SOUTH YARRA URBAN FOREST PRECINCT PLAN 2013 – 2023

CITY OF MELBOURNE

A Message from the City of Melbourne

The City of Melbourne's urban forest comprises around 70,000 trees in streets and parks as well as approximately 20,000 trees located in the private realm, in addition to a growing number of green roofs and walls across the municipality. The trees managed by the City of Melbourne in the public realm contribute significantly to the character and identity of Melbourne.

The Urban Forest Strategy completed in 2012 identified the need to generate a new legacy for Melbourne and create a forest for future generations. This urban forest is to be diverse, robust and resilient in the face of current and future challenges. The urban forest precinct plan documents are a key implementation tool of the Urban Forest Strategy, providing a framework for tree planting in streets that will meet the Urban Forest Strategy targets.

We have worked closely with the community and key stakeholders to generate this plan and are confident that it provides the basis for a street tree planting program that is consistent with neighbourhood character, the community's vision for the future urban forest, and the principles of the Urban Forest Strategy.

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Robert Doyle
Lord Mayor

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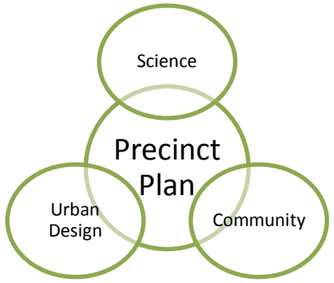
Cr Arron Wood
Future Melbourne (Eco-city) Committee Chair

Precinct Plan Content

Introduction to the Precinct Plans

Urban forest precinct plans guide tree planting and greening in City of Melbourne streets. Precinct plans are subsidiary documents to the City of Melbourne's 2012 *Urban Forest Strategy* and form a key component of the strategy's implementation. Melbourne is divided into 10 precincts.

Each precinct plan has been developed in collaboration with the community, and is grounded in the science underlying the Urban Forest Strategy and in sound urban design principles.

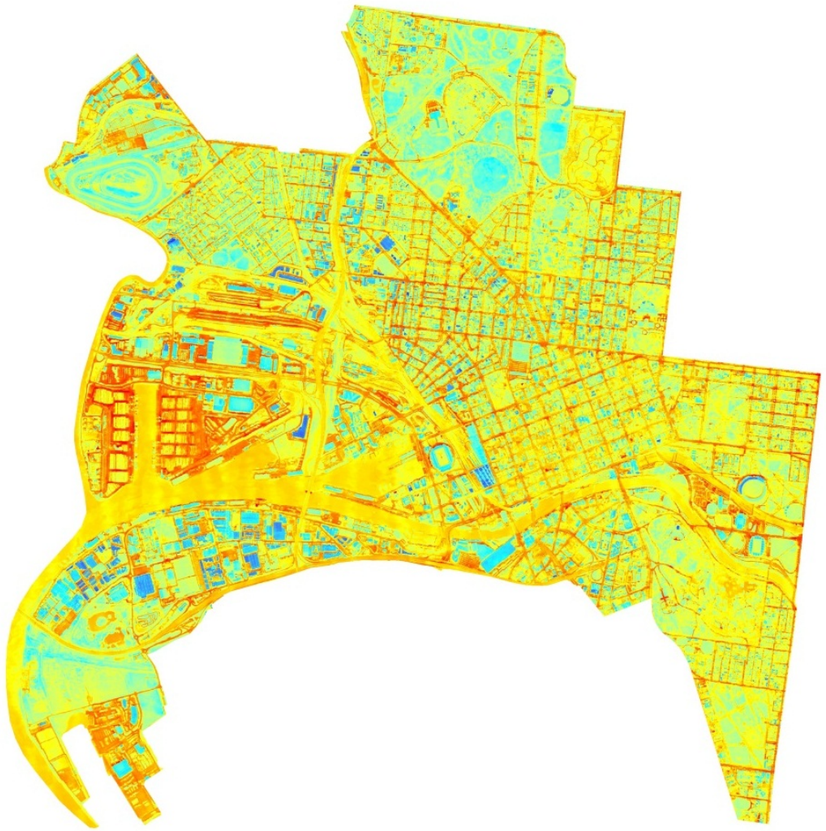


What is an Urban Forest?

The urban forest comprises all of the trees and other vegetation – and the soil and water that supports it – within the municipality. It incorporates vegetation in streets, parks, gardens, plazas, campuses, river and creek embankments, wetlands, railway corridors, community gardens, green walls, balconies and roofs.

Why is the Urban Forest Important?

The City of Melbourne is currently facing three significant challenges: climate change, urban heating and population growth. These will place significant pressure on the built fabric, services and people of the city.



Thermal imaging of Melbourne, taken late at night, showing how paved, unshaded surfaces store heat from solar radiation, contributing to increased temperatures in urban areas

A healthy urban forest will play a critical role in maintaining the health and liveability of Melbourne by:

- Cooling the city
- Improving and maintaining the health, well-being and happiness of urban dwellers
- Improving social cohesion
- Cleaning air and water
- Sequestering and storing carbon
- Attracting people to live, work and visit in Melbourne
- Stimulating economic activity in retail and dining precincts
- Providing habitat for native birds and pollinators

Why are we Concerned About Climate Change, Urban Heat Island and Population Growth?

Climate change impacts to human health and well-being are a significant concern for our City. Climate change science indicates that Melbourne is likely to experience an increase in the frequency and severity of extreme weather events such as heatwaves, drought and flooding. Heat waves kill more people in Australia each year than any other natural disasters. Average annual temperature is expected to increase by approximately 2.6 C° and the number of hot days each year is expected to increase from 9 to 20 by 2070.

The urban heat island effect (whereby urban areas are several degrees hotter than surrounding rural areas) means that central Melbourne will reach threshold temperatures for heat related illness in vulnerable populations more often and for a longer duration than surrounding suburban and rural areas. The urban heat island is primarily a result of impervious hard surfaces that absorb heat, human activity that generates heat and low vegetation cover that fails to provide adequate shade and natural cooling.

Anticipated population growth and increasing urban intensification means that more people will be at risk during extreme weather events and, as a result, there will be a greater demand on health services in the City of Melbourne. Urban intensification also places additional pressure on public realm open space as the private realm becomes increasingly built-up (for more information see Melbourne's *Open Space Strategy*). Access to open space is critical to people's physical and mental health and well-being.

What can the Urban Forest do?

Urban forests provide an array of environmental, economic and social benefits that contribute to creating resilient and sustainable cities that provide healthy and enjoyable places for people to live and work. Some of the significant benefits that our tree canopy can provide to mitigate climate change impacts are shade, cooling and rainwater interception. The urban forest and its associated benefits have been identified as one of the most cost-effective means of mitigating the potential impacts of climate change and heat on our city. The *Urban Forest Strategy* has established principles and targets for developing an urban forest that will meet Melbourne's needs and create a city within a forest.

The Urban Forest Strategy

The directions and targets set out in the Urban Forest Strategy are to:

Increase canopy cover: *The City of Melbourne's canopy cover will be 40% by 2040.*

Increase urban forest diversity: *The City of Melbourne's urban forest population will be composed of no more than 5% of one tree species, no more than 10% of one genus and no more than 20% of any one family.*

Improve vegetation health: *90% of the City of Melbourne's tree population will be healthy by 2040.*

Improve soil moisture and water quality: *Soil moisture levels will be maintained at levels to provide healthy growth of vegetation.*

Improve urban ecology: *Protect and enhance urban ecology and biodiversity to contribute to the delivery of healthy ecosystem services.*

Inform and consult the community: *The community will have a broader understanding of the importance of our urban forest, increase their connection to it and engage with its process of evolution*

How does Melbourne's Urban Forest Measure up?

In order to provide the benefits we need from our urban forest in a changing climate, our tree population needs to be healthy, diverse and resilient. To assess its current state we mapped the trees in our city to measure species/genus/family diversity, useful life expectancy and tree canopy.

Tree Diversity and Vulnerability

At present, approximately 40% of our trees come from one family (Myrtaceae). Elm avenues line many Melbourne boulevards and plane trees dominate in many streets, particularly within the central city. Within streets 24% of trees are planes, 11% are elms and 8% are spotted gums. Reliance on a few species, and a lack of spatial diversity in species distribution, leaves the urban forest vulnerable to threats from pests, disease, and stress due to climate change.

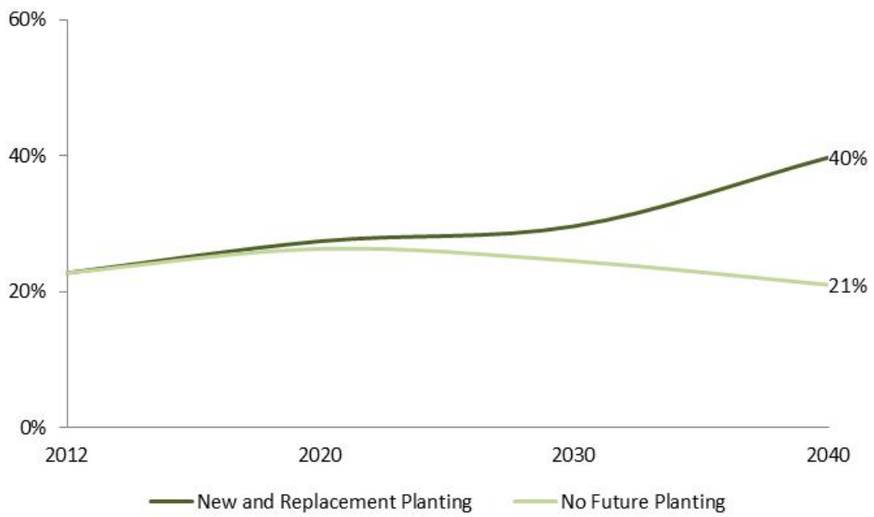
Useful Life Expectancy

Useful life expectancy is an estimate of how long a tree is likely to remain in the landscape based on health, amenity, environmental services contribution and risk to the community. The recent period of drought and water restrictions triggered irreversible decline for many trees. This exaggerated the age-related decline of many significant elms and other trees. Modelling shows that within the next ten years, 23% of our current tree population will be at the end of their useful lives and within twenty years this figure will have reached 39%. Most dramatically, 55% of Melbourne's elms are in a state of severe decline and will likely need to be removed from the landscape within 10 years.

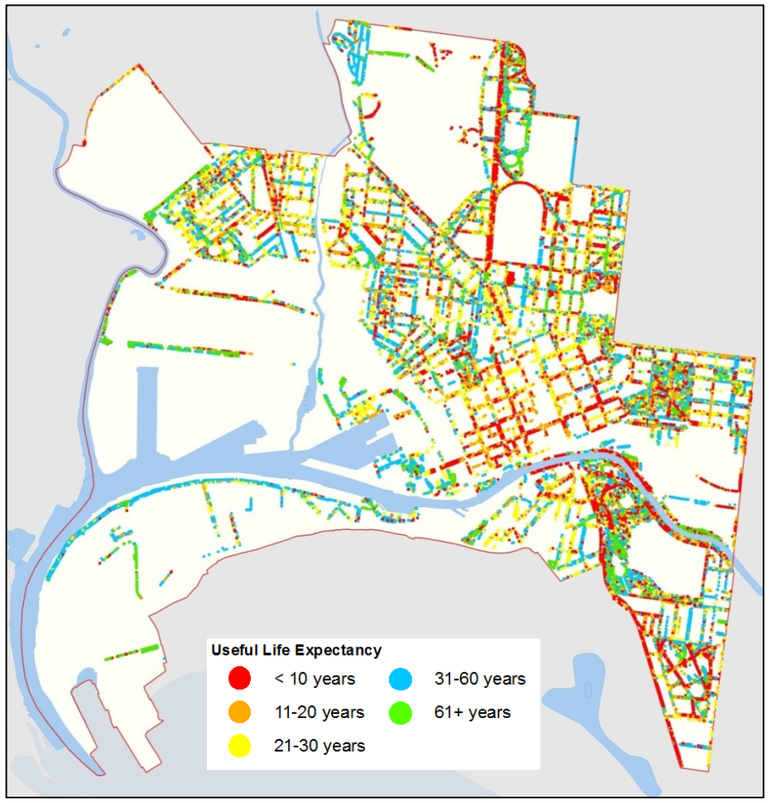
Canopy Cover

Increasing the provision of summer time shade and biomass is important to combating the urban heat island effect, adapting to climate change and enhancing our streetscapes for the comfort of people. Canopy cover is a way of expressing, as a percentage, how much of any given area is shaded by trees. Currently, 77% of Melbourne's streets and parks are without natural shade, and the areas of the city with the highest population density have the lowest canopy cover. The City aims to double its canopy cover by 2040 and is currently planting 3,000 trees per year to achieve this target.

Melbourne's canopy graphed with and without tree planting



The lower line represents what is projected to happen to our canopy cover if we stop planting trees. The line above shows what will happen if we replace trees as they are lost and plant new trees at a rate of approximately 3,000 trees per year to 2040.



Useful life expectancy mapped for City of Melbourne Trees.

How can Permeability, Availability of Water and Soil Volume be Improved?

The urban environment is highly modified, with harsher conditions for plant growth than in natural landscapes. Tree health and the ability to maintain shade and cooling benefits are primarily influenced by the conditions in which trees are growing.

Access to ample soil moisture enables trees to actively transpire and cool the surrounding air. Adequate soil moisture is critical for healthy vegetation. A number of active and passive approaches are currently undertaken to replenish soil moisture and ensure it is maintained at levels to provide healthy growth. The City's *Total Watermark Strategy* is being updated to strategically manage Melbourne's water catchment. In the meantime, the City has implemented numerous water sensitive urban design projects to capture and store water that would otherwise go down the drain. This water is being used to water the vegetation in our urban landscapes.

Urban development has increased the connectedness of impervious surfaces resulting in:

- Decreased vegetation cover and below ground growing space;
- Decreased infiltration of water into the ground;
- Increased pollutant runoff; and,
- Increased hard surfaces contributing to the urban heat island.

Fundamentally, the city has low levels of water permeability (50%) and water has little opportunity to infiltrate the soil. Ground surfaces need to allow rainfall to enter the soil, a huge reservoir that is ready made to provide for a healthy forest. The City is increasingly using methods to increase permeability through the use of permeable pavement, structural soil cells and peeling back asphalt where possible to provide better growing conditions for trees and vegetation, and a better cooling outcome.

What will the Precinct Plans Achieve?

The precinct plans will help to guide implementation of the urban forest strategy in Melbourne's streets. The information provided in the plans will direct the annual tree planting program to achieve urban forest strategy objectives, protect and enhance neighbourhood character, and to prioritise works and budgets within each precinct.

Within this document, specific direction is provided on the selection of appropriate trees for the precinct. The plans are performance based in that they establish the desired outcomes for streets but do not prescribe specific species for each location. A set of high performance guidelines are being developed for Melbourne's urban landscapes and these will support the precinct plans with case studies and detailed guidance on how to achieve outcomes in streets that are consistent with the urban forest strategy. Park and significant boulevard trees will be planted using existing master plans and site specific plans.

The City of Melbourne boundary is shown in grey and the South Yarra Precinct is highlighted in orange.

Policy Context

The relationships between the precinct plans and City of Melbourne policy documents are outlined in the Urban Forest Strategy. Within South Yarra, the heritage overlays and Open Space Strategy strongly influence the future character of the precinct.

The Vision for South Yarra's Urban Forest

South Yarra's urban forest will be spectacular and engaging, providing interest through shape, colour and light. Canopies will be shady and lush, and understory will provide habitat for native birds and bees.

Complementary Strategies

The precinct plans address tree planting in Melbourne's streets but there are many ways in which the private and public realm can contribute to meeting urban forest objectives and creating a city resilient to climate change. These include:

- Water sensitive urban design
- Tree planting in parks
- Private realm tree planting that contributes to urban forest canopy, diversity and connectivity
- Planting vegetation that enhances urban biodiversity
- Maximising permeable surfaces and growing space for trees
- Building green roofs and walls
- Greening balconies
- Implementing innovative green technologies

The City of Melbourne is working with stakeholders in both the public and private realm to support these outcomes.

Opportunities exist to enhance canopy cover in the private realm. The projected canopy cover for the entire precinct has included a potential doubling of private realm canopy cover to 8% by 2040. In order for this to occur, private and institutional land owners, and developers would need to actively create space for and plant trees.

The City of Melbourne will support private residents to plant trees by providing materials that advise on suitable trees to plant in small yards and by seeking creative ways to encourage private land planting. Council will also continue to educate residents on how they can contribute to and be involved in the urban forest through our ongoing community engagement work.

In and adjacent to the South Yarra precinct, the Royal Botanic Gardens, Government House and schools manage large areas of land that could potentially support greater canopy cover. The City of Melbourne will work with institutional and large holding land managers across the city to support and encourage the adoption of urban forest strategy principles on those lands. Similarly, the City of Melbourne will work with neighbouring municipalities to support and encourage the adoption of urban forest strategy principles in other jurisdictions.

Historical and Existing Tree Plantings

Early tree planting was largely driven by the desire to create windbreaks and establish shade. The first significant street tree plantings in the South Yarra precinct occurred in the 1850s when St Kilda Road was planted with fast growing blue gums and radiata pine, and, while the species have changes, St Kilda Road has been continuously treed since that time. In response to calls from the public to beautify streets and plant for the health benefits of trees, Melbourne City Council initiated a program of systematic street tree planting in 1878; however South Yarra streets do not feature in the records of those first plantings. Elm trees were planted along Alexandra Avenue in approximately 1900 after the Yarra River was straightened. The east side of Anderson Street was budgeted for planting in 1890. Further beautification of boulevards occurred in the lead up to the Royal visit in 1901 and records suggest that tree planting was occurring in streets from that period up until World War I. Other significant periods of street tree planting occurred in the 1930s when many tree islands and medians were constructed, and then from the 1970s onward when native trees were used more widely. Historic photos indicate that many of the larger residential streets in South Yarra were planted prior to the 1940s.

South Yarra Character

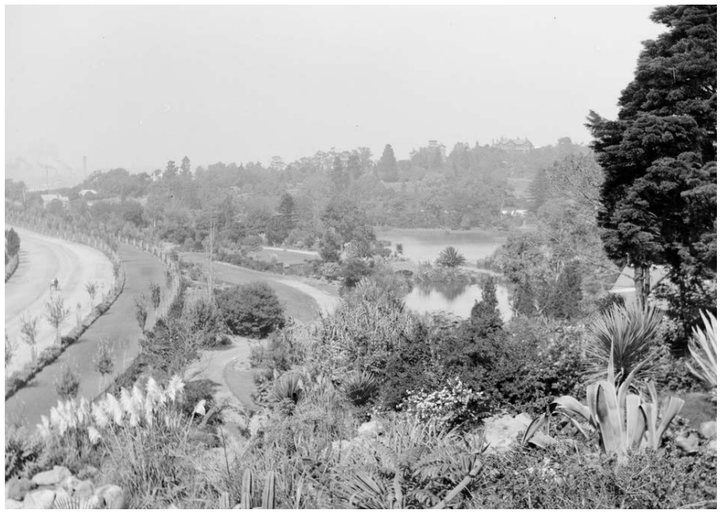
South Yarra extends across the hill above the Yarra River and King's Domain. The area within the City of Melbourne consists of three primary land uses laid out on a strongly rectilinear, north-south oriented grid – a dense residential neighbourhood to the south of the Royal Botanic Gardens, the expansive open space of Fawkner Park, and high rise apartment blocks and institutions along the St Kilda Road and Commercial Road frontages.

The character of the urban forest in South Yarra is heavily influenced by the landscapes of the Royal Botanical Gardens (not managed by the City of Melbourne), Domain parklands and Fawkner Park. These landscapes contain an eclectic mix of evergreen natives, conifers, deciduous trees and palms and this character is reflected in the diverse mix of street tree plantings within the precinct. The precinct also contains quite a number of significant trees such as the Golden Elm on the corner of Punt Road and Alexandra Avenue, the *Eucalyptus cornuta* planted by Baron von Mueller and many others that are either heritage listed or on the City of Melbourne's Exceptional Tree Register.

There are limited areas of avenue planting within the streetscape of South Yarra. The community highlighted several streets as important, namely Millswyn Street, St Kilda Road and Alexandra Avenue, which are all planted with large-canopied, mature trees. Pasley Street South was also highlighted during consultation and this street stands in contrast to most others in the precinct in that it is planted entirely with native trees. The core tree genera (groupings of species) that form South Yarra's urban forest are elms and planes, with the remainder of the forest being quite diverse.

South Yarra's narrow streetscapes contain the highest density of development and largest proportion of private flats within the Melbourne municipal area. A notable point of differentiation from other precincts is the adoption of high, solid fences which adds to streetscape enclosure and reduces the interplay between buildings and the street. The residential courts and cul-de-sacs are also a distinctive feature of South Yarra's street pattern.

As the roadways and footpaths throughout the precinct are relatively narrow (15 m), the majority of trees need to be located to either side of the streetscapes, either within the footpaths or parking lanes, balanced with on-street parking needs. While the use of medians or central tree islands is largely precluded in South Yarra due to the street widths, a particular opportunity exists in Toorak Road west of Park Street.



View to Alexandra Avenue looking towards Anderson Street probably in the early 1900s and showing young trees planted on the road side [Essendon Historical Society Collection, State Library of Victoria]

View down St Kilda Road from Domain Interchange to Fawkner Park showing young and mature street trees, taken between 1920 and 1940 [State Library of Victoria].

Community Priorities

South Yarra's Urban Forest Precinct Plan has been developed in collaboration with the community, which is reflected in the character, vision, planting plan and priorities defined for South Yarra's urban forest.

Consultation highlighted that South Yarra is home to exceptional trees, tree avenues and open spaces that are central to community identity and wellbeing. The community would like to see the heritage and character of South Yarra's urban forest respected while also creating opportunities to contemporise the landscape and increase the use of native trees that provide habitat for native birds.

Our work with the South Yarra community indicated a preference for trees that would provide large canopies, colour and habitat for native birds.

Desired future states defined by the community:

- Maintenance of existing tree character and important avenue plantings
- Tree planting on arterial roads and in narrow streets
- A diversity of trees that provide shade with green, leafy, lush canopies
- Use of native trees to provide habitat for birds and bees
- Visual interest that is diverse, engaging and spectacular through the use of shape, colour, shadows, productive trees and understorey planting
- Large trees and/or volume plantings that make a statement (sculptural) in urban, residential and parkland spaces.

Urban forest benefits highlighted through community consultation:

- Shade
- Biodiversity
- Food production
- Aesthetic beauty and screening
- Psychological benefits (e.g., sense of calm, soothing etc.)

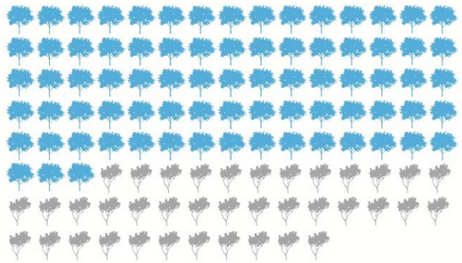
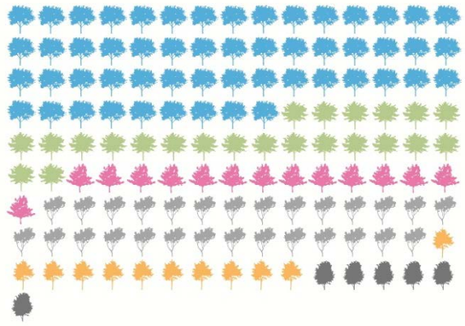
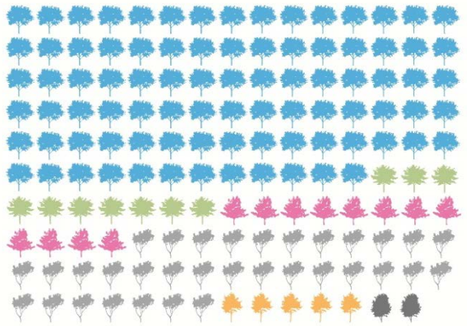
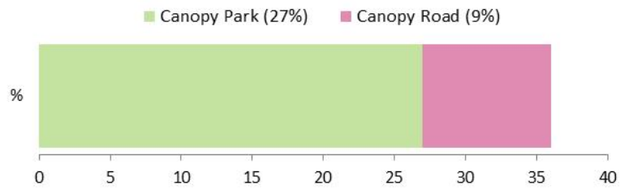
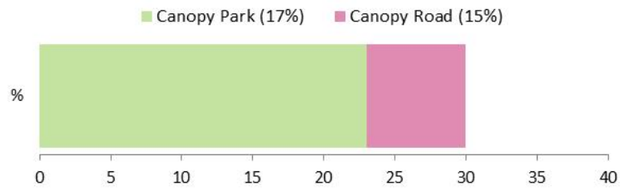
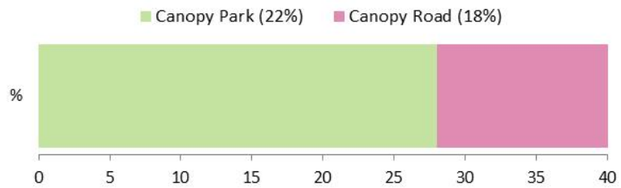
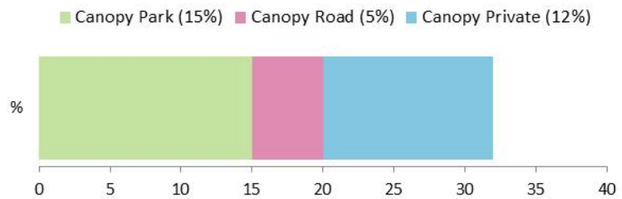
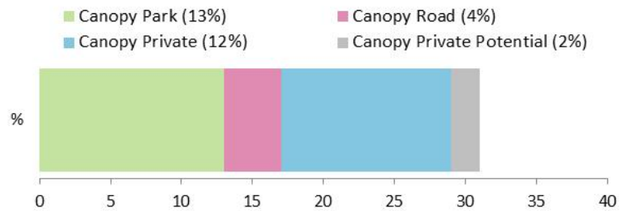
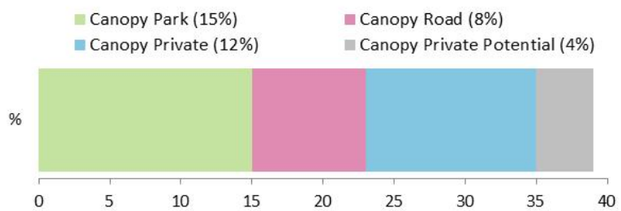
Colour

Shape

Streetscape

Images selected as representing a preferred future for South Yarra's urban forest that includes colour, canopy, shade, seasonal change and habitat.

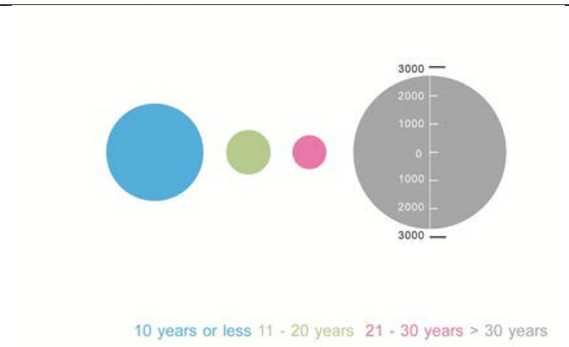
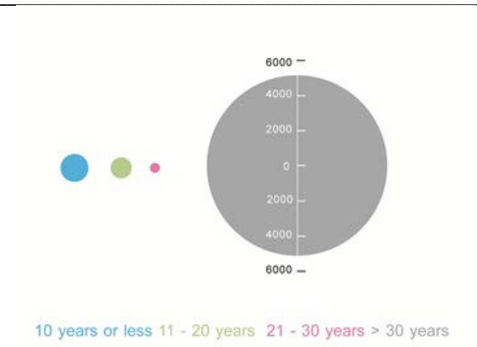
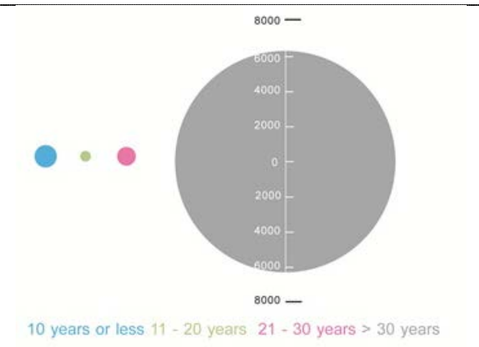
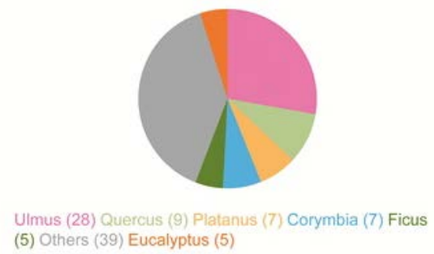
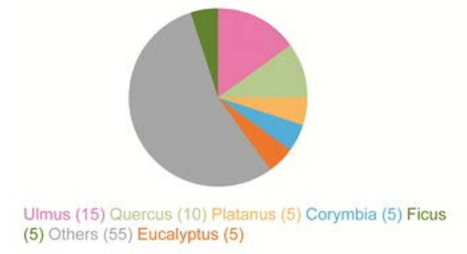
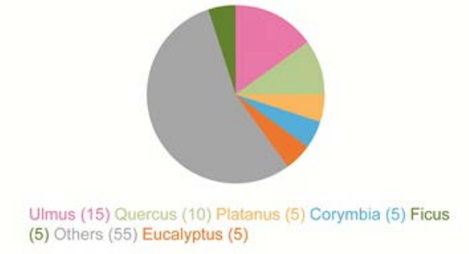
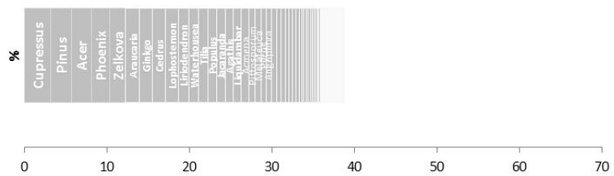
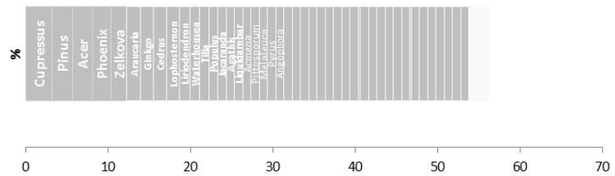
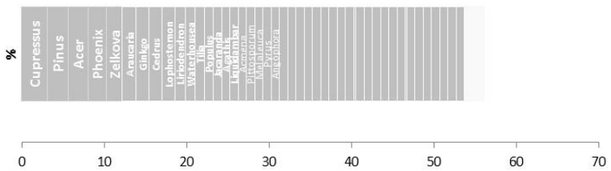
South Yarra's Urban Forest in 2013 and its Projected Future

	South Yarra Now 2013	South Yarra 2023	South Yarra 2040
Trees Public Realm[1]			
Canopy Public Realm[2]			
Canopy Entire Precinct[3]			
Urban Ecology	Open spaces provide habitat value for native birds and pollinators but are not well connected by vegetated corridors.	Connectors between open space will have been strategically implemented with overstory and understory plantings to enhance biodiversity values in South Yarra streets.	Private realm gardens, public streets and open spaces form connected green corridors that provide habitat for native birds and pollinators.

[1] Trees Public Realm: These data are sourced from the tree inventory dataset, 2011 Useful Life Expectancy data and an estimate of planting opportunities across the precinct. Replacements and new trees planted in 2023 and 2040 are estimates only.

[2] Canopy Public Realm: These data are sourced from the tree inventory dataset, 2011 Useful Life Expectancy data, 2008 canopy mapping, and 2011 canopy mapping. Projections of future canopy are estimates only and are based on the anticipated distribution of average tree canopy areas by age class in future years with loss, growth of recent plantings, replacements and new plantings.

[3] Canopy Entire Precinct: These data are sourced from 2011 canopy mapping. Projections of future canopy are estimates only and are based on the proportional change expected in public canopy. No change was applied to private canopy given that no data is available on useful life expectancy of trees in the private realm. Canopy Private Potential is a representation of canopy gains that could be made if new plantings occur in the private realm and is symbolic only.

	South Yarra Now 2013	South Yarra 2023	South Yarra 2040
Tree Health (ULE) in the Public Realm[4]			
Diversity (genus) Public Realm[5]			
	 Other (39%): 90 Genera	 Other (55%): 90 Genera	 Other (55%): 90 Genera
Inform and Consult the Community[6]	 Residents, workers and visitors to South Yarra have collaborated to develop the Urban Forest Precinct Plan. Residents are consulted on species choice in their street.	 Residents will be consulted on species choice in their street. Council will be providing guidance to, and working in partnership with residents, institutions, developers and businesses to enhance both public and private realm urban forest.	Forecast to 2031 only  Residents will be consulted on species choice in their street. Council will be providing guidance to, and working in partnership with residents, institutions, developers and businesses to enhance both public and private realm urban forest.

[4] Tree Health Public Realm: These data are sourced from the 2011 Useful Life Expectancy data. Projections of tree numbers are estimates based on the ULE for the existing tree population. Where ULE exceeded 30 years, 10% of the population was assumed to decline per 10 year period.

[5] Diversity (genus) Public Realm: These data are sourced from the tree inventory data set and 2011 Useful Life Expectancy data. Genus refers to groupings of related species and is a convenient scale at which to examine diversity, however species, family, spatial and structural diversity are also important to creating a resilient urban forest. Projections of future genus diversity are estimates only and are based on the expected losses within each genus as trees age and the assumption that many of the new and replacement trees planted will be selected from alternative genera.

[6] Population forecast sourced from Small Area Population Forecasts 2006 to 2031, City of Melbourne. Employment forecast sourced from SGS Economics and Planning Employment Forecasts, KSA1 Scenario.

How the Precinct Plan Guides Annual Planting

Inputs

Set Annual Planting Program

Priorities (Map 1)

Streets Undergoing Unforseen Change (e.g., Infrastructure Project or Development)

Annual Budget

Define Objectives for Streetscape

Review Guiding Principles and Considerations for Tree Planting

(Map 2-7)

Define Planting Strategy

Maps 8 - 10

Select Species

Review Streetscape Objectives

Review What Should Change(Map 7)

Review Planting Plans (Map 8, 9 & 10)

Review Species Pallette

Implement Planting

Produce Streetscape Design Options

Consult with Residents

Plant

Prioritising Tree Planting in Streets

When prioritising where to plant, it is important to focus resources in the locations that need it most. This includes consideration of where we have opportunities to plant new trees or replace trees, where the highest density of vulnerable people reside, which streets are the hottest in summer, and where very low canopy cover exists today. Replacements are only identified for streets where the useful life expectancy of multiple trees is rated at less than 10 years. Census and mapping data were used to spatially define streets with these conditions and are defined on the maps below.

1. **Streets with opportunities for planting or replacements**
2. **High density (>20) of vulnerable residents (< 5 or > 74 yo)**
3. **Community identified priority for greening**
4. **Hot and very hot streets**
5. **Tree replacements required in next 10 years**
6. **Canopy Cover < 20%**

Map 1: Planting Priorities

The priority for work in different streets has been determined using varied criteria and the associated timing is provisional only. The schedule for some streets may be brought forward or delayed by capital works, renewal projects or developments that affect tree planting or survival. Unforseen opportunities for streetscape improvement may also alter scheduled planting.

Streets prioritised for work in Years 1 – 4 (2013 – 2016) include those:

1. Already scheduled for work in the current planting season; or,
2. Having a high number of vulnerable people with two or more occurrences of: community priority, very low canopy cover, temperature hot spot or replacements required.

Streets prioritised for work in Years 5 – 7 (2017 – 2019) include those:

1. Having a high number of vulnerable people with one occurrence of: community priority, very low canopy cover, temperature hot spot or replacements required.

Streets prioritised for work in Years 8 – 10 (2020 – 2023) include those with only:

1. High number of vulnerable people; or a combination of,
2. Community priority;
3. Very low canopy cover;
4. Temperature hot spot; or
5. Replacements required.

LEGEND

- Years 1 - 4
- Years 5 - 7
- Years 8 - 10
- Timing not determined by precinct plan
- Section of land not managed or maintained by CoM
- Assess opportunities for feature planting

Guiding Principles and Considerations for Tree Planting

Planting in streets presents a variety of challenges, and there are important principles to use in responding to those challenges that will help to meet the Urban Forest Strategy targets. A complete and expanded set of these principles is included in the Technical Notes and should be referred to when designing or planting any streetscape; however South Yarra specific principles are outlined below.

Planting Types and Locations: Preference large canopy trees

A single large canopy tree provides greater benefits in terms of cooling, rainwater interception and other ecosystem services than multiple small trees totalling the same canopy extent. South Yarra's narrow streets mean that the large canopy trees must generally be planted in the footpath or roadway. A limited number of streets have nature strips that provide a planting opportunity. Given the limited sites available for tree planting, the largest tree appropriate for the site should be selected to maximise the canopy and shade potential.

Kerb outstands should be considered as opportunities to plant species drawn from a wider palette that are unique to that location or intersection and provide visual interest. Roundabouts and closed road ends should be considered as opportunities to plant large canopy trees and create landmark feature landscapes with supporting understorey planting. Consider extending the character of the gardens into the surrounding streetscapes to create linkages between open spaces.

Low voltage overhead wires are present in many South Yarra streets and are continuous on the major roads and present in all small streets between Toorak Road and Domain Road. High voltage wires are also present on Commercial Road and limit the potential for large, natural canopy growth. Where medians exist for large canopy tree planting, select small to medium trees on the side with overhead constraints. In streets where footpath trees provide the only canopy, select medium to large trees that can be effectively pruned around power lines. Always consider opportunities to bundle or underground power lines. Leopold Street and Punt Road are constrained in terms of both below ground and above ground services. Alternative strategies for greening these streets, including the potential contribution of the private realm, will need to be considered.

Outcomes that improve the pedestrian environment should always be prioritised.

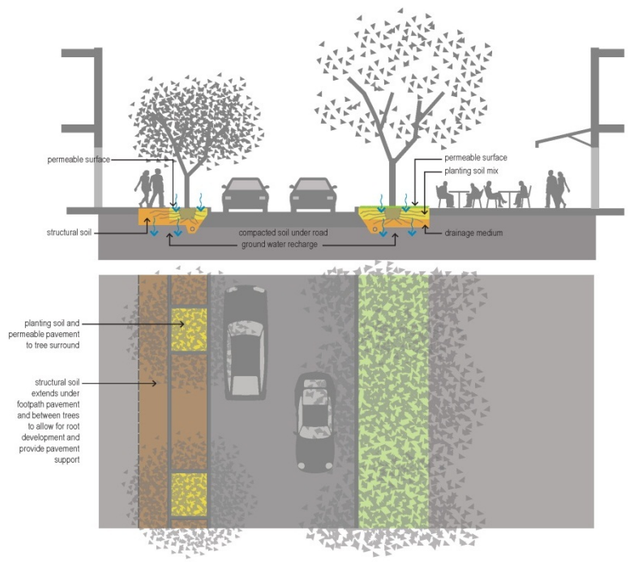
Planting Patterns and Species Choice: Adopt planting patterns that increase diversity

The convention of planting avenues, or consistent lines of a single species, can limit species diversity. However, avenue plantings are important to local character in many streets and open spaces in Melbourne. To balance these two conflicting pressures, it is important to identify ways to minimise the extent of homogenous avenue planting while maintaining a strong design outcome. The following strategies can be used:

- Establish a hierarchy of streets/paths most important to plant with continuous avenues and limit use elsewhere;
- Identify breaks in avenues at logical points along the length of streets, where species may change;
- Use asymmetrical treatments along some streets (e.g., local streets where there are power lines on one side only so large trees may fit on one side and small ones on the other);
- Use mixed avenues of two or more species of similar form and character where appropriate;
- Use informal mixes of species where acceptable (e.g., perimeters of parks and gardens, streets where most trees senescent but important established specimens remain, streets where vegetation from private gardens occasionally overhangs into street space, etc.).

Use a balance of proven and trial species to increase diversity but limit the use of trial species in streets to less than 10% of the precinct tree population.

Select 'shorter-lived' (~50 years) species in approximately 10% of each sub-precinct to better balance future age distribution across South Yarra. These selections should be focused in areas or planting positions where losses will have a lower impact on shade provision (e.g., where there large, long-lived trees in medians or on one side of the street, or in landmark/biodiversity plantings).



IMPROVING BELOW GROUND GROWING CONDITIONS FOR TREES IN STREETS

Soil and moisture conditions: Improve soil moisture conditions and select species appropriate to the site conditions

Always consider opportunities to undertake soil volume improvement in planting areas and to increase permeability or water infiltration where needed. Assessment for these interventions is particularly necessary at sites where trees are being replaced because they failed to thrive. Interventions to consider include:

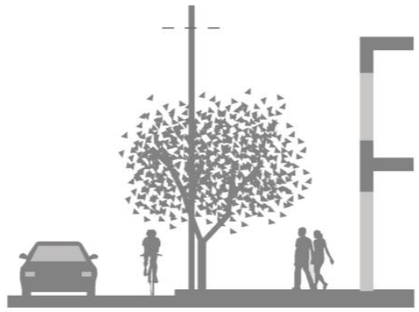
- Systematic trenching in landscaped areas, in medians, between tree plots and centre of road parking zones
- Structural soils below permeable paving
- Increasing soil volume
- WSUD tree pits or infiltration pits
- Stormwater harvesting

The native soils in South Yarra were formed from Silurian and Tertiary deposits. Clay soils derived from Silurian mudstone are located adjacent to the Yarra River (to approximately 200 m south) and in the eastern end of Toorak Road and surrounds. Sandy loam soils are capped over mudstone in the remainder of the precinct. The water table is relatively shallow (1-2m) in the area near Toorak Road and St Kilda Road and this is likely to be the case throughout the lower lying parts of the precinct. However, urban areas tend to have been highly disturbed so soil conditions are likely to have been altered in many locations. For example, the area from the Arts Centre to Princes Bridge is located on fill, which was brought in to raise the height of land well above the river.

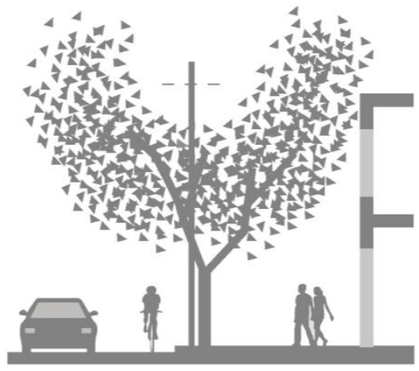
The Yarra River forms the northern edge of the South Yarra precinct and the surrounding streetscape and private realm vegetation can play a role in supporting the ecology of the river corridor. Species selection to provide habitat can be incorporated with initiatives for capturing water and runoff for filtration prior to entering the waterway.

Map 2: Key Planting Constraints

This map indicates locations where overhead constraints or tramlines have been identified and may impact tree selection and the maximum canopy cover that can be achieved. Low voltage overhead wires associated with electricity distribution and tram lines have minimum clearance distances from vegetation that must be maintained. When selecting which species to plant beneath overhead wires, ensure that the species chosen can be formatively pruned to create a pleasing canopy shape, or is at a mature height that it is a safe distance from overhead wires.



SMALL TREE UNDER POWERLINES

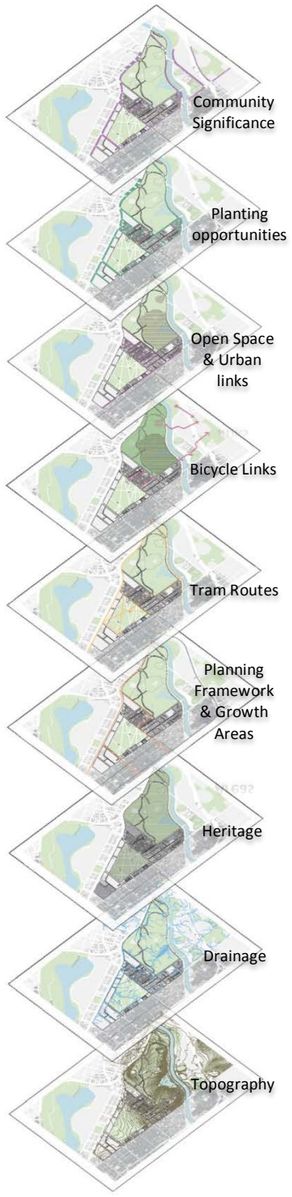


TREE TRIMMED UNDER POWERLINES

LEGEND

- Existing tram line with tram stop
- Low voltage powerlines
- High voltage powerlines
- Section of land not managed and maintained by CoM

These maps show some of the many layers of information that influence the opportunities and objectives for tree planting in South Yarra Streets.



Map 3: Natural and Open Space Context

LEGEND

- Existing open space
- Significant open space identified by the community
- Significant section of street identified by community
- Special building overlay (buildings subject to flood damage adjacent to flood plain)
- Existing ridge line
- Proposed open space links horizontal / vertical
- Median / centre road
- Existing contours 1m
- Existing drainage line
- Extent of City of Melbourne municipality boundary
- Boundary for South Yarra precinct

LEGEND

- Existing Youth Arts Centre
- Existing School
- Heritage listed School
- Existing Church / Synagogue
- Heritage listed Church / Synagogue
- Existing Open Space
- Heritage listed Open Space
- Existing Hospital
- Heritage listed Hospital
- Heritage listed property
- Heritage listed Community Hostel
- Existing Bike Lane
- Existing Bike Lane - on road
- Existing Roundabout
- Roadside / Avenue Planting determined by Park Masterplans
- Boundary for South Yarra Precinct
- Extent of City of Melbourne municipality boundary

Map 4: Strategic Context

Map 5: Planting Sub-Precincts

Domain & Botanic Gardens

A significant portion of the South Yarra Precinct is occupied by the parklands of Domain and Botanic Gardens, and the southern banks of the Yarra River. The avenues in this precinct are predominantly part of the parklands and as such are informed by the park masterplans for these and are not directly addressed within this Precinct Plan. These landscapes contribute to the character and amenity of the South Yarra precinct, and their significant heritage character is important in considering the character of planting with the adjoining streets.

North Residential Precinct

The residential area east of Anderson Street and Leopold Streets is located at the top of the hill with a ridgeline running through the centre of the precinct. The northern section slopes towards the Yarra with long views to Melbourne's north and east. The residences in this precinct have wide frontages and comprise a mixture of heritage properties and more contemporary dwellings as well as a number of courts and cul-de-sacs. Planting on Punt Road the frontage is compromised by the traffic lanes and services, with no planting on the eastern side of the road (which is part of City of Stonnington).

Central Residential Precinct

This finer grained area of South Yarra includes the small commercial precinct at the intersection of Domain Road and Park Street. The north south streets connect between the Domain and Fawkner Park open spaces and provide key linkages for pedestrian and cycle traffic. The properties in this area have predominantly narrow frontages. These north streets could provide linkages between the parklands to the north and south.

West Precinct

This precinct is west of Domain Street and comprises Melbourne Grammar School and a pocket of residential and mixed use properties that front St Kilda Road and Domain Road. There is good existing canopy spread due to the wider streets and the median on Domain Street. The grouping of figs at the west end of Toorak Road is a landmark at this large traffic junction.

Fawkner/St Kilda Rd Precinct

This precinct includes the large land lots that front St Kilda Road and, south of Commercial Road, extend back to Punt Road. These are a mix of commercial, residential and institutional land use and with their considerable setbacks, their forecourt and garden landscapes contribute to the greening of the streets. The St Kilda Road Boulevard defines the western boundary of this precinct and is supported by the building setbacks and grounds of the schools, hospitals contribute to the landscape character of the precinct. There are no street trees currently on the north side of High Street and the street relies on the planting within the adjacent Wesley School Grounds for canopy and shade to the footpath.

Fawkner East Precinct

This small precinct has a strong connection to Fawkner Park and is somewhat disconnected from the rest of the South Yarra Precinct. There is a significant contrast between the streetscape amenity of the properties that front Punt Road and those that overlook the parkland. There is an opportunity to create both a strong connection and contrast between the park and streets through the scale and character of planting.

Map 6: Canopy Cover Outcomes

Canopy Cover

Anticipated canopy cover at maturity is represented as shading in streets on the map. In some streets the maximum canopy cover is limited due to constraints such as tram routes. Planting configuration should seek to maximise canopy cover in all cases.

Map 7: What Should Stay and What Should Change?

Elms, oaks, planes, corymbias (gums), figs and eucalypts are core genera within South Yarra's urban forest today. That is not proposed to change; however their dominance will be reduced by using alternatives for new plantings and, in the locations defined on this map, by breaking up spatial continuity. Interrupting spatial continuity is necessary to reduce vulnerability within the urban forest tree population and aids diversity targets by providing an opportunity to change species. The use of elms will be limited to replacements in locations where they are already planted. Use of species within the Myrtaceae family should be targeted at streets where they can provide connecting corridors between open space for native birds, however it is preferable that different genera and species be planted in segments or as mixed plantings to increase diversity.

Planting Strategies

Map 8: Long-term Planting Strategy

This strategy provides the long-term direction for planting in the precinct. The selection of tree species for each street should respond to criteria including optimal size and other characteristics that relate to the street typology and its relationship to the major planting sub-precincts. Values of existing vegetation are also a factor in species selection.

Overarching principles affecting the planting plan include:

- Enhance the character of park perimeter streets through plantings that respond to the character and scale of the park perimeter.
- Maximise the potential for tree canopy where planting opportunities are limited.
- Enhance the contribution of the streetscape to the ecology of the Yarra River corridor.
- Create streets that provide connections between open spaces.
- Incorporate colour and seasonal change into species selections.

LEGEND

- Plane trees
- Elm trees
- Medium deciduous species
- Large deciduous species
- Large evergreen species
- Mixed deciduous and evergreen species
- Other contrasting species
- Street redesign opportunity
- Existing roundabout / proposed landmark specimen trees
- Roadside / avenue planting determined by park masterplans
- Section of land not managed or maintained by CoM

Map 9: 10-Year Planting Plan

This plan provides direction on where new and replacement planting is to occur across South Yarra. The size and evergreen/deciduous nature of the species to be used is also defined as a solid or dashed line (in the case of replacements this may be different to what is planted in that location currently). Species selection is left somewhat open; however, Map 7 and Map 8 provide guidance on where spatial diversity should be created and where core species should be retained. Streets with opportunities for re-design represent streets where permeability could be improved through interventions such as park expansions or new medians.

LEGEND

- Existing open space
- Street re-design opportunities
- Section of land not managed or maintained by CoM
- Existing roundabout / proposed landmark specimen trees
- Roadside / avenue planting determined by park masterplans

EXISTING

- Large evergreen tree
- Large deciduous tree
- Medium - small deciduous tree

REPLACEMENT

- Large evergeen tree
- Large deciduous tree
- Medium -small deciduous

NEW

- Large evergreen tree
- Large deciduous tree
- Medium - small deciduous tree

Map 10: Guide to Species Change

This map indicates locations along streets where a change in species is logical based on sub-precinct boundaries, topographic factors or objectives defined for streets within this plan. The colours do not indicate species distribution or specific species. Rather, they represent points of species change, with similar colours along a street indicating use of a range of species that will achieve a consistent character for that street.

Select or match species to form, colour and seasonal themes for streets to unify character even where species are varied. Introduce greater diversity in kerb outstands, roundabouts and road ends. In streets use a single species for multiple segments then change between sub-precinct boundaries, or consider the use of two alternating species of similar form, scale and colour. In narrow streets and where there are power lines on one side only use asymmetrical plantings of different species on each side of the street. When appropriate, use informal mixes of species along perimeters of parks and gardens or where vegetation from private gardens overhangs the streets.

LEGEND

- Existing roundabout / proposed landmark specimen trees
- North south avenues - consistent character with various species
- East West Streets - consistent character with various species
- City entry boulevards- new sections of avenue with character species
- Avenue - perpetuation of existing avenues
- Open space link - extending park character to the streetscape - mixture of species
- Section of land not managed or maintained by City of Melbourne
- Precinct boundaries
- Ridge Line
- Roadside / avenue planting determined by park masterplans

Species Palette

The following species are provided for guidance only and do not preclude the use of other trees that are consistent with the character of South Yarra, Guiding Principles and Planting Plan. Elms and planes are key genera within South Yarra, forming an important part of the character of its urban forest. While this character will be maintained, species from many different genera will also be planted to increase diversity and reduce vulnerability within South Yarra's urban forest population. Feature trees refer to trees that might be used in roundabouts, kerb outstands, road ends or that could add structure for biodiversity enhancement in locations with adequate space. Productive trees or edible landscapes may be considered in locations such as medians or feature landscapes where they conform to City of Melbourne policy and the community actively provide support for the project.

Core South Yarra Trees (Limited New Plantings)
Platanus sp., Plane
Ulmus sp., Elm

Large Trees for Streets
Evergreen
Angophora costata, Smooth-barked apple
Araucaria sp.
Cedrus sp., Cedars
Ficus benjamina sp., Benjamin's fig
Flindersia australis (trial), Crow's ash
Deciduous
Acer x freemanii, Freeman maple
Acer rubrum, Red maple
Fraxinus americana, White ash
Ginkgo biloba (male), Ginkgo
Lirodendron tulipifera, Tulip tree
Liquidambar styraciflua, Liquidambar
Tilia sp.
Toona ciliata (trial), Australian red cedar
Zelkova serrata, Japanese zelkova

Medium to Small Trees for Streets
Evergreen
Afrocarpus falcatus (trial), Sickle-leaved yellowwood
Brachychiton sp
Buckinghamia celsissima, Ivory curl tree
Callodendron capense, Cape chestnut
Cupaniopsis anarcardiodes, Tuckeroo
Eucalyptus leucoxylon subsp. megalocarpa, Red flowering gum
Ficus rubiginosa, Port Jackson fig
Geijera parviflora, Wilga
Harpullia pendula (trial), Tulipwood
Lithocarpus densiflorus (trial), Tanoak
Lophostemon confertus, Queensland brush box
Magnolia grandiflora, Southern magnolia
Podocarpus elatus, Plum pine
Tristaniopsis laurina, Kanooka
Waterhousea floribunda, Weeping lilly-pilly
Deciduous
Albizia julibrissin (trial), Persian silk-tree
Brachychiton sp.
Catalpa bignoniodes, Catalpa
Celtis australis, European nettle tree
Cercis siliquastrum, Judas tree
Corylus colurna, Turkish hazel
Fraxinus pennsylvanica, Green ash
Jacaranda mimosifolia, Jacaranda
Koelreuteria sp.
Lagerstroemia indica, Crepe myrtle
Melia azedarach, Australian white cedar
Pistacia chinensis,Chinese pistachio
Phellodendron amurense (trial), Amur cork tree
Sapium sebiferum, Chinese tallow tree
Stenocarpus sinuatus, Firewheel tree
Styphlonobium japonica, Pagoda tree
Tipuana tipu, Rosewood
Nyssa sylvatica, Tupelo

Large Feature Trees
Angophora floribunda, Rough-barked apple
Araucaria sp.
Cedrus sp., Cedar
Eucalpytus chapmaniana, Bogong gum
Eucalyptus tricarpa, Red ironbark
Ficus macrophylla, Moreton Bay fig
Livistonia australis, Cabbage tree palm
Metasequoia glyptostroboides, Dawn redwood
Phoenix canariensis, Canary Island date palm
Pinus sp., Pines
Quercus virginiana, Californian live oak
Ulmus glabra, Golden Elm
Washingtonia robusta, Mexican fan palm

Medium to Small Feature Trees
Acacia melanoxylon, Blackwood
Acmena smithii, Lilly pilly
Banksia sp,
Brachychiton sp,
Callitris glaucophylla, White cypress pine
Casuarina sp./Allocasuarina sp.
Cuppressus sempivirens, Mediterranean cypress
Eucalyptus cornuta, Bushy yate
Eleocarpus reticulatus, Blueberry ash
Ficus rubiginosa, Rusty fig
Hymenosporum flavum, Australian frangipani
Maclura pomifera, Osage-orange
Olea europea, Olive
Washingtonia filifera, Desert fan palm
Davidia involucrata, Dove tree

Frequently Asked Questions

Where can I find out more information about Melbourne's urban forest?

A wide range of information about Melbourne's urban forest can be explored at http://www.melbourne.vic.gov.au/urbanforest

What can I do to contribute to Melbourne's urban forest?

If you have a garden or room for a tree, you can contribute by planting in your own yard. If you own or manage a building, development, or institution you can contribute by planting in the grounds or by greening walls, roofs or balconies.

You can also contribute by staying informed about the urban forest and by talking to others about the benefits of having trees in our urban areas. Council will continue to provide opportunities for the community to volunteer their time and ideas to help achieve urban forest objectives. If you would like to be added to our mailing list, or have an urban forest idea you'd like to share, please email your details to melbourneurbanforest@melbourne.vic.gov.au.

I have seen a sick or damaged tree, or an empty tree plot. How can I tell Council about it?

Please email the location and a description of the issue to treeplanning@melbourne.vic.gov.au.

Can I plant a tree in a public space?

Trees can only be planted on public land with council authorisation or through a sanctioned public planting activity. However, if there is a location where you would like to see a tree planted then you can send a request for tree planting to treeplanning@melbourne.vic.gov.au.

Can I make a garden in a public space?

Please refer to the City of Melbourne's Street Garden Guidelines, which can be found at http://www.melbourne.vic.gov.au