

A coastal garden featuring a gravel path, wooden logs, and various plants including yellow flowers and green shrubs.

LANDSCAPING YOUR COASTAL GARDEN FOR BUSHFIRE



Environment,
Land, Water
and Planning



Colac Otway
SHIRE

Acknowledgements

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Useful contacts

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Phone: 5232 9400 Email: inquiry@colacotway.vic.gov.au

Website: www.colacotway.vic.gov.au

CFA - Barwon South West Region

Phone: 5240 2700 Website: www.cfa.vic.gov.au

Southern Otway Landcare Network

Phone: 5237 6904 Website: www.soln.org

Department of Environment, Land, Water and Planning

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Website: www.delwp.vic.gov.au

Colac Otway Shire Council makes the information contained within this booklet available on the understanding that you take reasonable care when using it. If you have any uncertainty about applying the information to your particular circumstances, you should seek professional advice.

Colac Otway Shire Council does not accept responsibility for how you apply or rely on the information in this booklet.

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About this booklet

Following the Wye River / Separation Creek fire in 2015-16, there has been a heightened awareness of bushfire and how to improve fire readiness. This event has also presented an opportunity to target and control a number of weeds. The removal of some weeds and the request for the community to improve fire preparedness has left some participants wondering where to start, what plants will be appropriate, and where and how any new plants should be located. Consequently, the demand for local information on appropriate landscaping and vegetation management has increased. This booklet aims to provide that information at a local level.

This booklet has been developed for Colac Otway Shire coastal property owners, and complements the Country Fire Authority's (CFA) publication *Landscaping For Bushfire: Garden Design and Plant Selection*.

As such, it seeks to apply the CFA's key garden design principles and to explain what they mean for you by providing a series of simple actions for landscaping in our local environment.

Four local garden styles - each accompanied by a sample landscape plan - are also included to show how you can use the actions to create and maintain your garden to reduce your bushfire risk.

It is your responsibility to check what planning controls apply to your property and ensure your landscaping complies. Further information on planning controls related to bushfire can be found on page 9 of this booklet.

It is important to note that landscaping for bushfire is just one aspect of managing your bushfire risk. Don't rely on landscaping alone to protect your family and your assets. People who live in or visit bushfire prone areas should prepare a comprehensive bushfire survival plan that covers a range of actions including preparing your property, plans for leaving early, what to pack in your emergency kit and back up plans.

Refer to page 8 for further information on CFA resources available to help you prepare a bushfire survival plan.

Who should use this booklet?

The information contained in this booklet is primarily intended to help Colac Otway Shire coastal residents who are:

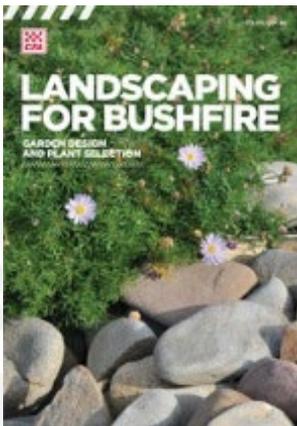
- in the process of developing new gardens or modifying established gardens
- involved in vegetation management and/or landscape design in high fire risk communities
- preparing landscaping plans as part of planning permit requirements
- involved in the Colac Otway Shire Council's fuel reduction programs (see page 7).

How to use this booklet

If you are seeking to make some simple modifications to an existing garden to reduce your fire risk, the key principles and quick start checklist on the following pages will get you started. Further detail on actions relating to the principles is provided throughout the booklet.

If you are looking to plant fire resilient species on your property, the 'Plants with desirable characteristics' section on page 25 provides a sample of appropriate plants.

If you are designing a new garden or preparing landscape plans as part of planning permit requirements, the information contained in this booklet will help to ensure your new landscaping complies with planning regulations. A range of example landscape plans are provided in the 'Garden styles for high fire risk areas' section on page 32.



Use this booklet, together with the CFA's *Landscaping for Bushfire*, to guide you in developing and maintaining your garden to reduce bushfire risk.

Go to www.cfa.gov.au or call 5240 2700 to obtain a copy of the CFA publication.

Alternatively a copy of the CFA publication can be accessed [here](#).

Landscaping your garden for bushfire – quick start checklist

By carefully selecting the location, arrangement and type of plants in your garden, and maintaining it over time, you can help to reduce the risk of losing your home in a bushfire.

1. Location – ensure vegetation is a minimum of 2-3 metres away from buildings

Where you locate vegetation in relation to your house and neighbours will influence the impact a fire may have. Careful location of plants, in particular locating any vegetation a minimum of 2-3 metres away from buildings can help to reduce your fire risk.

2. Arrangement – ensure vegetation doesn't connect vertically or horizontally

Vegetation that connects vertically or horizontally creates fuel continuity, which makes it easy for fire to spread across your property up to the house and to neighbouring properties. For example, fire in fine fuels like twigs and leaves on the ground can spread to shrubs and into the canopy of larger trees if not separated. Separating vegetation to prevent fuel continuity both vertically and horizontally will help to break up the path of fire on your property.

3. Type – use plants with desirable characteristics for high fire risk areas

All plants will burn under the right conditions; however, certain characteristics make some vegetation types less flammable, therefore making them a more desirable option for high fire risk areas. The plants suggested in this booklet have all been assessed against the CFA's Plant Selection Key and are rated as low to moderate flammability. As Council seeks to find a balance between fuel management and protecting our biodiversity, the plants identified in this book are indigenous species that have been selected for their desirable characteristics.

4. Maintenance – manage vegetation over time to ensure your landscaping remains effective

Modifying or developing your garden in line with the principles and actions outlined in this booklet will contribute to reducing the bushfire risk on your property, but if left unmanaged leaf litter, debris and weeds can accumulate in the garden and vegetation can encroach on cleared areas. Regular upkeep, particularly throughout the fire danger period, will help to keep the level of bushfire risk on your property reduced. Ensure you regularly clear leaf litter and debris, remove weeds, mow grass and prune vegetation.

It is important to note that the principles listed above are not independent of one another. All four principles are closely related, and should be applied collectively.

Landscaping for bushfire quick start checklist

- ✔ Prevent fuel continuity by having planted and non-planted areas in your garden
- ✔ Consider neighbouring properties and how you can reduce fuel loads along boundaries
- ✔ Move flammable plant materials, including woodpiles, at least 2-3 metres away from buildings
- ✔ Remove vegetation from within 2-3 metres of buildings
- ✔ Remove environmental weeds from your property
- ✔ Separate plants so the vegetation on your property doesn't connect horizontally or vertically
- ✔ Plant new trees apart so canopies do not touch
- ✔ Use the plants suggested in this booklet, or use the CFA's Plant Selection Key to ensure you choose plants with desirable characteristics

Landscaping to reduce bushfire risk

In simple terms, fire behaviour and its effect on homes is influenced by weather, fuel (i.e. vegetation and other combustible materials) and topography (i.e. slope).

The main attack mechanisms of a bushfire can be summarised as:

- **ember attack**, which occurs when burning fine fuels, such as bark and leaves, are carried by the wind and land in and around houses and gardens, often igniting spot fires
- **radiant heat**, which can ignite surfaces without direct flame contact, crack or break windows, distort or melt materials, and dry out vegetation ahead of a bushfire so that it burns more easily
- **direct flame contact**.

Carefully selecting the location, arrangement and type of plants in your garden, and maintaining your garden over time can help minimise how a bushfire interacts with your house, increasing the likelihood of it surviving.

Landscaping for bushfire involves:

- assessing the property, its layout, surrounds and existing vegetation, including considering prevailing weather conditions and local planning requirements
- designing your garden in line with planning requirements and the principles/ actions outlined in this booklet
- establishing and modifying the garden as needed
- maintaining it over time.

As illustrated by the photos throughout this booklet, landscaping elements may be hard (e.g. gravel, pavers, walls) or soft (e.g. plants, trees, garden beds) with the ideal garden featuring a combination of both.

Bushfire is complex and dynamic. It is beyond the scope of this booklet to present landscape designs that address the specific site characteristics of your property (e.g. aspect, topography, vegetation) and predicted bushfire behaviour.

Reducing fuel loads through joint fuel reduction programs

Colac Otway Shire Council works closely with the community and with government agencies to reduce fuel loads throughout the shire. Through Council's Fire Prevention Inspection program, the Municipal Fire Prevention Officer inspects properties to help identify and reduce excessive build-up of vegetation. In particular, this process identifies fine fuels close to assets that may carry a threat to life and/or property.

For successful reduction in bushfire risk, all elements of the community must play their part. This guideline will help you to not only reduce your risk, but also to contribute to the risk reduction of the townships. Council and the CFA can assist with advice relating to this publication and to other areas of your fire planning.

To find out more about fuel reduction programs contact Council's Municipal Fire Prevention Officer (Ph. 5232 9400).

The actions on the following pages focus on creating 'defendable space' around your home by modifying vegetation and other landscaping elements to reduce direct flame contact and radiant heat. Defendable space breaks up fuel continuity and reduces the amount of fuel available for to a bushfire. For new homes, defendable space is calculated as part of the planning permit process; for existing homes, it can be calculated using the CFA's online House Bushfire Self Assessment Tool.

Reducing Victoria's bushfire risk - an overview

Before summer each year, Victorians are reminded of the need to develop their bushfire plans, prepare themselves and their properties, and remain vigilant throughout the fire danger period. The CFA is responsible for declaring the fire danger period, which generally runs from late spring to autumn.

At the individual property level, reducing bushfire risk involves:

- understanding how fire behaves in your local environment, and
- developing your bushfire survival plan and taking steps to prepare your home and property.

The CFA website (www.cfa.vic.gov.au) contains a wealth of information and resources to help you become fire ready including:

- everything you need to prepare your bushfire survival plan
- the complete Fire Ready Kit
- online tools to assess and understand your level of bushfire risk
- how to prepare your home and property to be fire ready
- how to design and maintain your garden to reduce bushfire risk
- how to prepare back up plans.

In addition, the CFA provide a range of community bushfire safety information and advice programs such as:

- Fire Ready Victoria meetings and bushfire planning workshops, which cover how to prepare a bushfire survival plan
- Community Fireguard to help you and your neighbours prepare for bushfire
- Victorian Bushfire Information Line and Fire Ready Smart Phone App
- online bushfire information sessions.

You can access more information on these programs and other CFA resources, including *Landscaping For Bushfire* (the companion publication to this booklet), at the CFA website.

Being fire ready involves more than just a well-planned and maintained property. Go to www.cfa.vic.gov.au to learn more and remember on **Severe, Extreme and Code Red** days, leaving early will always be the safest option.

Bushfire risk and the Colac Otway Planning Scheme

The Colac Otway Planning Scheme identifies high fire risk areas across the municipality and applies the **Bushfire Management Overlay** to these areas.

This overlay is a planning control that seeks to address the level of bushfire risk by implementing specific bushfire protection measures, primarily to areas where there is potential for extreme bushfire behaviour due to significant fuel loads (i.e. vegetation). In addition to vegetation, it takes into account prevailing weather characteristics and topographical factors.

Properties in high fire risk areas may also be affected by other overlay controls, such as those relating to the protection of significant landscapes or native flora and fauna.

Understanding how to implement the various controls can be difficult sometimes, particularly when their intentions appear to conflict (e.g. fuel reduction versus retaining vegetation).

To find out the overlay controls that apply to your property, including the Bushfire Management Overlay, and how to implement them appropriately you can:

- contact Council's Planning department on **5232 9400**
- access the information [here](#) or via Planning Maps Online at the Land Channel (www.land.vic.gov.au).

Council does not seek a planning permit to remove weeds listed in Council's Significant Weeds brochures, provided the roots below ground level are retained. Colac Otway Shire Council provides a range of information to help you identify and control weeds on your property. Access this information [here](#) or call **5232 9400**.

Legislating to reduce bushfire risk

In November 2011, the Victorian Government introduced permanent planning controls as part of implementing the recommendations of the 2009 Victorian Bushfires Royal Commission.

The changes include new exemptions from the requirement for a planning permit to remove native vegetation to help reduce fuel loads around existing homes.

In summary, the two main exemptions, which apply only to existing dwellings built or approved before 10 September 2009, are the:

- **10/30 rule** where property owners do not require a planning permit to clear:
 1. any vegetation, including trees, within 10 metres of their house or
 2. any vegetation, except for trees, within 30 metres of their house.
- **10/50 rule**, which applies only to properties within a Bushfire Management Overlay (see page 9). Under this rule property owners within a Bushfire Management Overlay do not require a planning permit to clear:
 1. any vegetation, including trees, within 10 metres of their house or
 2. any vegetation, except for trees, within 50 metres of their house.

If your property is not covered by either of these exemptions, you may require a planning permit to remove native vegetation on your property. Note that if you illegally remove native vegetation, you may be subject to financial penalties.

If you're building a new home, the planning permit process already includes consideration of clearing for bushfire protection.

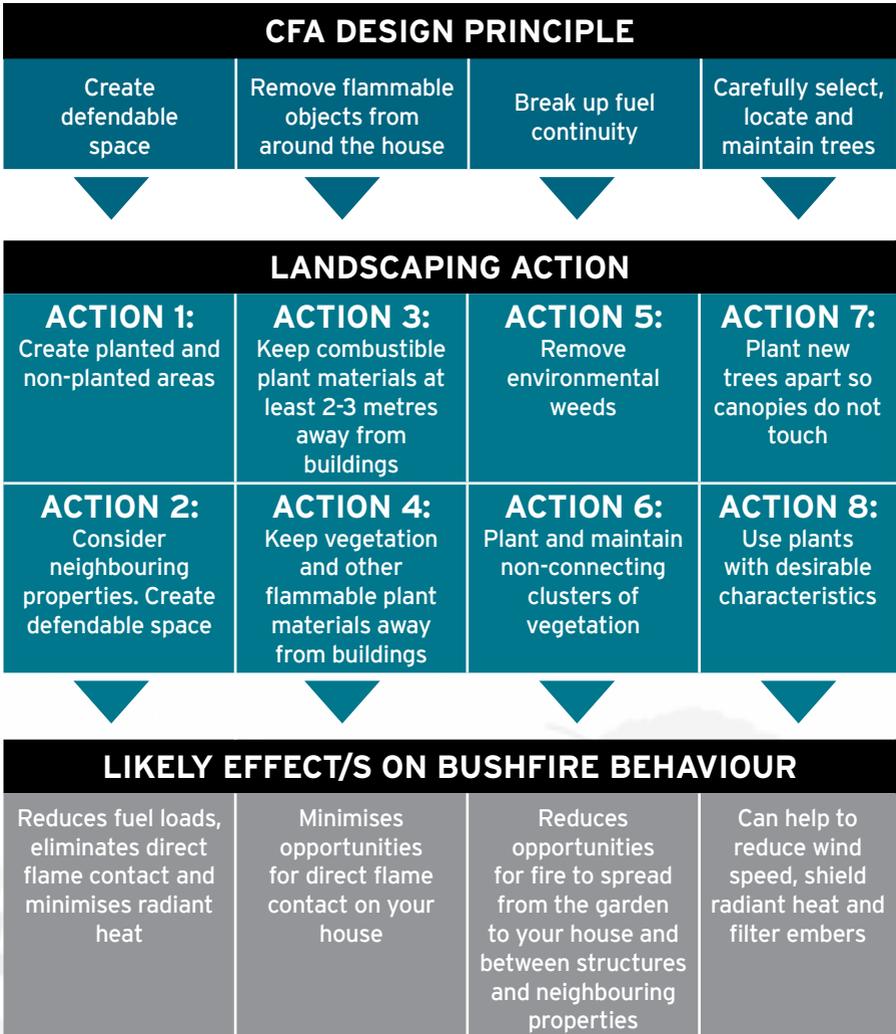
For more information about planning permit requirements for native vegetation removal, please contact Colac Otway Shire Council's Planning Department (Ph. 5232 9400).

Note that **low-threat vegetation** and **non-vegetated areas** are excluded from assessment under the Bushfire Management Overlay and AS 3959-2009. Low-threat vegetation includes grasslands less than 100 millimetres in height, maintained lawns, maintained public reserves and parklands, cultivated gardens, commercial nurseries, nature strips, and wind breaks (single row of trees on a property boundary). Non-vegetated areas include waterways, roads, footpaths, buildings, and rocky outcrops. Find more information on **non-hazard/low threat vegetation** [here](#).

Refer to the Colac Otway Planning Scheme, which sets the regulations for clearing vegetation on private properties across the Shire [here](#) or contact the Planning Department (Ph. 5232 9400).

Garden design principles and landscaping actions

In landscaping your garden to reduce bushfire risk, consider using at least one of the following design principles and associated actions, which can affect bushfire behaviour. Whether you choose to apply one, some or all will be dependent on your specific circumstances, including your level of risk and your bushfire survival plan (refer to page 8 for more information on how to develop a bushfire survival plan). Pages 12-24 provide more detail on each of the landscaping actions below.



Action 1 Create planted and non-planted areas

Designing your garden to include both planted and non-planted areas helps to create defensible space by breaking up fuel continuity across the site and minimising the **ladder fuel** effect (where fuel carries fire from the ground into the tree canopy).

Planted areas should be arranged in non-connecting clusters with non-planted areas (e.g. gravel, lawns, driveways, entertaining/play areas) used to separate them. This can help to prevent direct flame contact and minimise the impacts of radiant heat on your house.

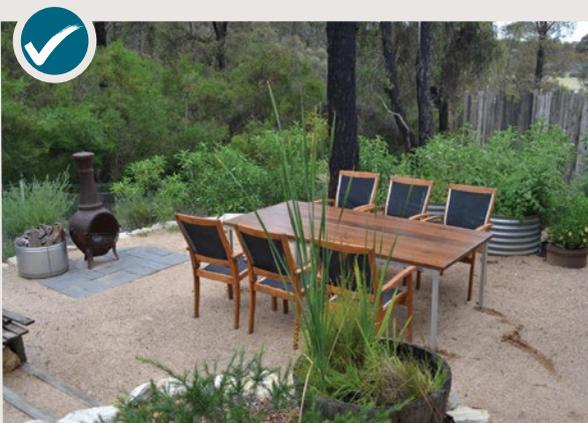
Other things to consider include:

- mulching with a variety of materials, particularly non-flammables (e.g. gravel, pebbles, shells, crushed bricks)
- choosing and arranging plant types to minimise the **ladder fuel** effect
- using appropriate landscaping features (e.g. stone walls) to create barriers to wind, radiant heat and embers
- managing existing vegetation appropriately, including removing loose bark, leaf litter and fine fuels
- taking care when removing vegetation from steep terrain - roots below ground level should be retained.

In a bushfire, plants can provide a continual fuel path to the house and act as **ladder fuel** from the ground into tree canopies - both major factors contributing to bushfire behaviour, which can lead to house loss. Selecting, locating, arranging and maintaining plants appropriately helps to reduce this risk.



*Planting grasses, shrubs and trees together, and/or building piles of wood and other flammable materials, creates **ladder fuel**, which carries fires from the ground up into the tree canopy.*



This outdoor dining area helps to prevent direct flame contact by providing separation between house and garden.



Paved entertaining areas and other hard landscaping features help to break up vegetation.



Non-flammable pathways can be used to separate garden beds to break up fuel continuity.

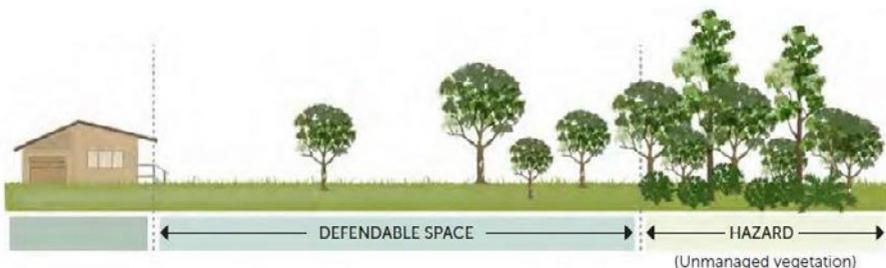
The way you design and landscape your property can significantly affect the level of bushfire risk for neighbouring properties – and vice versa.

Continuity of vegetation between properties and the location of other combustible materials (e.g. wooden fences and screens) in relation to neighbouring households can compromise defensible space by increasing the potential for fire to spread quickly from one property to another.

Look at how you can use your property boundary to reduce bushfire risk through:

- reducing fuel loads along the boundary by removing weeds and managing vegetation (e.g. mowing/slashing grass, pruning shrubs, lopping trees, removing plant debris)
- appropriate plant **selection, arrangement, location and maintenance** according to the actions in this booklet and the CFA's principles
- using appropriate landscaping features (e.g. non-connecting garden beds, paths, driveways, fences, screens) to create space and/or barriers between your home and neighbouring properties.

Defendable space is an area of land around a building where vegetation (fuel) is modified and managed to reduce the effects of flame contact and radiant heat associated with a bushfire. Defendable space is one of the most effective ways of reducing the impact of bushfire on a building. Find more information on defensible space [here](#).



Focus on reducing the potential for fire to spread to your property from neighbouring households, and vice versa, and design and maintain your garden accordingly.



Addressing vegetation continuity across your property, including between neighbouring properties, can help to decrease a bushfire's speed and intensity.



Plants running right up to the house can carry fire directly into your home and put your neighbours' homes at risk. Vines and creepers can also carry fire from the ground up into the tree canopy, which increases the risk to your own and neighbouring properties.



Using combustible materials for boundary fences and screens exposes you and your neighbours to greater risk of property loss in a bushfire.



Artworks such as mosaics and sculptures made from non-flammable materials are ideal landscaping features that can contribute to reducing your home's bushfire risk.



Metal screens can help to shield your house from radiant heat, direct flame contact and ember attack.



Use non-flammable gravel and rock for paving and mulching inside the two to three-metre perimeter around your home.

Action 3

Keep combustible plant materials at least 2-3 metres away from buildings

Combustible plant materials close to the house compromise defensible space by increasing the potential for localised direct flame contact.

Keeping them at a safe distance (two to three metres as the minimum) away from the building - particularly vulnerable components such as windows, doors, decks, pergolas and eaves - increases your home's chances of surviving a bushfire.

Some suggestions to help you achieve this include:

- locating non-flammable materials (e.g. stones, rocks, gravel, sand, paving) and features (e.g. screens, walls, sculptures, mosaics constructed using non-combustible materials) within the two to three-metre perimeter immediately around the house
- moving flammable structures and objects (e.g. outdoor furniture, barbecues, gas cylinders, plant-based mulches) well away from this two to three-metre perimeter during the **fire danger period**
- ensuring wood piles are stored well away from this two to three-metre perimeter during the **fire danger period**
- removing items stored under buildings which can ignite and provide an additional risk - either remove these items, or ember-proof the storage area
- using non-combustible planters and pots, and relocating these outside the two to three-metre perimeter during summer
- planting trees and shrubs outside the two to three-metre perimeter and ensuring they don't encroach inside this area by removing branches and leaf litter
- using non-flammable mulching materials
- considering succulent species for planting near assets.

To increase the likelihood of your home surviving, the area immediately surrounding your home should be kept free of all flammable objects including wood piles, which can easily ignite during a bushfire.





Trees and shrubs abutting the home increase the effects of direct flame contact and radiant heat.



Look at overhanging branches and leaf litter as fuel sources that can lead to major property loss during a bushfire - and manage them appropriately as part of your Bushfire Survival Plan.



Use of suitable ground and low level plants, non-flammable mulching and stone features (eg. pathways and walls) helps to keep the perimeter around the home free of flammable materials.

As fuel sources in a bushfire, vegetation and other flammable plant materials (e.g. leaf litter, debris) cause fire to spread, increasing the potential for ember attack and direct flame contact. They therefore need to be managed appropriately, particularly in the perimeter around the building, to ensure defensible space is maintained.

This does not necessarily mean clearing all plants and trees; in fact, if carefully selected, located, arranged and maintained, trees can help to reduce wind speed, shield radiant heat and filter embers.

Existing vegetation may be suitable to retain depending on its flammability, location and management regime. Refer to the actions relating to plant location and arrangement, and to the 'Plants with desirable characteristics' section in this booklet. The Plant Selection Key at www.cfa.vic.gov.au also provides a useful guide.

Other actions include:

- locating trees at least 1.5 times their mature height away from buildings (e.g. mature height 8 metres x 1.5 = 12 metres)
- regularly removing leaf litter, particularly from areas where it tends to accumulate (e.g. house corners, doors, windows, gutters, some rooflines, decks)
- keeping grass to no more than five centimetres high around the immediate perimeter and 10 centimetres or less elsewhere.

Trees should be located well away from buildings to minimise the potential for radiant heat and direct flame contact via overhanging branches and falling limbs and trunks.

In a bushfire, woody environmental weeds can provide a fuel source and contribute to the speed and intensity at which a bushfire spreads. Removing these weeds and ensuring other vegetation is **located and arranged appropriately** can help break up fuel continuity and reduce opportunities for fire to spread. Aside from fire reduction, removal of these weeds can provide a range of ecological benefits to our natural environment.

Environmental weeds are both woody and non-woody, and may be declared noxious under State legislation. In Colac Otway Shire, environmental weeds include trees and shrubs (e.g. sweet pittosporum, boneseed, broom species), herbs and succulents (e.g. agapanthus, arum lily), and grasses and rushes (e.g. pampas grass, asparagus fern, banana passionfruit, cape ivy, english ivy).

To find out more about Council's weed control program, or for advice on removing weeds from your property and selecting, locating and arranging replacement plants to reduce bushfire risk, contact Council's Environment and Community Safety department (Ph. 5232 9400). Council's website (www.colacotway.vic.gov.au) also includes information about weeds along with local planting guides, which can help you choose local indigenous plant species that may help reduce bushfire risk.



Council has developed resources to help residents identify and manage weeds on their property. Council's **Significant Weeds** brochures can be accessed [here](#).



Woody weeds such as pine trees should be removed as they contribute significantly to fuel loads.

Woody environmental weeds represent a major bushfire threat because they tend to invade and occupy more 'middle storey' space than local indigenous species. In a bushfire, this influences fire behaviour by increasing the intensity and speed at which fire spreads.



As major fuel sources, woody weeds and other noxious plants can increase a bushfire's intensity and speed.

Fuel continuity makes it easy for fire to spread across your property, onto heavy fuels such as retaining walls which can ignite your house, and onto neighbouring properties. By separating plants, garden beds and tree canopies, you can break up fuel continuity and reduce or prevent the path of fire to the house or other heavy fuel elements.

Use the concept of non-connecting clusters of vegetation as the basis for designing and building your garden to reduce bushfire risk. This includes:

- arranging plants and garden beds into defined areas separated by no/low fuel features (e.g. paths, lawns, pavers, walls)
- ensuring shrubs and other flammable materials are located away from trees to reduce the **ladder fuel** effect
- preventing a continuous canopy by creating discrete clusters of shrubs and trees separated by no/low fuel areas.

Fire spreads easily when plants are located close together with the availability of a continuous fuel path, which makes it easier for fire to destroy your home through direct flame contact and radiant heat.



Arranging suitable plants into non-connecting clusters, separated by non-flammable mulching materials (eg. sand, gravel) breaks up the fuel continuity.



Landscaping features such as rocks can be used within and between clusters to separate plants.

Plant new trees apart so tree canopies do not touch

A continuous tree canopy compromises defensible space by contributing to a bushfire's intensity and speed. If located too close to buildings, it can increase your home's exposure to radiant heat and direct flame contact by directly igniting and dropping leaves and bark.

To prevent a continuous tree canopy:

- space trees apart to create breaks of at least two metres between canopies
- locate trees at least 1.5 times their mature height away from buildings and other structures (e.g. power lines, water tanks) - allow even more space for tall mature trees with large canopies
- separate the canopy from ground level fuel by pruning the branches to a minimum of two metres above the ground
- do not place shrubs and other flammable plants and materials directly under trees as they can carry fire into the canopy via the **ladder fuel** effect.

Keep the area immediately under the tree canopy clear of shrubs, leaf litter, plant debris (e.g. bark twigs, branches) and other flammable materials. According to the CFA, fire is rarely sustained in the tree canopy unless there is a fire burning in the plants or leaf litter under the tree.



*Groundcover, shrubs and other 'middle storey' plants need to be selected and arranged appropriately in relation to canopy trees to ensure they don't provide **ladder fuel** in a bushfire.*

Plant **selection, arrangement and location** can reduce the risk of losing your home in a bushfire. Plants should be selected according to their flammability as a contributing factor to bushfire behaviour. Where and how they are **located and arranged** is critical to reducing bushfire risk as indicated by many of the actions in this booklet.

In general, when selecting plants to reduce bushfire risk choose plants that:

- are easily maintained by pruning or mowing
- require little water
- do not lose large amounts of leaves, bark or needles
- have thick, fleshy leaves or stems
- display leaves with an open transparent branching pattern
- have a high moisture content (i.e. succulent).

Plants that are considered to have **good characteristics for planting in high fire risk areas** include succulents, rushes, sedges, small shrubs with low foliage density, and trees with tight bark such as blackwoods.

Ongoing maintenance is essential as many of these plants may become more susceptible to bushfire if not maintained properly.

Non-desirable plant species of particular note include cypress, conifers, pines and paperbark.

Refer to the next section in this booklet and the Plant Selection Key at www.cfa.vic.gov.au or in *Landscaping For Bushfire*, and choose plants that possess desirable characteristics along with low to moderate flammability. The following pages feature some of these plants.

Council's website features information about local native plants, as well as significant weeds in Colac Otway Shire [here](#).

Plants with desirable characteristics

This section provides a small sample of plants which are indigenous to the Colac Otway coastal region and also have good characteristics for planting in high fire risk areas. These plants have been assessed using the CFA's Firewise Plant Selection Key and rated as moderate to low flammability.

Although not listed here due to high flammability ratings under the CFA's Firewise assessment tool, large canopy trees such as eucalypts play an important role in the overall ecosystem. The canopies of large trees filter both water and sunlight, supporting growing conditions for smaller shrubs, grasses and herbs. Large trees attract a variety of birds, mammals and insects which in turn provide necessary nutrients to the ecosystem. Over time, these trees develop vital habitat hollows.

These trees require an increased maintenance regime in order to maintain a lower fire risk environment. For example, some eucalypt species significantly contribute to fuel loads through loose bark and leaf drop. Additionally, tree height can result in the accumulation of leaves and bark on roofs and in gutters, which can be difficult to maintain and also add to your bushfire risk.

Note that all plants, regardless of flammability ratings, require regular and ongoing maintenance to address anticipated bushfire behaviour.

For more information, contact Council's Environment and Community Safety department (Ph. 5232 9400). Many local community groups can also advise on indigenous plants and weed species. The CFA's Firewise Plant Selection Key in *Landscaping for Bushfire* provides a useful tool for assessing plant flammability to assist in selecting plants with desirable characteristics. This tool is also available online [here](#).

GROUND (*less than 5cms*)

Karkalla

Carpobrotus rossii



Coast bonefruit

Threlkeldia diffusa



CLIMBERS AND SCRAMBLERS

Running postman

Kennedia prostrata



Coast twin leaf

Zygophyllum billardierei



LOW (less than 1m in height)

Black-anther flax-lily

Dianella revoluta



Tasman flax-lily

Dianella tasmanica



Cushion bush

Leucophyta brownii



Knobby club-rush

Ficinia nodosa



LOW (less than 1m in height)

Mat-rush

Lomandra longifolia



Creamy candles

Stackhousia monogyna



Sea-box

Alyxia buxifolia



Seaberry saltbush

Rhagodia candolleana



Ruby saltbush

Enchylaena tomentosa



MEDIUM (1m to 3m height)

Hop wattle
Acacia stricta



Blanket leaf
Bedfordia arborescens



Hop goodenia
Goodenia ovata



Native hemp bush
Gynatrix pulchella



Sticky boobialla
Myoporum viscosum



Common boobialla
Myoporum insulare



Dusty miller
Spyridium parvifolium



Mountain correa
Correa lawrenceana



TALL (*Shrubs and trees more than 3m*)

Silver banksia
Banksia marginata



Sweet bursaria
Bursaria spinosa



Austral mulberry
Hedycarya angustifolia



Blackwood
Acacia melanoxylon



Privet mock olive
Notelaea ligustrina



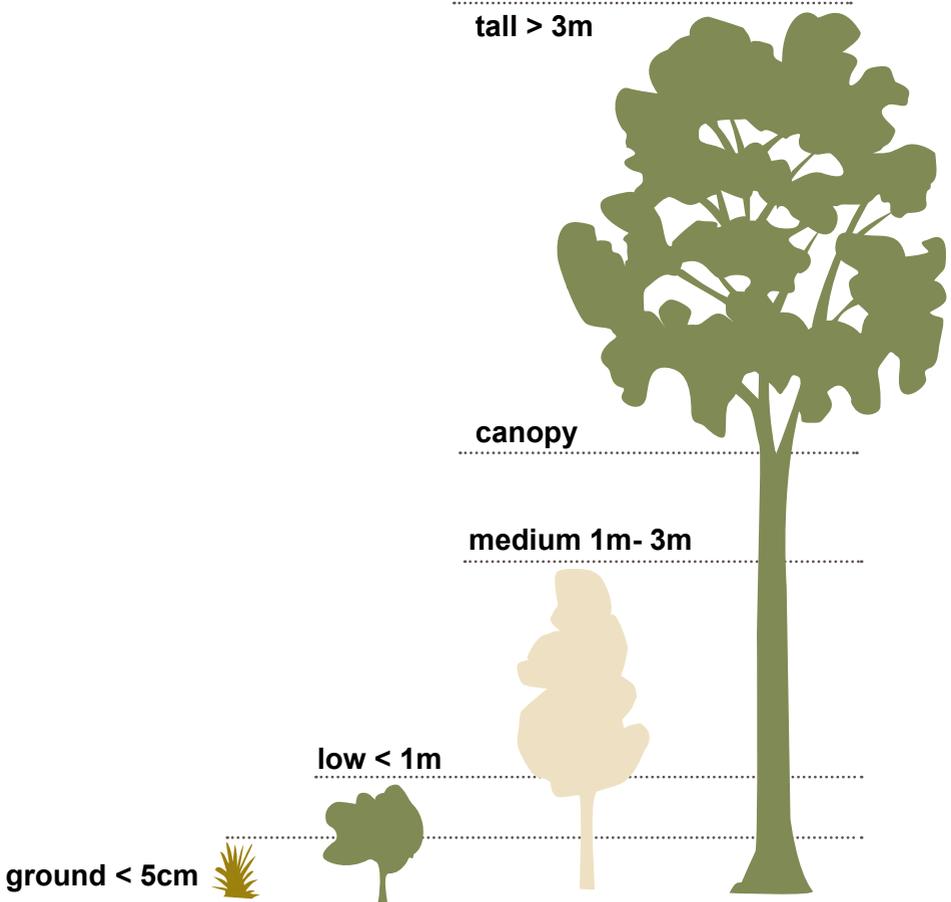
Musk daisy bush
Olearia argophylla



Hazel pomaderris
Pomaderris aspera



Satinwood
Nematolepis squamea



Garden styles for high fire risk areas

When establishing a new garden or modifying an existing one, choosing a style can help you to achieve a space that suits your needs. Applying the principles and actions outlined in this booklet to your preferred style also contributes to reducing bushfire risk in high fire risk areas.

The four garden styles appearing on the following pages are intended to provide a guide to landscaping your coastal garden to reduce bushfire risk.

Using one style, or combination of each, may help you determine lay-out, **plant selection, location and arrangement**, landscaping features, access and overall usability, including **ongoing maintenance**.

Each style is accompanied by a sample landscape plan that illustrates how the bushfire garden design principles and actions can be applied to that particular style.

These plans are intended to be generic. As such, they do not indicate the attributes of adjoining properties or the nature strip/road verge. It is recommended that you review your landscaping annually, with respect to the design guidelines in this booklet and adjoining land, as part of your bushfire survival plan.

This garden style uses a paved area as an attractive garden feature that provides separation between the home and planted areas to create defensible space in a bushfire.



The CFA's *Landscaping for Bushfire* provides a series of garden design styles for generic settings (e.g. coast, hills, rural, suburban), which offer additional information related to designing your garden to reduce bushfire risk.

The following steps may be helpful when it comes to planning your fire ready garden, including choosing a garden style, or combination of styles, that meets your needs.

Develop an understanding of how your garden is or will be used by considering issues such as: access and movement of people (e.g. pathways, gates); location of productive patches, outdoor dining/relaxation and play areas; adjoining properties and garden sheds; location of firewood, water tanks, clothes lines, etc.; and conserving existing native vegetation.

1. Make a sketch map of the site showing location of pathways, access points and other key features, including existing native vegetation and trees. Identify any environmental weeds to be removed.
2. Choose a range of local indigenous species in consideration of the overall garden style and which have low to moderate flammability as per the CFA Plant Selection Key.
3. Locate and arrange the plants and mulching materials according to the actions outlined on pages 12 to 24. This includes considering the arrangement of ground plants, small and tall shrubs and trees, to minimise the **ladder fuel** effect.
4. Consider non-combustible landscape features for screening, walls and sculptures.
5. Consider contacting landscape architects and/or landscape contractors for assistance and advice.

Whatever garden style or combination you choose to go with, focus on minimising opportunities for direct flame contact and radiant heat by planting vegetation in non-connecting clusters, using species of low to moderate flammability, arranged in a manner that does not favour the **ladder fuel** effect.

Whatever style you choose as the basis for designing your garden, focus on creating a garden you and your family can enjoy while contributing to reducing your property's bushfire risk.

Bush Garden

The bush garden style is characterised by a natural setting featuring native bushland, including local indigenous plants that support native wildlife, and little formality or apparent structure.

Whether it encompasses the entire site, or focuses on retaining or establishing discrete stands of native bushland in appropriate locations with respect to the home and other structures, **plant selection and arrangement** are critical to the level of bushfire risk.

The area's history (e.g. fire, clearing) and the presence of predominant native vegetation communities (e.g. heathland, woodland, forest, tall forest) need to be taken into consideration.

Choose appropriate local indigenous species for biodiversity and adaptation to local conditions, and maintain spaces between vegetation clusters to reduce connectivity and minimise fire spread.

Natural hard landscaping materials and features (e.g. rock and stone sculptures, walls, benches, seats, paving) complement this style and provide separation between vegetation and the home to reduce the risk of direct flame contact during a bushfire.

Although this garden style generally requires minimal attention throughout the year, regular maintenance is critical during the fire danger period to keep leaf litter and fine fuels (i.e. less than 6mm diameter) to a minimum. Continued monitoring and removal of weeds, particularly woody weeds, is essential.

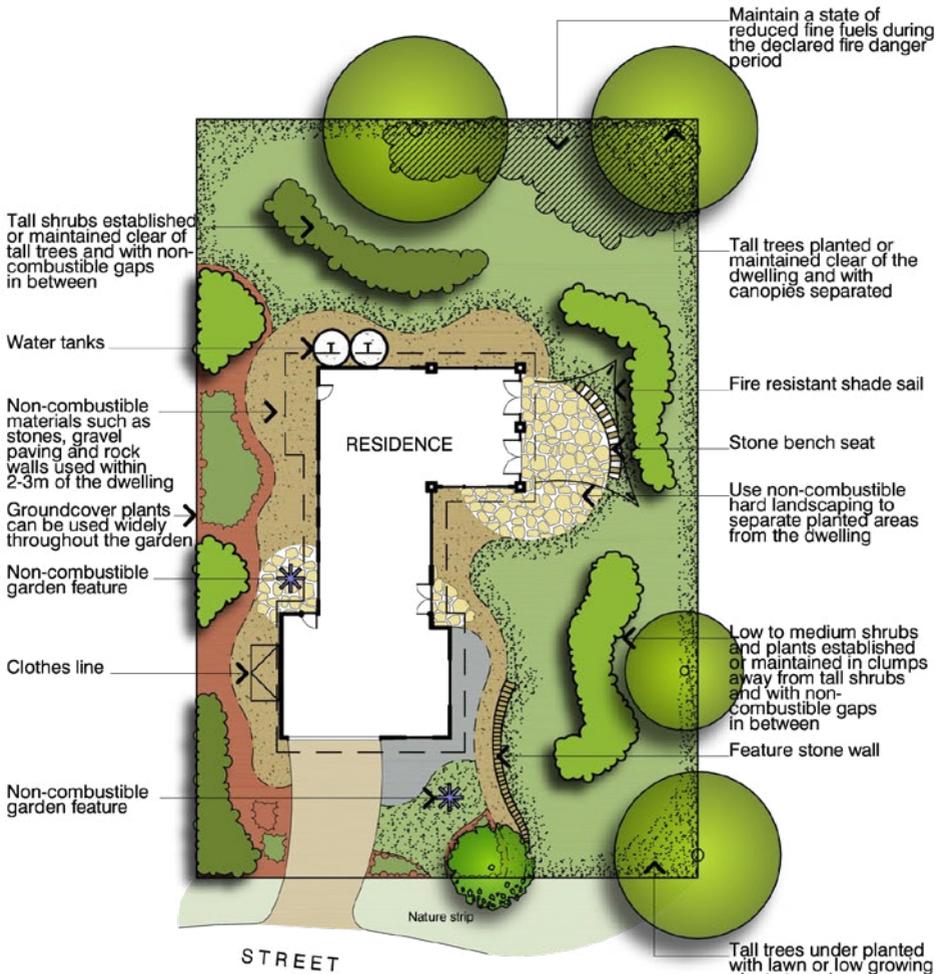


Rock walls and other hard landscaping features can be used in the bush garden to break up vegetation clusters and reduce fire spread.



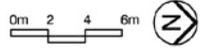
Retaining low fuel areas between stands of native vegetation also reduces fire spread.

Bushfire garden design guidelines applied to the Bush Garden



Legend

| | | | |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------|
|  | Tall existing Eucalypt tree (>3m in height) |  | Drought tolerant lawn. |
|  | Medium canopy trees (up to 3m in height) |  | Gravel pathways. |
|  | Tall shrubs (1-3m in height) |  | Stone, brick, concrete pavers. |
|  | Low to medium shrubs and plants (up to 1m in height) |  | Non-combustible mulch. |
|  | Groundcover planting (<5cm in height, low and spreading) |  | Gravel driveway. |
|  | Native vegetation patch. | | |



Family Garden

The family garden style focuses on creating an environment that nurtures children's play and imagination while providing areas for adult relaxation and entertaining.

Key components generally include:

- a combination of spaces for enjoyment and function
- minimal, low-key vegetation with an emphasis on safety and visual appeal
- children's play equipment
- outdoor furniture
- safety fencing
- grassed areas.

In terms of using this style to reduce bushfire risk, locating entertainment and play areas (constructed using non-flammable materials), low fuel areas (e.g. lawn) and other landscaping features (e.g. paths, fences, screens) in the perimeter around the home will separate it from planted areas and contribute to defensible space.

The family garden, like all garden styles, generally requires regular upkeep (e.g. mowing, pruning, weeding) throughout the year and more intensive maintenance during the fire danger period to keep leaf litter and fine fuels to a minimum, particularly in vulnerable areas around the home (e.g. roof gutters, windows, decks, doors, corners).



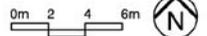
The family garden style can add to bushfire risk if flammable plants and materials feature in the perimeter around the home. Ensure they are kept a safe distance away and pay attention to leaf litter, plant debris and other fine fuels, which must be cleared during the fire danger period.

Bushfire garden design guidelines applied to the Family Garden



Legend

| | | | |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------|
|  | Tall existing Eucalypt tree (>3m in height) |  | Drought tolerant lawn. |
|  | Medium canopy trees (up to 3m in height) |  | Gravel pathways. |
|  | Tall shrubs (1-3m in height) |  | Stone, brick, concrete pavers. |
|  | Low to medium shrubs and plants (up to 1m in height) |  | Non-combustible mulch. |
|  | Groundcover planting (<5cm in height, low and spreading) |  | Gravel driveway. |



Productive Garden

Of the four garden styles outlined in this booklet, the productive garden requires the most planning, ongoing care and maintenance due to its focus on growing and using plants for food and other purposes.

In terms of designing a productive garden to reduce bushfire risk, the same guidelines apply in relation to creating defensible space around the home. This garden style, which often takes up just a section of the site, can also be successfully incorporated within the other garden styles.

Things to take into account when designing a productive garden include its aspect in relation to the sun, access to water and proximity to shade (i.e. adjacent vegetation and tree canopies).

Understanding the movement of sunlight across the site over the different seasons also determines plant selection (many productive plants require at least six hours sunlight a day). Pots can also be useful additions as they can be used all year round and easily moved to accommodate changes in seasons and sunlight.

Composting areas, pathways, wind protection and trees (including fruit trees) should also be considered in using this style.

Remember to incorporate the bushfire garden design guidelines and actions in designing your productive garden. Ongoing care and maintenance all year round are vital to a successful productive garden that also contributes to reducing bushfire risk.



The same principles and actions apply to the location and arrangement of planted and non-planted areas in the productive garden as for the other garden styles.



Bushfire garden design guidelines applied to the Productive Garden



Legend

| | | | |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------|
|  | Tall existing Eucalypt tree (>3m in height) |  | Drought tolerant lawn. |
|  | Medium canopy trees (up to 3m in height) |  | Gravel pathways. |
|  | Tall shrubs (1-3m in height) |  | Stone, brick, concrete pavers. |
|  | Low to medium shrubs and plants (up to 1m in height) |  | Non-combustible mulch. |
|  | Groundcover planting (<5cm in height, low and spreading) |  | Gravel driveway. |



'Productive Garden'

Park Garden

The park garden style is quite distinctive and generally consists of a well maintained and manicured ground layer, a few grasses and groundcovers or shrubs, and a number of small to large trees featuring interspersed canopies.

As the eucalypt trees, which are a strong feature of this style, take many years to mature, the park garden can take time to establish.

Careful **selection, location, arrangement** and **maintenance** of trees is the key consideration in using the park garden style to reduce bushfire risk. Ensuring tree canopies are well spaced and do not encroach into the defensible space perimeter around the home are critical.

The actions pertaining to removing flammable materials away from the home and breaking up fuel continuity should also be considered when designing, developing and maintaining a park style garden.

A well-designed and executed park garden, incorporating the bushfire garden design principles and actions, can substantially decrease bushfire risk. Selecting, locating and maintaining trees appropriately is the key factor in using this style.



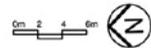
Features of the park garden style, such as seating, pathways and manicured lawns, all contribute to reducing bushfire risk by breaking up fuel continuity to create defensible space around the home.

Bushfire garden design guidelines applied to the Park Garden



Legend

| | | | |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------|
|  | Tall existing Eucalypt tree (>3m in height) |  | Drought tolerant lawn. |
|  | Medium canopy trees (up to 3m in height) |  | Gravel pathways. |
|  | Tall shrubs (1-3m in height) |  | Stone, brick, concrete pavers. |
|  | Low to medium shrubs and plants (up to 1m in height) |  | Non-combustible mulch. |
|  | Groundcover planting (<5cm in height, low and spreading) |  | Gravel driveway. |



'Park Garden'

Useful resources

Publications

Colac Otway

(download from www.colacotway.vic.gov.au or call 5232 9400)

- *Significant Weeds – Plains and Stony Rises*
- *Significant Weeds – Foothills and Ranges*
- *Significant Weeds – Coast*
- *Apollo Bay/Skenes Creek Species List*
- *Barongarook Species List*
- *Barwon Downs Species List*
- *Beech Forest Species List*
- *Colac Species List*
- *Forrest Species List*
- *Kawarren/Gellibrand Species List*
- *Lavers Hill/Johanna Species List*
- *Murroon/Pennyroyal Species List*
- *Wye River/Kennett River/Separation Creek Species List*
- *Colac Otway Shire Fire Management Plan*

CFA (download from www.cfa.vic.gov.au or call 5240 2700)

- *Fire Ready Kit (2011)*
- *Landscaping for Bushfire: Garden Design and Plant Selection (2011)*
- *Wildfire Management Overlay Applicants Kit (2010)*

Other (access via the websites provided)

- *Landscape and Building Design for Bushfire Areas*, CSIRO (2003)
www.csiro.au
- *2009 Victorian Bushfires Royal Commission Final Report*, Parliament of Victoria 2009 Victorian Bushfires Royal Commission (2010)
www.royalcommission.vic.gov.au
- *Planning and building for bushfire protection*, Department of Transport, Planning and Local Infrastructure (2009-2014)
www.dtpli.vic.gov.au/planning/planning-and-building-for-bushfire-protection/bushfire-planning-resources
- *Colac Otway Planning Scheme*, Colac Otway (2016)
<http://planningschemes.dpcd.vic.gov.au/schemes/colacotway>

Definitions

Canopy is the layer or multiple layers of branches and foliage at the crown (top) of a tree.

Combustible materials (e.g. timber, firewood) require ignition from a dominant source to burn.

Defendable space is an area of land around a building where vegetation is modified and managed to reduce the effects of direct flame contact and radiant heat associated with bushfire.

Direct flame contact occurs when flames touch a house or other structure.

Ember attack occurs when burning fine fuels (e.g. twigs, leaves, bark) are carried by the wind and land in and around houses and their gardens, often igniting spot fires.

Environmental weeds include:

- **noxious plants** declared as a problem under Victorian legislation and requiring landholders to control, and
- **woody plants** with hard woody parts, especially stems.

Fine fuels ignite quickly and burn easily, and include twigs, leaves and bark. These materials can be carried by wind long distances ahead of the main fire. Fibrous, dry tree bark can act as a ladder, spreading fire into the canopy.

Fire danger period is a time during which fires in the open air are legally restricted due to high fire danger. Under the Country Fire Authority Act 1958, the CFA is responsible for declaring the fire danger period in a municipality. In Victoria, the fire danger period generally runs from November to April.

Flammable materials (e.g. propane gas) are easily ignited by minimal sources (i.e. they have a lower flashpoint than combustible materials) and capable of burning rapidly.

All flammable materials are combustible but not all combustible materials are flammable.

Fuel load refers to the amount of vegetation, plant debris, leaf litter and other flammable materials around a property that is capable of carrying fire in a bushfire. High fuel loads increase the speed and intensity at which fire travels.

Heavy fuels take longer to ignite but will burn longer, and include branches, trees and logs. These materials create an extremely hot fire.

Ladder fuel is where vegetation is continuous and vertical between different plant heights and types, allowing fire to carry from surface fine fuels (e.g. leaves, twigs) into the crowns of trees or shrubs.

Planning scheme generally applies to a defined municipal area such as Colac Otway (and some special planning areas) and sets out the policies and provisions applying to the use and development of land in that area.

Plant height guide:

- **ground level/storey** - plants less than 50cm in height, leaf litter, twigs, branches
- **low level/storey** - plants less than 1m in height, grasses, sedges, rushes, small shrubs
- **medium level or middle storey** - plants 1m to 3m in height, medium shrubs, small trees
- **tall or upper level/storey** - shrubs and trees more than 3m in height.

Radiant heat is capable of igniting surfaces without direct flame contact, cracking/breaking windows, distorting/melting materials and drying out vegetation ahead of a bushfire so that it burns more easily.

