fire-prone bushland you’ll need extra fire protection. Remember, good siting is the key to protecting your new home from bush fires.
Keep clear of forests
Forest fires can cause ‘spotting’ (spot fires from burning embers—for example, bark and twigs) for at least half a kilometre down wind. The greatest risk of spotting is closest to forests.

Roads—the more the better
Make sure there are at least two ways in and out of your house site. Roads can easily be blocked by fire and falling trees. Consider installing a fire gate between your property and any neighbouring properties so that you all have alternative escape routes.

For more information contact your local government.

Remember
- It is best to build on flat country, not on hills.
- Check the site for fire risks and protective features.
- Keep clear of forests.
- Ensure there is more than one road leading out of your property.
When you're planning your new house, here's some basic safety features to keep in mind.

History has shown that flying embers are one of the two major ways a bushfire can destroy a house. Apart from the direct flame of bushfires, buildings can be ignited by embers which catch on windowsills, in nooks and crannies, sheltered recesses and doorways or under loose roofing or verandahs. These embers start little fires which go unnoticed and burn down a home from the inside out.

So fill in all the gaps, put shutters on the windows and avoid rough finished timber that can catch sparks.

Simple shape, single storey

The safest houses have smooth outside walls with no nooks and crannies and a low-pitched roof with no level changes. Single-level houses are generally safer than split level.

Roofing materials

Metal sheeting is the best—it can withstand falling trees better than other roofing materials and it's easier to close off from sparks. If you use tiles, they need to be well fitted, with fire-resistant sarking (boarding between rafters and the roof) beneath them.

Avoid roofing materials that catch fire easily like timber shingles, shakes and asphalt shingles.

A low-profile roof reduces wind turbulence, so avoid or minimise level changes and valleys where leaves and debris can gather.

If your house is in dense bushland, it's worth taking extra measures to protect the rafters from burning. Fully enclose the rafters by placing a layer of aluminium foil above and below them. This reduces the oxygen supply a fire needs to keep burning. If you have cathedral ceilings, fill up the space with fire-retardant insulation for the same reason.

High winds occur in fires. Make sure your roof can withstand these winds.
**Skylights and air conditioners**

Plastic skylights may melt and glass skylights may break, letting in the fire. If you must have a skylight, use flat wire-meshed glass and have a removable outside cover for it.

Evaporative air conditioners should be turned off when a bush fire approaches so that smoke and sparks are not drawn into the building. Those air conditioners containing flammable materials should be covered with a suitable metal screen to prevent entry of sparks.

**Under floor spaces**

Houses on stilts can be fire-traps. Air turbulence and flammable material under the house can provide a fire with access to your flooring. The safest option is to build on a concrete slab. If stilts are a necessary part of your house design, keep the floor as close to the ground as possible. Enclose the underfloor space and make sure no flammable materials build up under the floor.

**Use fire safe building materials**

Houses made of brick, mud brick, fibro and weatherboard are all acceptable (paint on the weatherboard has to be kept in good condition). However, vinyl weatherboards, rough timber and some other claddings may cause problems in a fire by warping or catching sparks.

If possible, use bricks or other fire-resistant material at ground level around the walls. If you use cladding that may cause problems in a fire, increase the circle of safety building protection zone by two or three times.

**Timber—rough is risky**

If possible, steer clear of elevated timber decking, stairs or raised timber verandahs. If you do use them, remember that rough sawn timber catches dust, which is highly flammable. Timber can be used safely if you:

- use a dense hardwood timber like jarrah for exposed rafters and external timberwork.
- give it a smooth or painted finish.
- don’t use flammable coatings like tar or resinous compounds, which may catch fire easily.

**Remember**

- It is best to build a single-storey house with a simple shape.
- Use a low-pitched roof with no level changes or skylights.
- Build on the ground and avoid stilts.
- Use safe building materials.
- Use timber wisely.
- Build to the Australian Standard that matches your location’s bush fire hazard.
In a bush fire, a well-designed garden can provide a 20m circle of safety building protection zone around your house. The principles are simple:

**Use your trees**
They can protect you from strong winds, killer heat and flying embers.

**Remove fuel**
Get rid of long dry grass, dead leaves and twigs, and flammable shrubs.

**Pick your plants**
Some trees and shrubs are much less flammable than others in a bush fire.

**Design for safety**
Put low fire-risk features—lawns, gravel paths, vegetable gardens, pools and patios—between you and the potential fire. Build in 'heat shields' to protect your plants and the house.

Here are some things to think about, when you’re planning a garden with bush fires in mind.

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1. **Use your trees**
Some people think the safest thing to do is to chop down all the trees around your house. This may not be true.

**Trees may save your house in a bush fire**
In a hot dry summer, trees are likely to be the greenest and wettest things around. A wind break will help either to protect your house from the full force of a bush fire or lift the wind over your house. Ideally, plant the shortest trees near the fence and the tallest on the inside edge.

You want your trees to carry the hot fire laden winds up and over your house. But you don’t want them to catch fire; and if they do catch alight, you don’t want them to spread the fire to other trees or your house.

*See: Wind breaks, page 19.*

**Tree safety**

**Keep trees clear of the house**
Trim back branches that overhang the roof or touch the walls. Create a minimum of a two-metre gap.

**Trim lower branches**
A ground fire will have trouble getting up into the trees if you prune the lower branches up to two metres off the ground and ensure vegetation is low under trees.
Break the canopy
Inside the wind break, plant trees singly or in small clumps—not in a continuous band. If your house is close to forest country, make sure there’s a good break (100m) in the tree canopy between the forest and your own trees.

Get rid of dry fuel
Trees almost always catch fire because the dead leaves and litter under them are burning. Rake it up, dig it in or pick it up with a motor mower.

Watch out for dry fuel in and under trees. Get rid of hanging bark, dead branches, and dead sections of hedge. Getting rid of dead material is a job you may have to keep doing all summer.

2. Remove fuels
Around your garden, the most important part of preparing for the summer fire season is to remove any fuels that can carry the fire. Fuels include dead leaves (under trees, under the house, in the gutters), twigs and branches; long dry grass; stacks of timber or rubbish; and liquid fuels (such as lawn mower fuel).

Any garden beds that are mulched need to be kept damp, so that the mulch itself does not become a fuel.

3. Pick your plants
Choosing plants to protect your home
Some plants are very flammable while others will provide good protection for your home. Those that provide the best protection in a fire contain plenty of water or salt in their leaves, don’t contain volatile oils and don’t have too many dead leaves and twigs (see table).

Fire resistance of trees and shrubs

<table>
<thead>
<tr>
<th>FIRE RESISTANCE</th>
<th>Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>Salt-rich plants</td>
<td>Salt bush, Tamarix, Boobialla.</td>
</tr>
<tr>
<td></td>
<td>Succulent ground-covers</td>
<td>Pig-face, Ivy, Strawberries.</td>
</tr>
<tr>
<td></td>
<td>Deciduous trees</td>
<td>Fruit trees, Oaks, Maples, Elms, Poplars, Willows.</td>
</tr>
<tr>
<td></td>
<td>Evergreen hardwoods</td>
<td>Peppercorns, Pittosporum.</td>
</tr>
<tr>
<td></td>
<td>Introduced conifers</td>
<td>Pines, Firs, Cypresses, Cedars.</td>
</tr>
<tr>
<td></td>
<td>Eucalypts</td>
<td>Smooth-barked varieties are safest.</td>
</tr>
<tr>
<td></td>
<td>Some native shrubs</td>
<td>Acacias, Melaleucas, Callistemons, Grevilleas, Hakeas, Tea Trees, Banksias.</td>
</tr>
</tbody>
</table>

The main difference between a high-risk tree and a safe tree is the amount of dry fuel underneath it. Before you pick a list of plants, ensure they are appropriate for your area. Choose plants that will not become a weed in your area.
You should consult your local nursery for specific advice for your circumstances. Non-endemic plants can become weeds when grown in a different environment. Weeds can become a major environmental issue so local native species are recommended.

**Fruit and vegetables are fine**

A vegetable patch makes a good green firebreak, so locate it, if you can, on the side of the house most at risk from bush fires (consider fuel levels as well as threats caused by wind direction—see page three under the heading ‘Oxygen’ for more information about wind threats). Fruit trees give excellent fire protection—plant as many as you like, all around the house. If you’re starting an orchard, locate it on the side of the house that receives the prevailing afternoon summer wind.

**4. Design for safety**

Fires spread because the radiant heat from the fire-front dries out the vegetation enough to let it burn. So anything that stops this heat will protect your plants from burning and also protect your house. You can build ‘heat shields’ into your garden to look like part of the grand design—earth mounds planted with succulents, a wind break for the barbecue area or a fence or wall to support vines or trained fruit trees. Heat shields can be made of any solid material and are best located on the most fire-prone sides of your garden.

**Green lawns—or gravel**

You need non-flammable or low-risk ground cover close to the house. A green lawn works well (keep it mowed short and as green as possible during the fire season). A wide gravel path (or any sort of paving) is fine too. Low-burn shrubs can be set in the lawn or paving, but not next to windows.
Wind breaks are beautiful to look at and useful for protecting houses, livestock and crops.

But are they a fire hazard?

No, say the fire experts—not if they are well maintained. In fact, a well-designed and maintained wind break may protect homes and buildings from bush fires in rural areas.

Wind breaks may:
- reduce wind speed
- filter out flying embers
- check the spread of fire.

Here’s how they do it, and what you need to know to get the most from your wind breaks…

**Wind speed**

When the wind hits a row of trees, it is slowed down and forced over the trees. The amount of wind protection depends on the density of the wind break. Dense trees provide a greater block to wind initially but to less area behind the wind break. A less dense wind break provides a lower block to wind but diverts the wind over a longer distance behind the break.

If you’re planting a wind break around your home, 50–60% of the wind should be allowed to penetrate.

**Flying embers**

In a bush fire, the greatest risk to your house is not the flames (if you have a 20m circle of safety) but flying embers carried by the strong winds. Trees can catch many of these sparks and burning twigs before they get to the house. Because green leaves contain a lot of water, trees do not usually catch fire from flying embers, although this can happen if there is too much dead material (twigs, leaves and loose bark) on the tree.

**Slowing the fire**

Trees slow wind speed and helps to slow the fire. They also provide a shield from radiant heat. Under trees where roots have suppressed the grass there is usually a bare area that acts as a natural fire-break, again helping to slow down the flames.
Getting the most from wind breaks

A single row of trees provides good protection from wind and fire. A multi-row wind break is even better. But a series of wind breaks offers the best protection.

For best results:

- Wind breaks should be planted at right angles (90 degrees) to the prevailing winds.
- Solid wind breaks can cause turbulence, so a wind break that allows approximately 50-60% of the wind to pass through is recommended.
- The minimum length for a windbreak should be 100m, but ideally a 200m wind break would give you a larger protected zone from the winds.
- An effective windbreak can reduce the wind speed up to 20 times that of the height of the trees. However the maximum protection area provided by the wind break is about three to seven times the height of the trees.

Don't let your wind break burn!

A ground fire will not run up into a tree if there is a clear break between the ground and the branches and the bark is not highly flammable. So prune off the lower branches to about two metres up the trunk (some species self-prune these lower branches anyway).

Make sure dead leaves, loose bark and other litter are not allowed to build up under the trees and that nearby grass is kept short. A solid fence along the windward side of the wind break blocks low winds and helps to ensure the trees don’t burn.
Houses in Forest Country

If you live in the middle of a forest, special precautions need to be taken to manage the fuel levels in the forest. High-fuel levels on the forest floor may support a 'crown-fire' (a fire in the tree tops). On sloping ground fire in a tree canopy can be supported by surface fire up to 100m behind it.


The best plan is to thin the trees to give a 'park-like' look, and ensure the ground beneath them has low fuel levels. The steeper the slope, the larger the area you'll need to clear of fuel. Start with a minimum of 20m from the house on flat land and add at least a metre for each degree of slope.

If you reduce the amount of ground fuel in forest areas, the fire intensity and the likelihood of crowning 'tree-top' fires will be reduced.

For information on carrying out prescribed hazard reduction burning or other fuel reduction methods with a minimum impact on the environment, speak to your local government.
WINTER WORK MEANS FIRE-FREE SUMMERS

The general layout of your rural property can be used to protect the homestead and buildings. For example, a green crop becomes a natural firebreak if placed between the house and the most likely direction of bushfires (for more information, see page three under the heading ‘Oxygen’). Locate at least one dam close to the house for firefighting purposes. Also make sure you have more than one access road into and out of your property in case one of them becomes impassable.

Grazing is the cheapest way of reducing dry grass, which may be a fire hazard. Heavily graze house paddocks in spring and summer. As part of your property management program, consider the need for firebreaks and pre-fire season burning-off to reduce fuel levels. You should take special measures to protect your livestock, haystacks and fuel supplies. In most areas there are local government requirements.

Firebreaks

Firebreaks may not stop a major fire, but they can prevent a small blaze growing too large. Contact your local government for firebreak requirements.

Green summer crops

Green potato, canola or lucerne crops (among others) can provide a green firebreak near the house.

Ploughing

The best time to plough a break is winter or early spring, before the grass begins to grow. Follow up with disc harrowing just before the fire season.

Mowing or slashing

Slashed grass must be removed to prevent it becoming a fire hazard. Slash any long grass near the house. Chemical firebreaks may be an option in areas that may be prone to soil erosion.
Livestock
Where will you put your stock in a bush fire? Your animals will need water, shade and a fire refuge. Before the fire season, plan a refuge for your stock – it might be the centre of a ploughed paddock or a field of green crop like lucerne.

Haystacks
You need to protect your fodder supplies and minimise associated fire risks. Locate fodder supplies away from the house separate different types from each other and plough a firebreak around them. Alternatively, fence off the hay and allow grazing right up to the stack. Don’t burn off around haystacks.

Fuel supplies
Keep fuel away from haystacks and buildings. For large amounts of flammable fuels, use elevated storages or underground tanks. Drums of fuel should be stored in a fully-enclosed shed well away from the house.

Fire fuel reduction
Fuel reduction is important to optimise protection of life and property from bush fires. Hazard separation zones and building protection zones are critical to protect life and property. Fuel reduction can also have an adverse impact on the flora and fauna of a particular area. It is important to ensure that fuel reduction not only protects life and property but also prevents unnecessary destruction of native flora and fauna and exposure of an area to erosion.

Fuel reduction can be achieved through a number of methods, including:
• slashing
• mowing
• park land clearing
• prescribed hazard reduction burn
• clearing (please ensure you have authority from the Department of Environment to undertake any clearing).
Burning off

You will need a permit during the 'Restricted Burning Period'—check with your local government. It’s important to comply with the conditions of the permit. Whether or not you have a permit, it’s illegal to burn off on days of very high or extreme fire danger.

Strip burning is best—but take great care by keeping the burn area small and always under control. Plough a firebreak around the area to be burnt, have firefighting equipment on hand (knapsack spray and hand tools or a firefighting unit), and burn back into the wind. You’ll need enough people with you to keep the fire under constant control. Develop a burning prescription that specifies objectives and strategies as these will help determine the fire fighting equipment you will need. Advise your neighbours to warn them of any possible smoke hazards. Your local fire brigade may be able to help. Mop-up standards must be adhered to—don’t leave the fire unattended until it is out. Comply with permit conditions and seek advice from your local government.

Remember

- Many fires start from burning off operations which get out of hand. Make sure you know what you are doing—check first with your local government.
- Wind breaks, firebreaks and good layout make a rural property safer.
- Develop a prescription with objectives and strategies.
WATER SUPPLIES

If you’ve made the right preparations, the garden hose can save your house in a bush fire. But you may need an emergency water supply because in most bush fires the mains water supply can fail and electric power supplies be cut off.

Your emergency supply needs to be gravity fed unless you use a petrol or diesel pump to provide water pressure.

Here’s how to keep the water flowing in a fire.

VITAL FOR HOME PROTECTION IN RURAL AREAS

Store it
If your house is on reticulated mains water, you can run it through a storage tank, so that the tank is always full. If you use tanks for your domestic supply, make sure that a water supply for personal and home protection is always kept in reserve. A swimming pool or dam is fine.

How much to store:
To protect the house itself, you need a minimum of 1,000 litres—preferably more. For a sprinkler system, allow about 15,000 litres plus a further supply for household fire protection.

Protect it
A metal tank stand may buckle in the heat of a bush fire so put a heat shield around it—corrugated iron is fine. Don’t store wood or any other flammable material under the tank stand.

Pump it
A small fuel-powered pump can be a real help in boosting water pressure for your hoses. A small (five horsepower) petrol or diesel pump is all you need—not an electric one, since there may not be any power. Put the pump in a shed to protect it from radiant heat. Make sure you maintain your pump.

Sprinklers and hoses
Run the reticulation system in a loop right around the house. Put in gate valves and hose couplings at each corner, so you can deliver the full force of water wherever you need it.

If you have a sprinkler system, direct the sprays on to the parts of the house most at risk—the windows, eaves, LP gas cylinder, and verandah.

Remember that plastic water pipes are likely to melt—use metal pipes or bury plastic pipes at least 30cm underground. Make sure you have enough hoses to cover the entire house. If they are plastic, you’ll need to take them inside while the fire front passes, to prevent them melting.

Remember
• Water supplies are vital for firefighting in rural areas.
Trees and power lines are a dangerous combination. Fires can start in a number of ways from trees and power lines coming together:

- Branches shorting out between wires.
- Branches cause the lines to clash together.
- Power leaking down a tree.
- Small branches bridging across insulators in high winds.
- Lines brought down by falling trees.

**Responsibilities**

The occupiers of land are responsible for all cultivated trees and Western Power is responsible for most naturally occurring vegetation, except for vegetation from private property which encroaches into the power line clearance zone. In this instance, the occupier is responsible.

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**Power clearing standards for distribution lines**

Distribution lines are the most common ones and carry up to 33 kV.

**Urban areas**

For urban areas the **minimum** vertical and horizontal clearances to the power lines are **two metres**. Branches can overhang into the clearance zone with Western Power’s permission. This is generally only given if the tree is of a certain species or a qualified tree expert vouches for the soundness of the tree.

Any plant that grows less than five metres is suitable for planting near power lines.

**Rural areas**

In rural areas that would support a fire that could escape and become a bush fire (this may include areas inside a township boundary) the clearances are greater to allow for the increased risk. Although the **minimum** is still **two metres under the line**, it is 2.5m to the side of the line. In heavily timbered areas, it is generally accepted that the clearance should be at least **five**

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**Legend:**

- **P** Property boundary
- **MZ** Management zone
- **M** All vegetation to be maintained clear of this space.
- **F** Firebreak

**Recommended clearance zones around power lines in urban areas.**
metres to the side and sometimes up to 10m in heavily timbered areas to account for tree growth and movement in high winds.

Care should also be taken to ensure that no weakened or known limb shedding types of trees are in a position to hit the line if they fall.

Please contact Western Power if you have such trees near power lines. Western Power may assist in the reduction or removal of these trees even if they are outside the management zone.

If you have a duty to keep trees out of the clearance zone, then this zone must be maintained clear at all times. However, depending on your location and available resources, you might consider it prudent to keep considerably more than the minimum clear to allow for regrowth and movement in winds. For big trees it may be wise to get advice from an expert as incorrect pruning can promote regrowth that is liable to break off if it gets too big.

If the distance between the power poles is greater than 150m, it will be necessary to seek advice from Western Power about the likely distances the power lines will sag or swing in high winds.

Access to the line is required at all times so a clear track needs to be maintained by Western Power and not obstructed by the property owner. Where there are fuse poles, there may be a need to bare the earth around them because sparks can be produced when the fuse operates.

Clearing around poles is sometimes practised to reduce the risk of bushfires burning down the poles. For this reason it is generally wise to reduce the flammable material under or near a power line and not plant vegetation that burns easily.

Any plant that grows less than three metres is suitable for planting near power lines in rural areas or near transmission lines. Blue Gum plantations should be planted no closer than 15m (20m for pine trees) to the centreline of the poles.

**Transmission line clearances**

Generally, anything that grows up to three metres high is permitted under the transmission lines.

Transmission lines which carry very high voltages (between 66 and 330 kV) are on poles taller than 15m or on steel towers. For vegetation clearance in specific instances, please contact the Western Power Transmission Services Engineer on (08) 9326 4897.

Blue Gum plantations should be planted no closer than 25m (80m for pine trees) to the centre line of the power lines.
When bush fires are close and you feel sure they’ll reach your house, you must decide early whether to stay with the house or evacuate your family.

Research by the University of Melbourne’s Forestry Section into the Ash Wednesday fires at Mount Macedon suggests you may have a good chance of saving your home if you stay. Of those who stayed, 90% were able to save their houses, mainly because they were able to put out the spot fires as they started.

Staying with the house could also be safer than trying to get away on roads blocked by fires.

You may prefer to stay:
- if you are confident your home is well prepared for fire;
- if you have sufficient emergency water supplies;
- if you think you and your family could deal with the stress and tension of the fire; and
- if you and your family are in good health.

You may prefer to go:
- if you are not confident about the fire safety of your house;
- if you are worried about young children, elderly people or someone who’s sick;
- if you suspect you could not cope with the stress of fighting the fire;
- if you know it is safe to leave and you have a firm destination; and
- if you decide to evacuate, go early and know which access roads are open or affected by fire.

Evacuation arrangements
In Western Australia an incident controller or incident manager (the person from a fire station or fire brigade who is in charge of fighting a fire), in consultation with police will decide whether there is a need to evacuate communities in a major fire. If so, the police will organise the evacuation.
**Driving**

Drive carefully and slowly, as your car will not perform well in the heat. Smoke will be thick in places, making it difficult to see any firefighters, firefighting appliances or vehicles which may be on the road. Driving slowly with your headlights on low beam will minimise the possibility of an accident or loss of life.

**If you are forced to stop**

- Try not to panic
- Pull over to the side of the road
- Choose a place to stop with the least amount of vegetation. Burnt ground is safer than unburnt, and lightly forested is safer than long grass or low scrub. If possible avoid areas of dense vegetation
- Keep headlights and hazard lights on and keep the engine running
- Close all windows and vents
- Turn off fans and air-conditioners to keep out smoke
- Get down below the windscreen level and cover yourself with a blanket (preferably made from natural fibres), to protect yourself from radiant heat
- Do not get out of the car or open windows until the fire front has passed
- Remember to drink lots of water to prevent dehydration.

**Caution:** do not attempt to drive through a fire front unless you can see through to the other side and the flames are no higher than you.

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**On foot in a bush fire**

You should only consider moving through the fire front as a last resort as this will cause stress and likely injury.

If you have to move through the fire front to safety:

- cover all exposed skin as best you can
- take some quick deep breaths, and move fast
- choose the easiest path—avoid dense growth, logs or uneven ground.
- keep low to the ground
- wait until there is a lull in the flames
- do not run uphill.

This must be a last resort.
IF YOU DECIDE TO STAY

Your house is your best protection in a bush fire. If you decide to stay rather than evacuate, dress everyone in protective clothes. Bring young children and pets inside. Older children can be very useful as fire-spotters and in fighting small spot fires around the house. Park the car in a cleared area as a potential second refuge and leave the keys in the ignition. Place blankets or towels (wet if possible) inside the car, together with bottles of drinking water.

Protecting the house

- Close all doors, windows and shutters.
- Bring outdoor furniture inside.
- Remove highly flammable curtains and furniture from window areas.
- Keep sprinklers playing on high-risk parts of the house—windows, eaves, gas bottles.
- Fill basins, sinks and baths with water. Fill outside gutters. If time permits, block up the mouth of downpipes to keep in the water.
- Soak towels and rugs in water and lay along the doorways to keep sparks out. They can also be used as beaters for firefighting.
- Soak blankets and keep them handy for protection against radiant heat. Keep buckets of water and mops handy.
- As the fire approaches, turn off the electricity and gas supply to the house, and move people into the fire refuge area, if you have one. Take hoses inside, to prevent them melting. Leave sprinklers running if installed.
- Keep checking for spot fires around the house, and put them out.
- Keep checking each room of the house as the fire passes outside.
- If possible, check for any embers that may have entered the roof space.
- If a fire takes hold in the house, move people into another safe area, if you have one.
- Ensure your house is well prepared with an appropriate circle of safety building protection zone.

Remember

Stay in the house when the fire front is passing. This usually takes 5 to 10 minutes. Then keep checking for spot fires they can still occur several hours after the main fire.
THE RIGHT CLOTHES

Can save your life...

Wear
- Natural fibres
- Long-sleeved shirts
- Long trousers, jeans or overalls, sturdy leather shoes or boots (not elastic sides), wool or cotton socks

Do not wear
- Singlets
- T-shirts
- Short-sleeved shirts
- Shorts
- Dresses or skirts
- Sandals or thongs
- Stockings or synthetic socks

Materials
Clothes should be made of:
- Pure wool
- Heavy cotton drill or denim—not synthetics.

Outside the house
While outside the house, or fighting the fire, wear:
- A wide-brimmed or hard hat
- Goggles or glasses
- Gloves
- A moistened mask to filter smoke. And protect your face by wetting it with water

Remember
- Cover up as much skin as you can, but do not overload yourself with tight-fitting or heavy clothing, as the heat will be intense. Two layers of loose-fitting, natural fibre clothes work well.
- Protect yourself from radiant heat with long sleeves, long trousers and strong, leather shoes or boots.
Some of the equipment you'll need to protect your home will probably be on hand already. Other items may need to be bought but are not generally expensive, except for the water pump. Here's what you need:

**Torch**
Make sure it works and that you have spare batteries.

**Hoses**
One hose for each water outlet. You'll need enough hose to reach all corners of the house and out to the edge of the circle of safety.

**Knapsack spray or mop**
Used for small spot fires.

**Buckets**
Have plenty around the house and one in the roof space. Don't use water on the roof if the power is on.

**Ladder**
Ideally, you'll need two (one for inside and one for outside) that are long enough to reach the roof.

**Fuel powered water pump**
Emergency stand-by—keep it in working order and in a safe place so it is not at risk from the fire.

**Gloves**
Sturdy, leather, garden variety—not rubber or synthetic.

**Shovels, hoes and rakes**
At least one of each.

**Blankets and towels**
Woollen blankets and cotton towels, for blocking sparks under doors, and for heat protection. Keep them wet.
Protecting Your Home When the Fire Arrives

Wear protective clothing

Avoid the fire front and its radiant heat
Fight the fire from the side if possible.

Attack the base of the flames
It will do no good to hose the flames above the base of the fire.

Hose with a sweeping action
Work the hose in a sweeping action, as this is the best way to cover the entire burning surface.

Hose the fire nearest you
Concentrate on the fire edge first and then go on to the fire further away.

Dampen the grass
Hose the ground in front of the fire to slow and cool it.

Shovel earth
Earth is a good way to put out small spot fires and embers. Shovel it on the flames.

Use beaters
A wet hessian bag or blanket can be used as a beater on low grass fires. Work from the burnt ground so you are not exposed to radiant heat.
Drink frequently to avoid dehydration
Drink every 15 minutes even if you don’t feel thirsty. Heat exhaustion can strike suddenly.

Caution: Do not attempt to move through a fire unless you can see through to the other side, and the flames are no higher than you. It is dangerous to move through flames and should be avoided unless absolutely essential.

After the fire
- Once the fire-front has passed, remain dressed in protective clothing and check the house thoroughly for spot fires both inside and out.
- Check for embers or signs of smoke inside the ceiling and from furniture, bedding and crevices in windows and walls.
- Check under the floor if possible.
- Hose trees and shrubs near the house.
- Check garage and sheds for small fires.

Remember
Houses can burn long after the fire front has passed. Keep checking.
Because Western Australia is so fire prone, each summer there are restrictions on the lighting of fires in the open air. These normally operate from October to April in the South of the State but vary in the North West to correspond with the dry season during the Northern Winter. Check with your local government to ascertain the fire restriction periods that apply to your district.

During these ‘fire danger periods’ when restrictions or prohibitions are in force...

**You must not:**

- Throw or drop any burning tobacco, cigarette, cigar or match on the ground or from a vehicle.
- Light a campfire or cooking fire within three metres of a log or stump or unless there is a cleared area of at least three metres around the fire. Such fires are automatically prohibited on days when the fire danger forecast for the particular area is ‘very high’ or ‘extreme’.
- Leave the fire unattended. Always extinguish the fire with water or earth before leaving.
- Light a fire to burn bush, grass, stubble or undergrowth without a written permit.
- Use welding apparatus of any kind or power operated cutting discs of any kind unless there is at least one fire extinguisher situated at the site and all instructions issued by a local government fire control officer are complied with.

**Burning garden refuse or rubbish**

- Fires may be lit at any time in an incinerator that is properly constructed to prevent the escape of sparks or burning material.
- The areas around the incinerator must be cleared of all combustible material for a distance of at least two metres. The incinerator must not be situated closer than two metres from any building or fence.
- Check with your local government before you light a fire to burn garden refuse or rubbish as some districts totally prohibit it while others allow it under certain conditions. In some districts, fires may be lit on the ground to destroy garden refuse or rubbish if a radius of at least five metres around the fire has been cleared of all flammable material. The fire must only be lit between the hours of 6pm and 11pm of the same day. A person shall remain in attendance at the fire and completely extinguish the fire before leaving it. No fires may be lit on days when the fire danger forecast for the area is very high or extreme.

**Declared bush fire emergency**

On days when the Minister declares a bush fire emergency period with a total fire ban, for a defined area of the state, a person shall not light a fire in the open under any circumstances whatsoever in that area.

This ban includes fires for which a permit has already been issued, campfires, cooking fires, barbecue fires, incinerators and rubbish fires.
FIRE SAFETY

Don’t leave it until summer to try to make your property safe from fire. Many jobs can be done at cooler times of the year. Here’s a checklist of things to do. Details about most of them are given elsewhere in this book.

(Tick the ones you’ve done).

DO IT NOW!

Long-term precautions

☐ Prepare firebreaks.

☐ Plant wind breaks, or belts of trees along the fence line in rural areas.

☐ Make the house safe—fit wire screens and shutters, fill gaps.

☐ Develop a 20 m circle of safety to create a building protection zone.

☐ Provide an emergency water supply.

☐ Discuss fire prevention with your neighbours—is your locality safe?

☐ Discuss your preparedness with your neighbours.

Autumn and winter

(May—August)

☐ Tree pruning—remove lower branches, check that power lines are clear.

☐ Reduce fuel levels around the house—clear long grass, leaves, twigs and flammable shrubs.

☐ Petrol and other fuels—store in a shed away from the home.

☐ Make sure your personal and home protection equipment is in good order. Overhaul the emergency water pump.

☐ Make sure everyone in the family knows what to do in a fire.

Spring

(September—November)

☐ Move woodpile and stacked timber away from the house.

☐ Keep the grass short—on farms, keep grazing pressure high on areas near the house.

☐ Clean out gutters, remove debris from roof.

☐ Create firebreaks.

Early summer

(December onwards)

☐ Water lawns, trees and shrubs near house, to keep them green.

☐ Re-check personal and home protection gear, screens, water supplies, gutters.
Local Government

Local government is responsible for establishing an infrastructure for the prevention, control and suppression of fires. Responsibilities include:

- Routine administration of the *Bush Fires Act*.
- Prosecution of offences against this *Act*.
- Publishing firebreak notices and ensuring compliance with requirements of these notices.

Bush fire control officers

These officers are appointed by a local government. Their day-to-day activities deal largely with fire prevention and generally provide for community bush fire safety.

Bush fire control officers may:

- Take measures necessary to prevent the outbreak of bush fires.
- Protect life and property from damage by bush fires.
- Manage the control and suppression of bush fires.
- Examine fires they think may have been lit contrary to the provisions of the *Act* or any fires they believe to be out of control.
- Examine firebreaks, fire hazards or any fire precautions on the land.
- Investigate the cause and origin of fire on the land or in a building.
- Prosecute offenders in a court of law, if authorised by a local government to do so.

Bush fire brigades

Volunteer bush fire fighters are organised into brigades registered by local governments.
**First-aid kits**

If you don’t already have one, your local chemist can help you put one together. Alternatively, the Australian Red Cross or the St. John Ambulance Association provide a range of first aid kits.

**Reference books**

There are many different books available. A couple worth considering are the *First Aid Manual*, a Red Cross book, and *Australian First Aid*, available from the St. John Ambulance Association.

**Treatment of the most common injuries**

**Burns**

If clothes are on fire, wrap the person in a rug or blanket and roll on the ground to put out the flames. Keep the person still.

Cool the burns with running water for up to 20 minutes. (Be careful not to overdo it—you don’t want the person to start shivering).

Do not remove stuck clothing.

Do not break blisters.

Loosely cover with a sterile dressing or clean linen. Plastic cling wrap makes an ideal dressing. Treat for shock. Seek urgent medical aid.

**Shock**

*Symptoms: pale face, cold/clammy skin, weak, rapid pulse.*

The person may be unconscious. Move to fresh air if possible. Lie the person down, raise the feet and keep them warm. Allow no food or drink. If unconscious, make sure the airway is clear. Seek urgent medical aid.

**Overcome by smoke (asphyxiation) and smoke inhalation**

Move person away from the smoke or ask them to lie down on the ground or floor, where the air is freshest. Apply artificial respiration if breathing has stopped. Seek urgent medical aid.

**Smoke and foreign matter in eyes.**

Bathe the eyes with water for up to 20 minutes. If unsuccessful in removing the foreign object, cover both eyes and seek urgent medical aid.

**Heat induced illness**

*Symptoms: pale face, cold/clammy skin, weak pulse, shallow breathing.*

Place the person in the coolest spot, sponge with cool water. Encourage the person to drink water, a small amount (50 mls) at first. If that is tolerated, increase the amount.
Remember

- Protect yourself from radiant heat.
- The well prepared house is your best protection.
- Dress everyone in protective, natural fibre clothing – long trousers, long sleeve shirts and sturdy, leather footwear.
- Keep wet, woollen blankets nearby and shelter under them as the fire passes.
- If you decide to evacuate, go early.
- If you stay, keep checking for spot fires.
- Avoid heat exhaustion – take a drink of water every 15 minutes.

EMERGENCY TELEPHONE NUMBERS

Emergency calls (Fire, Ambulance, Police)

DIAL 000

Local numbers for fire prevention advice:

Local Fire Brigade ______________________
Local Government ______________________
Local Police Station ______________________
Local Ambulance ______________________
On your property, fire safety starts with you. You are in control. It’s in your hands to reduce fire risks around the home and create an environment that will help protect you in a fire. This book sets out some useful hints on what to do for those living in rural, semi-rural or bushland areas.

The Bush Fire Survival Manual has been prepared to help you become better informed about bush fires. It draws together the best advice available on preventing and fighting fires.