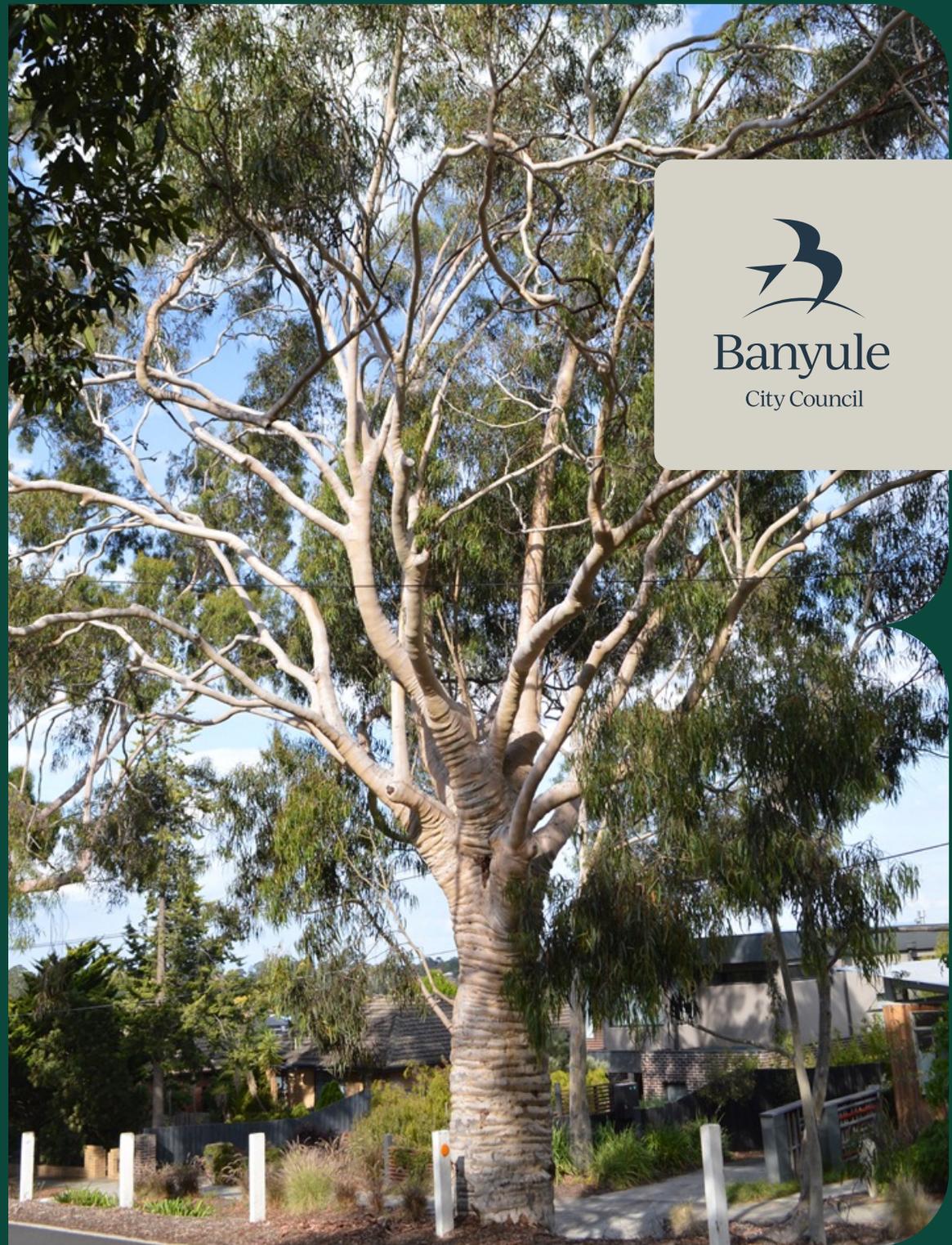


Urban Forest Strategy

Overview 2023-2033



Banyule
City Council

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Acknowledgements

Banyule City Council is proud to acknowledge the Wurundjeri Woi-wurrung people as traditional custodians of the land and we pay respect to all Aboriginal and Torres Strait Elders, past, present and emerging, who have resided in the area and have been an integral part of the region's history.

Our community is made up of diverse cultures, beliefs, abilities, bodies, sexualities, ages and genders. Council is committed to access, equity, participation and rights for everyone; principles which empower, foster harmony and increase the wellbeing of an inclusive community.

Banyule City Council would like to thank the local residents, organisations and groups who contributed to the development of this Strategy, including the Urban Forest Strategy Community Reference Group and the Banyule Environment and Climate Action Advisory Committee.

Message from the Mayor



Banyule residents have a strong connection to natural and green spaces, including its population of more than 150,000 public trees and many more on private land.

Banyule Council recognises the vital contribution that our urban forest makes to biodiversity and habitat, as well as neighbourhood character and amenity.

With increasing pressures from building growth and climate change, the ecosystem services that these trees provide, including shade and cooling, will be essential to making Banyule a liveable city for present and future generations.

This Urban Forest Strategy has been developed by working closely with the community and undertaking direction to include the community as joint custodians of the urban forest.

It outlines Banyule's vision for the long-term future for the urban forest and provides strategic management actions to get there over the short and medium term. This Strategy will support Council to plan, manage and maintain one of Banyule's highest-valued assets for the next 10 years.

A vision for Banyule's urban forest

This is the long-term community vision for Banyule's future urban forest:

Banyule's urban forest is resilient. It is thriving and people are aware and value the role of the urban forest for health and wellbeing and in making Banyule a great place to live.

The urban forest is managed as an essential asset for Banyule and decisions about the urban forest are fit for place and purpose, with space provided to support greening and increased tree canopy.

People work with Council and are active in the protection, management and maintenance of the urban forest.

We understand that this vision may not be fully realised for 50 years or more and it describes the far future state of the urban forest for Banyule.

It was developed collaboratively with the community and guides the strategic areas of focus, important areas of work and actions to take over the next 10 years. It was endorsed by Council in February 2022.

We have developed indicators to measure and report on the achievement of this vision. These are outlined in the Urban Forest Strategy Implementation Plan.

What is the urban forest in Banyule?

In February 2022, Council adopted a definition of the urban forest. This definition will assist Council officers and the community to understand the reach of this strategy and consider the urban forest improvements to be made across all areas.

Banyule's urban forest is the trees and green assets that exist in the urban area that are strategically planned, designed and managed, and the ecosystems, soils and water that support them.

This definition highlights that the Banyule urban forest:

- is made up of all trees and green assets (including public and private) that exist in the urban area (not just bushland)
- is a managed asset and therefore not a purely natural system of vegetation
- includes the soils and water needed to support resilience and healthy growth.

Executive summary

Banyule City Council has a long history of valuing and improving its management of the city's urban forest, trees and greening, and developed its first Urban Forest Strategic Plan in 2015. In 2019 Council declared a climate emergency and recognised the need for an updated approach to managing its urban forest.

The Urban Forest Strategy provides a summary of the:

- benefits of the urban forest
- challenges for urban forestry
- current state of the urban forest in Banyule
- strategic framework that will guide action (definition, vision, principles and strategic areas)
- major actions to be taken over the next 10 years
- measures of success.

The Urban Forest Strategy builds on the foundation of the 2015 Urban Forest Strategic Plan (UFSP).

All nine goals set in the 2015 UFSP match to a principle and strategic area in the Urban Forest Strategy.

Of the 40 measures that were identified in the 2015 UFSP:

- 26 are retained and enhanced in the Urban Forest Strategy
- 7 are replaced with an improved alternative target
- 7 are discarded as no longer appropriate.

Of the 94 actions that were set in the 2015 UFSP:

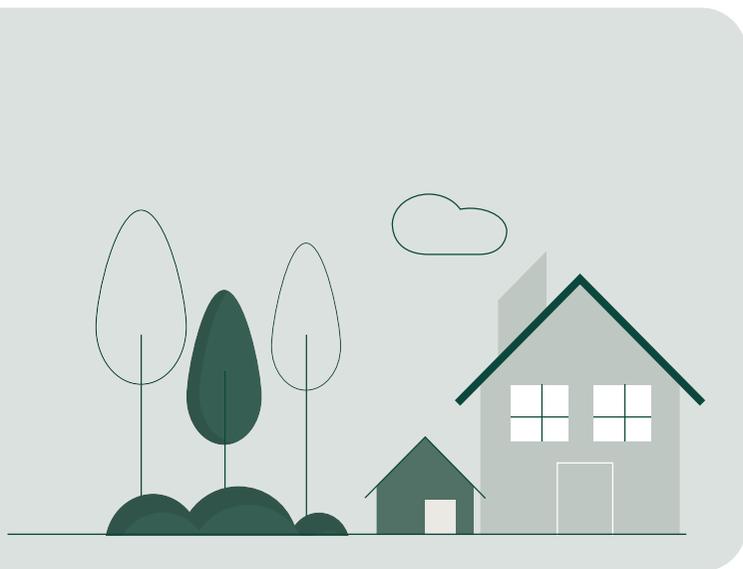
- 15 have been achieved
- 41 are retained in the Urban Forest Strategy
- 34 are replaced with an improved alternative action
- 4 are discarded as no longer appropriate.

The refreshed strategy has been developed with input from a wide range of stakeholders, including the Urban Forest Community Reference Group, Banyule Environment and Climate Action Advisory Committee (BECAAC), councillors, Council officers, other agencies and the wider Banyule community through Shaping Banyule (Banyule's community engagement portal) and public forums.

The feedback from these stakeholders has informed the future direction by:

- clarifying what the term urban forest means for Banyule
- drafting a vision for the urban forest (a 50+ year vision)
- confirming the five principles by which the urban forest will be managed
- developing six key directions with major actions for Banyule
- providing feedback on the actions.

The structure of the Urban Forest Strategy and the relationship of the vision to the measurements of success are in **Figure 1**.



Urban Forest Strategy principles

There are five urban forest principles that provide the focus for Council in the implementation of Banyule's Urban Forest Strategy. These principles were developed collaboratively with the community and councillors and were endorsed by Council in February 2022.

The urban forest principles are:

1. We believe the urban forest is an essential asset for Banyule, shared by all and crucial for the health and wellbeing of the community and natural environment.
2. We believe a healthy urban forest is the result of strong partnerships between Council and community.
3. We act today to respond to the changing climate and to leave a positive legacy for the future community, and we act responsibly, using evidence-based practice in our leadership and management of the urban forest.
4. We plan, design and deliver for the people, places and natural environments of Banyule, including:
 - a. Climate change and reduction of the urban heat island effect
 - b. Liveability, amenity and neighbourhood character
 - c. Banyule's ecosystems and biodiversity
5. We protect and enhance Banyule's natural environment to care for flora and fauna.

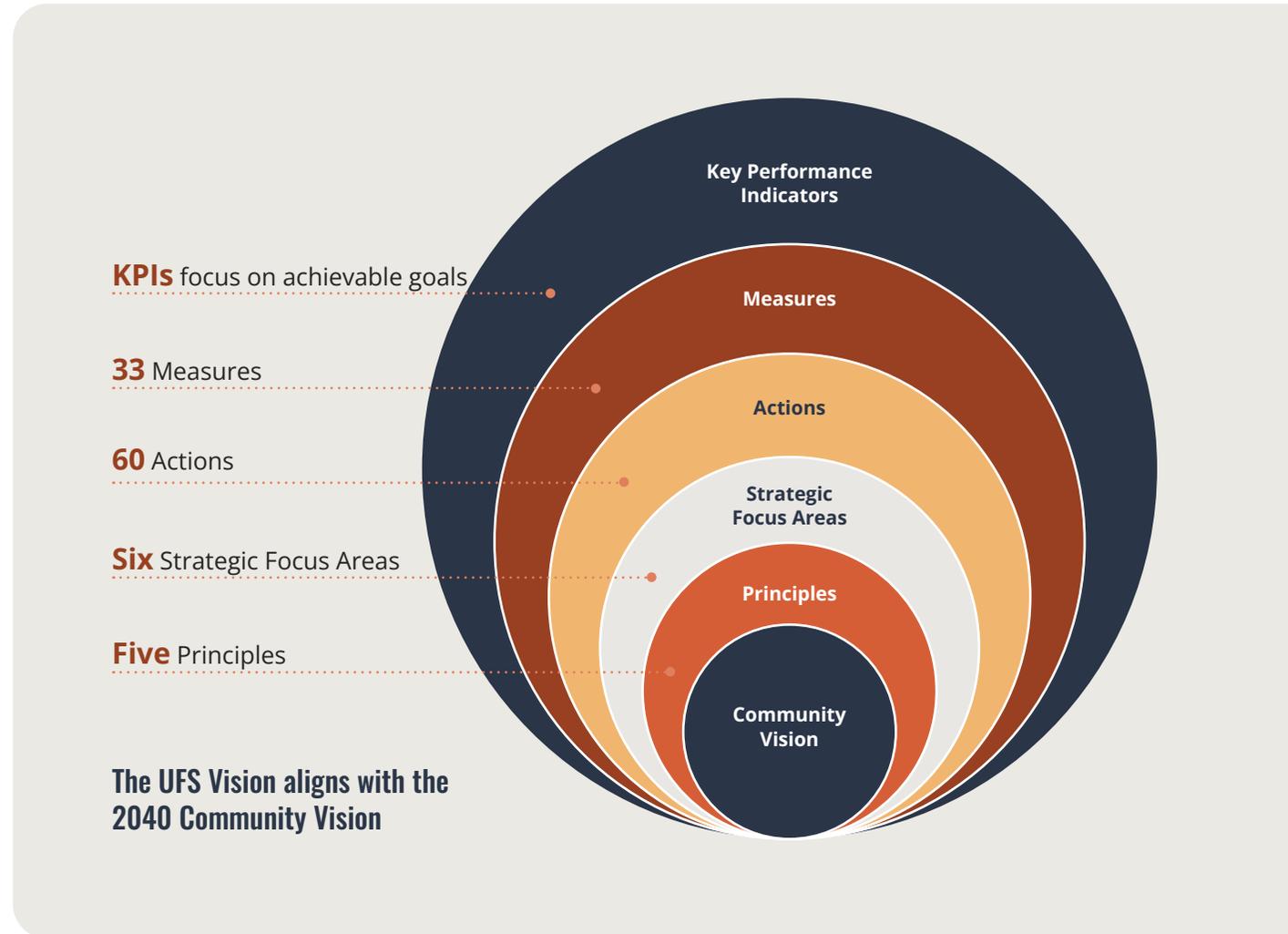


Figure 1. The structure of the Urban Forest Strategy



The Urban Forest Strategy emphasises improving governance and management along with building the capacity of all parts of Council to integrate the urban forest needs into their work. This approach will see greater efficiencies in the planning, design and delivery of infrastructure as green assets are managed alongside and in concert with other non-living (grey) infrastructure.

Urban Forest Strategy focus areas

These six key and strategic focus areas were developed in collaboration with the community and reflect the areas of work most needed to be taken to achieve the Urban Forest Vision.

Each strategic area has a series of major actions to be implemented over the short- and medium-term. Key performance indicators (KPIs) will assist with measuring and reporting on success and supporting a continuous improvement process for the management of the urban forest.

Six strategic focus areas will be delivered using a combination of existing and new staff resources, new grant funding, community and volunteer resources and new initiative funding.

The strategic focus areas are:

1. Prioritise urban forest improvements in the most vulnerable suburbs and places across Banyule
2. Increase the diversity of the urban forest for biodiversity and habitat with ground cover and shrub layer plantings
3. Manage the urban forest across public and private land for resilience to climate change
4. Take a long-term, asset management approach to the urban forest
5. Build and maintain partnerships with others in the protection and management of the urban forest.
6. Integrate urban forest principles in all parts of Council services.



Under the six strategic focus areas there are 60 actions described to allow immediate and ongoing work which will respond to the challenge that the urban forest faces, including impacts of climate change and increasing urban development.

With this Urban Forest Strategy, Council will focus its efforts on the actions needed today and over the next 10 years so that by 2033, Banyule is well on its way to achieving the long-term Urban Forest Vision.

We have established 33 measures with reporting intervals to report on the progress towards the vision over the life of the Strategy.

We have also defined Key Performance Indicators (KPIs) to focus reporting on the critical outcomes.

Specific, achievable and timely measures have been set for:

- canopy cover across all suburbs (30% by 2050 with no loss in suburbs exceeding the target)
- canopy cover across the footpath and local road network (45% by 2050 with no loss in suburbs exceeding the target)
- Canopy cover across the open space shared path network and surrounding playgrounds -50% by 2050

In addition to the metric KPIs, the development of an endorsed tree management framework will include clear and transparent process, procedure and applications, including but not limited to:

- managing tree risk
- processes for removal
- process for reporting and customer engagement
- planning planting and species
- managing complaints and disputes.

This action will integrate existing policy and process and develop new outcomes where gaps exist.

The Urban Forest Strategy will be reviewed every four years with annual results published in Banyule's State of the Environment report.



Banyule's urban forest today

To plan for the future of the Banyule urban forest, it is important to first understand the current state of the urban forest.

This section explores the state of the urban forest using the available data from Council, the Victorian Government (Vegetation Change 2014-2018; Vegetation Extent 2021; Planning Scheme Zones) and the Federal Government Socio-Economic Indexes for Areas (SEIFA) as well as literature on urban forestry. This section provides a snapshot of the current state of Banyule's urban forest.

Banyule's places

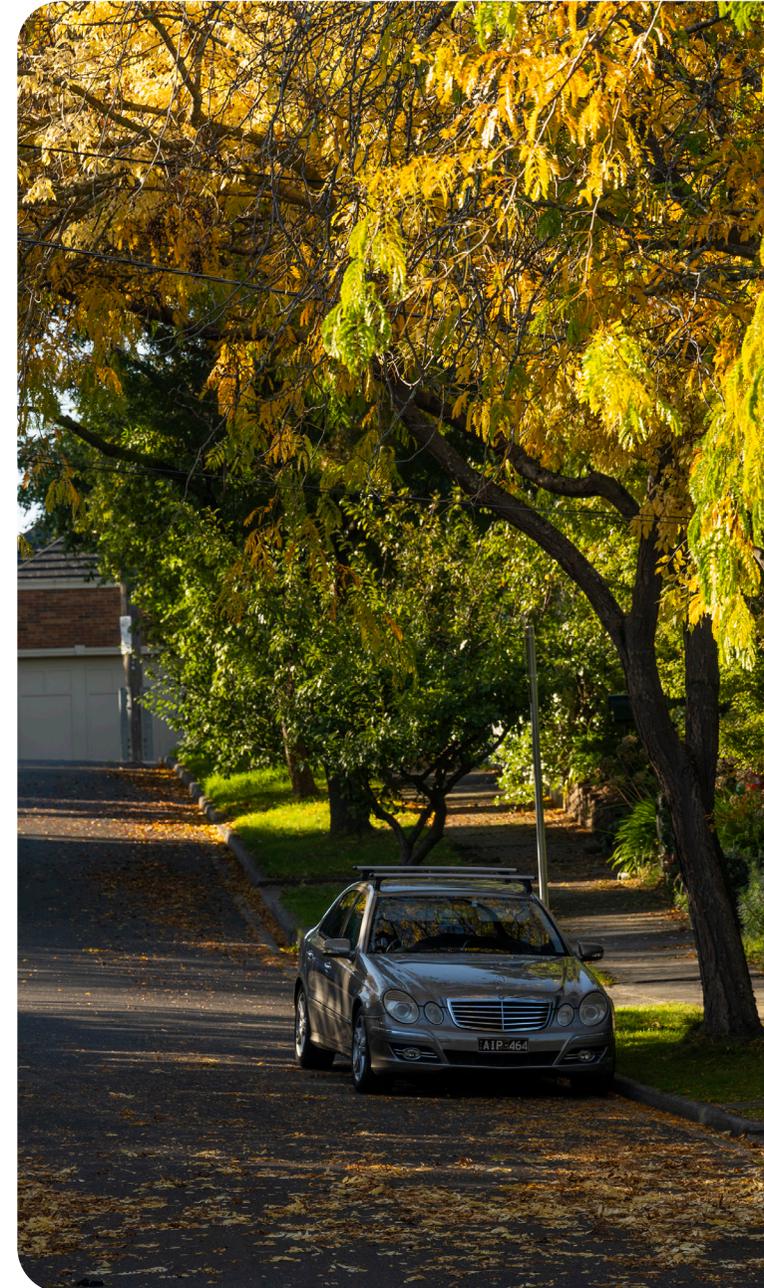
The diverse character of Banyule's urban forest and local neighbourhoods means it is important to take a place-based approach to urban forest management. To support this, we have considered the city as a whole, as well as its specific places, such as neighbourhoods, suburbs, natural areas and water catchments.

NEIGHBOURHOOD CHARACTER

Neighbourhood character is the way buildings, vegetation and the topography relate to each other to create a visual sense-of-place. It's what makes one place different from another.

The vegetation and trees that make up the urban forest have a significant impact on character. The Neighbourhood Character Strategy 2012 and Residential Neighbourhood Character Policy assist developers to respect the existing character and/or contribute to the preferred character of an area.

The Neighbourhood Character Strategy lists five types of character areas, each with specific reference to the types of vegetation that contribute to the existing and future desired character.



Tree canopy cover in Banyule

Areas of Banyule with the lowest canopy cover are in the north-west and south-west parts of the Local Government Area

DISTRIBUTION OF CANOPY COVER

The urban forest canopy is not evenly distributed across Banyule (Figure 2 and Figure 3).

Data provided by the Victorian Government show that residential areas with lowest canopy cover are in the north-west of Banyule, in particular Bundoora. The Heidelberg West Business Park has very low canopy cover, typical of industrial estates across Melbourne.

The southern area of Lower Plenty encompasses the floodplain of the Yarra River which is still used for grazing and is the location of a golf course. Both these land uses have low levels of canopy cover.

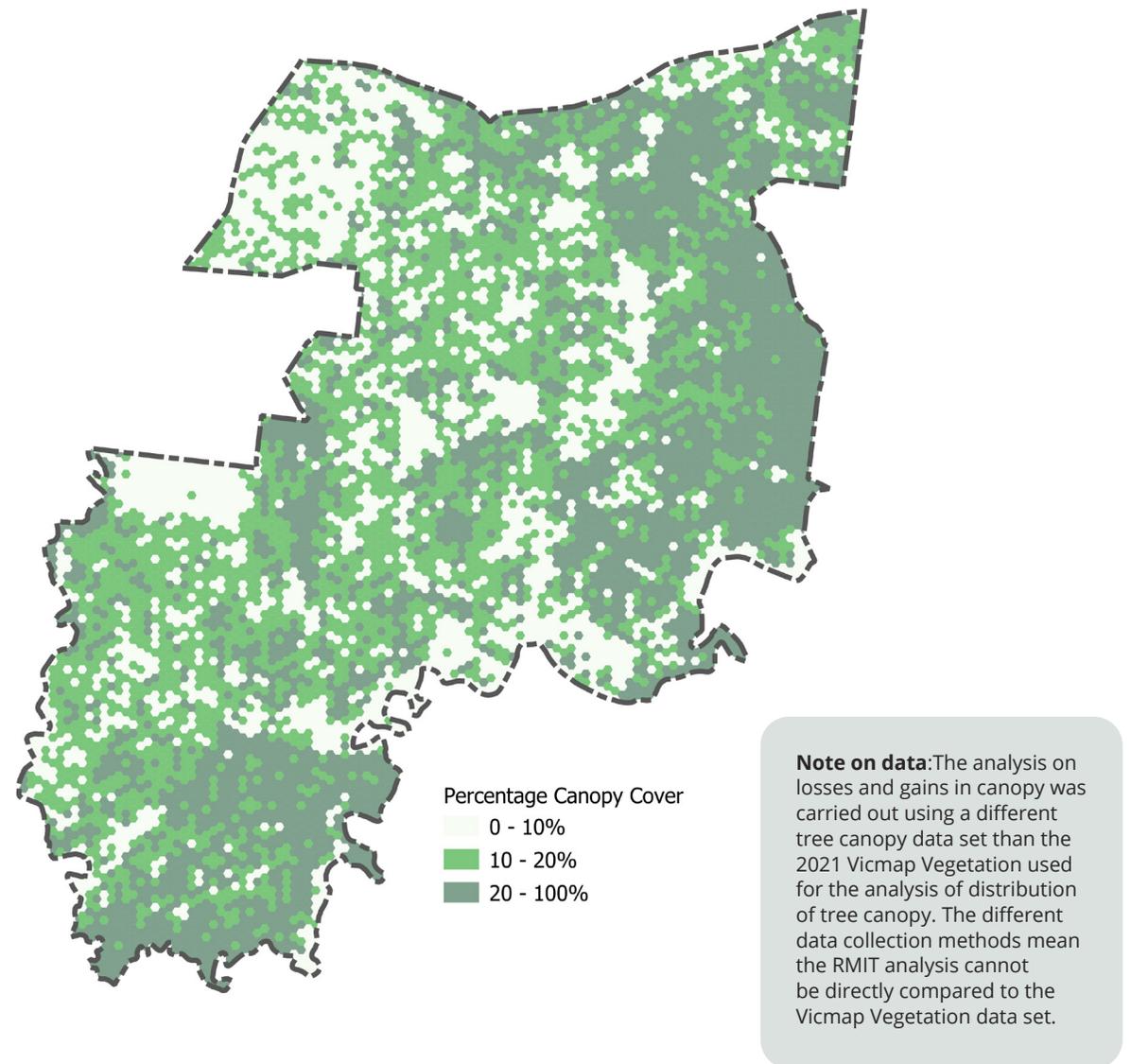


Figure 2. Tree canopy cover across Banyule. Cover is averaged to hexagonal mesh with 100 m long sides. Suburb boundaries are represented by thin black lines. Data collected, quality assured and supplied by the Victorian Government as part of the Vicmap data set released in 2021.

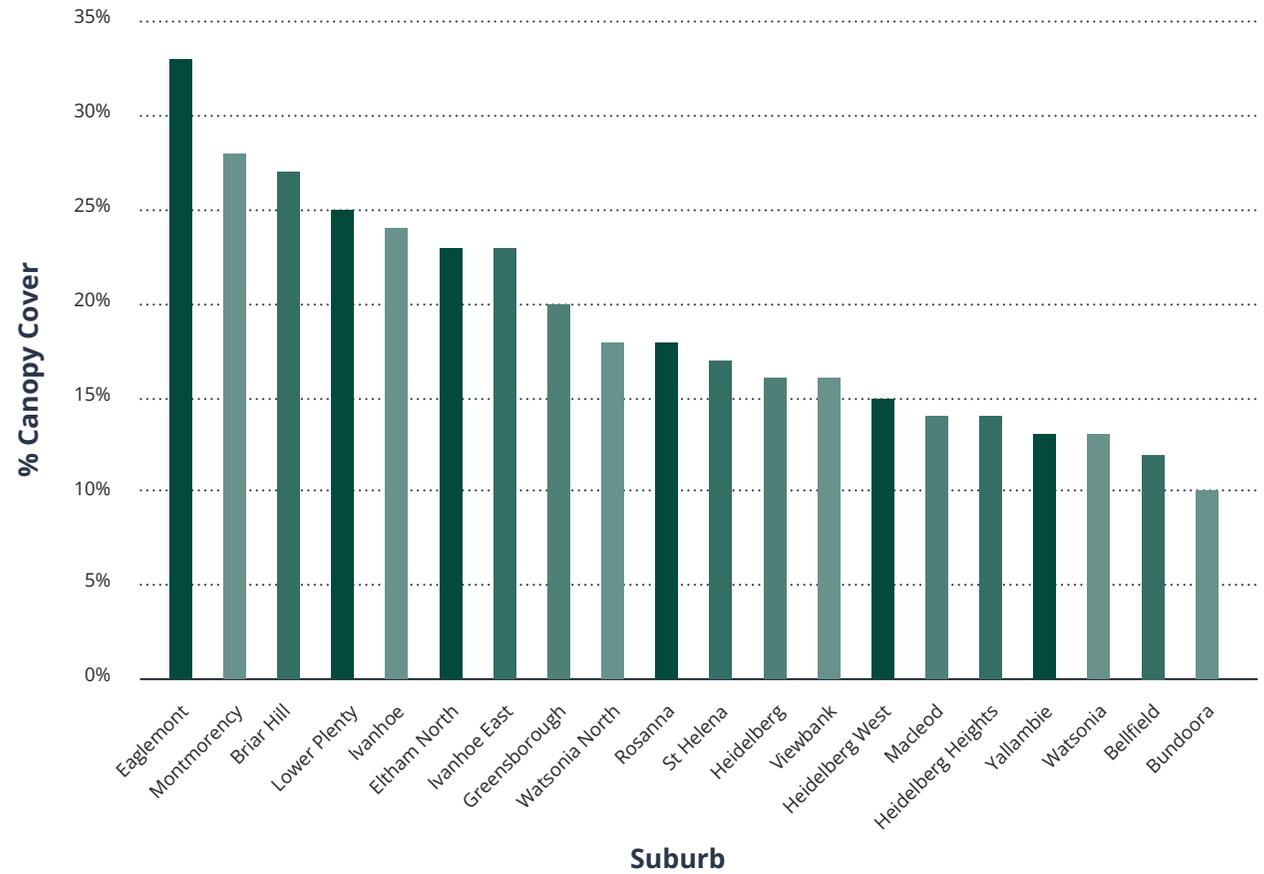


Figure 3. Tree canopy cover by suburb. Data collected, quality assured and supplied by the Victorian Government as part of the Vicmap data set released in 2021.



Figure 4. Images from areas of Banyule with low canopy cover: Taunton Drive in Bundoora (top), Orthla Avenue in Heidelberg West (middle) and Orsova Court in Bundoora. Source: Google Maps

Urban forest equity

The uneven distribution of canopy means the benefits of the urban forest are not felt equally across the population. This is problematic when low canopy cover coincides with the location of more vulnerable communities.

The spatial distribution of the Socio-Economic Indexes for Areas (SEIFA), and the Index of Relative Social Advantage or Disadvantage (IRSAD) in Banyule show that areas of disadvantage are concentrated in the western areas of Banyule, in particular Bundoora, Watsonia, Heidelberg West, Heidelberg Heights and Bellfield.

Greensborough has a mixture of advantage and disadvantage, and most of the eastern area of Banyule shows relative social advantage with respect to Victoria as a whole.



Canopy over footpaths and local roads

Trees in streets provide shade for daily activities and influence the way that people access and experience active travel options such as walking and cycling.

Shade from trees provides protection from UV exposure and a comfortable walking environment. Closely spaced shade trees are described as an essential ingredient for designing 'walkable communities for pedestrians'. Street trees also make a substantial contribution to the visual attractiveness of the streetscape and provide important habitat and movement pathways for animals. The value the community places on trees in streets is reflected in the higher prices paid for houses on leafy streets.

Figure 5 and **Figure 6** show low canopy in the streetscape of Bundoora. **Figure 7** shows the impact of shaded streetscape in Ivanhoe East which is more amenable to walking.

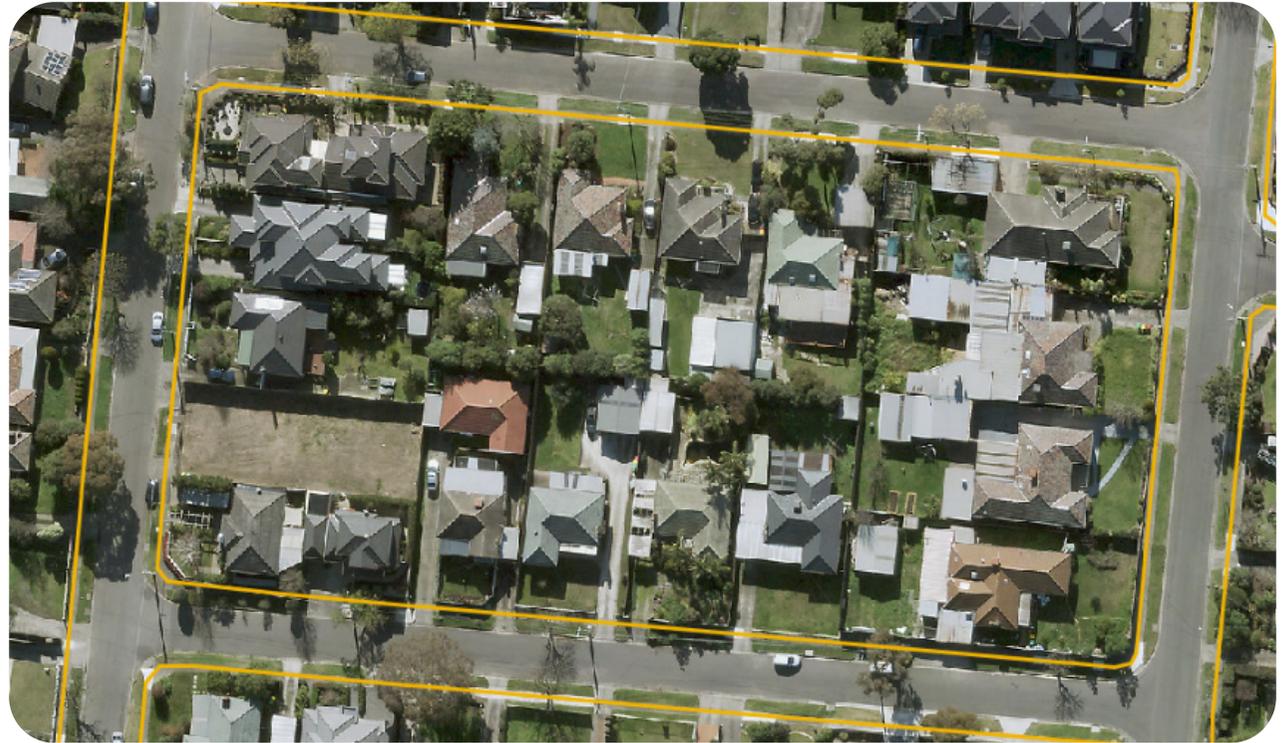


Figure 5. Poorly shaded footpaths in Bundoora. Source: Banyule City Council



Figure 6. Streetscape view of poorly shaded footpaths in Bundoora. Source: Google Maps



Figure 7. Streetscape view of well shaded footpaths in Ivanhoe East. Source: Google Maps

Diversity and age of public trees

DIVERSITY OF SPECIES

Overall, Banyule's species-level diversity at the whole of city area is healthy. **Figure 8** shows the current diversity of species in Banyule's recorded public street tree population (note: current tree records focus on street trees and high use parks, with most of the city's natural area park trees yet to be included in the inventory).

The data shows that of the five dominant species, no single species contributes more than 7% of the public tree inventory.

The most dominant tree is *Eucalyptus melliodora* or Yellow Box, with 6% of the recorded population (7500 out of 125,000 trees).

While the overall diversity of the urban forest tree population is good, there are some neighbourhoods where street trees are much less diverse. In the Semi Bush and Bush Woodland precincts, more than 25% is made up of *Eucalyptus melliodora*.

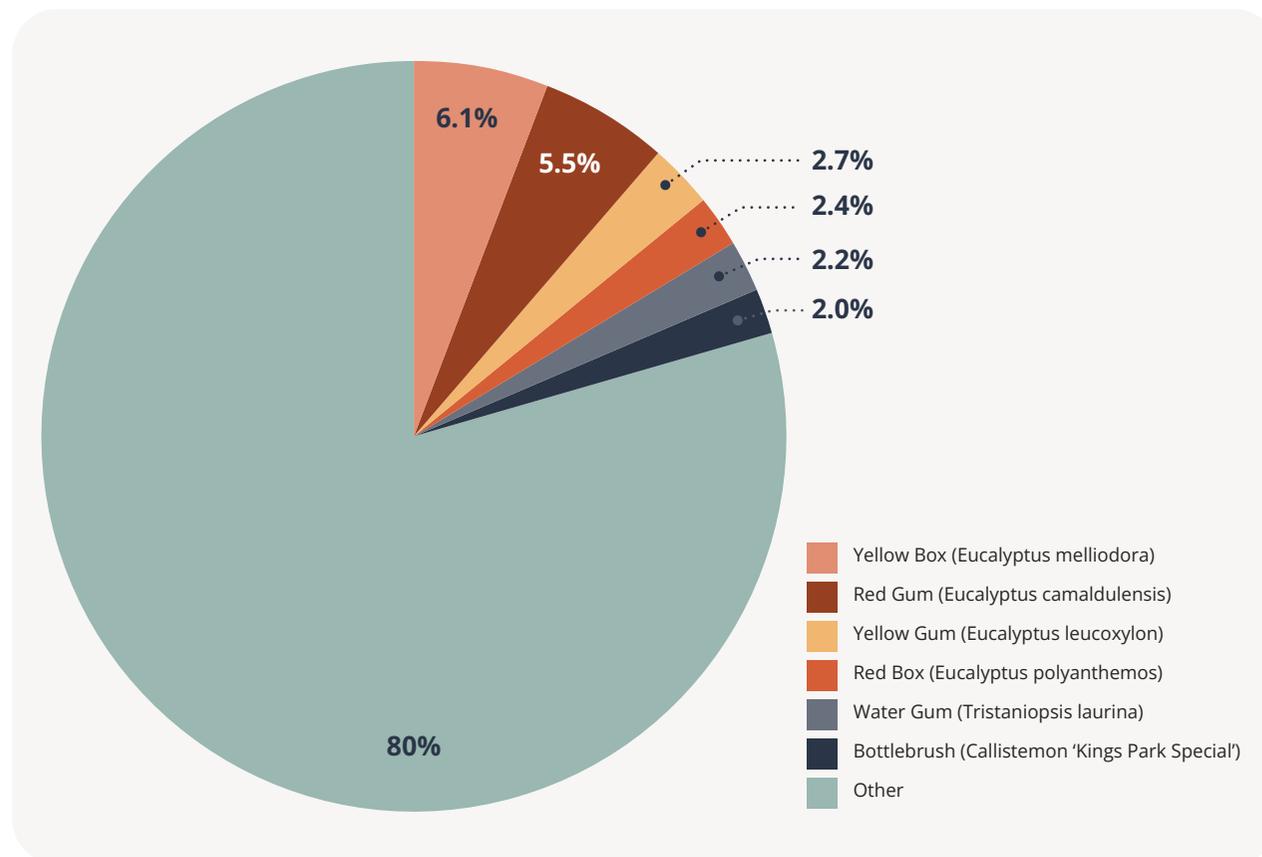


Figure 8. Public tree species in Banyule, based on analysis of Council's tree inventory which includes all street trees and some park trees.

DISTRIBUTION OF AGE

Figure 9 shows the age of public street trees across Banyule. There is not available data for date of planting prior to 2016, so tree age has been estimated.

The majority of trees in the 'mature' or younger category have an estimated lifespan of over 30 years. Most trees that are in the 'senescent' category are shorter lived, with a lifespan of less than 30 years.

Most of the street trees in Banyule are mature, a phenomenon seen across each of Banyule's neighbourhoods. In part by nature of their large area, the Garden Court and Garden Suburban Precincts contain the majority of these aging trees.

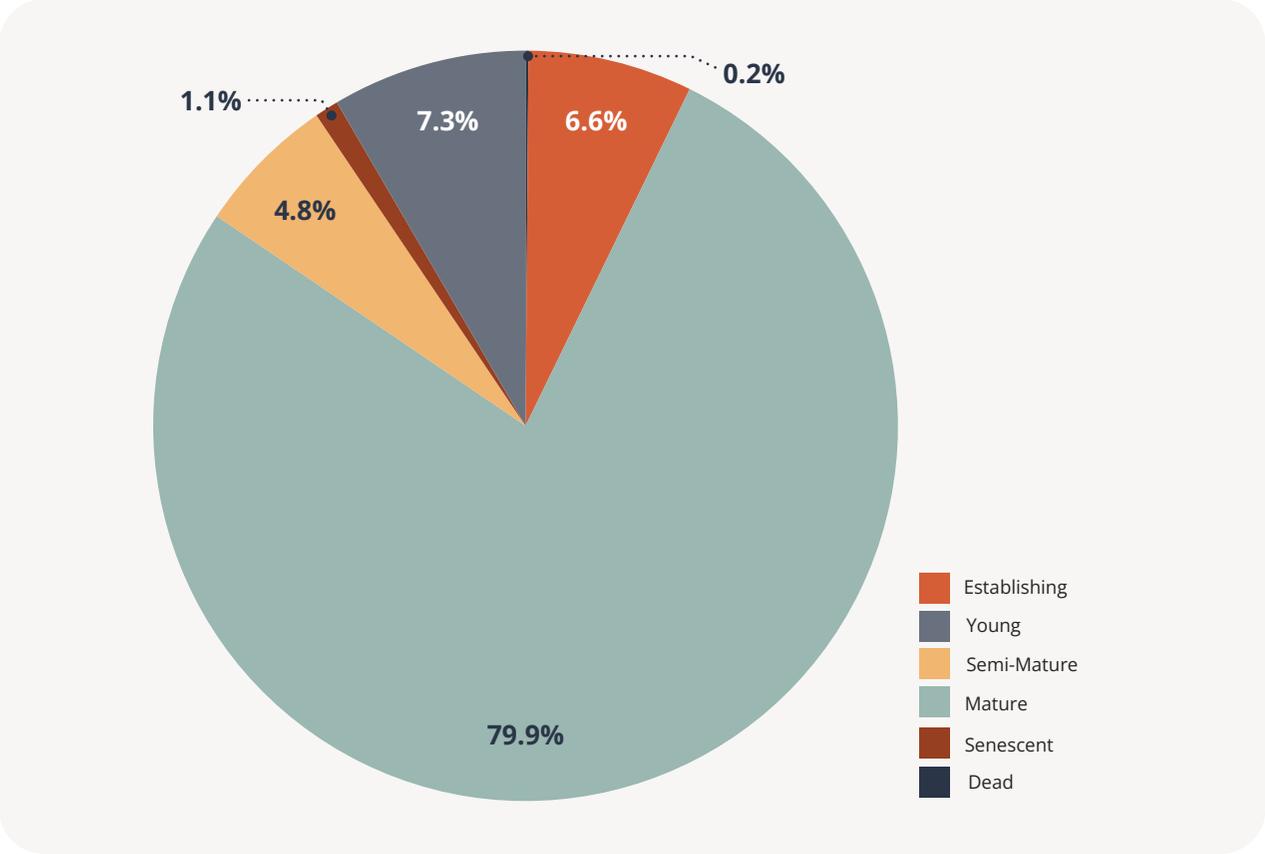


Figure 9. Public tree age across Banyule, based on analysis of Council's tree inventory which includes all street trees and some park trees.



Climate vulnerability

The impact of climate change on the vulnerability of the most common trees in Banyule shows that under an extreme climate change scenario (3°C increase in mean annual temperature by 2090), common trees that are well adapted to the present climate will become very vulnerable to future conditions.

Under an extreme climate future (3°C increase in mean annual temperature by 2090), 40% or more of the public tree population would have moderate to high vulnerability to projected climate change.

Under a more moderate climate scenario, over 20% of the most common tree individuals may show increased vulnerability to climate change.

This projected vulnerability is based on climate vulnerability data used to assess the City of Melbourne's street tree climate vulnerability and CSIRO's climate analogues (**Table 1**).

Table 1. Climate change scenarios

CURRENT CLIMATE

- Mean annual temp 16.4°C
- Extreme maximum temperature 44°C
- Extreme minimum temperature of -2.4°C

MODERATE CLIMATE CHANGE SCENARIO

- 0.8 °C increase in mean annual temperature to 17.2°C
- 0.5 °C increase in extreme maximum temperatures 44.5°C
- 0.5 °C increase in extreme minimum temperatures to -1.9°C
- **Climate changing to resemble Albury-Wodonga**

EXTREME CLIMATE CHANGE SCENARIO

- 3 °C increase in mean annual temperature to 19.4°C
- 2 °C increase in extreme maximum temperature to 46°C
- 2 °C increase in extreme minimum temperature to -0.4°C
- **Climate changing to resemble inland NSW towns of Dubbo, Parkes and Forbes**





Where is Banyule's urban forest most vulnerable?

A central tenet of the Urban Forest Strategy is that actions should target places in greatest need. To determine where these places are, we looked at the available data to assess the areas of highest need i.e. those that were most vulnerable.

Determining high priority places

There are many ways to define where both the urban forest and the community are most vulnerable and where priority action is needed. Spatial analysis using overlaying data about vegetation in an area and how the community uses that area, is one way we will rank the importance of action in different areas.

Having access to good quality, well-collated data about the trees and vegetation and their urban environment is critical to the delivery of best practice urban forestry. Banyule, the Victorian Government and others have a range of data available that has assisted with the analysis of urban forest vulnerability in Banyule. As data improves, the accuracy of prioritisation will improve.

Data for this analysis has come from:

- Banyule's Tree Inventory (2021)
- Vicmap Vegetation Tree Extent Data (2021)
- Victorian planning scheme zones (2022)
- Socio-Economic Indexes for Areas SEIFA (2016)
- Metropolitan Melbourne Heat Vulnerability Index (2018)
- Victorian Planning overlays, specifically Land Subject to Inundation Overlays (LSIO) and Urban Floodway Zone (UFZ) (2022)

PRIORITISATION MATRIX

A draft prioritisation matrix has been applied to a series of urban forest data to demonstrate the approach and results. The matrix proposes a method to collate and assess climate, urban forest and socio-economic data (historic, current and emerging) to assign weightings against actions.

The matrix is intended to be used as living tool and will be periodically reviewed to refine its application against emerging data and trends.

While there are many elements that could be included in the matrix, the following six elements of the urban forest were considered important to assess priority places for Banyule. The features characterising areas considered more vulnerable or more in need of urban forest action are in brackets.

- Existing canopy cover (Low canopy cover)
- Socio-economic disadvantage (High levels of socio-economic disadvantage)
- Biodiversity (Low levels of biodiversity/habitat)
- Urban heat islands (High levels of urban heat)
- Walking routes (Priority walking and cycling routes present and opportunities for connectivity)
- Flooding hot spots (Nuisance flooding)

Other factors that can be included in the prioritisation matrix in the future include:

- Places with capacity for storm buffer/wind break
- Places that can accommodate large trees
- Relative diversity of tree species
- Trees reaching the end of their life (useful life expectancy - ULE)
- Areas with upcoming maintenance activities or capital works planned e.g. roads, footpaths, traffic calming infrastructure
- Active Transport Routes, such as shared user trails
- An intersectional Gender Impact Assessment (GIS)

EMERGING PRIORITY PLACES FOR URBAN FOREST ACTION

The analysis of data using the draft prioritisation matrix shows that the high priority areas for intervention and urban forest improvements are:

- Bellfield
- Bundoora
- Eltham North
- Greensborough
- Heidelberg
- Heidelberg Heights
- Heidelberg West
- Ivanhoe
- Viewbank
- Watsonia

These suburbs have a range of factors to make them priorities. For example, Bundoora has low canopy cover and higher disadvantage while areas of Ivanhoe East are prioritised for their pedestrian activity, urban heat and proximity to biodiversity areas.

Greensborough, Watsonia and Yallambie have lost significant areas of vegetation since the canopy baseline was taken, due to the construction of the North East Link project. Re-establishing that canopy will require large efforts by the Victorian Government in coordination with Banyule.





Monitoring and evaluation of this Strategy

This Urban Forest Strategy has been prepared with a vision for the far-future (50+ years) and with a set of principles, strategic focus areas and major actions to be implemented over a 10-year period.

The implementation of the Strategy is to be managed by the Parks and Natural Environment department, however there is a role for all areas of Council. Being accountable to the community on the delivery of the Strategy is to be done through measures of success that will be reported, with the timeframes and data sources detailed later in this document.

It is recommended that the Strategy is reviewed after five years to assess, refine and update major actions.

It is important that Council can track its progress towards the Urban Forest Vision, against the achievement of the ten-year strategic areas and against the major actions.

To support the monitoring and evaluation of the Strategy, there are three scales of measures:

1. A series of **Key Performance Indicators** (KPIs) – to be measured throughout the life of this Strategy
2. A series of **indicators** to measure progress on the Vision – these are to be measured throughout the life of this Strategy and beyond
3. A series of **measures** that have been carried over from the 2015 Urban Forest Strategic Plan

Key Performance Indicators of major actions

To drive the performance of the Strategy, three **Key Performance Indicators** (KPIs) are used:

1. Canopy cover across all suburbs - 30% by 2050 with no loss in suburbs exceeding the target
2. Canopy cover across the footpath and local road network - 45% by 2050 with no loss in suburbs exceeding the target
3. Canopy cover across the open space shared path network and surrounding playgrounds – 50% by 2050

SUBURB CANOPY COVER TARGET

Banyule has committed to achieving 30% canopy cover across all suburbs by 2050.

With the principle that the urban forest should be shared by all the communities in Banyule, this level of canopy cover should be the minimum target for all suburbs, not just for Banyule as a whole. **Figure 10** shows the current canopy cover in Banyule’s suburbs and the results of modelling additional canopy gain from new and vacant street tree plantings.

Although one suburb currently exceeds the 30% target, and some only require a small addition of canopy by 2050 to achieve the target, the majority of Banyule suburbs need substantial increases over current canopy to achieve the target of 30%.

Major canopy gain outside of street tree and open space planting is required to achieve the target.

The additional canopy needed to reach the desired 30% target across all suburbs will need to be met through:

- Private land canopy gain and gains on land held by other authorities
- Growth of canopy from existing established trees
- Growth of canopy in open space and Council-managed sites from the established trees
- Changing the way that public trees are planted in roadways and other Council land that would require significant infrastructure changes to give them more space and water.

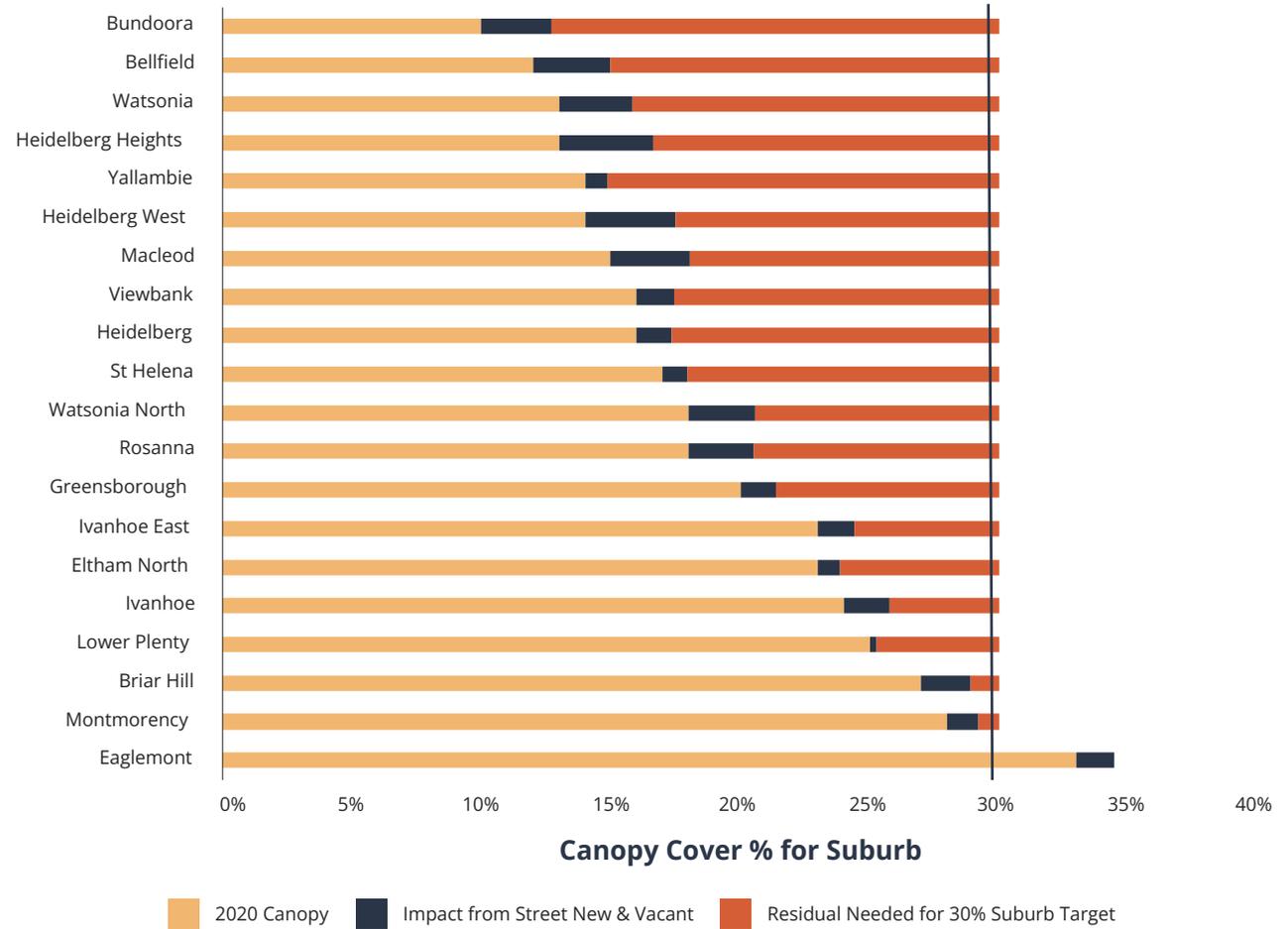


Figure 10. Suburb canopy cover - gap to 30% Target (yellow bars indicate current canopy, blue bars indicate projected canopy increase from street tree planting, orange bars indicate the gap between projected canopy cover and needed canopy cover).

FOOTPATH AND LOCAL ROADS CANOPY COVER TARGET

Banyule has committed to achieving 45% canopy cover across the footpath and local road network by 2050

The current extent of tree canopy cover of public footpaths across the city was measured by analysing data sets that map the current urban forest canopy and footpaths along streets and in parks and reserves.

The inequality of existing canopy by suburb footpath was in line with the canopy cover of the suburb as a whole described above. Suburbs with long established street trees have much better canopy cover over footpaths, making walking more accessible and inviting (**Figure 11**).

The potential future increase in footpath canopy cover was estimated by creating a ‘future canopy’ data set that modelled future canopy increases from tree planting in known vacant tree planting sites and the growth of trees that have been planted recently.

OPEN SPACE PATH NETWORK CANOPY COVER TARGET

Banyule has committed to achieving 50% canopy cover across the open space path network by 2050

Following the principle of shade for daily activities in open spaces, including walking, exercising, cycling and visiting playgrounds, the Draft Urban Forest Strategy proposes the open space path network and surrounding playgrounds canopy target is 50% by 2050.

Footpath Canopy Cover by Suburb

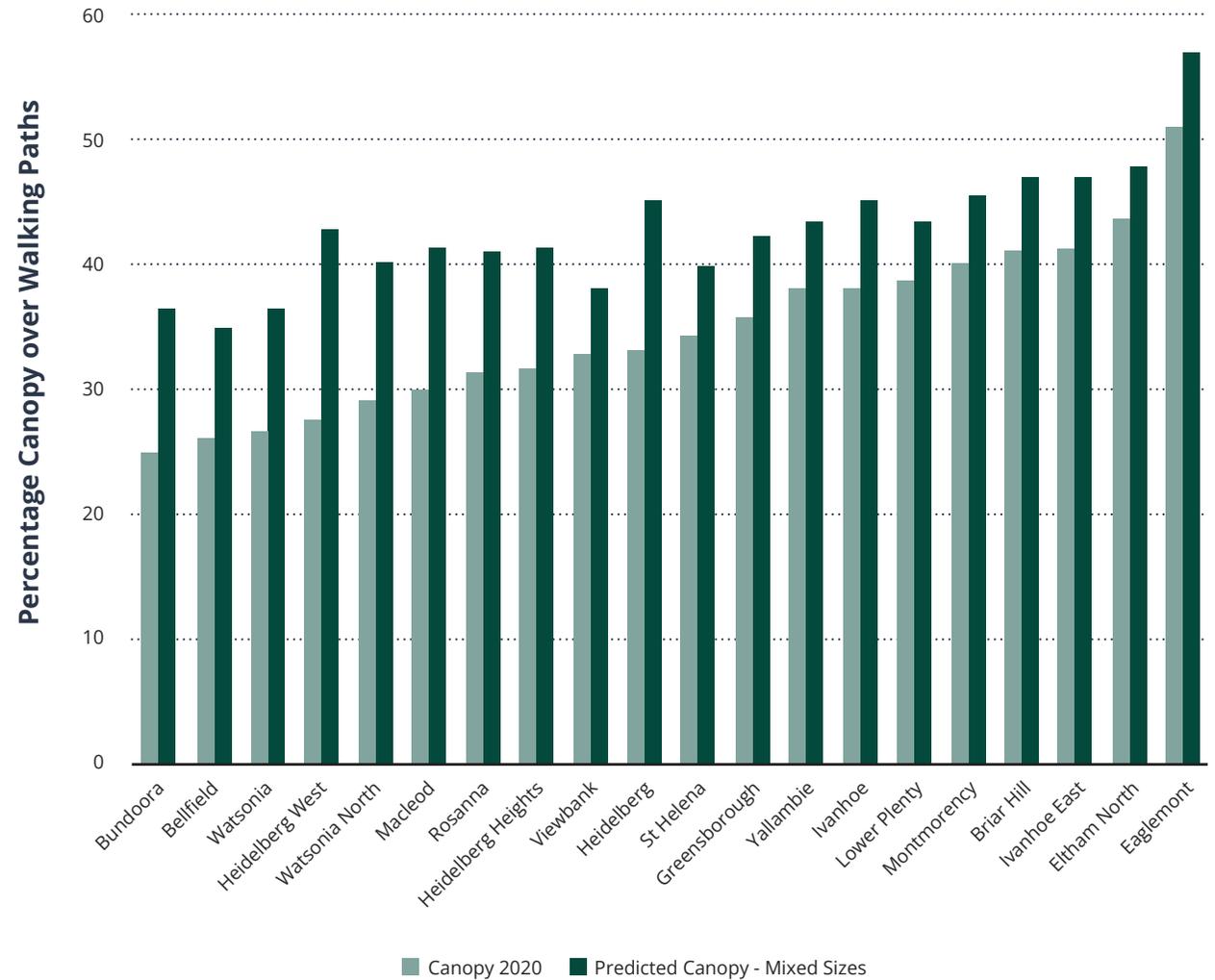


Figure 11. Footpath canopy cover - current and predicted

Monitoring progress towards the Urban Forest Vision

The Banyule vision for the urban forest is a long-term statement.

Indicators for the four core aspects to the vision have been developed to assist Council to monitor and report on progress (Figure 12). The indicators, source of information and frequency of collection are outlined in the Urban Forest Strategy: Background Technical Report.

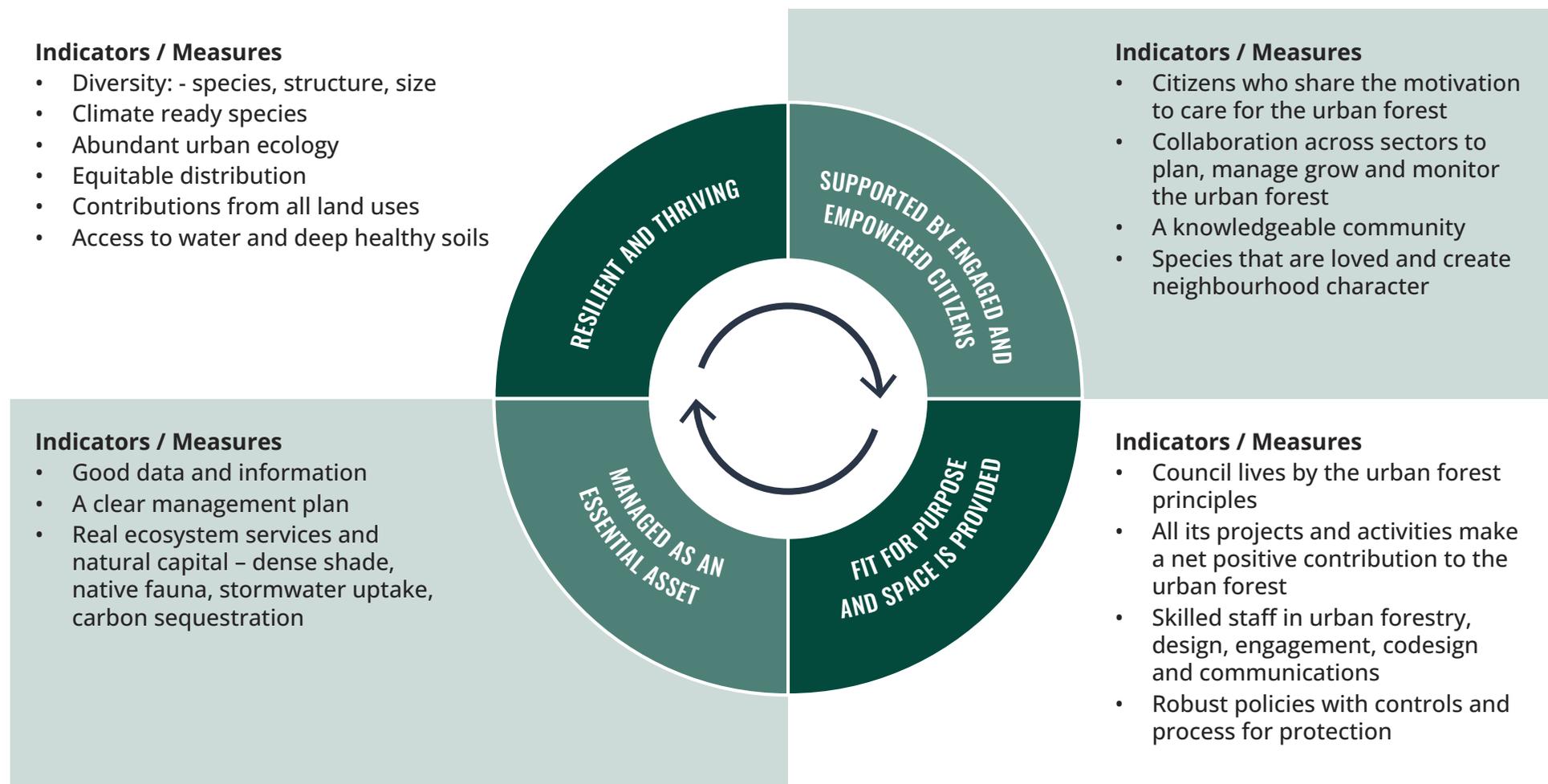


Figure 12. Indicators to assist Council to track progress towards achieving the Urban Forest Vision

Strategic areas, actions and timeframes

The Strategy outlines six key strategic areas. Each strategic area has a series of major actions to be implemented over the short- and medium-term.

Key Performance Indicators assist with measuring and reporting on success and supporting a continuous improvement process for the management of the urban forest.

The **Urban Forest Strategy: Background Technical Report** provides:

1. An overview of the issue being addressed.
2. The major action areas to be implemented by Council and its partners over the next 10 years.
3. Case studies of best practice by other local government agencies.
4. The details of the actions in each strategic area with classification of their timeframe, investment commitment level, funding model and departments to lead the action.





Existing	Council can adopt these actions within the current proposed budgets. They can be integrated into existing programs or investigated without additional staff or infrastructure requirements.
\$	<\$10k. Low-cost action.
\$\$	\$10k-\$100k. Council should plan for budget beyond the current proposed budget. Investment in additional research, infrastructure, staffing or funding is required to realise the action.
\$\$\$	>\$100k. Council will require significant additional budget to realise the action, due to the need for new infrastructure, additional staff or introduction of regulations and / or requirements.
Short term	1–3 years.
Medium	4–8 years.
Ongoing	Commencing from 2023.

Summary of investment and timeframe

NO. OF ALL ACTIONS	ACTIONS USING EXISTING CAPACITY	SHORT TERM 2023 – 26	MEDIUM TERM 2027 – 30	ONGOING
60	18	23 actions over years 1-3	14 actions over years 4 – 8	19 actions ongoing

For more detail on the Urban Forest Strategy, including our Implementation Plan and references, see the full Technical Background Report at shaping.banyule.vic.gov.au/UrbanForest