

URBAN TREES

Making choices for a
changing climate



Acknowledgement of country

We acknowledge and respect the Djab Wurrung people as the Traditional Custodians in the Ararat region. We recognise their continuing connections, right, and obligations of the Djab Wurrung people in their Country, and we pay respect to their Elders past, present and future.

Our partners

This project is supported by the Victorian Government and funded through the Sustainability Fund – Supporting Our Regions to Adapt program and our partner Ararat Rural City Council.

This booklet is designed for residents of Ararat, Stawell and Beaufort and the outlying towns and villages across the region.



Ararat Rural City



Upper Mount Emu Creek
Landcare Network

PROJECT
PLATYPUS
UPPER WIMMERA LANDCARE



Environment,
Land, Water
and Planning

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Introduction

As the climate becomes hotter and drier, planting trees can help to keep our homes and towns cooler in summer and adapt to the changes in our climate to create sustainable and liveable towns.

Small decisions that you make about planting in your backyard can have big impacts and contribute to making your town a better place to live.



Climate change and adaptation

“Climate” is the prevailing weather conditions in an area over a long period of time. However, our climate is changing. Average annual temperatures have already increased 1.5°C since the 1960s, and other changes are occurring.

By 2030, Victoria is predicted to experience:



An average annual temperature increase of **0.6-1.2°C**



Additional **hot days**



More frequent and severe **heat waves**



More frequent and severe **droughts**



Increased frequency and intensity of **storms**



Overall **decrease in rainfall** by almost 10%, particularly in spring and autumn



Urban Heat Islands

You may have noticed that there is a difference in temperature between towns and nearby country areas. It is usually hotter in urban areas than in rural areas. In town, there are hard, dark surfaces that absorb and radiate more heat than natural materials like grass and vegetation. This causes urban areas to heat up and creates an urban heat island.

The urban heat island effect is worsened by the lack of trees and other vegetation in urban areas to cool the air and provide shade.

Many people are worried about the urban heat island effect. It is expected that the occurrence and intensity of extreme heat events will increase with climate change, and there are concerns about the serious risk that increased heat poses to human health.

LATE AFTERNOON
TEMPERATURE °C



RURAL

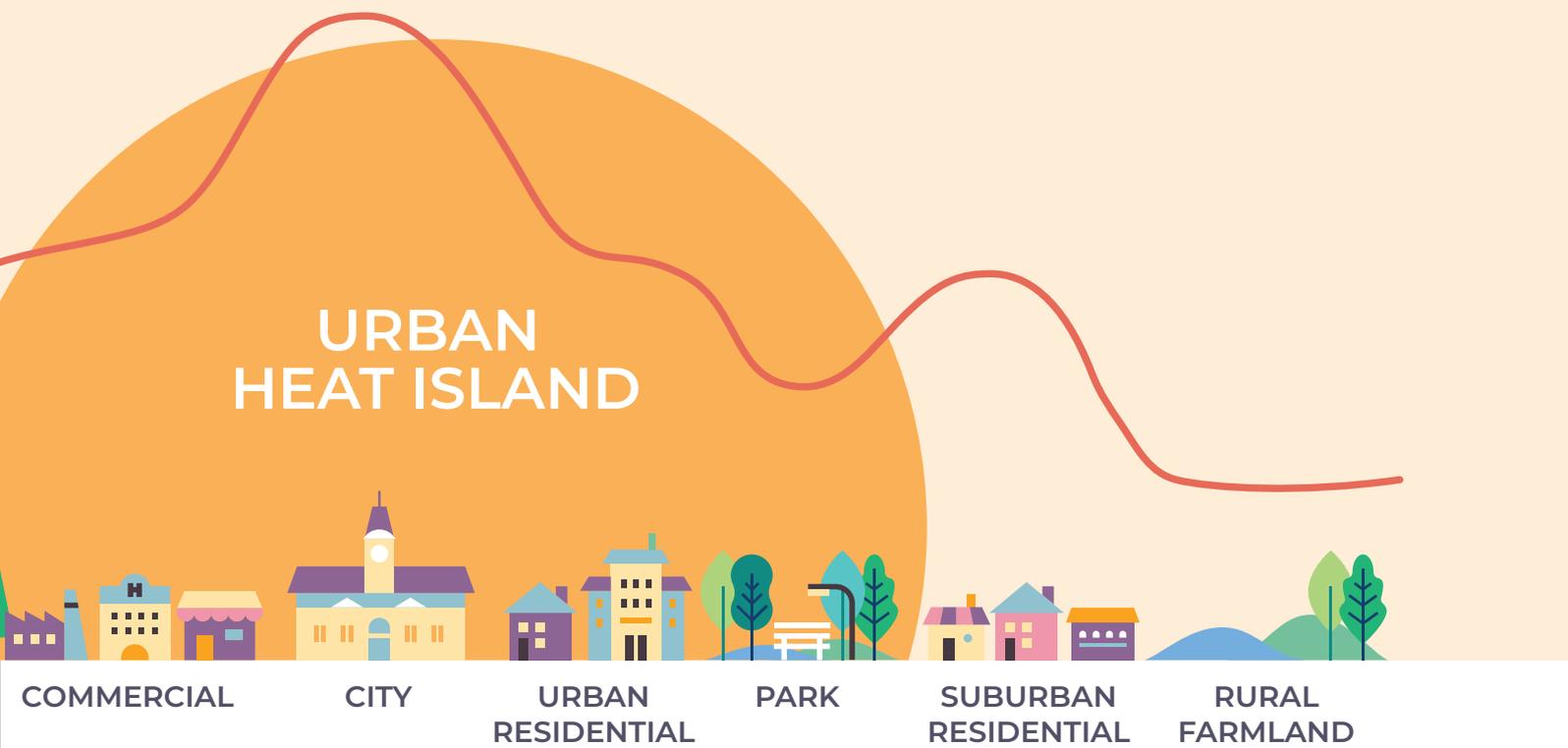
SUBURBAN
RESIDENTIAL



What can we do?

Planting trees is the most effective way of reducing the effects of urban heat. In addition to street trees, landowners can also help by planting trees in their own backyards.

URBAN HEAT ISLAND



Benefits of urban trees

Provide heating and cooling:

- Create shade
- Reduce heat and UV exposure
- Reduce energy costs
- Mitigate the urban heat-island effect

Create a little nature:

- Habitat value
- Biodiversity value
- Improve air quality
- Store carbon

Keep everyone happy and healthy:

- Encourage physical activity
- Improve mental health and wellbeing
- Improve quality of life and human health
- Reduce loneliness and stress

Make a great place to live:

- Aesthetic value
- Increase property values
- Clean stormwater and reduce flooding



Choosing your tree

Trees live a long time, so take your time and choose the right tree for your yard and your lifestyle. Look around town and think about which trees you like and which ones will fit in your garden.

Plant diversity is important as we work together to mitigate the effects of climate change. Having many different species of trees lowers the chances of them all being affected by a pest or disease outbreak, by climate change, or by an unusual storm event. Diverse plantings ensure these effects do not lead to widespread loss of canopy cover in a region.

As well as planting trees in their gardens, homeowners can also choose a variety of shrubs and groundcovers to create structural diversity. Including many types of plants makes the garden look great and helps safeguard against the effects of climate change. Different plants can act as shields against extreme heat or ultraviolet radiation stress and can help reduce water loss in times of drought.

Diversity also leads to more diverse wildlife assemblages in the area, greatly assisting in conservation efforts. Urban environments are increasingly being looked to for their potential as conservation areas for native bird species and important pollinator insects, particularly if local native trees are planted.

The choices you make in your yard can support biodiversity in our region.

Habitat value

Australian native trees provide usable habitat for many species of native bats, birds, insects, and small mammals. Very few native animals would survive in urban environments without native trees in backyards, streetscapes, parks and reserves. In your backyard, you can create better habitat by including native trees, shrubs and groundcovers to attract all sorts of native wildlife.

Benefits of evergreen trees

Most Australian native trees are evergreen and offer valuable shade in summer and a windbreak and shelter in winter. Evergreen trees near your house help reduce heating costs in winter by acting as insulators and reduce cooling costs in summer by cooling the air around the house and providing shade.

Benefits of deciduous trees

Deciduous trees provide numerous benefits to people's health and lifestyle. They provide shade in summer and let sun and warmth into the house in winter. Fruit and nut trees can provide food for homeowners. Additionally, although not many deciduous trees are Australian natives, they may still act as important shelter for native animals.

We encourage you to include shrubs and groundcovers in your gardens and select local native plants whenever possible.

Where to plant

As a homeowner, you can make smart choices about planting trees in your yard. When choosing a planting site for your tree there are several things to consider.

Make sure the tree fits the site.

When selecting a planting site for a tree, always consider the mature tree height and canopy size of the tree. Allow enough space for the tree to grow to its full size without any serious pruning needed and watch out for overhead power lines or other obstacles. If you have removed a nuisance tree that has caused problems, consider selecting a replacement tree that will be smaller. Extensive pruning of established trees can have negative impacts on tree health. Plan now for the future by selecting a suitable planting site.

Dial before you dig!

Don't forget to contact your local council before any big gardening project. They can help you figure out where there are drains and overhead powerlines that may affect your tree location.

Go to www.1100.com.au for information about services on public land.

Roots can cause problems, so think ahead.

Roots can block drains and sewer systems so always consider where you are planting your tree and make sure there is some distance to the nearest drain or sewer pipe. We recommend:

Mature tree height of 0-8m
= 3m away from sewerage pipes

Mature tree height of 8-15m
= 4-6m away from sewerage pipes

Mature tree height of 15+m
= 10-15m away from sewerage pipes

Roots can grow under your home's foundations and cause damage. Root intrusion into house foundations is less likely if the ground under your house is consistently dry or has poor or compacted sand, soil or gravel underneath. Still, it's important to maintain some distance between your house and a new tree. We recommend:

Mature tree height of 0-8m
= 2m away from building

Mature tree height of 8-15m
= 3-5m away from building

Mature tree height of 15+m
= 9-14m away from building

Choosing a location for maximum cooling effects and weather protection:

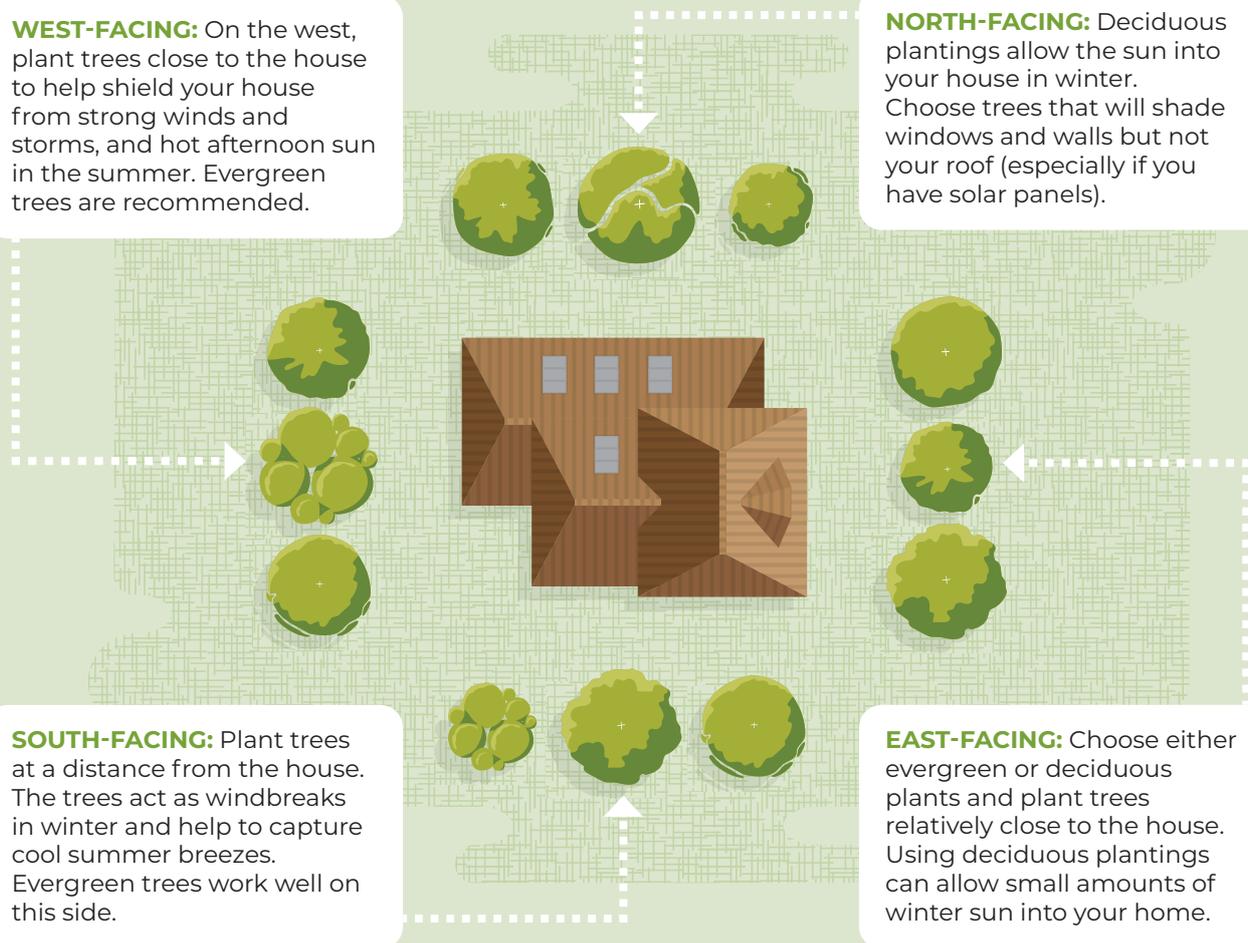


WEST-FACING: On the west, plant trees close to the house to help shield your house from strong winds and storms, and hot afternoon sun in the summer. Evergreen trees are recommended.

NORTH-FACING: Deciduous plantings allow the sun into your house in winter. Choose trees that will shade windows and walls but not your roof (especially if you have solar panels).

SOUTH-FACING: Plant trees at a distance from the house. The trees act as windbreaks in winter and help to capture cool summer breezes. Evergreen trees work well on this side.

EAST-FACING: Choose either evergreen or deciduous plants and plant trees relatively close to the house. Using deciduous plantings can allow small amounts of winter sun into your home.



Soil types

There are five main soil types found in our region.



Sand

Sandy soil is very fine, does not hold its shape well and contains very few nutrients. It is also very hard for water to penetrate sandy soil: water will sit on the surface of the soil or run off. If water does manage to enter sandy soil, the soil dries quickly.

To prepare for planting, add organic matter like compost, mulches, grass clippings, leaves and straw to increase nutrients and aid in water retention.



Silt

Silt is a very fine substance, smaller than sand, which is made up of mineral and rock particles. Silty soil is often well-draining and aerated.

Because silty soils are quite fertile, minimum preparation will be needed before planting, but you can choose to add some organic matter.





Clay

Clay soils are heavy and clump together to form aggregates. Clay soils are relatively high in nutrients but are prone to becoming waterlogged and have poor drainage.

Adding organic matter and/or gypsum to the soil can reduce soil compaction and help with drainage and aeration.



Loam

Loamy soil is a mix of sand, silt and clay soils. It has the benefits of each soil type, making it fertile and good for water retention without becoming waterlogged.

Loamy soil often requires little to no preparation, although you may add compost or mulch.



Chalk

Chalky soils are white or grey and powdery. They are fast draining so often have poor water retention. Nutrients are not readily available for plants to use in chalky soils.

Adding organic matter like compost, mulches, grass clippings, leaves and straw to chalky soils will add nutrients, reduce the alkalinity of the soil, and aid water retention.





Planting techniques

There are more ways to plant a tree than you may think! Here is one of the best techniques to help give your new tree the best start in life.

- 1** Dig a hole that is 2-3 times the width of the root ball with sloping sides. There is no need to dig deeper than the size of the root ball, but the top of the root ball should not sit above the soil line.
- 2** Mix organic matter into the excavated soil. The organic matter added should not be more than half of the original volume of soil excavated.
- 3** Set the root ball firmly into the hole, ensuring that the soil underneath is firmly packed, and the top of the root ball sits a little bit lower or flush with the soil horizon around the hole.
- 4** Backfill the hole with the excavated soil, ensuring it is flush with the top of the root ball and firming it around the root ball with your hands.
- 5** Mulch to a depth of 75mm over the planting hole and slightly beyond to overlap with the surrounding undisturbed soil. Keep mulch 25-50mm away from the trunk of the plant.
- 6** If the tree is more than 1m tall, stake and use two opposing soft, flexible ties to stabilise the tree while it establishes. For smaller trees, use a tree guard for protection from rabbits, livestock and lawnmowers.





Ongoing plant maintenance

Keep up the good work!
Take care of your tree once you have planted it.

Mulching

Mulching is an excellent way to help with water conservation and to continue adding nutrients to the soil to feed the tree. Mulch decomposes over time, so add more around the base of the tree to keep mulch about 75mm deep. This is the perfect depth to discourage shallow rooting or rotting and does not starve roots of oxygen. Re-mulching is not essential once the tree is established.

Watering

Water is essential for the continued health and resilience of all plants, including trees. Most trees will only require watering during extended periods without rain, especially during summer and early autumn. Water responsibly and adhere to the permanent water rules that apply across Victoria.



Permanent Water Rules

Permanent water rules apply across Victoria at all times. Additional water restrictions may come into effect in Ararat or other localities in times of drought.

There are 5 permanent water saving rules in place in Victoria:

- 1 Keep your hose healthy:** Ensure it is leak-free and fitted with a trigger nozzle.
- 2 Water in the mornings and evenings:** Only water between the hours of 6pm and 10am to minimise evaporation and maximise water absorption by plants. If you need to water outside these times use a bucket, watering can, or hand-held hose fitted with a trigger nozzle rather than a watering system.
- 3 Enjoy water features responsibly:** All ponds and water features should use recirculated water.
- 4 Don't hose hard surfaces:** Don't hose hard surfaces such as driveways, paths, concrete, tiles or timber decking unless cleaning is urgently required. Even then, try to limit this activity to once a season.
- 5 The rules apply to everyone:** This includes public gardens, lawns and playing surfaces.

Pruning

Pruning is the process of shaping a tree and removing sick or old limbs. Many trees benefit from formative pruning when young to help them grow into a healthy tree with a sound structure. Talk to your local nursery or other gardeners about their pruning recommendations to make sure you help the tree to become strong and healthy.

Fire hazard for peri-urban and rural areas

To manage fire hazards associated with trees, keep your gutters clean and compost leaf litter from the ground. Dead trees within 2m of the house should be removed.

In **rural** areas, such as on farms, trees should not overhang buildings.

In **rural** areas that have been identified as **high bushfire risk areas** trees should not be planted within 10m of a house and shrubs should not be planted directly under trees where they can allow fire to access the tree canopy. You can check with your local council to learn if you live in an area associated with high bushfire risk.

There are *fire resistant* and *fire retardant* plant species that you can choose if you are worried about fire risks. These have been identified in the species list at the back of this booklet.





Species list

We recommend choosing local native tree species instead of non-native species for the greatest habitat benefits. Native trees look great, are quite hardy and can help to cool your house in summer.

The trees in this list have been identified as **heat-resilient** and **drought-tolerant**. We expect that they will do well in our changing climate and provide a number of benefits to you.

Small trees: 1-5m high

Species Name	Size	Drought Tolerance	Frost Tolerance	Sun Requirements	Features	Description
Snowy River Wattle <i>Acacia boormannii</i>	H: 4m W: 3m	High	High	Full sun to part shade	Fast growing. Winter flowering.	Tolerant of all soil types. Beautiful shrub that flowers prolifically in late winter/early spring.
Silver Banksia <i>Banksia marginata</i>	H: 2-12m W: 1-4m	Moderate to high	Moderate to high	Full sun to part shade	Attracts native birds and insects including pollinator species. Favoured by possums and gliders. Long flowering and nectar heavy.	Fast growing. Typically reaches 2-4m in height but can grow taller. Tolerant of all soil types.
Dwarf Snow Gum <i>Eucalyptus gregsoniana pauciflora</i>	H: 4-6m W: 3-5m	High	High	Full sun to part shade	Attracts pollinator species including bees and butterflies. Habitat tree.	Beautiful, twisted branches with pale green to cream bark. When the bark sheds the trunk has an interesting striped pattern. Produces white flowers in spring and summer.
Grampians Stringybark <i>Eucalyptus serraensis</i>	H: 5m W: 4m	High	High	Full sun to part shade	Attracts pollinator species including bees and butterflies.	Beautiful fluffy white flowers. Thick glossy green leaves.
Lemon Scented Tea-tree <i>Leptospermum petersonii</i>	H: 3-5m W: 1-2m	Moderate	Moderate	Full sun to part shade	Attracts pollinator species including bees and butterflies.	Prolific small white flowers in spring. Fragrant. Tolerates all well-drained soil types. Fast growing.
Tree Everlasting <i>Ozothamnus ferrugineus</i>	H: 2-5m W: 1-3m	Moderate to high	High	Full sun to part shade	Food and habitat for a diverse range of insects.	Profuse white flowers in late spring to early summer. Fast growing. Tolerant of all soil types.
Round-leaved Mint Bush <i>Prostanthera rotundifolia</i>	H: 1-2m W: 1-2m	Moderate	High	Light shade to part shade	Attracts pollinator species including bees and butterflies.	Profuse purple flowers in spring. Fragrant. Edible flowers to add flavour to dishes.
Feijoa <i>Swellowiana</i>	H: 3-6m W: 2-3m	Moderate to high	High	Full sun to part shade	Unique red and pink flowers in spring prior to fruiting.	Fruit tree. Exotic. Prefers rich, well drained soil. Slow growing. Evergreen.

Medium trees: 5-12m high

Species Name	Size	Drought Tolerance	Frost Tolerance	Sun Requirements	Features	Description
Silver Wattle <i>Acacia dealbata</i>	H: 6-30m W: 5-10m	High	High	Full sun to part shade	Food plant for bees, butterflies, beetles, and birds. Favoured by gliders and possums. Fire retardant.	Fast growing and effective in erosion control. Can grow to 30m if space permits but will grow to fit the space in garden settings.
Weeping Myall <i>Acacia pendula</i>	H: 6-12m W: 4-6m	Moderate to high	Moderate to high	Full sun to part shade	Attracts pollinator insects and native birds. Fire retardant.	Beautiful weeping form. Flowers profusely in late winter/early spring. Tolerant of all soil types.
Willow Wattle <i>Acacia salicina</i>	H: 5-13m W: 3-6m	Moderate to high	High	Full sun to part shade	Beneficial to insects. Attracts insect eating birds. Fire retardant.	Weeping form. Fixes nitrogen into soils, improving soil. Fast growing. Reaches greater heights in warmer climates.
Woolly Oak <i>Allocasuarina inophloia</i>	H: 3-10m W: 3-6m	High	High	Full sun to part shade	Attracts cockatoos and other seed eating birds.	Interesting shaggy, woolly bark on trunk. Tolerant of all soil types, but prefers good drainage. Fast growing.
Black Sheoak <i>Allocasuarina littoralis</i>	H: 12m W: 4-7m	High	Moderate	Full sun to light shade	Attracts cockatoos and other seed eating birds.	Fast growing. Fixes nitrogen into soils, improving soil. Tolerates all soil types but requires good drainage.
Drooping Sheoak <i>Allocasuarina verticillata</i>	H: 4-10m W: 2-6m	High	High	Full sun	Attracts cockatoos and other seed eating birds.	Drooping branches form a rounded crown. Prefers well drained soil.
Dwarf Apple Gum <i>Angophora hispida</i>	H: 5-7m W: 3-5m	High	Moderate. Frost tender when young.	Full sun	Attracts pollinator insects. Prolific flowers.	Interesting gnarled, fibrous trunk with twisting branches. Profuse cream flowers in summer. Tolerates all soil types but requires good drainage.

Species Name	Size	Drought Tolerance	Frost Tolerance	Sun Requirements	Features	Description
Sweet Bursaria <i>Bursaria spinosa</i>	H: 3-8m W: 2-3m	High	Moderate to high	Full sun to part shade	Supports a diverse range of insects including many native butterfly and wasp species. Important in the conservation of the Eltham Copper Butterfly. Fire retardant.	Prolific white flowers in spring through summer. Fragrant. Produces brown heart shaped seed capsules that rattle in the wind.
Willow Bottlebrush <i>Callistemon salignus</i>	H: 3-10m W: 1-5m	High	Low to moderate. Frost tender when young.	Full sun to part shade	Attracts pollinator species including bees, butterflies, and birds.	Prolific flowerer with red-tinged leaves. Tolerates all soil types including water-logged soils.
Weeping Bottlebrush <i>Callistemon viminalis</i>	H: 5-8m W: 2-4m	High	Low to moderate. Frost tender when young	Full sun to part shade	Attracts pollinator species including bees, butterflies, and birds. Nectar heavy.	Beautiful weeping form. Produces prolific red flowers in late spring into summer. Tolerant of all soil types.
Illyarrie <i>Eucalyptus erythrocorys</i>	H: 3-9m W: 2-6m	Moderate to high	Moderate. Frost tender when young.	Full sun to light shade	Attracts pollinator species including bees, butterflies, and birds. Nectar heavy.	Produces large rectangular red buds that give rise to spectacular yellow flowers in late summer to early autumn.
Wilga <i>Geijera parviflora</i>	H: 6-10m W: 5-8m	High	Moderate	Full sun to light shade	Attracts pollinator species. Habitat tree.	Beautiful weeping form with trailing branches. Dense canopy and fragrant small white flowers in winter through to summer.
Salt Paperbark <i>Melaleuca halmaturorum</i>	H: 6-8m W: 2-3m	Moderate to high	High	Full sun to part shade	Attracts pollinator insects and birds.	Slow growing. Tolerates all soil types including waterlogging. Showy white flowers in late winter through spring. Interesting, twisted growth forms.
Moonah <i>Melaleuca lanceolata</i>	H: 7-10m W: 3-5m	Moderate to high	High	Full sun to part shade	Attracts pollinator insects and birds.	Fragrant. Showy white flowers in summer. Interesting, twisted growth forms. Tolerates all well drained soils.

Medium trees: 5-12m high

Species Name	Size	Drought Tolerance	Frost Tolerance	Sun Requirements	Features	Description
Prickly Paperbark <i>Melaleuca styphelioides</i>	H: 6-15m W: 3-8m	Moderate to high	Moderate to high	Full sun to part shade	Attracts pollinator insects and birds. Prickly leaves provide excellent shelter and habitat for native birds.	Showy white flowers in spring through summer. Tolerant of all soil types and waterlogging. Compact dense canopy.
Dogwood <i>Pomaderris apetala</i>	H: 6-12m W: 3-5m	Moderate	High	Light shade to full shade	Habitat tree for birds and insects.	Clusters of cream flowers in spring.
Trident Maple <i>Acer buergerianum</i>	H: 6-10m W: 6m	Moderate to high	High	Full sun to part shade	Deciduous tree that will allow winter sun in.	Exotic. Prefers well drained, rich soil. Fast growing. Leaves turn vibrant reds, oranges, and yellows before being lost in autumn.
Red Maple <i>Acer rubrum</i>	H: 10-12m W: 7-9m	Moderate	High	Full sun to part shade	Deciduous tree that will allow winter sun in.	Exotic. Tolerant of all soil types. Moderate to fast growth rate. Leaves turn vibrant red before being lost in autumn. Some varieties may grow taller than the size indicated.
Judas Tree <i>Cercis siliquastrum</i>	H: 10-12m W: 5-10m	Moderate to high	High	Full sun to part shade	Deciduous tree that will allow winter sun in. Prolific pink flowers in spring.	Exotic. Tolerant of all soil types but prefers good drainage. Slow growing.
Crepe Myrtle <i>Lagerstroemia indica</i>	H: 3-8m W: 3-5m	Moderate to high	High	Full sun	Deciduous tree that will allow the winter sun in. Produces masses of bright pink flowers in summer.	Exotic. Tolerant of all soil types but require good drainage and prefers some organic matter. Prefers shelter from the wind. Fast growing.
Persian Ironwood <i>Parrotia persica</i>	H: 7-10m W: 5m	Moderate to high	High	Full sun to part shade	Deciduous tree that will allow winter sun in.	Exotic. Tolerant of all soil types but require good drainage and prefers some richer soils. Leaves turn vibrant reds, oranges, and yellows before being lost in autumn.



Learn how to create positive, long-term impacts in our local town by making the right choices about planting trees.

As our local climate becomes hotter and drier, towns across Australia are looking to trees to help create cooler microclimates within urban areas. Planting the right tree variety in the right place is one action we can take to adapt to the changes in our climate to create sustainable and liveable cities for the future.

Ararat Landcare Group
facilitator@UpperHopkins.org.au
upperhopkins.org.au/about/ararat-landcare-group/

