

LAND- SCAPING FOR BUSHFIRE

LESSONS FOR
YEARS 7-10



Landscaping for Bushfire: Garden design and plant selection

Communities in high bushfire risk areas need to understand their environment and what they can do to prepare for each fire season. Bushfire behaviour, including its intensity and rate of spread, is influenced by weather conditions, topography and fuel (vegetation). The survivability of buildings, and of those who occupy and shelter in them, can be significantly enhanced or endangered by the type, quantity, location and arrangement of plants around the building. Even though all plants burn, carefully managing the property and garden around a building can reduce fire intensity.

ABOUT THIS LESSON PLAN

LESSON 1: FIRE IN THE ENVIRONMENT

Students learn about vegetation as fuel for a fire. They explore high-risk environments and how fires behave.

LESSON 2: MANAGING VEGETATION: PROPERTY ASSESSMENT

Students learn how a well-prepared property, landscape design and plant selection can reduce fire risk. They assess the preparedness of a chosen property, its garden design and plants and make recommendations on how it can be improved.

LESSON 3: GARDEN DESIGN AND PLANT SELECTION

Students apply their knowledge and understanding to design a 'firewise' garden.

DURATION

Allow up to 90 minutes of class time for each lesson. Where possible, students should be encouraged to complete the property assessment task for lesson two on their own property.



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CURRICULUM CONNECTIONS

The content is relevant to the Victorian Curriculum Geography learning area where:

The Geography curriculum teaches students to respond to questions in a geographically distinctive way, to collect, evaluate, analyse and interpret information, and suggest responses to what they have learned. They conduct fieldwork, map and interpret data and spatial distributions, and use spatial technologies. These skills can be applied in everyday life and at work.

Source: victoriancurriculum.vcaa.vic.edu.au

These lessons are also suitable for middle and upper secondary students in programs that focus on sustainability, environment or horticulture.

These practical lessons focus on developing students' understanding of:

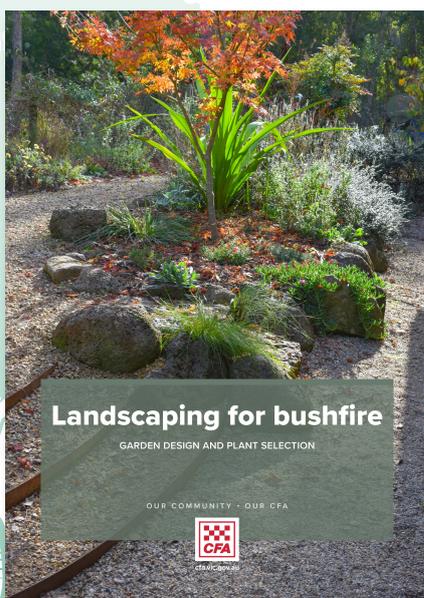
- Vegetation as fuel for a fire
- How to reduce the risk and impact of radiant heat and ember attack on buildings
- How to prepare a property for the fire season
- How to identify and select more 'firewise' plants
- How to design a more 'firewise' garden

WHAT YOU WILL NEED

Students will need:

- *Fire Ready Kit* (copies can be downloaded from cfa.vic.gov.au)
- *Landscaping for Bushfire: Garden Design and Plant Selection* (copies can be downloaded from cfa.vic.gov.au)
- Drawing paper, grey lead and coloured pencils
- Computer and internet access (optional)

The two publications above are available on the CFA website or print copies can be requested by contacting education@cfa.vic.gov.au



LESSON 1 - FIRE IN THE ENVIRONMENT

FIRE TRIANGLE

- Fire needs three things to continue to burn: **fuel, oxygen and heat.**
- The fire triangle is a simple explanation for understanding what is necessary to start a fire. The triangle shows the three elements a fire needs to ignite: heat, fuel, and oxygen. A fire naturally occurs when the elements are available and combined, meaning that fire is actually an event rather than a thing. A fire can be prevented or extinguished by removing any one of the elements. For example, covering a fire with a fire blanket removes the oxygen to extinguish a fire.
- What is the main source of fuel in a bushfire?



HIGH RISK ENVIRONMENTS

Under the right conditions, a fire can burn anywhere there is vegetation. However, some environments are at a higher risk of fire.

- 01 Study the high-risk environments in the *Fire Ready Kit* page 5– 9 or [online](#)
- 02 Which of the four environments poses the greatest risk? Consider the type of vegetation in this environment. How might it contribute to the risk?
- 03 Which fire-prone environment is most like your local environment?

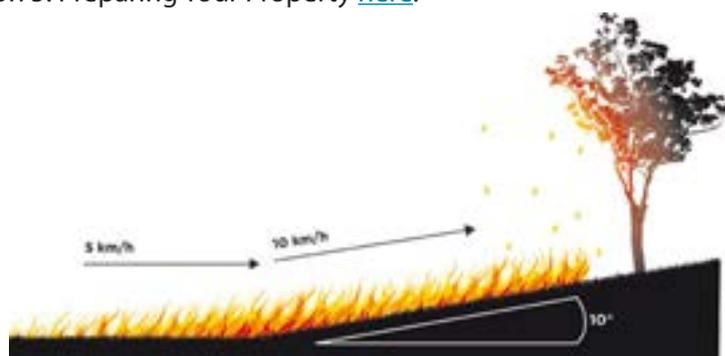
FIRE BEHAVIOUR

You will need a copy of the *CFA Fire Ready Kit*

If working online, you will only need to download Section 5: Preparing Your Property [here](#).

- 01 Read *Fire Behaviour* on page 39–41
- 02 What are the two fuel types?
 - A _____ fuels ignite quickly and burn easily.
 - B _____ fuels take longer to ignite but burn for longer.
- 03 Why do fires burn faster uphill?
- 04 What effect does temperature and dry conditions have on vegetation?
- 05 What are embers? What is ember attack?
- 06 Burning vegetation generates radiant heat. Embers are pieces of burning vegetation carried by the wind. Embers and radiant heat can ignite buildings. How can you reduce the risk of radiant heat and ember attack from impacting buildings?

To learn more about bushfire behaviour including ember attack view the CFA [bushfire interactive](#).



LESSON 2 - MANAGING VEGETATION: PROPERTY ASSESSMENT

Study the image of the well-prepared property in the Fire Ready Kit on page 46 and 47 or [online](#) and also read 'Managing vegetation' from page 48 to 51.

TASK 1

- A** Draw a sketch of your chosen building (home, school or other building) and surrounding property. Include landscape and garden features such as garden beds, trees, paths and swimming pools.

Examples can be found in *Landscaping for Bushfire: Garden Design and Plant Selection* and [online](#)

- B** Study the plant selection key in *Landscaping for Bushfire: Garden Design and Plant Selection* on page 43 or use the [online](#) version.

You will need to head out into the garden and use your senses. Colour code or label the vegetation in your sketch according to its firewise and flammability rating: not firewise, at-risk fire wise, moderately firewise or firewise.



TASK 2

Assess the property around your home, school or other building. You can record your observations in the table below.

WHAT TO LOOK FOR	OBSERVATION	WHAT TO LOOK FOR	OBSERVATION
<p>Mature trees</p> <p>Mature trees can help shield against radiant heat and embers. They must be strategically located and well managed.</p>		<p>Shrubs</p> <p>Lower branches of shrubs should be pruned so that they are separated from surface fuels underneath. Shrubs should also be pruned so that they are well away from branches of mature trees.</p>	
<p>Flammables</p> <p>Flammable items such as boxes, furniture and doormats should be removed from decks and verandahs.</p>		<p>Tree branches</p> <p>Tree branches should not overhang buildings or the area within 10 metres of the building.</p>	
<p>Short grass</p> <p>Grass should be cut to less than 10cm. Fire can ignite and travel quickly through long grass.</p>		<p>Garden beds</p> <p>There should not be large shrubs next to or under windows.</p>	
<p>Woodpiles</p> <p>Woodpiles should be well away from the house. Stray fire embers can easily ignite woodpiles.</p>		<p>Pebbles and rocks</p> <p>Pebbles and rocks should be used in your garden (not flammable mulch)</p>	
<p>Storage of flammables</p> <p>Flammable liquids must be stored away from the house and in flame proof containers.</p>		<p>Roof gutters</p> <p>Gutters should be clear of leaf litter.</p>	<p><i>Do not climb. Describe what you can see from the ground.</i></p>
<p>Leaves and Twigs</p> <p>Dry grass, leaves, twigs and loose bark should be removed.</p>			

TASK 3

Create a list of recommendations and actions to better prepare this property. Include suggestions on how to improve the garden design and plant selection.

LESSON 3 - GARDEN DESIGN AND PLANT SELECTION

Garden design should incorporate the following four principles:

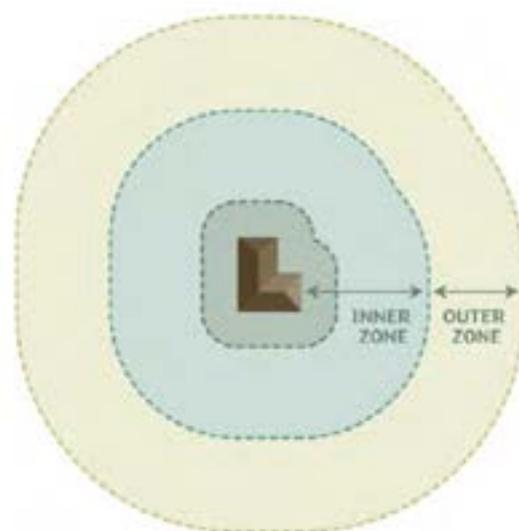
- 01** Create defensible space – an area of land around a building where vegetation is modified and managed to reduce the effects of radiant heat and direct flame contact during a bushfire.
- 02** Remove flammable plants and objects such as wood piles and gas bottles from within 10 metres around a building.
- 03** Break up fuel continuity (create space between plants and trees).
- 04** Carefully select, locate and maintain plants and trees.

More information about these design principles can be found in *Landscaping for Bushfire: Garden Design and Plant Selection* available [online](#).

TASK

Use the garden design principles and 'firewise' plant selection to design a garden and select plants around your chosen property and local environment.

Example designs and information for gardens in coastal, mountainous, rural and suburban environments can be found in *Landscaping for Bushfire: Garden Design and Plant Selection* and [online](#)



- Within 10 metres avoid flammable objects near vulnerable parts of the building.
- Inner zone – An area immediately surrounding a (proposed) building where fuel is managed to a minimum condition.
- Outer zone – An area around the building between the inner zone and the unmodified vegetation that substantially decreases the intensity of an approaching fire and restricts the pathway to canopy fuels.