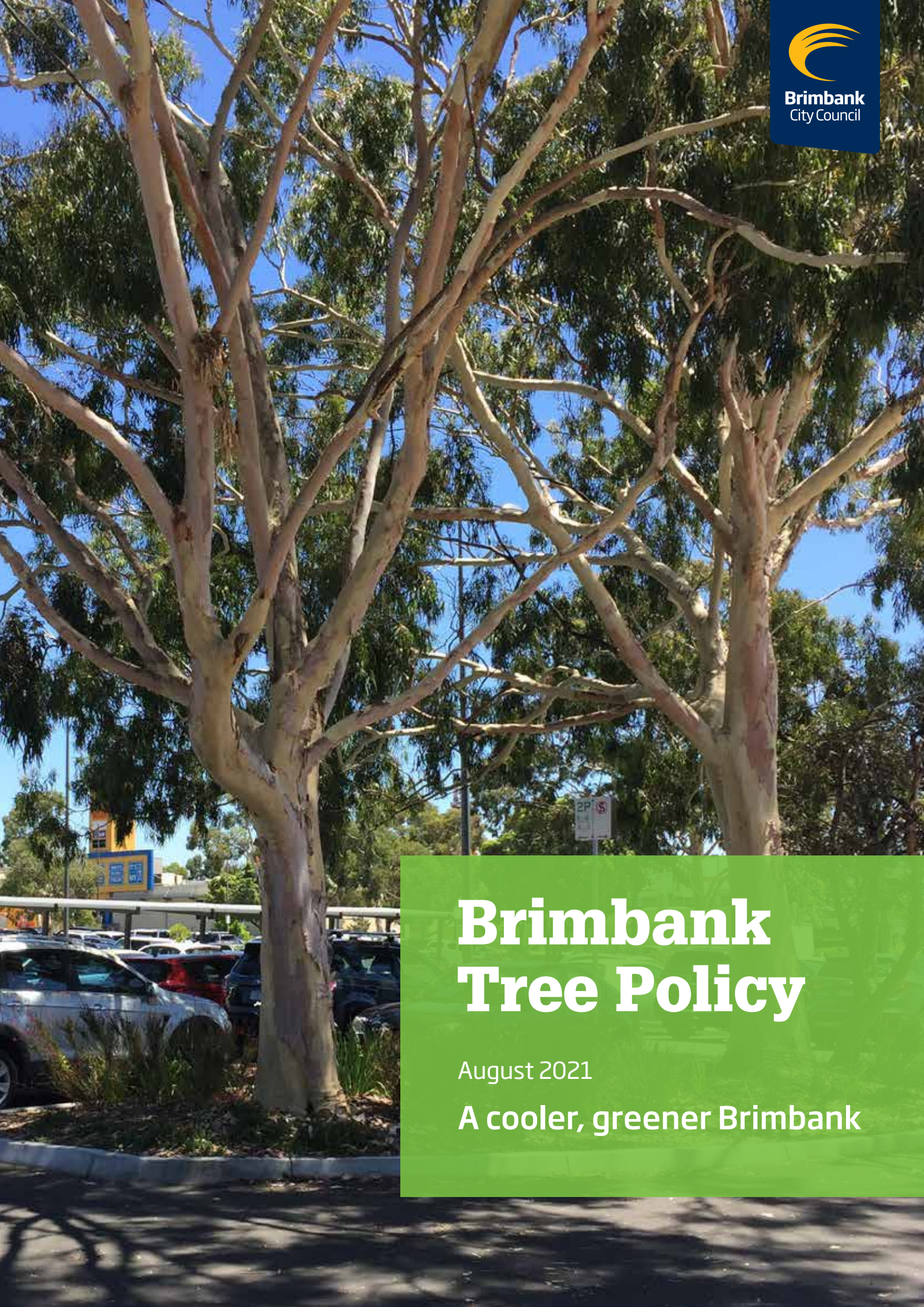


Brimbank City Council

Brimbank Tree Policy

August 2021

A cooler, greener Brimbank

Contents

Executive summary

The Brimbank Tree Policy is a direct action of the Urban Forest Strategy adopted by Council in 2016. Applying to all trees across the municipality, it replaces the existing Street Tree Policy (2010).

Trees are key components of a thriving urban forest, which includes all vegetation, and the extent of tree canopy cover is crucial to liveability. Increasingly critical to mitigating and adapting to the climate emergency, trees have positive impacts on residents' health and wellbeing, and offer significant advantages to the local economy and environment. Given this importance, trees are often referred to as green infrastructure, with a minimum of 30% canopy cover being the industry standard for a liveable city.

With the vision "Creating a cool, green, healthy and resilient municipality through an extensive urban forest", the Brimbank Tree Policy aims to assist in increasing the canopy cover from 8.5% (2018) to 30% in streets and 50% in parks and open spaces by 2046. It provides clear directions for the planting, management and maintenance of trees on public as well as private land across Brimbank.

Planting and protecting trees on private land is imperative to achieving sufficient canopy cover, and Brimbank was one of the first councils in Melbourne to introduce a legal requirement for trees in the front and back yards of new infill housing developments. Since trees take time to grow and provide maximum benefit, Council's Local Law includes a clause to protect significant trees on private land. This clause cannot be enforced until Council has developed and adopted a Significant Tree Policy, detailing the criteria for what constitutes a significant tree, and a register of significant trees has been established. A Significant Tree Policy has been prepared for Council consideration in combination with the Brimbank Tree Policy.

The Brimbank Tree Policy provides directions for surveying and valuing trees in the public domain. Street trees were inventoried in 2018 and found to number 102,703, the majority being young or semi-mature, and valued at $126 million. Trees in public parks and open spaces are to be comprehensively inventoried by 2023. Current estimates of that population set the number at around 250,000.

It should be underlined that the value of trees, increases over time; a mature tree provides much greater ecological services than a sapling. The Brimbank Tree Policy therefore proposes a new tree removal fee, based on an industry-standard formula that includes removal and reinstatement costs as well as the amenity and ecological services values of the tree in question.

A range of additional measures to secure a biodiverse and resilient urban forest is contained within the Brimbank Tree Policy, which outlines four main objectives: Community engagement; Greening our city; Improving urban tree management; and Demonstrating best practice in tree maintenance.

Other than the Urban Forest Strategy and Local Law, key drivers include Greening The West, Living Melbourne, Brimbank Climate Emergency Plan; Creating Better Parks Policy and Plan; Biodiversity Strategy; and Brimbank Sustainable Water Management Strategy.

Introduction

Trees are key components of a thriving urban forest, which includes all vegetation, and the extent of tree canopy cover is crucial to liveability. Increasingly critical to mitigating and adapting to the climate emergency, trees have positive impacts on residents' health and wellbeing, and offer significant advantages to the local economy and environment. Trees are therefore today referred to as green infrastructure, with a minimum of 30% canopy cover being the industry standard for a liveable city.

Council adopted an Urban Forest Strategy in 2016 with the aim to increase canopy cover from 6.2% to 30% by 2046. A key action was to develop a Brimbank Tree Policy to replace the existing Street Tree Policy (2010). The Brimbank Tree Policy aims to provide a clear direction for the protection, management, maintenance and planting of new trees on public and private land across Brimbank while addressing Brimbank's urban forest challenges and opportunities.

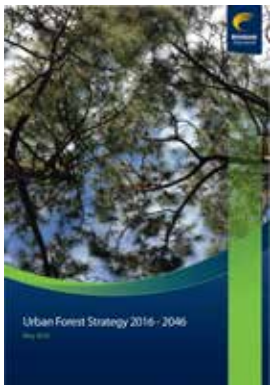
Policy drivers

Local law

Planting and protecting trees on private land is imperative to achieving sufficient canopy cover, and Brimbank was one of the first councils in Melbourne to introduce a legal requirement for trees in the front and back yards of new infill housing developments. Since trees take time to grow and provide maximum benefit, Council's Local Law already includes Clause 9 for the protection of significant trees on private land. A requirement of this clause is a Significant Tree Policy that provides direction for determining a significant tree and a permit system for any works to a nominated significant tree on private land.

A draft Significant Tree Policy has been prepared for Council consideration at the same time as the draft Brimbank Tree Policy.

Urban Forest Strategy



This Strategy aims to realise the vision "to create a resilient, healthy and diverse landscape that improves the liveability of Brimbank, meeting community needs now and into the future". Whilst it encompasses all kinds of urban vegetation, it singles out tree canopy cover as the most important measure of success. The target is to increase the canopy cover to 30% by 2046, and the Brimbank Tree Policy is a direct action to that end.

Brimbank Climate Emergency Plan

This Plan targets net-zero carbon emissions for Council operations by 2030 and for the municipality at large by 2040. Adding a major carbon sink, the Brimbank Tree Policy is crucial to meeting these goals. It addresses four of the five major themes identified in the Climate Emergency Plan: People Power (achieving positive change together, leaving no one behind); Resilient Rebuild (facilitating safe connections for low-emission transport such as walking and cycling); Green and Cool (securing a flourishing urban forest); and Circular Economy (regenerate natural systems and design out pollution).

Creating Better Parks Policy and Plan

Prior to the original launch of this Plan in 2008, there were virtually no destination places within the municipality; residents travelled to neighbouring suburbs for park activities. Council has since invested $37 million in 116 parks, earning 10 industry awards in the process.

Brimbank now offers a wide range of green spaces, and the importance these hold to the community spirit was made particularly clear during the COVID-19 restrictions of 2020. Parks were where people gathered and socialised. As we move into an uncertain future of higher temperatures and new pandemics, the Brimbank Tree Policy will be critical to sustaining a connected community.

Brimbank Cycling and Walking Strategy

Since transportation accounts for 18% of our community's carbon footprint, this Strategy addresses the climate crisis as well as matters of health and wellbeing. It has seen Council construct over 40km of off- and on-road cycle routes as well as a range of upgrades to other cycling and walking facilities. With cycling and walking now steadily on the increase across the community, this Strategy recommends that trees be incorporated in any new cycling or walking infrastructure projects to make them more attractive, provide shade and encourage an active lifestyle.

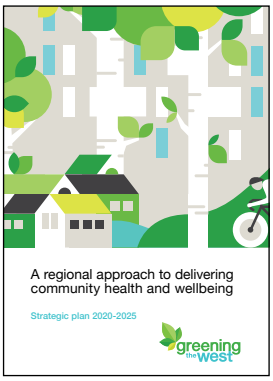
Biodiversity Strategy

Any healthy ecosystem relies on its biodiversity to function, and Brimbank supports some of the last urban populations of endangered species and communities. This Strategy notes that modern urban design focuses on improving human health and wellbeing by giving residents everyday access to a range of different natural environments. It also identifies climate change as a key threat to biodiversity and recommends an increase in tree canopy cover as Council's primary response to heat waves.

Brimbank Sustainable Water Management Strategy

This Strategy outlines the importance of Water-Sensitive Urban Design in mitigating climate change and reducing urban heat. It confirms the high benefits of assisting waterway health through revegetation and recommends that blue-green assets such as tree pits be prioritised to direct stormwater to trees and provide cooling of urban hot spots, parks, roads and town centres.

Greening The West



This regional collaboration between 38 state and local government authorities, community groups and other affiliates is the first of its kind. It focusses on delivering health and wellbeing through green infrastructure, underlining the importance of ensuring sufficient tree canopy cover. Having generated around $40 million in green investments and won six industry awards, Greening The West has to date, planted over a

million trees across the western suburbs. The Brimbank Tree Policy aligns with all of its intended outcomes: maximise greening; support greening with sustainable water supplies; increase climate adaptation, urban cooling, liveability and health; and improve community education and participation.

Living Melbourne: Our metropolitan urban forest

Presenting a vision of international significance in its whole-of-city approach, this Strategy is supported by some 32 metropolitan councils, state government agencies, non-government and community organisations. It aims to create a profound shift in how people think about the relationship between cities and nature. Whereas cities have traditionally been perceived as being in conflict with nature, people are increasingly beginning to understand that the long-term viability of cities depend on their ability to integrate nature. Maintaining sufficient tree canopy cover is key to achieving this, and the Strategy recommends ambitious targets to ensure a greener, more liveable Melbourne in the future.

Key benefits of urban trees

The planting, protection and management of urban trees bring a wide range of benefits, which for the purpose of this Policy will be grouped into the broad fields of health and wellbeing, environment and economy.

Health and wellbeing

Cooling

Urban trees reduce air and surface temperatures through shading and evaporative cooling. This has both local and community-wide benefits. Shaded walls and rooftops may be cooled by up to 25°C, and the cool air spreads to lower the average temperature in the immediate surrounds (refer to Figure 2 below).

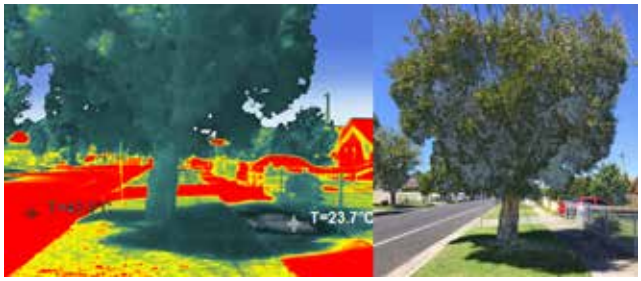


Figure 1: Thermal image of a street tree in Sunshine shows a reduction of 20.0˚C in surface temperature under tree shade

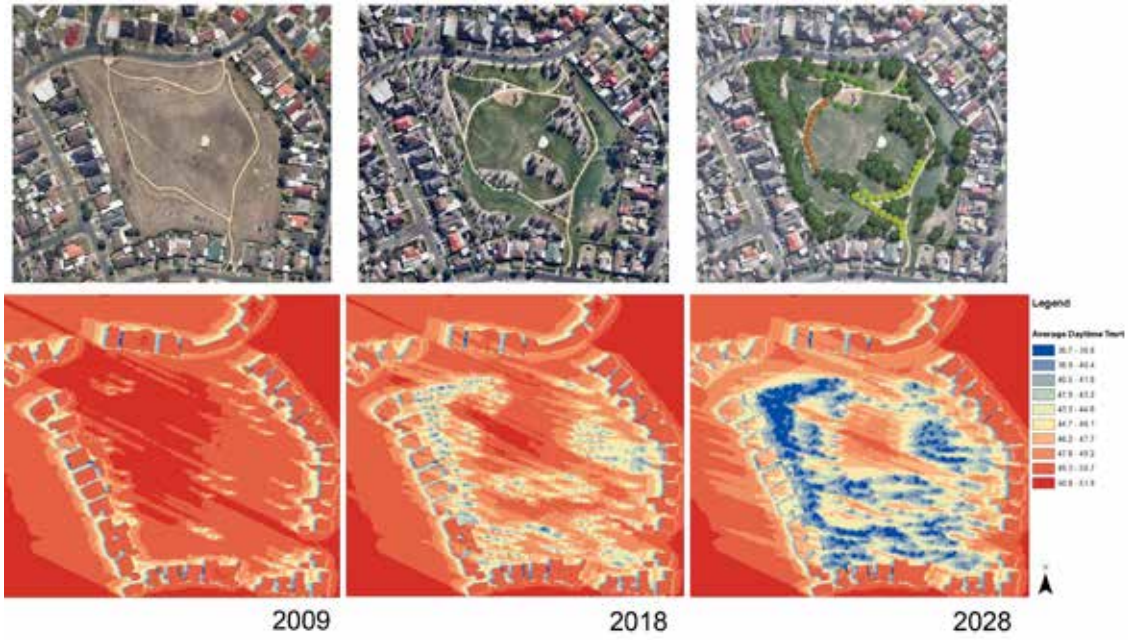


Figure 2: The above maps show that International Gardens had no shade in 2009, with shade increasing in 2018 and significant shade expected to develop towards 2028 and beyond.

Monash University research confirm that, air temperature in a small park can be up to 3°C cooler than the adjacent urban areas (Motazedian et al., 2020). Such a difference in temperature has a major impact on residents. Heatwaves already kill more people in Australia than all other natural disasters combined, and studies show that temperatures need only exceed 29°C for heat-induced morbidity and anomalous health outcomes to increase in people over 64 years of age.

As climate change repeatedly pushes new record temperatures, sufficient canopy cover may ultimately not only be a matter of improved liveability; it may come to decide whether an area is at all liveable.

Cleaner air

Urban vegetation can reduce street-level pollutants by up to 60%. This is significant, because air pollution is among the top 11 factors driving the most death and disability in Australia, and bushfire smoke pollution is likely to increase as an effect of the climate emergency (Australia Health Data).

Healthier lifestyles

Green space inspires more active and healthy lifestyles. A large-scale European study found that people with the greatest access to green space were more than three times as likely to frequently engage in physical activity as those with the least access. They were also 37% less likely to be overweight or obese (Schipperijn et al., 2017).

These statistics hold major implications. Non-communicable diseases such as cancer, diabetes and heart disease account for 70% of all deaths in Australia, and they are largely driven by unhealthy lifestyles. A Victorian Department of Health research paper concludes that "Municipalities showing high levels of obesity and type 2 diabetes should be encouraged to invest in appropriate green infrastructure to facilitate exercise". This advice is particularly valid in Brimbank, where a number of health metrics give ample reason for concern.

Table 1: Brimbank health statistics

Adults not meeting physical activity guidelines	49.8%
Adults overweight/obese	47.5%
Adults with ttpe 2 diabetes	7%
Adults not meeting recommended amounts offruit and vegetables	48.6%
Adults with self reported health fair or poor	30.2%
Adults with high/veryhigh psychological distress	19.9%
Adults diagnosed with anxiety or depression	27.8%
Adults diagnosed with hypertension	29%

Source: DHHS, Victorian Population Health Survey 2017

Mental health

Research indicates that those living near quality public open space are twice as likely to report low psychological distress than those having no access to quality public open space. Another study reported a range of benefits of visiting green, open spaces. These benefits include improvements in mood as well as lower levels of anxiety, stress and depression (Francis et al., 2012). Other evidence suggests that exposure to nature from an early age is an indicator of future educational success, health and wellbeing in school children (Bento and Dias, 2017).

Social cohesion

The urban forest does not only provide greener, healthier environments for individual residents. It also opens up for many of the interactions that build social cohesion across the community, for example involvement in "Friends of" groups, planting days and various public events. Social interactions in green spaces tend to be relatively relaxed and friendly, creating a strong sense of place and belonging. This became particularly apparent during the COVID-19 lock-downs, and as the frequency of pandemics is likely to increase, public green spaces may take on a yet more central role in our society.

Environment

Climate change mitigation

Carbon offsets through planting is a solution supported by the Victorian Government. Brimbank's current population of street trees alone sequester around 860 tonnes of carbon annually and store another 8,970 tonnes. The urban forest further mitigates climate change by regulating the temperature around the year. In summer, it keeps the community cooler; in winter, it acts as a windbreak that insulates buildings from heat loss, thus decreasing the air conditioners and heaters.

Healthy waterways

Tree canopies intercept rainfall, and soil and root systems help capture and filter stormwater before it enters the local waterways, protecting freshwater and marine ecosystems from effluents. By binding the soil and storing large amounts of rainwater, urban trees also decrease the rate of erosion and lessen our reliance on artificial irrigation.

Biodiversity and habitat

Adapting urban environments to create habitat for a wide variety of insects and animals is becoming increasingly important, and Brimbank is home to over 20 vulnerable and threatened species of birds, fish, reptiles and amphibians. A flourishing urban forest is necessary to ensure their survival. Planting a greater range of tree species also ensures greater overall resilience to future climate fluctuations, diseases and pests.

Economy

Reduced energy costs

Trees reduce energy costs and support urban sustainability. Cooling costs in summer are lower in shady streets. Heating costs are reduced when street trees provide a windbreak. A study conducted in Sydney shows that increasing the vegetation cover and planting street trees that provide shade on both buildings and surrounding urban surfaces help to save up to $400 on yearly electricity bills (Cool Streets 2019). Other U.S. studies show that strategic planting of shade trees generates twice as high energy savings as what is needed to be cost-effective (McPherson, 2010).

Reduced stormwater costs

Decreasing erosive stormwater overflows and capturing rainwater for irrigation, green infrastructure provides integrated water management at exceptionally low cost. Stormwater run-off is reduced through evaporation of rainfall intercepted by the canopy and transpiration, while stormwater quality is improved by retention of pollutants in soil and plant uptake (Stovin et al. 2008). A local study conducted in Melbourne, also suggests that installation of storm water control measures such as tree pits can increase the volumetric reduction of stormwater runoff by increasing the proportion of evapotranspiration in the water balance (Thom et al., 2020). New York City have calculated that their green infrastructure costs 60% less than traditional, grey infrastructure solutions (NYC Environmental Protection 2011).

Higher property values and retail sales

Studies show that green infrastructure can increase the value of local properties by between $32,139 and $57,991 (CRCWSC 2017). Effects in retail sales are similarly positive, with consumers having been found willing to pay 12% more for goods in precincts with more street tree shading.

Reduced healthcare costs

Just how much green infrastructure can contribute to decreased healthcare costs is difficult to assess for the simple reason that the flow-on benefits affect every aspect of life for the residents in question. Obesity alone today leads to combined costs amounting to 3.1% of Australia's GDP (OECD 2019). Air pollution from the electricity sector alone leads to estimated annual healthcare costs of up to $600

million; the corresponding figure for the transport sector is $1.5 billion (DELWP 2018). Poor mental health is estimated to cost the state $5.4 billion a year. Seeing as how green infrastructure has major positive effects on all these – and many other – health issues, the associated savings in financial and human costs are hard to overstate.

Brimbank's trees today

Brimbank features a markedly lower canopy cover than most other local government areas in Melbourne, but Council has been planting proactively since 2007. More than 280,000 trees have been planted, with the canopy cover increasing from around 6.1% in 2014 to around 8.5% in 2018. Brimbank has also taken on a leading role in the award-winning regional initiative Greening The West. Council is a leader in the delivery of urban greening, and with the measures outlined in this Policy, the 30% canopy target is more achievable.

Canopy cover

At 8.5%, Brimbank's overall canopy cover is low compared to most other areas of greater Melbourne. It remains far below the industry standard of 30% canopy cover for liveable cities. The canopy cover however varies a lot across different suburbs of our municipality. Industrial neighbourhoods such as Derrimut and Brooklyn have less than 3% cover, whereas the greenest suburb, Keilor, has over 15%.

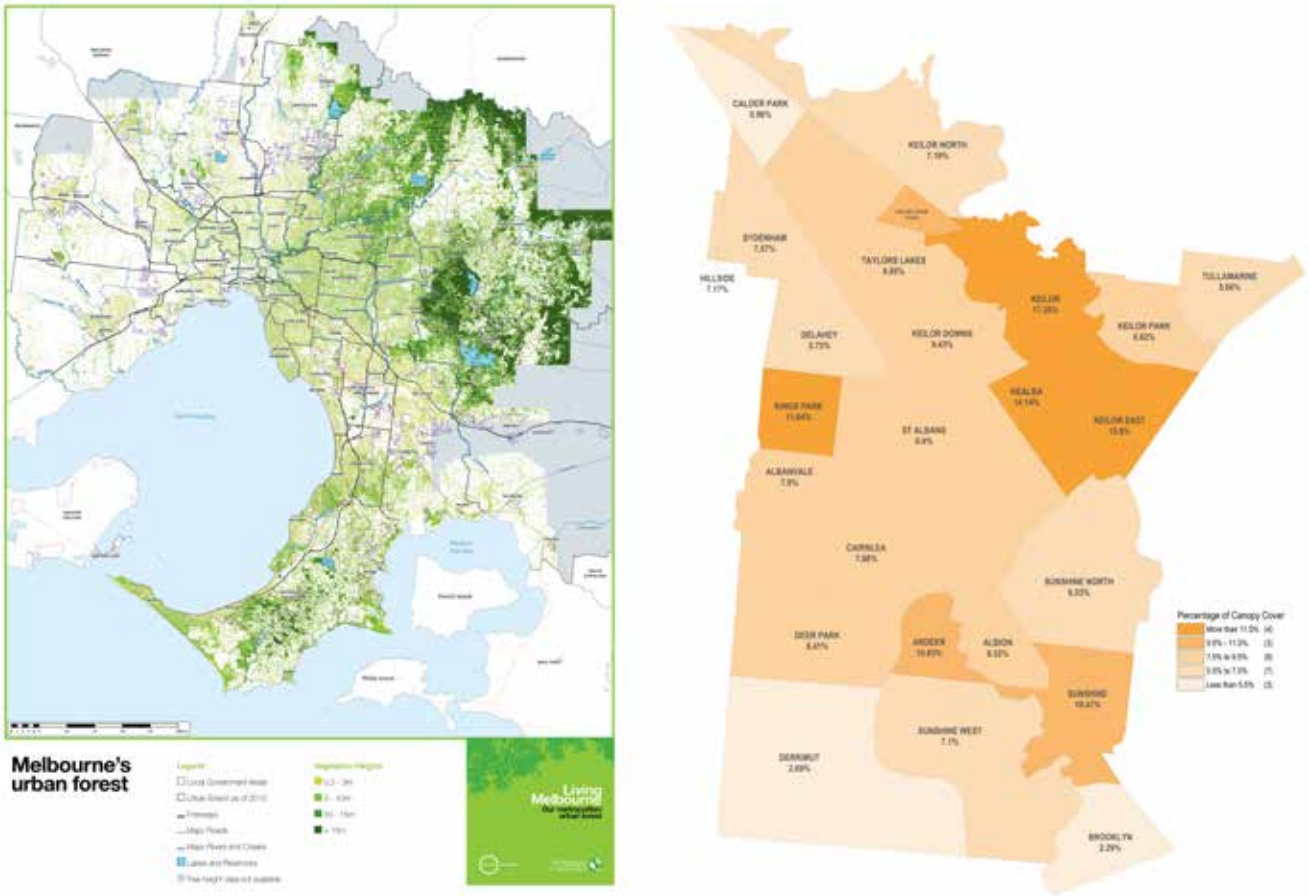


Figure 3: Melbourne's urban forest (Living Melbourne our metropolitan urban forest) and tree canopy cover percentage per suburb across Brimbank.

Street tree population analysis

Council manages a diverse population of approximately 350,000 trees in the public realm, including streets, parks and reserves. Comprehensive data has however only been collected for street trees, recording species, height, canopy width, age, health and useful life expectancy (years remaining at time of analysis). Similar data for all other Council trees is scheduled to be compiled over the next two years.

The comprehensive analysis of Brimbank street trees nonetheless provides valuable insights into the current status of our green infrastructure. Conducted in 2018-2019, some of its key findings include:

- The total number of street trees is 102,703
- There are about 510 different species and cultivars
- 47% of all trees belong to the Myrtaceae family
- 85% of the trees are in good health; 96% are in good or fair health
- 49% have a useful life expectancy of over 61 years
- 3% has a useful life expectancy of less than 10 years
- Street trees annually help avoid nearly 10 megalitres of stormwater runoff
- Street trees sequester a total of 8,970 tonnes of carbon every year
- Street trees annually remove a total of 573 tonnes of air pollution
- A single street tree costs about $500 to plant and maintain for two years and returns around 100 times that amount in environmental benefits when fully grown
- 87% of all street trees are yet to fully mature and provide maximum benefits
- With trees increasing in value as they mature, the current value of Brimbank's street trees is $126 million
- Around 20% of all street trees are very young and will dramatically increase in value over the coming ten years
- There are 55,250 vacant planting sites for street trees

It should be noted that the above data relates to current street trees, which represent a subset of the total number of trees in Brimbank. The majority of Council trees are found in parks and reserves, and none of the above numbers account for trees on private land. With 71% of all land in Brimbank being private, trees managed by private owners represent a significant share of the total number and are critical to our achieving a healthy canopy cover across our communities.

Community perceptions

In February 2020, Council coordinated an online survey of the community's perception of Brimbank's urban forest. The outcome included the following key points:

- Over 250 residents participated in the survey, indicating a great interest in the urban forest among community members
- Respondents appreciate that the urban forest cools local temperatures and improves the health and wellbeing in the community
- Respondents are concerned that development of private properties leads to increased loss of canopy cover
- Having been made aware of the benefits of urban greening, a majority of residents will consider planting more and bigger trees
- Concerns relating to planting includes a lack of space and expertise, a general fear of trees and costs associated with planting and maintenance
- Respondents would like to receive more support from council in greening their properties. Such support is proposed to include expert advice on suitable species and planting locations; community workshops; tree-planting grants; free trees and mulch; and incentives such as free green waste collection and distribution to tree planters.
- Other than providing planting programs and related support, the respondents would like Council to:
  - Protect existing trees on private land
  - Promote greener developments
  - Encourage key stakeholders such as government authorities and owners of large commercial and industrial precincts to implement urban greening measures
  - Introduce higher tree removal fees
  - Support or legislate more effective tree canopy cover in car parks
  - Dedicate more council land to green leafy spaces
  - Educate the wider community on the benefits of trees
  - Involve the community in planting events
  - Liaise with school to encourage children to attend planting days
  - Publicise lists of significant trees
- Enforce local laws

All survey and other feedback received from the community has been taken into consideration in developing the Brimbank Tree Policy and associated Significant Tree Policy, and Council will continue to consult and engage residents in relation to planting days, street tree infill programs and major upgrades.

Vision

Creating a cool, green, healthy and resilient municipality through an extensive urban forest.

Objectives

In order to realise the vision of the Brimbank Tree Policy, Council has identified overarching objectives in four broad areas: community engagement, greening our city, improving urban tree management and demonstrating best practice in tree maintenance.

Community engagement

The Brimbank Tree Policy aims to involve the wider community in order to achieve protection and expansion of the canopy cover on private as well as public land.

Greening our city

As a direct action of the Urban Forest Strategy, the Brimbank Tree Policy aims to achieve a minimum of 30% canopy cover by 2046. The target is to increase the cover to 30% in road parks, streets and on private land and, where possible, up to 50% in parks and open spaces.

Improving urban tree management

The Brimbank Tree Policy seeks to retain and protect established trees with large canopies on both public and private land.

Demonstrating best practice in tree maintenance

With a preference for proactive maintenance, the Brimbank Tree Policy aims to lead the way by demonstrating and freely sharing advice on best practice.

Challenges and strategic directions

Each objective comes with its own set of unique and shared challenges. The main challenges for each objective are covered below, together with the strategic directions to overcome them.

Community engagement

With 71% of all land being private, the successful implementation of the Brimbank Tree Policy hinges on engaging the community at large. Council needs the support of residents and property owners, both as constituents and as active participants in the protection and expansion of the urban forest.

Community awareness

For all the informed opinions of survey respondents, there is a perceived lack of insight into the functional benefits of the urban forest, and understanding is key to generating acceptance and support. Many residents still view trees as a nuisance due to leaf litter and the potential for branches to fall rather than as natural assets, integral to human health and wellbeing. However, once community awareness increase, perceptions can change rapidly. There is a growing appreciation of the tree planting being done by Council as annually Council receives numerous responses stating how grateful they are for trees planted in streets or parks.

Updates and consultations

Council will endeavour to keep the public informed of all ongoing and upcoming projects, where possible inviting residents and property owners to take part, such as selecting tree species and planting locations. Table 2 outlines what continuous updates and consultations will take place.

Table 2: Council's commitment in tree related activities and community engagement

Activity	Tree species selection	Engagement	Time of information	Time of planting
Planting				
Replacement of removed trees	By Council staff. Trees will be selected based on the existing species and to increase canopy in the street.	Letter to residents with information on selected species and time of planting.	Removals done in this calendar year to be replaced in the following year. Cut-off date is Dec 31st of each year.	Planting to take place between April and September each year.
Street tree infill program	By residents where appropriate. Two options will be selected by Council staff and provided to residents to choose from.	Letter to residents requesting feedback on proposed species when appropriate.	In January for planting in April – September.	In January for planting in April – September.
Parks and local reserves	By Council staff. Trees will be selected based on the existing species and to increase canopy in the street.	Letter to residents with information regarding the park upgrade and tree planting program.	Prior to park upgrade and as part of community consultation when possible.	Tree planting season in April – September.
Road rehabilitation program	By Council staff. Trees will be selected based on the existing species and to increase canopy in the street.	Letter to residents with information regarding the road upgrade and tree planting program.	Prior to road construction and in January for planting in April – September.	Projects with construction completed would be planted in the following planting season.
Requests from residents – one tree	By Council staff. It can be discussed if resident is not happy with species. Trees will be selected based on the existing species and to increase canopy in the street.	Letter to residents with information on species and planting time once the site has been inspected.	Approximately 1 month from initial request is taken	Requests received prior to January each year will be considered for planting in the following planting season.
Request from residents – whole street	By Council staff. Budget and planting numbers may be a limiting factor.	Letter to residents with information on species and planting time once the site has been inspected.	Approximately 1 month from initial request is taken	Requests received prior to January each year will be considered for planting in the following planting season.
Requests from residents – parks and local reserves	By Council staff	Phone call or email to residents with information on species and planting time.	Approximately 1 month from time of initial request.	Requests received prior to January each year will be considered for planting in the following planting season
Removal				
	Visual Tree Assessment carried out by Council arborist. Is basic removal criteria met? ie., is the tree dead, dying, diseased or structurally dangerous?	Discuss on site with complainant if available. If not, leave calling card with enquiry details and inspection findings.	Inspect within 5 working days. If urgent, 1 day. In emergencies, contact should be made within 1 hour.	Works programmed via Confirm Connect defect raised maximum 60 days depending on urgency.
Pruning				
	Visual Tree Assessment carried out by Council arborist. Looking at what the complaint is about and considering any other non-conformance to Council, electrical and VicRoads requirements.	Discuss on site with complainant if available. If not, leave calling card with enquiry details and inspection findings.	Inspect within 5 working days. If urgent, 1 day. In emergencies, contact should be made within 1 hour	Works programmed via Confirm Connect defect raised maximum 60 days dependant on urgency.

Encouraging and supporting private planting

The 30% canopy cover target cannot be achieved without protecting existing trees on private properties and planting new ones. Planting and maintaining trees however require a degree of expert knowledge and technical skills. Council will therefore not only promote planting on private property, but also provide individual community members and groups with free reference material and access to professional advice.

Fostering community stewardship

In order to ensure efficient management, maintenance and urgent actions such as addressing tree vandalism, Council will need to foster a sense of shared responsibility across the community. All members of the public will be encouraged to nominate significant trees for protection and to report any relevant issues directly to Council (for more information on this, see section on tree management below).

Surveys

It's important for Council to understand the community's thinking, and this will evolve as the implementation of the Brimbank Tree Policy progresses. Council will conduct periodical surveys to gauge perceptions in the community and adjust messaging and actions to best suit the current situation.

Greening our city

Brimbank is situated within the Victorian Volcanic Plains bioregion, which predominantly features rocky clay soil, and the climate emergency is having a major impact here. Over the past 15-20 years, rainfall has been lower than the historical average. Many areas have averaged 400mm or less per year, which as a standalone measure classifies their climate as semi-arid, the second driest type of climate after deserts. Average temperatures are on the increase, as are heatwaves: Brimbank now typically experiences five or more days of over 40°C every year.

Combined with a growing population, development pressures and the continued degradation of wildlife habitat, such factors pose a number of challenges to establishing a flourishing urban forest. There are however many tree species that have a proven track record of not only surviving, but thriving in these conditions.

Council continuously trials and monitors the viability of different species in different local areas, and cross-references with lists of species used in similar locations elsewhere, such as Hume and Melton and some South Australian councils that experience even hotter and drier conditions than Brimbank. This work has resulted in lists of preferred species for streets, parks and open spaces (refer **Appendix 1**).

The Brimbank Planning Scheme, with its various zones and overlays, is also relevant in this context. It includes provisions for individual canopy trees with specific height requirements in new developments and contain general directions for the selection of species to align with neighbourhood characteristics as well as environmental, landscape and heritage regulations. These provisions are however only triggered when planning permits for development or vegetation removal are lodged.

What sites are prioritised and what species are ultimately recommended for a particular site, whether public or private, will naturally depend on a range of local factors such as existing conditions, soil, sun and moisture. But it will also take into account the many strategic considerations required in order to create a flourishing, diverse and resilient urban forest across the entire municipality. These include the following key points.

Prioritising strategic locations

The Brimbank Tree Policy aims to prioritise sites that provide maximum benefits to the health and wellbeing of residents. Urban hot spots, socio-economically disadvantaged neighbourhoods and heavily trafficked footpaths and parking lots are examples of areas in urgent need of cooling. Areas that are particularly prone to damage from extreme weather events, such as heatwaves, drought and flooding, will also be prioritised. These will eventually be incorporated in a community-wide network of urban trees.

Ensuring resilience

Tree species vary in their susceptibility to climate fluctuations as well as to different pests and diseases. A relatively wide range of species is therefore required to ensure that the population as a whole remains resilient to future threats. Native species from the Myrtaceae family, predominantly various species of eucalyptus trees, will however account for up to 50% of the total number of trees. This is because these species have proven themselves to be exceptionally successful in the Brimbank area, and because they provide vital food and habitat for native wildlife.

Planning for generational turnover

Growth rates and life spans vary greatly between different species. The Brimbank Tree Policy aims to select species that will ensure a staggered generational turnover, so that no neighbourhood will lose too much of its canopy cover at any one time.

Supporting wildlife and sensitive environments

Wildlife populations, waterways and grasslands require special considerations. Council's Biodiversity Strategy and Habitat Connectivity Plan will dictate plant selection within habitat corridors and conservation areas, with local indigenous species used adjacent to waterways and grasslands.

Planting on private land

As previously mentioned, with 71% of all land in the municipality being private, ensuring that property owners support the Brimbank Tree Policy is critical to its success. This is especially so given the increased demand for subdivision and development. Since 2015, canopy trees are a requirement in the front and back yards of new infill developments, but in order to achieve 30% canopy cover, we need to promote tree-planting on all suitable existing properties.

It's important that plantings on private land are successful, so that the trees grow to full maturity and provide maximum benefits. To encourage and support property owners, Council will supply tube stock trees and fact sheets as well as complimentary greening workshops and access to professional advice.

Planting street trees

Having green parks and open spaces connected through green streets will help improve urban ventilation, allowing for cooler air to penetrate more densely built areas. In addition to increasing property values and retail expenditure, street trees also provide excellent opportunities for the capture, filtering and usage of stormwater. The creation of green streets can further limit the negative effects of urban densification and park fragmentation, allowing wildlife to disperse or move between different locations with similar habitats. This is how a biodiverse urban forest is created, enhancing liveability for both humans and animals.

Figure 4: Artist impression of a street in Brimbank before and after tree planting

Council currently plants approximately 3,500 semi-mature trees in streets each year with a survival rate of 90%. Council has identified that there are around 55,000 vacant sites to fill.

Council will be looking at other planting opportunities and external funding to assist in filling the vacant sites as soon as possible. Council will also proactively explore the potential of other planting sites in the streetscape, such as in roundabouts and cul-de-sacs.

Enabling water-sensitive urban design

Using natural water sources for irrigation is key to maintaining a flourishing urban forest, and water-sensitive urban design such as tree pits and raingardens can help reduce stormwater flooding and remove pollutants before the runoff reaches our waterways. Street tree species will be selected to, where appropriate, facilitate the use of tree pits, and Council will encourage property owners to install small-scale swales and raingardens.

Council aims to maximise the use of water-sensitive urban design in the future and will continue to support and trial innovative designs in this field. Every year, Council upgrades around 20 roads and streets as part of the Road Rehabilitation Program. While reinstalling all kerbs and channels in these projects, new passive irrigation systems will be considered to provide additional water for newly planted trees. Each site is unique, so trials of different systems will be carried out every year to identify the most successful methods. The development of a Creating Better Streets Strategy will investigate this further.

Leveraging structural soils

Traditional street design relies on soil being heavily compacted to provide load-bearing for the sidewalk, road and other sealed surfaces. Such dense soil can however make it difficult for larger trees to establish a sufficient root system, limiting their ability to grow and thrive.

A relatively new advent, structural soils are a mix of different components – generally clay loam, crushed stone and hydrogel – that facilitate root penetration without compromising the load-bearing standards of pavement and other sealed surfaces. Structural soils may be used to promote better tree health and to grow larger trees in smaller nature strips. Council will continue exploring the potential of structural soils to best meet Brimbank's needs.

Planting in parks and open spaces

Parks and open spaces are important meeting places and key to encouraging and facilitating a healthy and active lifestyle. They also provide excellent testing grounds for trialling the viability of different species, and they offer the right conditions for larger trees, such as cedars and pines, which may live for hundreds of years and grow more than 30 metres tall.

Initiatives such as Creating Better Parks Policy and Plan and Greening The West have seen numerous trees planted in recent years, transforming a great number of parks into greener, shadier and more attractive spaces. Council will continue this work as part of the Brimbank Tree Policy, and it's expected that many parks will have an emerging framework of at least 30% canopy cover within ten years.

Improving urban tree management

To date, management of the urban forest has to some extent treated individual trees as interchangeable units. Approved removal of a tree on public land by a property owner or developer has for example incurred a set replacement fee of $500. But this does not at all reflect the true value of the tree, which depends on a wide range of factors, including genetical significance, current health and useful life expectancy as well as historical, cultural and aesthetic considerations.

One particularly noteworthy factor is that of ecological services, because it makes the management of trees and other green infrastructure distinctly different from the management of grey infrastructure assets, such as pavement, sewers and power grids. Whilst the value of grey infrastructure depreciates over time, green infrastructure increases in value. Fully mature trees provide ecological services that make them much more valuable than young or semi-mature trees. Council will therefore prioritise the protection and maintenance of established trees with large canopies on both public and private land.

With a view to ensure a thriving urban forest as a whole, the Brimbank Tree Policy includes a number of measures to better manage urban trees. Key aspects of these measures are outlined below.

Surveying trees

As new species are introduced in line with the Urban Forest Strategy, the urban forest will change over time. Understanding how it develops is fundamental to making strategic decisions on future planting and allocating sufficient resources to tree services. Council therefore undertakes regular tree surveys.

Table 3: Tree inspection cycles

Location	Inspection cycle
Major Roads (Dept. of Transport)	2 years
All other Roads	5 years
Town Centres	1 year
Parks and Open Space (High traffic Areas and Trees within the vicinity of playgrounds)	1 year
Parks and Open Space	5 years
Community Centres and Kindergartens	1 year
Leisure Centres	1 year
Significant Trees	1 year

A tree survey begins with a visual inspection. If this reveals a defect in the tree, the visual inspection will be followed by a quantified risk assessment, which gauges the risk of harm from tree failure. Further investigations may include testing by external contractors to measure the strength of the timber and rate of decay.

Trees will only be removed if they are deemed dead, diseased, dying or dangerous. Should there be disagreements on Council's assessment, an independent arborist will be consulted. The finding of the independent arborist will then be deemed final and any actions recommended will be implemented.

Trees on private land

Significant Tree Policy and Significant Tree Protection Register

To protect established trees on private land, a draft Significant Tree Policy, in line with the Brimbank Local Law 2018, has been developed for Council's consideration that will provide direction for the establishment of a Significant Tree Protection Register (Register). A tree on private land will be included on the Register if it meets any of these criteria:

- A trunk diameter, measured at breast height, of 50 centimetres or more
- A height of 15 metres or more
- Canopy cover of 100 square metres or more

Additionally, irrespective of the above criteria, a tree may be included in the Significant Tree Protection Register if it meets any of the relevant requirements set out by the National Trust (Table 4). These requirements include aspects such as aesthetical, historical, cultural and spiritual significance. A tree that, for example, was planted in memory of a person or event might therefore be included in the Significant Tree Register on request.

Table 4: Criteria for significant trees established based on National Trust criteria

Category	Subcategory	Notes
Scientific	Horticultural or genetic value	
	Important source of seed or propagating stock	
	Particularly resistant to disease or exposure	
	Species or variety that is rare or of a very localised distribution	
	Remnant native vegetation	
	Outstanding for its size	Size refers to height, trunk circumference or canopy spread
	An outstanding example of the species	
	Outstanding habitat value	
Social	Unique location or context	
	Contribution to landscape	
	Associated with Aboriginal activities	
	Important landmark	
	Spiritual and religious associations	
	Contemporary association with the community	
Historic	Forms part of an historic park, garden or town	
	Commemorative plantings	May include memorial or ceremonial plantings such as Avenues of Honour
	Associated with an important event	
	Associated with an important person, group or institution	
Aesthetic	A really great looking tree	
	Exhibits curious growth form or unusual physical features	Features may be naturally occurring, resulting from natural events (such as lightning strike) or human intervention
	Is a better than average example of its species, or a tree in its location	

Subject to the adoption by Council of a Significant Tree Policy, Council officers will develop the Register, based on significant tree criteria, and members of the public will also be encouraged to nominate trees that they consider qualify as per either of the above criteria by contacting Council.

All trees listed in the Significant Tree Protection Register will be protected by Local Law under the Significant Tree Policy as follows.

- Local Law

In 2018 Council updated the General Local Law and it included Clause 9 as follows:

9. Significant Trees

9.1. Under section 112 of the Act, Brimbank City Council's Significant Tree Policy (Policy), as amended and published from time to time, is wholly incorporated into this Local Law and should be interpreted and understood as such.

9.2. An authorised officer who reasonably believes that a person has contravened the Policy may issue a notice under Part 11 of this Local Law.

9.3. A person must not, without a permit or specific written instruction from an electricity service provider, remove, damage, destroy or lop a significant tree or engage another person to remove, damage, destroy or lop a significant tree.

9.4. A person removing, damaging, destroying or lopping a significant tree on the basis of specific written instruction from an electricity service provider must retain a copy of the written instruction for 12 months from the date works on the significant tree are carried out.

A Local Law permit will be required before pruning or removing a significant tree. Any work carried out within 2.0 metres of a significant tree will also require a special permit, in addition to any Planning or Building Permit that may be required.

Damaging a significant tree on private land

The owner or owners of land upon which a significant tree is illegally pruned, removed or damaged will be considered guilty of an offence unless they can prove that the interference was carried out by another party without their knowledge.

In some instances, trees are poisoned by residents in the hope that this will kill the tree and force its removal. The signs of poisoning are usually quite clear, as poisoned trees die in a particular way that is different from general tree decline. Other evidence that a tree has been poisoned include cuts or holes.

Maintaining a significant tree on private land

Any work on or within 2.0 metres of a significant tree on private land requires a Local Law tree works permit, the application requirements for which are set out in the below table.

Tree location	Applicant	Supporting document
Tree is located on your property	Owner of property	• Proof of property ownership (eg. Copy of rates notice) • Proof of owner's identity (eg. Copy of driver licence)
Tree is located on common land managed by Owners Corporation	Owners Corporation Manager	A letter of authorisation from the Owners Corporation Manager, supporting the proposed tree works
Tree is located on land owned by a company	Company director	Proof of director's identity (eg. Copy of ASIC company extract and copy of their driver licence)
Tree is located on a neighbouring property	The tree owner or the neighbouring property owner	• Proof of property ownership (eg. Copy of rates notice) • Proof of owner's identity (eg. Copy of driver licence)

Applications for tree removals must always be lodged by the property owner. Furthermore, builders and developers are required to protect all retained trees in accordance with Council's Tree Protection Zone regulations.

Landowners seeking a Local Law tree permit for any trees works will be able to download a form on Council's website where instructions will be provided to assist in completing the form.

For further information on significant trees on private land, refer to the draft Significant Tree Policy.

Trees on public land

Significant trees managed by Council

Around 1,000 public trees have been identified as significant as per the National Trust criteria, and it is expected that this number will increase greatly as Council inventories all trees in parks and open spaces over the next couple of years.

Significant public trees are subject to a proactive inspection program, with independent arborists assessing the trees' condition, estimating remaining lifespans and making maintenance recommendations. These trees are also covered by a succession-planting scheme to ensure that, when a significant tree eventually dies, others are already growing to lessen the impact of its removal.

Tree Protection Guidelines

All public trees in streets, parks, reserves and open spaces are covered by Council's Tree Protection Guidelines. Interfering with a public tree, whether it is deemed significant or not, is illegal. This includes any prohibited activity carried out within the Tree Protection Zone that surrounds every public tree.

Council will review designs for all works Council or otherwise, that impact on trees and then supervise the works to ensure that all tree protection conditions are complied with prior to and during construction works.

For more information on the Tree Protection Zone, please see **Appendix 2**.

Vandalism

Trees are occasionally vandalised through illegal pruning or snapping of branches. If possible, Council will prune vandalised trees to preserve the integrity of the tree. If the vandalism compromises the structure of the tree, it will be removed and replaced at the next planting season.

Examples of vandalised trees in Brimbank.

If Council believes that a tree has been poisoned, the tree will be scheduled for removal or retained for wildlife habitat. The tree will in either case not be removed entirely. A sizeable trunk will remain in the ground, to which Council will attach a large sign indicating that the tree has been poisoned and providing an estimate of its value to the community. The sign will remain in place for a period of no less than six months, and a fine may be issued.

Valuation and tree removal fees

Valuation

What the value of environmental services that an individual tree provides, such as carbon sequestration and air filtering, can be calculated using the industry-standard tool i-Tree Eco. This model also provides a dollar figure for how much it would cost to replace the tree and regrow a new one to a similar size and function; a figure referred to as "structural value".

Brimbank's population of 102,703 street trees have been audited this way, generating the following data:

- The street trees annually remove 573 tonnes of air pollution;
- store 8,970 tonnes of carbon;
- sequester 858.7 tonnes of carbon;
- produce 2,300 tonnes of oxygen; and
- help absorb nearly 1M litres of stormwater runoff

The total structural value of Brimbank's street trees is estimated at $126 million. Since 90% of the population is young or semi-mature, this figure (equating to an average structural value of around $1,225 per tree) will increase manifold over coming years.

Below are the figures for two mature trees for reference.

Tree species: Eucalyptus cladocalyx

- Height: 20.0 m
- Canopy width: 10.0 m
- DBH (Diameter at Breast Height): 114.0 cm
- Age: Maturing
- Health condition: Good
- Useful life expectancy: More than 61 years
- Structural Value: $40,719.95
- Stores 4,388.4 kg of Carbon each year
- Removes 1016.8 g of air pollutions annually

Tree species: Lephostemon confertus

- Height: 18.0 m
- Canopy width: 8.0 m
- DBH (Diameter at Breast Height): 70.0 cm
- Age: Maturing
- Health condition: Good.
- Useful life expectancy: More than 61 years
- Structural Value: $15,970.85
- Stores 1,461.3 kg of Carbon each year
- Removes 373.7 g of air pollution annually

It should further be noted that the estimated value of $126 million is for street trees only; it does not include the value of trees in parks and open spaces, nor the value of all the trees on private property.

Tree removal fees

A new tree removal fee is proposed, which includes removal and reinstatement costs, plus the amenity and ecological services values of trees. This tree valuation formula is an established, industry-based standard. Depending on a range of factors, it may lead to a tree removal fee that is higher or lower than the structural value outlined above. For the details of this formula, refer Appendix 3: Tree Evaluation.

In general, Council does not support the removal of any healthy, established street tree to accommodate a driveway crossover or an extra unit. If a tree on public land must be removed, then the new tree removal fee will be applied. Payment of the fee is required prior to removal.

All fees collected will be used to plant more trees in the immediate area.

Trees conflicting with private interests

Developments

The demand for subdivision and development is leading to an increase in tree removal requests and a decrease in land available for future planting. Trees planted in accordance with the new legal requirements for infill developments will go some way to offset this, but they will take a long time to reach maturity and start providing the ecological services once offered by removed trees. It is therefore Council's preference to retain and protect established trees with large canopies.

Figure 5: An example of a development in Brimbank

The removal of any tree included in the Significant Tree Protection Register will require a Local Law permit. Council is however disinclined to grant such permits other than in exceptional circumstances. As a rule, architects and developers will be encouraged to find creative solutions to retain established trees.

In cases where Council has approved the removal of a street tree, the applicant has to pay Council the value of that tree prior to removing the tree.

Any work carried out near a public tree or any tree listed in the Significant Tree Protection Register must also adhere to Tree Protection Zone regulations (see **Appendix 2**).

Furthermore, the creation of new carparks in nature strips will now require a review to ensure that no tree-planting space is removed.

Damage caused by trees

Trees sometimes cause damage to pavement, vehicle crossovers, buildings and infrastructure, and Council receives many requests for trees to be removed due to nuisances such as leaf litter in gutters or excessive bird droppings. With a view to find a design solution to the problem, Council will liaise with the concerned residents and property owners.

Any claims of public trees causing damage to private property will be assessed by Council's Risk Management Unit. Such claims may involve root damage to crossovers, fences or private dwellings, and each case will be assessed on its own merits. If a public tree is proven to have caused damage, Council will take action to prevent further issues and may also consider contributing to the cost of repairs.

Felling a tree will only be considered as a last resort, when all other options have been assessed.

Demonstrating best practice in tree maintenance

To reach the target of 30% canopy cover by 2046, the Brimbank Tree Policy relies on private property owners being successful in planting, growing and maintaining a range of different tree species. Advice on species selection and planting is consequently important and will be provided as outlined above. It is however equally important that property owners are aware of best-practice tree maintenance. A number of destructive and dangerous methods are still all too common, and it's vital that Council leads the way by continuously consulting with property owners and showcasing best-practice maintenance of all public trees.

The following are key tree maintenance tasks carried out by Council:

- Maintain computerised database of trees throughout the municipality detailing the location, species and history of each tree.
- To visually inspect all trees to retain trees, identifying changes to trees, safety hazards and recommending how these should be addressed.
- To identify works to trees and oversee works via planned and reactive work programs.
- To provide support and advice relating to tree matters to other Council departments
- To manage complaints and enquiries relating to trees ensuring the health and longevity of the tree are at the forefront of decision making.
- To consult with the community on tree related matters
- To assess the quality of work undertaken to trees by internal and external arboriculture providers
- To manage Council's risk relating to trees
- To ensure that all tree maintenance is carried out in adherence with current legislation, including permitted clearing regulations Clause 52.1. Maintenance Programs

Proactive maintenance

Proactive maintenance aims to prevent issues from arising rather than having to address more or less urgent existing issues. Council's preferred method, it helps ensure the long-term viability of the tree in line with current arboriculture standards. Proactive maintenance also helps reduce the risk of damage to surrounding infrastructure and minimises the risk of tree failure, enabling defects to be identified and rectified before becoming a danger to the public.

Council engages tree contractors to undertake all proactive maintenance work. A monthly schedule of works is provided to individual contractors, who must complete them within the given timeframes.

Reactive maintenance

Reactive maintenance works are carried out in response to an enquiry made by a member of the public. A resident might for instance report damage to a tree, extraordinary growth or a conflict with infrastructure that the resident deems to be unsafe.

Council will inspect all trees related to such enquiries. If non-urgent maintenance is required, this will be included in the schedule of works of a tree contractor, to be completed within three months of inspection. Should the tree require work sooner, this will be undertaken within a specified timeframe or referred for immediate action.

Emergency work

Any emergency work requested during normal working hours will be directed to Council for action. The tree will be assessed and given priority for maintenance works as appropriate.

Out-of-hours calls are directed to Council's Out of Hours Service. If deemed an emergency, an Emergency Duty Officer will then allocate works to remove any danger immediately.

Out-of-hours emergency work will only aim to make affected trees and surrounds safe; any urgent maintenance will be carried out when working hours resume.

Maintenance work conducted by Council

Pruning

Different types of pruning represent the majority of all maintenance works conducted by council. Undertaken in accordance with AS 4373:2007, standard pruning methods include the following.

Uplifting

This is where lower branches are pruned to clear space underneath the tree, most commonly for cars or pedestrians.

Crown reduction

Crown reduction involves pruning of the outermost edges of the crown. It may alleviate foliage encroachment over highways, building or street lighting. It also reduces the drag, decreasing the risk of wind damage. Although it reduces the size of the crown, this method should however retain the natural, balanced outline of the tree.

To maintain healthy growth, this pruning should not remove more than 30% of the crown. It should also be noted that different tree species and even individual trees of the same species can vary in their response to crown thinning. Some trees may respond by producing vigorous straight growth, which then will require cyclical maintenance. Crown reduction is therefore usually only appropriate when the tree's behaviour already is known, or when the tree has been proven to be implicated in an insurance claim related to subsidence or other structural damage.

Crown thinning

This method involves the even removal of small branches throughout the canopy of a tree. It reduces the overall density of the crown, letting more light and wind through the canopy. Since it retains the original outline of the crown, it can be hard to spot the impact of this kind of pruning work. It's usually specified as a percentage of the crown, and no more than 30% will be pruned.

Dead-wooding

Removing branches or parts of branches that have died or become weak or diseased is called dead-wooding. It's an important part of the maintenance regimen, because such wood has the potential to cause damage if left on the tree.

Removed dead wood is valuable to wildlife. If safe to do so, it should be left on site as habitat logs. In habitat corridors and other conservation areas, trees with significant dead wood, or even entire dead trees, may be left for habitat purposes.

Formative pruning

Young immature trees can benefit from formative pruning, which removes crossing or rubbing branches and weak forks to encourage a good natural shape. This can reduce subsequent health issues and the need for major pruning when the tree has matured.

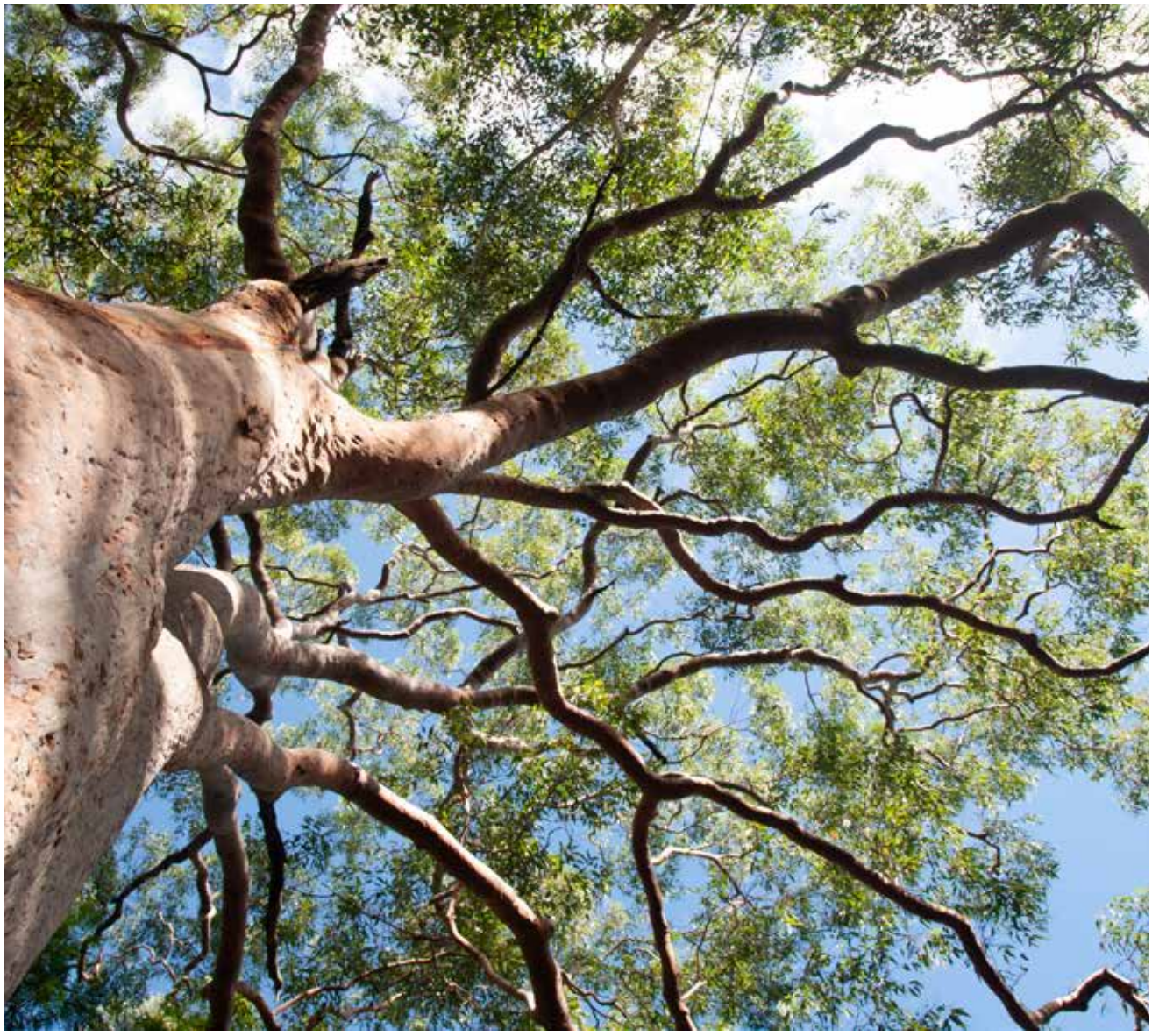
Tree removal

If a tree is considered dead, dying, diseased or dangerous, Council will remove it. The stump will initially be left in the ground to be assessed for signs of regrowth. In some cases, the stump may need to be poisoned to prevent regrowth. Once Council officers are satisfied that there is no regrowth, the stump will be removed.

Healthy trees do occasionally need to be removed. A tree or group of trees might for instance interfere with a neighbouring tree or group of trees, preventing healthy development of either. In such cases, the more desirable tree or group of trees will be preserved.

Another reason for the removal of a healthy tree can be that it is substantially contributing to damage to public or private property.

In the above scenarios, tree removal will only be considered as a last resort, after all other options have been considered.



Other types of tree maintenance work

Treatment of pests and disease

Trees are susceptible to pests and disease. If either is discovered, Council will undertake the recommended treatment. Signs will be placed on the tree to advise the public of the treatment applied and the reason for its use.

Root barrier

To redirect roots away from surrounding infrastructure, a root barrier may be installed. In most cases, this is done to reduce the impact of council trees on private property.

Root pruning

Root pruning is another method for preventing damage to infrastructure or to allow for footings to be constructed. This kind of pruning will only be carried out if it does not cause any structural damage to the tree, and only under the supervision of a qualified arborist.

Cable and bracing

Structurally weak trees that are vulnerable to damage from winds or their own weight may be supported with cable and bracing. This is done to reduce the risk of structural failure and ultimate destruction of the tree. However, this method is not suitable for all trees, and it is generally only applied on significant trees, when the loss of the tree or a branch would have a major impact on the landscape.

Property clearance

Branches overhanging a property line may be pruned by Council, but only up to four metres over the property line. As per the below, Council does not support the wholesale pruning of an entire side of a tree.

Maintenance work not carried out by Council

The following maintenance works are deemed unsuitable and will not be considered by Council.

Lopping

Reducing the height of a tree by lopping off the main trunk is no longer recommended practice. It destroys the structure of the tree, creating a dangerous situation where the tree may ultimately die and topple.

Siding

The practice of cutting all branches on one side of a tree will never be undertaken. It makes trees unbalanced and prone to failing. **Pruning or removal for convenience**

Council receives many requests to undertake tree works for reasons of convenience. Any works resulting from such requests are however coincidental; they are carried out because they are of benefit to the tree rather than as a result of the customer enquiry.

Tree works will not be undertaken to address any of the following issues:

- Tree blocking light or creating shade
- Tree blocking solar panels from working effectively
- Interference with television or satellite dish reception
- Nuisance from insects or other non-hazardous wildlife
- Droppings from roosting birds
- Leaf, fruit, nut, flower or seed fall
- Leaves dropping into gutters or pools
- Pollen
- Tree is considered to be too large by the complainant

How to get involved

All community members are encouraged to get involved in the creation of Brimbank's thriving urban forest. For further advice, please contact Council by -

Phone: **(03) 9249 4000** or

Email: **info@brimbank.vic.gov.au**

Actions

Objective 1: Community education and engagement

Targets:

- Run three community information sessions about benefits of trees each year
- Run two "Greening the Park" Programs with schools each year
- Run two "Greening the Street" Projects each year
- Run one "Greening Champions" Programs each year

Action	Measure	Time frame Short (1-3 years) Medium (4-7 years) Long (8-10 years Ongoing	Responsibility
Developing graphical and easy-to-read tree information flyers and thank you cards	Monitoring confirm requests	Short	Urban Design
Identifying areas with the highest request for tree removals and tree vandalism and targeting those areas for community information sessions and flyer distributions	• Audit of tree data • Monitoring confirm requests	Ongoing	• Urban Design • Assets & Property Services
Continuing give-aways of tube stock plants at parks openings	Surveys to be conducted every two years	Ongoing	Urban Design
Consulting with community, seeking feedback regarding Council tree-planting programs		Ongoing	Urban Design
Running tree-related programs such as Greening the Street and Greening Champions annually		Ongoing	Urban Design
Continue community engagement and connection to the urban forest	• Council media release and advertising campaigns • Updating the website • Organising events	Short and ongoing	• Urban Design • Media and Communications
Encouraging community groups	Support and providing funds for community greening activities.	Short and ongoing	Urban Design
Encouraging tree-planting in front and backyards	• Develop online guidelines for greening front and backyards • Provide trees to residents in greening projects	Short	Urban Design

Objective 2: Greening our city

Targets:

- Increase the tree canopy cover to achieve 30% in road reserves and to 50% in parks by 2046
- Maintain and protect existing trees
- Grow a diverse, resilient urban forest

Action	Measure	Time frame Short (1-3 years) Medium (4-7 years) Long (8-10 years Ongoing	Responsibility
Continuing with the current tree-planting program and increasing the number of planting to reach the target for each year	• Audit of tree data • LIDAR data to be captured every two years	Long	Urban Design
Prioritising tree planting in identified socio-economically disadvantaged areas and hot spots	Urban heat-mapping	Medium	Urban Design
Updating Significant Tree Data for public land	Tree audit	Short and ongoing	Parks Services
Developing tree Planting and Protection guidelines for developers	Guidelines to be completed	Short	Parks Services
Establishing green corridors between major activity areas	Completion of green boulevards tree planting	Medium	Urban Design
Establishing a Green Infrastructure working group to regularly meet to discuss tree management issues and opportunities for urban trees	One meeting to be conducted every two months	Ongoing	• Urban Design • Parks Services • Environment • City Planning • Engineering
Adopting and optimising WSUD and passive irrigation systems in road projects where appropriate	Opportunities and achievements to be discussed in IWMT meetings	Ongoing	Integrated Water Management team
Protecting Council's urban forest assets	Train and authorise relevant staff	Short and ongoing	• Engineering • City Planning • Urban Design • Parks Services

Objective 3: Improving tree management

Targets

- Secure an up-to-date street tree data set
- Protect significant trees on public and private land

Action	Measure	Time frame Short (1-3 years) Medium (4-7 years) Long (8-10 years Ongoing	Responsibility
Auditing parks and street trees	• Full audit of tree data every five years • LIDAR data to be captured every two years • All trees inspected and required works raised every 1-5 years depending on location of tree	Long Ongoing	• Parks Services • Urban Design • Parks Services
Updating tree removal fees	Inform relevant staff and community	Short	Urban Design
Protecting Significant Trees on Council Land	Development of Significant Tree Management Plan	Short	Parks Services
Continuing the .development of the Significant Tree Register for private land	LiDAR and field study	Ongoing	Urban Design
Requesting landscape bond for the protection of significant trees on private land undergoing development	Landscape and tree inspection	Short	• City Planning • Strategic Planning • Urban Design
Providing tree protection zone information to developers as part of planning permit process	Inform relevant staff	Short	Urban Design
Providing tree protection zone information to contractors and other authorities as part of Council civil works	Inform relevant staff	Short	• Urban Design • Engineering

Objective 4: Demonstrating Best Practice in Tree Maintenance

Targets

- Maintain a healthy urban forest

Action	Measure	Time frame Short (1-3 years) Medium (4-7 years) Long (8-10 years Ongoing	Responsibility
Assessing trees for condition as well as risk	Tree inspection staff trained in QTRA method	Short	Parks Services

Appendix 1: Preferred List of Species

Street trees

	Name		Nature Strip Location					Foliage		Dimensions	
	Botanical Name	Common Name	Less than 2m	2m - 4m	4m+	Suitable in WSUD	Suitable Under Power Lines	Evergreen	Deciduous	Height/m	Width/m
Small Trees < 6m	**Native**										
	Acacia pendula	Weeping Myall					*			6	6
	Agonis flexuosa	Willow Myrtle					*			6	6
	Angophora hispida	Dwarf Apple					*			6	5
	Callistemon 'Kings Park Special'	Bottle Brush				*	*			4	4
	Callistemon salignus	White Bottle Brush				*	*			6	3
	Eucalyptus mannifera 'Little Spotty'	Little Spotty					*			6	5
	Melaleuca linariifolia	Snow in Summer				*	*			6	5
	Tristaniopsis laurina	Water Gum				*	*			5	4
	Exotic										
	Arbutus unedo	Irish Strawberry					*			6	5
	Lagerstroemia hybrids	Crepe Myrtle				*	*			5	3
	Olea europaea selections	Olive Tree					*			6	6
	Photinia x fraseri	Red-Leaf Photinia					*			5	5
	Prunus cerasifera 'Nigra'	Black Cherry Plum					*			5	4
	Pyrus calleryana cultivars	Ornamental Pear				*	*			6	5
Medium Trees 6m-10m	**Medium Trees 6m - 10m Native**										
	Allocasuarina verticilata	Drooping Sheoak								8	4
	Brachychiton acerifolius	Flame Tree				*				10	6
	Corymbia eximia	Yellow Bloodwood					*			9	7
	Cupaniopsis anacardioides	Tuckeroo Tree				*				8	6
	Geijera parviflora	Australian Willow								9	8
	Hymenosporum flavum	Native Frangipani					*			8	6
	Lophestemon confertus	Brush Box				*	*			10	8
	Melia azedarach	White Cedar					*			10	8

Street trees continued

	Name		Nature Strip Location					Foliage		Dimensions	
	Botanical Name	Common Name	Less than 2m	2m - 4m	4m+	Suitable in WSUD	Suitable Under Power Lines	Evergreen	Deciduous	Height/m	Width/m
Medium Trees 6m-10m	**Medium Trees 6m - 10m Exotic**										
	Acer negundo sensation/ buergerianum (sp.)	Maple				*	*			8	6
	Fraxinus oxycarpa 'Raywoodii'	Claret Ash								10	8
	Fraxinus pennsylvanica var.	Urbanite/Cimmaron								10	8
	Gleditsia triacanthos 'Shademaster'	Honey Locust					*			10	10
	Jacaranda mimosifolia	Jacaranda					*			8	8
	Koelreuteria paniculata	Golden Rain Tree								8	8
	Pistacia chinensis	Chinese Pistachio					*			8	8
	Pyrus ussuriensis	Manchurian Pear					*			8	8
	Ulmus Parvifolia	Chinese Elm				*	*			10	10
	Ulmus glabra 'Lutescens'	Golden Elm								10	10
	Zelkova serrata	Japanese Elm					*			10	8
Large Trees > 10m	**Large Trees >10m Native**										
	Angophora costata	Smooth-barked Apple								15	10
	Corymbia citriodora	Lemon-scented Gum								15	10
	Corymbia maculata	Spotted Gum								18	10
	Eucalyptus mannifera	Brittle Gum								15	10
	Eucalyptus melliodora	Yellow Box								15	10
	Eucalyptus nicholii	Narrow Leaved Peppermint								15	8
	Eucalyptus polyanthemos	Red Box								12	8
	Eucalyptus scoparia	White Gum								12	8
	Eucalyptus sideroxylon (sp.)	Iron Bark								15	10
	Grevillea robusta	Silky Oak								16	8
	Large Trees >10m Exotic										
	Cupressus (Various)	Cypress Tree								20	8
	Liquidambar styraciflua	Liquidambar								12	6
	Platanus x acerifoia	London Plane Tree								12	10
	Quercis palustris	Pin Oak								15	8
	Quercus robur	English Oak								12	10
	Ulmus x hollandica	Dutch Elm								18	12

Parks trees

	Name		Foliage		Dimensions	
	Botanical Name	Common Name	Evergreen	Deciduous	Height/m	Width/m
Small Trees <6m	**Small Trees <6m Native**					
	Agonis flexuosa	Willow Myrtle			6	6
	Eucalyptus Macrocarpa	Gum Tree			4	3
	Callistemon 'Kings Park Special'	Bottle Brush			4	4
	Callistemon salignus	White Bottle Brush			6	3
	Small Trees <6m Exotic					
	Lagerstroemia hybrids	Crepe Myrtle			5	3
	Prunus cerasifera 'Nigra'	Black Cherry Plum			5	4
	Pyrus calleryana cultivars	Ornamental Pear			6	5
Medium Trees 6m-10m	**Medium Trees 6m-10m Native**					
	Acacia implexa	Lightwood			8	4
	Allocasuarina littoralis	Black Sheoak			8	4
	Allocasuarina verticilata	Drooping Sheoak			8	4
	Allocasuarina luehmannii	Buloke			10	5
	Banksia integrifolia	Coastal Banksia			8	4
	Brachychiton acerifolius	Flame Tree	Semi	Deciduous	10	6
	Brachychiton populensis	Kurrajong			10	6
	Corymbia eximia	Yellow Bloodwood			9	7
	Eucalyptuss viridis	Green Mallee			8	8
	Geijera parviflora	Australian Willow			9	8
	Hymenosporum flavum	Native Frangipani			8	6
	Melia azedarach	White Cedar	Semi	Deciduous	10	8
	Medium Trees 6m-10m Exotic					
	Ceratonia siliqua	Carob Tree			10	8
	Fraxinus oxycarpa 'Raywoodii'	Claret Ash			10	8
	Fraxinus pennsylvanica var.	Urbanite/Cimmaron			10	8
	Gleditsia triacanthos 'Shademaster'	Honey Locust			10	10
	Jacaranda mimosifolia	Jacaranda			8	8
	Pistacia chinensis	Chinese Pistachio			8	8
	Pyrus ussuriensis	Manchurian Pear			8	8
	Ulmus Parvifolia	Chinese Elm			10	10
	Ulmus glabra	Golden Elm			10	10
	Zelkova serrata	Japanese Elm			10	8

Parks trees continued

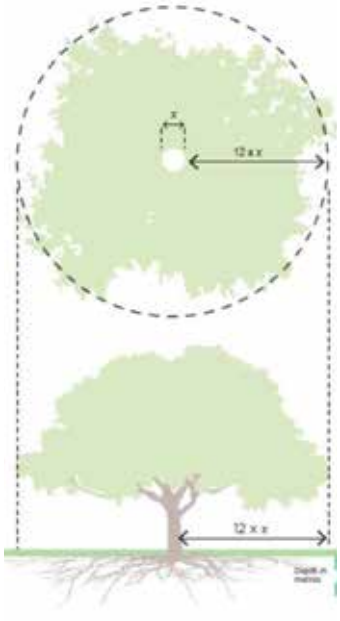
	Name		Foliage		Dimensions	
	Botanical Name	Common Name	Evergreen	Deciduous	Height/m	Width/m
Large Trees > 10m	**Large Trees 10m-18m Native**					
	Angophora costata	Smooth-barked Apple			15	10
	Corymbia citriodora	Lemon-scented Gum			15	10
	Corymbia maculata	Spotted Gum			18	10
	Eucalyptus camaldulensis	River Red Gum			15	12
	Eucalyptus leucoxylon 'Rosea'	Flowering Yellow Gum			15	12
	Eucalyptus mannifera	Brittle Gum			15	10
	Eucalyptus melliodora	Yellow Box			15	10
	Eucalyptus polyanthemos	Red Box			12	8
	Eucalyptus scoparia	White Gum			12	8
	Eucalyptus sideroxylon (sp.)	Iron Bark			15	10
	Ficus microcarpa var. hillii	Hill's Weeping Fig			12	10
	Grevillea robusta	Silky Oak			16	8
	Large Trees 10m-18m Exotic					
	Celtis sinensis	Hackberry			12	8
	Liquidambar styraciflua	Liquidambar			12	6
	Pinus pinea	Italian Stone Pine			15	12
	Pinus halepensis	Aleppo Pine			15	8
	Platanus x acerifoia	London Plane Tree			12	10
	Populus simonii	Simon Poplar			12	6
	Quercus canariensis	Algerian Oak			15	12
	Quercus ilex	Holly Oak			12	10
	Quercis palustris	Pin Oak			15	8
	Quercus robur	English Oak			12	10
	Ulmus x hollandica	Dutch Elm			18	12
Very Large Trees >18m	**Very Large Trees >18m Native**					
	Araucaria heterophylla	Norfolk Island Pine			25	10
	Eucalyptus cladocalyx	Sugar Gum			30	15
	Ficus macrophylla	Moreton Bay Fig			20	20
	Very Large Trees >18m Exotic					
	Cupressus (Various)	Cypress Tree			20	8
	Pinus canariensis	Canary Island Pine			30	10
	Cedrus atlantica	Blue Cedar			25	12
	Cedrus deodora	Himalayan Cedar			25	12

Appendix 2: Tree Protection Zone

Brimbank City Council follows industry based standards for Tree Protection Zone guidelines. The following content is a direct exert from:

https://www.melbourne.vic.gov.au/community/greening-the-city/tree-protection-management/Pages/tree-protection-policy.aspx

1. A Tree Protection Zone (TPZ) shall be established for the duration of any works near a tree.
2. The tree protection distance method outlined in the current Australian Standard will be used for the allocation of tree protection zones. The TPZ for individual trees is calculated based on trunk (stem) diameter (DBH), measured at 1.4 metres up from ground level. The radius of the TPZ is calculated by multiplying the tree's DBH by 12. For example; a tree with 40cm DBH requires a TPZ of 4.8 metres. The method provides a TPZ that addresses both tree stability and growth requirements. TPZ distances are measured as a radius from the centre of the trunk at ground level.



3. The Council's arborist must approve any modification to a tree protection zone

Table 6: Example Tree Protection Zone

Trunk Diameter (DBH)	Tree Protection Zone (TPZ)
10cm	1.2m
20cm	2.4m
40cm	4.8m
75cm	9m
100cm	12m

- The following are not permitted within a tree protection zone:
- Mechanical excavation on the road, footpath or any public space
- Stockpiling of building materials, debris or soil
- Vehicular traffic except on existing paved surfaces
- Installation of service pits or hatches
- Vehicular crossings
- Severing of tree roots with a diameter greater than 30mm
- Alteration of soil levels and structure

Appendix 3: Tree Valuation

The tree valuation formula is an established, industry based standard.

The following content is a direct exert from:

https://www.melbourne.vic.gov.au/community/greening-the-city/tree-protection-management/Pages/tree-protection-policy.aspx

Where a tree removal is approved by Council's arborist in relation to a development, the associated cost of the tree and its removal shall be paid by the property owner or representative prior to the removal.

The costs associated with removal of a public tree include:

A – Removal Costs	Amounting to the fees incurred by Council for physically removing the tree
B – Amenity Value	Calculated in accordance with Council's Amenity Formula.
C – Ecological Services Value	Calculated in accordance with the i-Tree valuation tool
D – Reinstatement Costs	Calculated in accordance with the greening required to replace the loss to the landscape incurred by the removal.

A - Removal Costs

Costs will be based on the current costs of tree removal. It includes the physical removal of the tree and the stump.

B - Amenity Costs

The following formula has been prepared to assist with calculating the monetary amenity value of a tree in Brimbank. When young trees with a 6cm trunk diameter or less will be replaced by another tree, there will be no amenity value charge. The Amenity Value Formula used follows the method used by City of Melbourne which has been derived from the formula (by Dr.Peter Yau, 1990) of the Maurer-Hoffman Formula. For more details please visit:

https://www.melbourne.vic.gov.au/community/greening-the-city/tree-protection-management/Pages/tree-protection-policy.aspx

Value (V) = Basic Value ($) x Species (S) x Aesthetics (A) x Locality (L) x Condition (C)

Read through the following formula definitions to calculate the tree amenity value:

Basic Value ($) 2013

The basic monetary value of a tree is determined by matching the trunk diameter at breast height (DBH) with its corresponding base value:

DBH cm	Base Value	DBH cm	Base Value	DBH cm	Base Value
6	$309.92	50	$21,522.33	100	$ 86,089.33
8	$550.98	55	$26,042.03	105	$ 94,913.49
10	$860.89	60	$30,992.16	110	$104,168.09
15	$1,937.00	65	$36,372.74	115	$113,853.14
20	$3,443.57	70	$42,183.77	120	$123,968.63
25	$5,380.58	75	$48,425.25	125	$134,514.58
30	$7,748.04	80	$55,097.17	130	$145,490.97
35	$10,545.94	85	$62,199.54	135	$156,897.81
40	$13,774.29	90	$69,732.35	140	$168,735.09
45	$17,433.09	95	$77,695.62	145	$181,002.82
				Base Value	

Species Factor (S)

A tree is assessed according to its known natural life span and its rate of growth in a particular environment. For example, a long-lived tree will be scored higher than a short-lived tree. Significant features to the tree will also modify how the tree is scored. Judgment regarding species factor must be made by a qualified Arborist.

Group	Characteristics	Example Species	Score
1	• trees of short life span (less than 50 years) • fast growth rate	*Prunus, Acacia, Virgillia, Laburnum*	**0.5**
2	• trees of short life span (less than 50 years) • slow growth rate	*Malus, Crataegus, Eugenia, Waterhousia, Pyrus*	**0.6**
3	• trees of medium life span (50 -150 years) • fast growth rate	*Populus, Liquidamber, Eucalyptus, Corymbia, Angophora, Grevillea, Melaleuca, Michelia, Salix, Casaurina, Hakea, Celtis, Acmena*	**0.7**
4	• trees of medium life span • (50 - 150 years) • slow growth rate	*Brachychiton, Fraxinus, Gleditsia, Jacaranda, Shinus, Phoenix, Melia, Robinia, Lophostemon, Liriodendron, Agonis, Meterosideros, Syzygium*	**0.8**
5	• trees of long life span (more than 150 years) • fast growth rate	*Cupressus, Platanus, Ficus, Pinus*	**0.9**
6	• trees of long life span (more than 150 years) • slow growth rate	*Ulmus, Quercus, Sequoia, Ginko, Araucaria*	**1.0**
Modifiers	• Environmental Weeds • dangerous (poor branch attachment) • undesirable characteristics (e.g. allergenic)	*Salix, Fraxinus rotundifolia, Pittosporum undulatum*	**-0.1**
	• a rare species in the locality • a special precious cultivated variety • a 'significant tree' registered by the National Trust • has special historical or other significance		**+0.1**

**Trees named are supplied only as examples in Melbourne conditions*

Aesthetics (A)

The aesthetic value of a tree is determined by the impact on the landscape if the tree were removed. This category is closely tied to the locality factor (L).

Aesthetic Factor	Score
Contributes little to the landscape	0.5
One of a group of close plantings	0.6
Wide plantings	0.7
Irregular spacing between trees; regular spacing one side	0.8
Street or pathway plantings, regular spacing both sides	0.9
Solitary feature specimen tree	1.0
Aesthetics (A)	

Locality (L)

The locality factor is determined by the tree's geographical situation. Trees in a capital city main street or boulevard score highest because of the stressful growing environment in which the tree has to survive. As the location becomes more rural, the significance of the tree diminishes

Locality Factor	Score
In undeveloped bushland or open forest	0.5
In country areas and country roads	1.0
In outer suburb areas and residential streets	1.5
In inner city suburbs	1.75
In City Park or Reserve; significant street near City Centre	2.0
In City Garden, City Square, Mall or City Centre secondary street	2.25
City Centre Main Street, Principal Boulevard	2.5
Locality (L)	

Tree Condition (C)

The tree condition value is determined by the corresponding total score of the assessment criteria.

Assessment Criteria	Criteria Condition	Score
Trunk	• solid and sound	5
	• sections of bark damaged/missing	3
	• extensive decay, hollow trunk	1
Growth	• >15cm twig elongation this season	3
	• 5-15cm twig elongation	2
	• <5cm twig elongation	1
Structure	• healthy, stable and sound	5
	• some deadwood and dead limbs	3
	• extensive dieback and deadwood	1
Pests and Diseases	• no pest/disease infestation	3
	• minor symptoms of infestation	2
	• advanced symptoms of infestation	1
Canopy Development	• full balance canopy	5
	• full but unbalanced, lop-sided	3
	• unbalanced and lacking full canopy	1
Life Expectancy	• >50 years	5
	• 10-50 years	3
	• <10 years	1
	Total Score	

Total Score	Tree Condition	Rating
6-9	very poor	0.2
10-13	poor	0.4
14-18	fair	0.6
19-22	good	0.8
23-26	excellent	1.0
	Tree Condition Rating (C)	

C - Ecological Services Value

The ecological benefits a tree provides will be calculated in accordance with the i-Tree valuation tool. This is peer-reviewed software from the USDA Forest Service that enables urban forest analysis and assessment and has been adapted for Australian conditions.

D - Reinstatement Costs

The level of reinstatement required will be determined by Council and will take into consideration the location, the significance, the biodiversity provision and the amenity of the tree. Reinstatement costs will also include a 24-month tree establishment fee and any treatment or Water Sensitive Urban Design (WSUD) measure deemed to be required to establish suitable replacement trees.

Appendix 4: *Local Government Act 2020* Compliance Statement

Section 9(1) of the *Local Government Act 2020* (Act) requires Council to give effect to the overarching governance principles, in the performance of its role. Section 9(2) of the Act specifies the governance principles as follows:

a) Council decisions are to be made and actions taken in accordance with the relevant law (Compliance with the law);

b) Priority is to be given to achieving the best outcomes for the municipal community, including future generations (Achieve best outcomes for the community);

c) The economic, social and environmental sustainability of the municipal district, including mitigation and planning for climate change risks, is to be promoted (Promote the sustainability of the municipality);

d) The municipal community is to be engaged in strategic planning and strategic decision making (Engage the community in strategic planning and decision making);

e) Innovation and continuous improvement is to be pursued (Strive for innovation and continuous improvement);

f) Collaboration with other Councils and Governments and statutory bodies is to be sought (Collaborate with all other levels of government and government agencies);

g) The ongoing financial viability of the Council is to be ensured (Secure the ongoing financial viability of Council);

h) Regional, state and national plans and policies are to be taken into to account in strategic planning and decision making (Strategic planning and decision making must take into account plans and policies in operation at all levels);

i) The transparency of Council decisions, actions and information is to be ensured (Council decisions, actions and information must be transparent).

In developing the Brimbank Tree Policy, Council has considered and given effect to the overarching governance principles, as summarised below:

	Governance Principle	Considerations
(a)	Compliance with the law	Not applicable for this Policy.
(b)	Achieve best outcomes for the community	This Policy seeks to ensure that this municipality reaches its target of 30% canopy cover for liveability for the future generations.
(c)	Promote the sustainability of the municipality	This Policy is aligned with Council's Climate Emergency Plan to ensure that future heatwaves can be mitigated through an extensive urban forest and canopy cover of 30%.
(d)	Engage the community in strategic planning and decision making	Not applicable for the Policy.
(e)	Strive for innovation and continuous improvement	Not applicable for the Policy.
(f)	Collaborate with all other levels of government and government agencies	This Policy supports Council's involvement in Greening The West which is a regional partnership seeking an increase in urban greening across western municipalities.
(g)	Secure the ongoing financial viability of Council	Not applicable for the Policy.
(h)	Strategic planning and decision making must take into account plans and policies in operation at all levels	Not applicable for the Policy.
(i)	Council decisions, actions and information must be transparent	Not applicable for the Policy.

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