

Landscaping for bushfire prone areas



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Landscaping for bushfire prone areas



Outdoor learning areas are an important part of the school environment. Creating outdoor environments that support learning and provide enjoyable social spaces requires thoughtful landscaping solutions, particularly in bushfire prone areas.

Bushfires are a natural and challenging feature of the Victorian landscape. These guidelines are designed to support school principals and childcare directors with bushfire preparations and emergency management plans.

Well planned and managed vegetation can provide many benefits in bushfire prone areas. It can:

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

Planning a school's new landscape

The school's site plan can be used to develop a plan which incorporates planting and landscaping. All external features on site need to be considered, for example, overhead wires, existing trees and shrubs, hard areas, service areas, paths and roadways, playgrounds and sports fields.

A school 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.

Fuel management

Fuel, i.e. combustible material, is a major factor influencing the intensity and spread of bushfires.

When developing a landscaping plan, consideration should be given to fuel management.

Consider the following fuel management strategies:

- Avoid plants that produce fine fuel which is easily ignited. Fine fuel includes tree and shrub litter, leaves, twigs, bark strips, mulches, ferns, low plants, grass, decaying material and debris on the ground
- Do not plant trees that are particularly combustible, for example, trees with ribbon bark, open crown, fine leaves or high oil content
- Remove fuel resting against buildings or structures
- Create breaks between fuels horizontally along the ground. Plant islands, rather than continuous runs of vegetation



- Form breaks between fuels vertically. Plant in such a way that fuels cannot form a continuous or linked ladder from ground level grasses to bushes, and from 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, plants which grow to a height greater than four metres should not be closer than ten metres from any structure
- Look at descriptions and plant dimensions when selecting plants, but also observe how particular plants grow in your area. The list of less flammable plants at the end of 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
- Select plants for which students can be responsible. Working in gardens and other areas designed to reduce the spread of fire will reinforce fire awareness
- Plant for minimum water usage, drought tolerance and hardiness.

Resources

There are many excellent resources which offer general landscaping and design guidelines, as well as particular information about landscaping in fire prone areas.

The Country Fire Authority (CFA) and the Department of Sustainability and Environment (DSE) also publish excellent information for bushfire prone areas.

Helpful resources are listed below:

- Landscape and Building Design for Bushfire Areas, Caird Ramsay and Lisle Rudolph, 2003, CSIRO Publishing
- Shade for Everyone, a guide for shade development, available at: www.sunsmart.com.au
- Australian Plants Society Victoria lists numerous native plant nurseries state wide. The site also features a comprehensive list of plants found to provide some degree of protection during fires, available at: www.apsvic.org.au
- Nursery and Garden Industry of Victoria. The site includes a useful document, Rebuilding Safer Communities, available at: www.ngiv.com.au
- Good commercial plant nurseries will be able to provide advice on landscaping in bushfire prone areas.

Questions and answers

What sorts of plants are best for our grounds?

See the resources listed previously and the suggested plants for bushfire prone areas at the end of these guidelines.

Also:

- 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 fire
- Plants with compact dense growth, smooth bark and broad leaves, low oil content and salt in foliage, for example, many silvery-grey leaf plants, are less likely to burn
- 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.

How do we source plants for landscaping?

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

Are there any plants that are fire resistant or retardant?

All plants will eventually burn although some are more fire resistant, i.e. less flammable than others (see the list of plants at the end of these guidelines).

Do we sacrifice shade, shelter and aesthetics 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 non-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 and may be a better option in some circumstances. They do require more maintenance, and usually require more water.

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

Fine shredded pine bark and poplar wood are lighter than hardwood chips and should not be used. Mulch finer than a pencil diameter should not be used.

Research on the benefits of using rubberised soft-fall surfaces rather than mulch to reduce fire risk is inconclusive.

The impact 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 present problems.





Ideally, playgrounds should be located to the south of structures so a prevailing fire wind (north wind) would blow embers away from buildings. Similar consideration should be given to the location of 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 was on fire, what impact or consequence would it have?
- What would 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? If an isolated patch of tanbark is not connected to other vegetation, there might only be a patch of small flame that would not travel anywhere.

You should avoid:

- Continuous mulch up to any buildings, which creates a path of fuel from the playground to the buildings.

How do we plant low vegetation?

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

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 metres to 2 metres. Consider pavers, concrete, asphalt, pebbles or gravel for areas close to buildings.

Can our students do the propagation and planting themselves?

Yes, there is great educational value in these activities.

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 coarse or less flammable mulch is used. For example, do not use pea straw if the kitchen garden is close to buildings.

The following website offers some guidance:

www.kitchengardenfoundation.org.au



Suggested plants in bushfire prone areas



The following shrubs and trees are recommended in bushfire prone areas. Remember, the dimensions shown here are only a guide. They can vary considerably depending on local conditions.

Shrubs

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

* = Introduced Species

Azaleas, Camellias and Rhododendrons

These plants do have fire resistant qualities and should, if possible, be retained where they currently exist. It should be noted that some varieties have poisonous leaves and others can cause dermatitis.

Trees

	Botanical name	Common name	Average height and width
	Acacia Melanoxyton	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
	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. Embothrium w.)	Tree Waratah	15m x 6m
*	Olea europaea	Olive	10m x 9m
R	Photinia serrulata	Chinese Hawthorn	8m x 7m
R	Pittosporum eugenioides	Tarata	6m x 3.5m
*D	Platanus acerifolia	London Plane Tree	16m x 10m
*D	Populus simenii	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 sspp. 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



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