

Landscaping guidelines for bushfire prone areas

*Every
child,
every
opportunity*



**Published by the Communications Division
for Infrastructure Division
Department of Education and
Early Childhood Development**
Melbourne
October 2010

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Landscaping Guidelines for Bushfire Prone Areas

The outdoors are an important part of the learning environment. Creating outdoor environments that support learning and provide enjoyable social spaces requires thoughtful landscaping solutions.

Bushfires are a natural and challenging feature of the Victorian landscape. These Guidelines provide suggestions and support for schools and children's services which are located in bushfire prone areas. Advice on site works and tree removal are not included in these guidelines.

Planning

Using a copy of your site plan, develop a plan which incorporates planting and landscaping. With this, you can consider and evaluate all external features on site, for example, overhead wires, existing trees and shrubs, hard areas, service areas, paths and roadways, playgrounds and sports fields.

Your site is a part of the wider community, so involving your neighbours, parents and others in the local community can serve to strengthen and broaden the outcomes of a landscaping project.

Bushfire prone areas need not necessarily be cleared of vegetation. Well planned and managed vegetation can:

- reduce fire intensity
- reduce wind speed
- deflect and filter embers and other burning debris (embers are small particles of burning material)
- provide shelter from radiant heat

Fuel management

Fuel, i.e. combustible material, is a major factor influencing the intensity and spread of bushfire. When landscaping a new area, fuel management must be considered.

- Avoid plants that produce fine fuel which is easily ignited. Fine fuel is tree and shrub litter, leaves, twigs, bark strips, mulches, ferns, low plants, grass, decaying material. and debris on the ground
- Trees that are particularly combustible, for example those that have ribbon bark, open crown, fine leaves, high oil content, should not be considered for planting
- Remove fuel resting against buildings or structures
- Create breaks between fuels horizontally, along the ground. Plant islands, not continuous runs of vegetation
- Create breaks between fuels vertically. Plant in such a way that fuels cannot form a continuous or linked ladder from ground level grasses to bushes to understorey to tree tops
- Consider the position and nature of existing trees. Make sure that new planting will not create a fuel ladder with these trees
- If planting to provide shade, choose species with dense foliage and spreading canopies
- As a general rule, no plant which grows to a height greater than four metres should be closer than ten metres from any structure. Look at descriptions when selecting plants, but also observe how particular plants grow in your area. The list of less flammable plants which is appended to these guidelines will give you a guide to the grown size of plants that you select

Ongoing care and maintenance

- Develop a program for annual maintenance and for maintenance prior to and during the fire season
- Plan for mechanical maintenance wherever possible
- Plan for planting for which students can be responsible. Working in gardens and other areas which have been planned to reduce the spread of fire will reinforce fire awareness
- Plant for minimum water usage, drought tolerance and hardiness

Resources

There are many excellent publications from the CFA and DSE which offer general landscaping and design guidelines, as well as particular information about landscaping in fire prone areas. Some are listed below.

- *Landscape and Building Design for Bushfire Areas*, Caird Ramsay and Lisle Rudolph, 2003, CSIRO publishing
- *DEECD Building Quality Standards Handbook*
Section 8.8 Landscape Cultivation and Planting Guidelines
[https://edugate.eduweb.vic.gov.au/sc/sites/Infonline/Policies Guidelines and Procedures/Capital Works Procedures Manual \(Jan 2010\).pdf](https://edugate.eduweb.vic.gov.au/sc/sites/Infonline/Policies%20Guidelines%20and%20Procedures/Capital%20Works%20Procedures%20Manual%20(Jan%202010).pdf)
- *Shade for Everyone: a practical guide for shade development*, pp 17-20 pdf 3.4MB
SunSmart Victoria
www.sunsmart.com.au
- Association of Societies for Growing Australian Plants
www.asgap.org.au/nursery.html
The Victorian page lists numerous native plant nurseries state wide.
- *Australian Plants for Fire Prone Areas* (1994)
<http://anpsa.org.au/fire.html>
- Australian Plants Society Victoria
This site includes a recent section with a comprehensive list of plants found to provide some degree of protection during fires.
www.apsvic.org.au
http://www.apsvic.org.au/plant_fire_resistant.html
- Nursery and Garden Industry of Victoria
The site includes a useful document *Rebuilding Safer Communities*.
www.ngiv.com.au

Questions and answers

What sorts of plants are best for our grounds?

Refer to the resources list above and to the appendix.

- If planting close to buildings, choose native or exotic grass species that remain green throughout summer.
- Less flammable ground cover plants can reduce the speed of travel of fire.
- Plants with compact dense growth habit, smooth bark and broad leaves, low oil content and salt in foliage, for example, many silvery-grey leaf plants, are less likely to burn.



Correa alba



Myoporum montanum

- In principle, avoid plants that produce fine fuel which is easily ignited. Plants that produce a lot of debris should also be avoided.
- Drought resistance, growth rate, shade provision and wind protection are also attributes to consider when selecting plant material.



Lauris nobilis



Nothofagus cunninghamii

How do we source plants for landscaping?

There is great educational value in students propagating your own plant material.

The environment department of your local municipal or shire council might be a good source of indigenous plants, and provide help and advice about planting and propagation.

Are there really any plants that are fire resistant or retardant?

All plants will eventually burn although some are more resistant, i.e. less flammable than others. A list is appended to these Guidelines.

Look at the list on the ACT Planning and Land Management web site and the list in the *DEECD Building Quality Standards Handbook*, Section 8.8 Landscape Cultivation and Planting Guidelines. (See Resources list) Good commercial nurseries will give advice too.

Do we sacrifice shade, shelter and beauty for reduced fire risk?

Reduction of risk is paramount in bushfire prone areas. Shade can be provided by trees with dense foliage and spreading canopies, or by built shade. See www.sunsmart.com.au and the *DEECD Building Quality Standards Handbook*, Section 8.5.5 Shade Areas.

Should we focus only on native species?

Not necessarily, there are many native species that are less flammable and more fire tolerant than others, and that will regenerate after fire. Deciduous species provide shade in summer and allow light penetration in winter. They do require more maintenance, and usually require more water.

Is soft-fall like hardwood chips, tan bark, chipped/shredded pine a good option for playground soft-fall surfaces in bushfire prone areas?

Research using rubberised soft-fall surfaces rather than organic mulches appears inconclusive in terms of the fire hazard they present. Fine shredded pine bark and poplar wood are lighter than hardwood chips and should not be used. No mulch finer than a pencil diameter should be used.

Use of organic soft fall depends on where it is in relation to buildings and vegetation, and on the design of the grounds. If an area of organic soft-fall mulch is in the playground, surrounded by a grassed or asphalt area, it may not be problematic.

Ideally, playgrounds should be located to the south of structures so prevailing fire wind (north wind) would blow ember away from buildings. Similar consideration should be given to locating kitchen gardens if fine mulch is to be used.

Consider the following:

- What is the overall risk of the mulch catching fire?
- If the mulch were on fire, what impact or consequence would it have?
- What would actually happen if an ember did get into the mulch?
- Considering the flame height would only be a few inches, would it result in other vegetation catching fire?
- Is the mulch continuous up to any buildings, thus creating continuity of fuel from the playground to buildings? Avoid this scenario
- If an isolated patch of tanbark that is not connected to other vegetation, potentially there could only be a patch of small flame that will not travel anywhere



Can we plant gardens up against our buildings?

All material against and around buildings should be non-combustible. It should extend away from structures for 1.5 to 2 metres. Consider pavers, concrete, asphalt, pebbles or gravel.

Plant low vegetation in clumps rather than in continuous strips beyond two meters from structures. Short grass kept moist and debris free reduces the fire risk.

Can our students do the propagation and planting themselves?

Yes – great learning opportunity!

Could we develop a kitchen garden as part of our landscaping?

Yes. Kitchen gardens can provide an excellent buffer to buildings. If a kitchen garden is located to act as a buffer to buildings, make sure that course or less flammable mulch is used. Do not use pea straw, for example, if the kitchen garden is close to buildings.

The following sites offer some guidance:

https://edugate.eduweb.vic.gov.au/edulibrary/Schools/Circulars/2006/S249-2006_kitchengardens-eml.doc

www.kitchengardenfoundation.org.au

www.education.vic.gov.au/kitchengarden



Appendix

Plants and trees not listed below are not recommended for use in schools or children's services in bushfire prone areas. Remember, the dimensions shown here are only a guide. They can vary considerably according to the conditions in which they are growing.

Relatively less flammable plants

Trees

D = Deciduous Species * = Introduced Species R = Suitable for Radiant Shields

| | Botanical name | Common name | Average height and width |
|-----|----------------------------|------------------------|--------------------------|
| | Acacia Melanoxydon | Blackwood | 12m x 5m |
| *D | Acer campestre | Common Maple | 14m x 7m |
| *D | Acer negundo | Box Elder Maple | 12m x 6m |
| *D | Acer platanoides | Norway Maple | 18m x 8m |
| *D | Acer pseudoplatanus | Sycamore | 15m x 7m |
| R | Acmena smithii | Lilly Pilly | 10m x 3.5m |
| *D | Aesculus carnea | Pink Flowered Chestnut | 16m x 8m |
| *D | Alnus glutinosa | Common Alder | 5m x 6m |
| * | Alnus jorullensis | Evergreen Alder | 12m x 5m |
| | Angophora costata | Rusty Gum Myrtle | 14m x 8m |
| | Brachychiton populneus | Kurrajong | 11m x 5m |
| | Buckinghamia celsissima | Ivory Curl Flower | 10m x 7m |
| * | Calodendron capense | Cape Chestnut | 13m x 8m |
| | Casuarina cunninghamiana | River She-Oak | 18m x 7m |
| * | Celtis australis | Hack Berry | 16m x 7 m |
| * | Ceratonia siliqua | Carob | 12m x 8m |
| | Ceratopetalum apetalum | Coachwood | 19m x 5m |
| * R | Cornus capitata | Evergreen Dogwood | 6m x 4m |
| R | Elaeocarpus reticulatus | Blue Oliveberry | 6m x 2.5m |
| | Eucalyptus gummifera | Bloodwood | 20m x 9m |
| | Eucalyptus maculata | Spotted Gum | 22m x 9m |
| | Eucryphia moorei | Leatherwood | 10m x 7m |
| *D | Fraxinus species | Ash Trees | 10-15m x 7-9m |
| *R | Gordonia axillaris | Cordia | 6m x 4m |
| *R | Griselinia littoralis | N.Z. Broadleaf | 5m x 3m |
| | Lagunaria patersonii | Pyramid Tree | 11m x 5m |
| *D | Lagerstroemia indica | Crepe Myrtle | 6m x 5m |
| *R | Laurus nobilis | Laurel (Sweet Bay) | 10m x 5m |
| R | Ligustrum lucidum | Privet | 7m x 5 m |
| | Liriodendron tulipifera | Tulip Tree | 25m x 10m |
| R | Metrosideros excelsa | N.Z. Xmas Tree | 10m x 4m |
| | Nothofagus cunninghamii | Myrtle Beech | 15m x 5m |
| | Oreocallis wickhamii (syn. | Tree Waratah | 15m x 6m |
| * | Olea europaea | Olive | 10m x 9m |
| R | Photinia serrulata | Chinese Hawthorn | 8m x 7m |
| R | Pittosporum eugenoides | Tarata | 6m x 3.5m |
| *D | Platanus acerifolia | London Plane Tree | 16m x 10m |
| *D | Populus simonii | Simons Poplar | 10m x 4m |
| *R | Prunus laurocerasus | Cherry Laurel | 6m x 4m |
| *R | Prunus Lusitanica | Portugal Laurel | 5m x 4m |
| | Quercus canariensis | Algerian Oak | 15m x 10m |
| *D | Quercus cerris | Turkey Oak | 20m x 11m |
| * | Quercus suber | Cork Oak | 11m x 9m |
| * | Quercus virginiana | Live Oak | 10m x 8m |
| *D | Salix alba ssp. vitellina | Golden Willow | 10 m x 7m |
| * | Schinus molle | Peppercorn Tree | 7 m x 6m |
| | Stenocarpus sinuatus | Firewheel Tree | 14m x 6m |
| R | Syzygium coolminianum | Lilly Pilly | 10m x 4m |
| | Syzygium floribundum | Weeping Lilly Pilly | 18m x 6m |
| *D | Tilla vulgaris | Linden | 12m x 5m |
| | Tristania conferta | Brisbane Brush Box | 10m x 6m |
| R | Tristania laurina | Kanooka | 6m x 3m |
| *D | Ulmus glabra | Scotch Elm | 12m x 6m |
| * | Ulmus parvifolia | Chinese Elm | 9m x 8m |
| *D | Ulmus pumila | Siberian Elm | 11m x 5m |
| * | Zelkova carpinifolia | European Zelkova | 15m x 7m |

Weed Plants

The following plants, although listed above, are not recommended for mountain areas as they have the potential to become 'weeds'. However, they may be suitable in other areas

| | Botanical name | Common name | Average height and width |
|--|------------------------|----------------|--------------------------|
| | Acacia elata | CedarWattle | |
| | Acer Pseudopiatanus | Sycamore | |
| | Cinnamomum camphora | Camphor Laurel | |
| | Hakea salicifolia (syn | Willow Hakea | |
| | Ligustrum lucidum | Privet | |
| | Prunus laurocerasus | Cherry Laurel | |

Shrubs

| | Botanical name | Common name | Average height and width |
|---|----------------------------|--------------------------|--------------------------|
| | Acacia boormanii | Snowy River Wattle | 3m x 2m |
| | Acacia cyclops | W.A. Coast Wattle | 3m x 3m |
| | Acacia flexifolia | Bent-Leaf Wattle | 1m x 1m |
| | Acacia glandulicarpa | Hairy-pod Wattle | 1m x 3 m |
| | Acacia howittii | Sticky Wattle | 5m x 3.5m |
| | Acacia pravissima | Owens Wattle | 4 m x 2.5m |
| | Acacia iteaphylla | Gawler Range Wattle | 3m x 3m |
| | Acacia myrtifolia | Myrtle Wattle | 1.5m x 1.5m |
| | Acacia vestita | Hairy Wattle | 3.5m x 2m |
| | Agonis juniperina | Juniper Myrtle | 4.5m x 2m |
| | Atriplex nummularia | Old Man Saltbush | 2.5m x 2m |
| | Banksia marginata | Silver Banksia | 3 m x 3 m |
| * | Buxus sempervirens | English Box | 2 m x 2 m |
| | Chaenomales japonica | Japonica | 1m x 1.5m |
| * | Cistus spp. | Rock Rose | 1.5m x 1m |
| * | Correa alba | Coastal Correa | 1.5m x 2m |
| * | Duranta plumieri | Sky Flower | 2.5 m x 2m |
| * | Dais cotinifolia | Pompom tree | 3m x 2.5m |
| * | Elaegnus pungens variegata | Variegated Oleaster | 3m x 2.5m |
| | Erythrina crista-galli | Coral Tree | 3m x 3m |
| * | Escallonia macrantha | Escallonia | 2.5m x 2 5m |
| | Eupomatia laurina | Bolwarra (Copper Laurel) | 3m x 2.5 m |
| | Grevillea rosmarinifolia | Rosmary Grevillea | 2m x 2.5m |
| * | Hebe spp | Veronica | 1-2m x 1-2m |
| * | Lagerstroemia indica | Crepe Myrtle | 3m x 3m |
| * | Lonicera nitida | Box-Leaf Honey Suckle | 1-2m x 1-5m |
| | Myoporum Insulare | Boobialla | 4m x 4m |
| | Myoporum montanum | Waterbush | 1.5m x 1.5 m |
| * | Myrtus pendunculata | Myrtle | 3m x 3m |
| * | Osmanthus heterophyllus | Osmanthus | 3m x 2m |
| * | Photinia glabra "Rubens" | Chinese Firebush | 2m x 2m |
| * | Photinia glabra "Robusta" | Chinese Firebush | 4m x 3m |
| * | Pieris japonica | Japanese Pearl Flower | 2.5m x 2m |
| | Rhagodia parabolica | Saltbush | 2m x 2m |
| * | Rhapilolepis delacouri | Indian Hawthorn | 2m x 2.5m |
| * | Rhododendron spp | Rhododendron | 3m x 3.5m |
| | Telopea oreades | Victorian Waratah | 3m x 3m |
| | Telopea truncata | Tasmanian Waratah | 2m x 2.5m |
| * | Viburnum tinus | Laurustinus | 3m x 3m |
| | Westringia fruticosa | Native Rosemary | 2m x 3m |
| | Westringia glabra | Violet Westringia | 1.5m x 1.5m |

Azaleas, Camellias and Rhododendrons

These plants do have fire resistant qualities and should, if possible, be retained where they currently exist. However, they are not normally recommended as they can be costly and subject to vandalism. Some varieties have poisonous leaves and others can cause dermatitis.