



DOCKLANDS URBAN FOREST PRECINCT PLAN 2014 – 2024

DRAFT

Docklands Urban Forest Precinct Plan 2013 - 2023

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. An increasing body of evidence and research informs us that urban forests and green space are vital to supporting a healthy community as well as providing a means to adapting to climate change.

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
Chair Environment Portfolio

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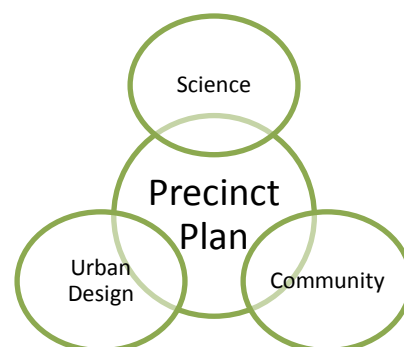
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Introduction to the precinct plans

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.

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

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*



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

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.

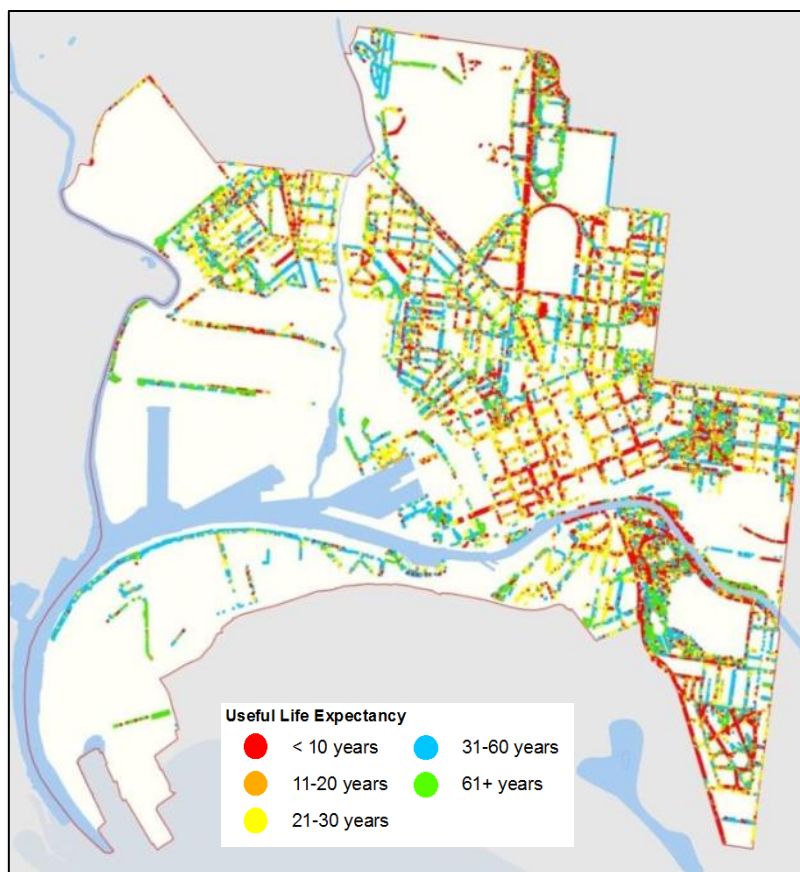
The urban heat island effect (whereby urban areas are several degrees hotter than surrounding rural areas) means that central Melbourne will reach threshold temperatures for heat related illness in vulnerable populations more often and for a longer duration than surrounding suburban and rural areas. 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.

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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.



Useful life expectancy mapped for City of Melbourne Trees.

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.

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.

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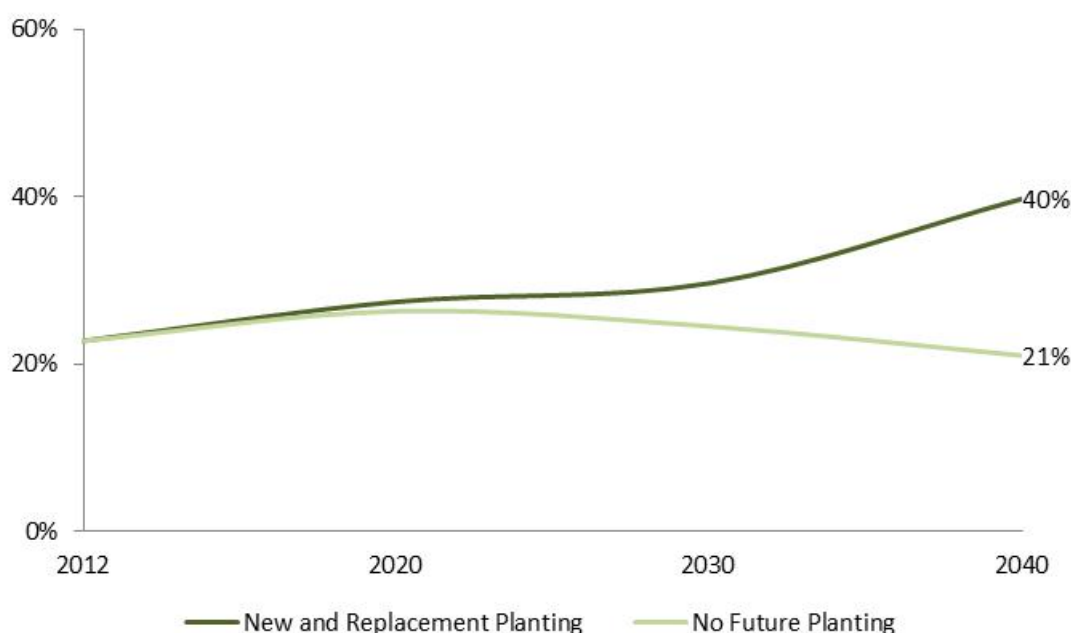
Tree diversity and vulnerability

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.

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.

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.

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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 Docklands 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. The *Docklands Community and Place Plan*, *Docklands Public Realm Plan*, the *Open Space Strategy*, the *Harbour Esplanade Master Plan* and future development areas strongly influence the future character of the precinct.

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The vision for Docklands' urban forest

Docklands' urban forest will be a mix of global and native species with seasonal colours, textures and scents that complement the precinct's connection to water and its architecture. The green, leafy canopy will provide shady, sheltered spaces that are welcoming, accessible and surprising. Sustainable design will support multiple layers of planting that attracts birds and brings nature into the Docklands.



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 5% 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.

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In and adjacent to the Docklands precinct, the Port of Melbourne, State Government and developer community 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

Docklands was not planted until recently. Prior to settlement, Docklands was part of an estuarine ecosystem and therefore would not have supported tree cover. The 3,000 trees now in Docklands have predominantly been planted since the first residents moved into Docklands in 2001. The 2008 *Melbourne Docklands Tree Strategy* had guided species selection within the precinct and this precinct plan.



Map shewing the site of Melbourne and the position of the huts & buildings previous to the foundation of the township by Sir Richard Bourke in 1837 [cartographic material] / surveyed & drawn by Robert Russell. State Library of Victoria.

Docklands character

The redevelopment of Docklands began 16 years ago. In that time its population has grown to 7,000 residents and 25,000 workers.

Docklands is located where Victoria Harbour, Yarra River and Moonee Ponds Creek intersect resulting in 7 km of waterfront edge within the precinct. The *Docklands Public Realm Plan* describes the following future for Docklands:

Docklands will capture the essence of Melbourne's waterways by embracing the Yarra River, Victoria Harbour and Moonee Ponds Creek.

Docklands will have a seamless network of welcoming public streets and waterfronts and a well-linked family of diverse public spaces that provide a choice of experiences, activities and journeys, for many people at various times of the day and night throughout the seasons.

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Harbour Esplanade forms the central spine of Docklands as the primary destination waterfront, parkland and civic spine of the precinct. Several of the 30 m wide east-west city streets (Collins, Bourke, La Trobe and Dudley Streets) extend across the Spencer Street railway lines, linking the central city to Docklands. Laid across these is a less regular array of new secondary streets in Docklands. Generally, these cross-streets occur at more frequent intervals and are 16-18 m in width.

Separating the CBD and Docklands is the rail corridor and a series of at grade and elevated vehicle and pedestrian links extending the Hoddle Grid street layout across to Docklands. Planting on structure is common in Docklands and will increase as decking extends across roads and rail yards, and as the wharfs are further developed. As the remainder of North Wharf is developed in future, this new precinct will be finer grained with a more local character and close connection with the water on this narrow peninsula.

The urban forest has an important role to play in creating welcoming and connected spaces in Docklands. Themes of creating an urban forest that celebrates the precinct's unique waterfront character were prevalent in community engagement.

Docklands urban forest is young and its character is still evolving. The deciduous tree canopy of the Hoddle Grid is continued down the connecting streets. A predominantly native, evergreen character is prevalent throughout the rest of the precinct. A number of difficult planting conditions are encountered in the precinct and a certain amount of trialling is appropriate in order to identify successful species. To achieve the future vision desired by the community, it will be essential that new developments create good planting opportunities, including the provision of adequate soil volume to achieve large canopy tree growth.



Aerial view of Victoria Dock, 1920 - 1939. Museum Victoria.

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Community priorities

Docklands 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 Docklands' urban forest.

Consultation highlighted that Docklands is a unique part of Melbourne and the urban forest planting should respond to its uniqueness, Australian identity and waterfront connection.



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

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Our work with the Docklands community indicated a preference for trees that would add to the social, cultural and aesthetic value within Docklands as well as providing canopies that would mitigate wind, capture water and foster biodiversity.

Desired future states defined by the community:

- Green, leafy, native
- Shady, sheltered from wind
- Varied in colour, texture, scent, understory, seasons, height, shape
- Social, evocative, peaceful, natural, vibrant, elegant
- Connected to the water
- Water sensitive.

Urban forest benefits highlighted through community consultation:

- Shade
- Biodiversity
- Aesthetic beauty
- Psychological benefits (e.g., sense of calm, soothing etc.)
- Social cohesion
- Cultural (e.g., indigenous trees, nativeness, connection to water)
- Wind mitigation
- Water capture and storage

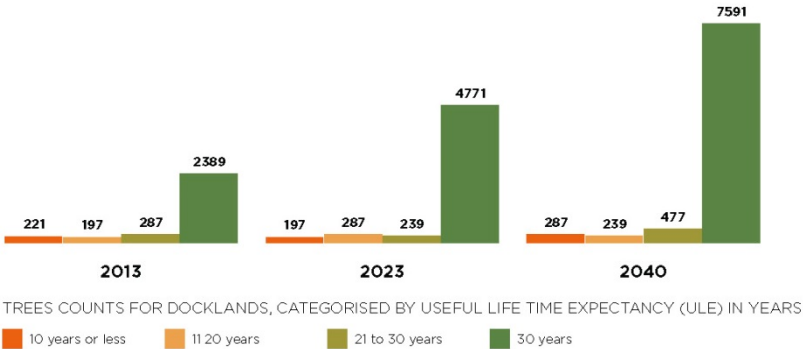


Docklands community members developing priorities for planting in the precinct.

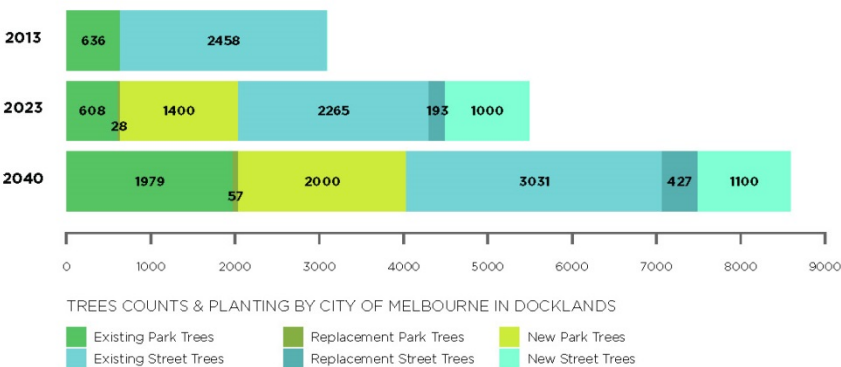
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Docklands' urban forest in 2013 and its projected future

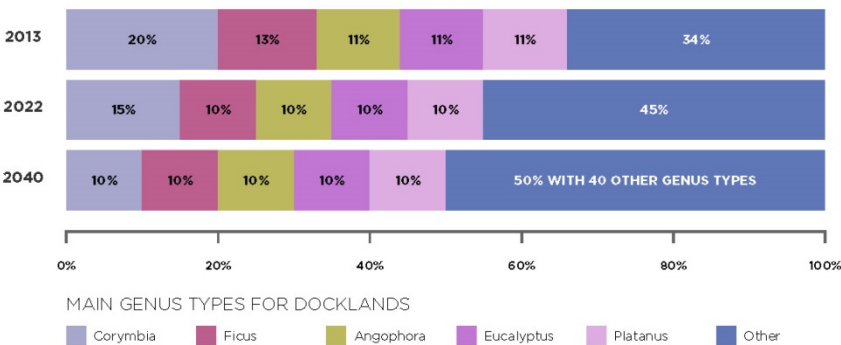
TREE HEALTH (ULE) - PUBLIC REALM



TREES - PUBLIC REALM

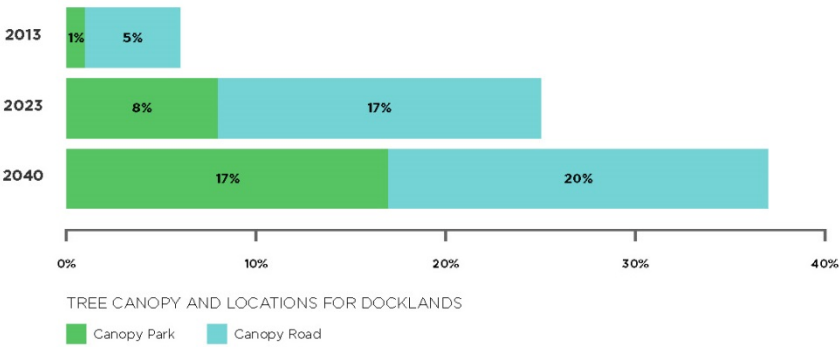


DIVERSITY (BY GENUS) - PUBLIC REALM

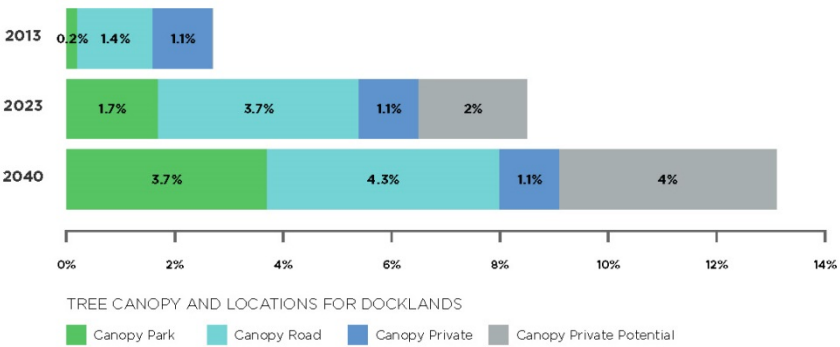


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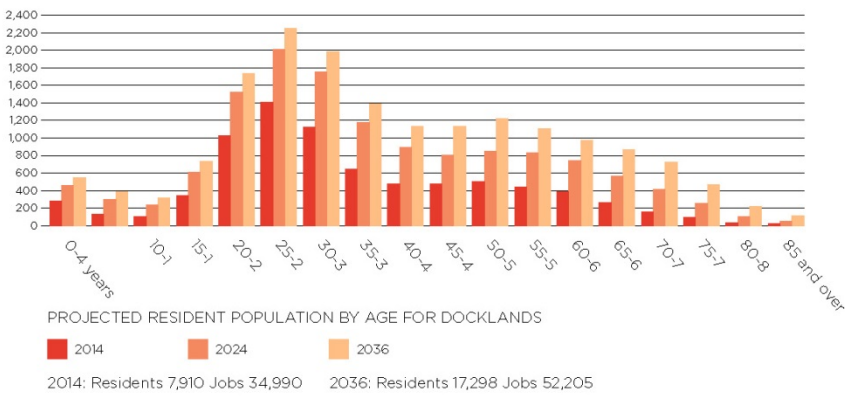
CANOPY - PUBLIC REALM



CANOPY - ENTIRE PRECINCT



PRECINCT POPULATION DISTRIBUTION - RESIDENTS



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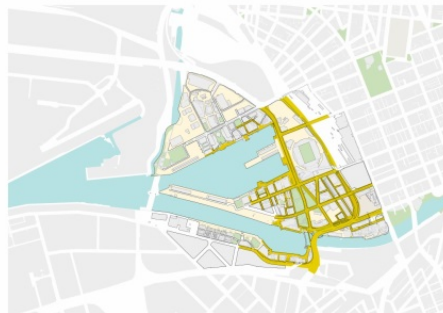
Prioritising tree planting in streets

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 overleaf.

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%



How the Precinct Plan Guides Annual Planting

Inputs



Set Annual Planting program

Priorities (Map 1)
Streets Undergoing Unforeseeable 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 Palette



Implement Planting

Produce Streetscape Design Options
Consult with Residents
Plant

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. Unforeseen 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.

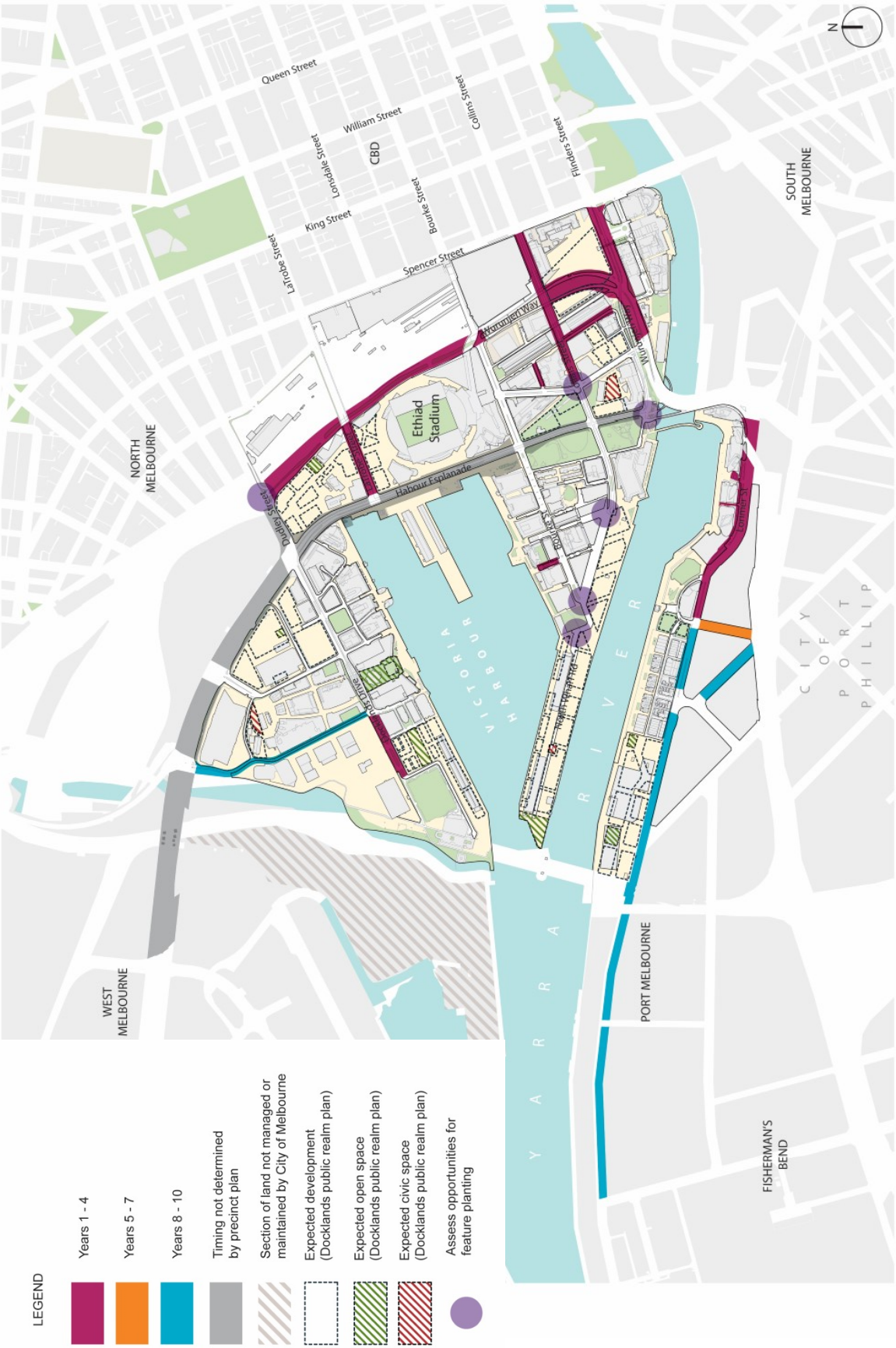
Streets prioritised for work in Years 5 – 7 (2017 – 2019) include those:

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.

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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 Urban Forest Diversity Guidelines and should be referred to when designing or planting any streetscape; however Docklands specific principles are outlined below. As many areas of Docklands are still under development, there is opportunity design these areas to maximise the potential for tree growth.

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. In Docklands feature trees can be used to create individual identities for sites and sub-precincts. Consider extending the character of the gardens into the surrounding streetscapes to create linkages between open spaces. Outcomes that improve the pedestrian environment should always be prioritised.

Planting on structure

Much of Docklands waterfront areas are wharf structures which extend beyond the sea walls that form the edge between natural ground and the adjacent waterways. Large areas of bridging structures also connect Docklands to the Central City across the railway corridor and Wurundjeri Way.

While the first option for any city greening should be planting inground where vegetation has access to natural soil and ground water, a significant proportion of the public realm is on structure in Docklands and it is important to consider how these spaces can contribute to the Urban Forest.



The cost of planting on structure is substantially greater than planting in ground but the potential benefits of greening these areas can be considerable in reducing wind, providing shade, open space amenity, connectivity of the streetscape and a range of ecological services.

Planting on structure requires creating a growing environment for vegetation that provides: sufficient soil volume and suitable growing media to support the growth and stability of the planting, drainage and irrigation. The weight loading either of the existing or proposed structure needs to be appropriate to support the dead/live and transient loads of the growing environment, the mature vegetation, as well as the weight of people and vehicles that may use the space. The available depth of structure will also determine what type of planting can be supported and if the planting needs to be raised above the deck level to create sufficient space.

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The *Urban Forest Diversity Guidelines* provide further details on soil volume requirements for containerized trees and details the Crown Projection Method to be used when determining the soil volume required for a tree of a given size.

All vegetation on structure relies more on ongoing inputs and maintenance, and is more vulnerable to failure due to infrastructure failure or change of management and ownership. The selection of vegetation in these locations will be subject to the limitations of the growing that can be achieved, and also needs to be able to cope with strong winds and be salt and heat tolerant.

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 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.).

Docklands presents a range of challenges for tree growth due to the underlying soil conditions, wind exposure, saline air, sometimes limited solar access and building canopies/awnings. Planting site preparation, stock selection and, to an extent, species trials are critical to establishing a successful urban forest in Docklands. 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 Docklands. 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).

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

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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 Docklands precinct has been heavily modified. The landscape would have been periodically inundated with saline water and therefore a low water table, saline soil or contamination may be encountered. Given the level of modification variable fill and Coode Island Silt are likely to be common.



The Yarra River, Moonee Ponds Creek and Victoria Harbour are the focus of the Docklands precinct and the streetscapes. Public 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 waterways.

Map 2: key planting constraints

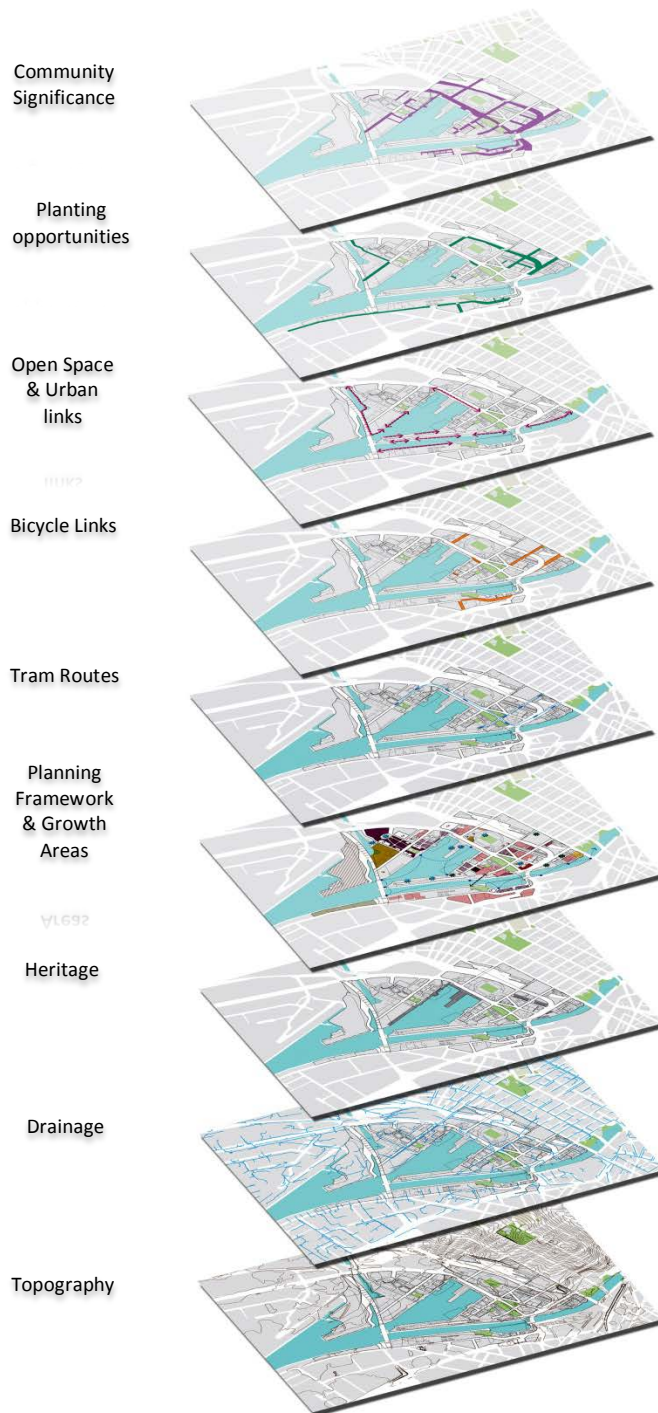
This map indicates locations where overhead constraints or tramlines have been identified and may impact tree selection and the maximum canopy cover that can be achieved. Low voltage overhead wires associated with electricity distribution and tram lines have minimum clearance distances from vegetation 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.

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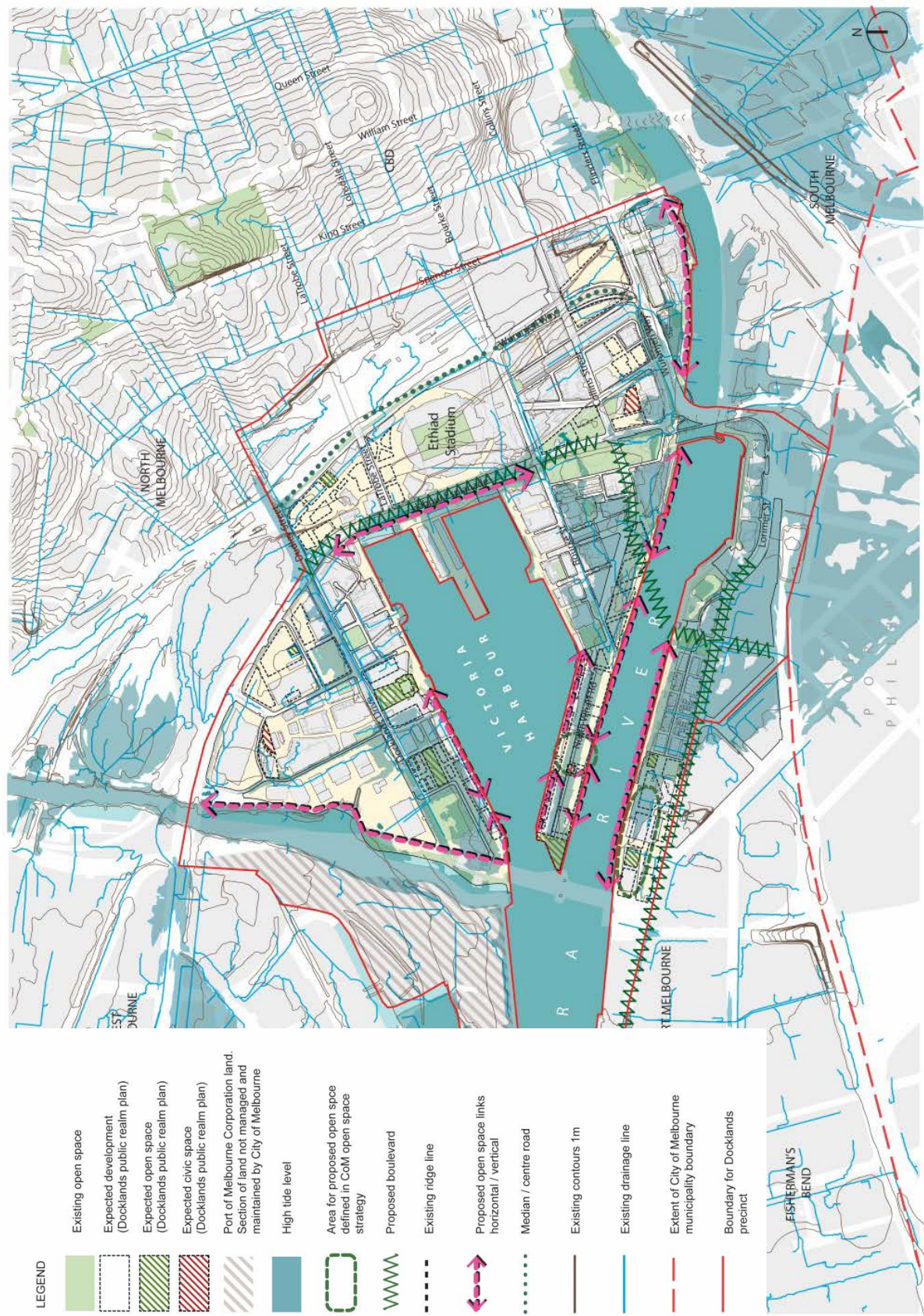
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These maps show some of the many layers of information that influence the opportunities and objectives for tree planting in Docklands Streets.



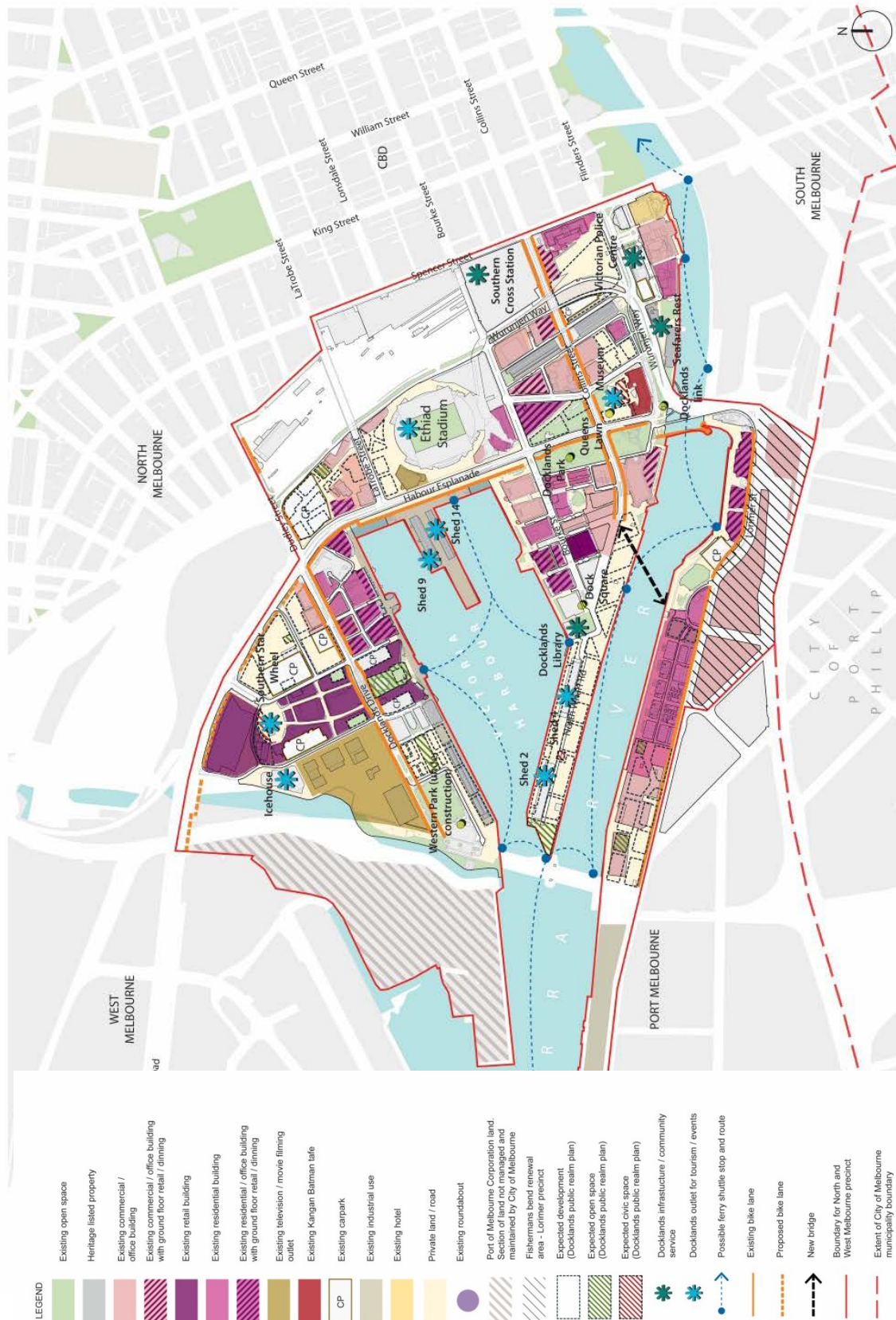
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Map 3: natural and open space context



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Map 4: strategic context



Map 5: Planting sub-precincts

Harbour Esplanade parklands and waterfront

As the central spine of Docklands this precinct provides the primary destination waterfront and the civic spine of the esplanade and the series of parklands that extend to the Yarra River.

Docklands Park is characterised by its native vegetation and it forms part of the biodiversity corridor that links with the Yarra River. This is an important connector for trams, vehicles, pedestrians and cyclists and the further development of these open spaces needs to consider how these spaces are enhanced to create a strong character for Docklands and the quality of the amenity and microclimate to support public use.

Moonee Ponds Creek/Waterfront City Precinct

This precinct is characterised by its large destination facilities including the observation wheel and studios and the future Western Park. This new parkland will provide a regional open space for Docklands that connects Docklands Drive with the creek and harbour front. The planting of Docklands Drive and the park will provide drainage capture and biodiversity links to the creek. This low lying area drains to the Moonee Ponds creek and is subject to flooding. Other planting in the precinct should support the ecological quality of the creek.

New Quay Precinct

This waterfront residential and maritime precinct will be further enhanced by a series of new open spaces to serve the local community. This area can also be enhanced as a waterfront destination for visitors to Docklands and enhancing the local character of the public realm.

Digital Harbour

This small precinct is a pocket of mixed use development that is quite distinct from other parts of Docklands. The network of streets and small parklands should create an intimate and protected public realm.

Stadium Precinct

The Stadium precinct includes a substantial area of elevated pedestrian spaces which provides key links from the city across the rail corridor and Wurundjeri Way. Opportunities for planting on structure through these connectors should be considered to increase the connectivity of the urban forest and improve the microclimate on these large paved areas.

Spencer St Rail Precinct

Separating the CBD and Docklands this precinct is occupied by the rail corridor with a series of at grade and elevated vehicle and pedestrian links extending the Hoddle Grid street layout across to Docklands. Planting on structure is a key aspect of continuing the Collins Street plane tree avenue through this area. The landscape corridor along Wurundjeri Way supports large trees which form an important avenue and green threshold to the entry to Docklands from the city.

Batmans Hill Precinct

Further development over the railway lines will create a new urban precinct that connects Collins and Flinders Street. New parkland and urban spaces will be built on structure and will provide local open space amenity. The interface of this precinct with Wurundjeri Way creates the opportunity for substantial planting along these wider open spaces.

Seafarers Precinct

This small pocket of waterfront is separated from the rest of Docklands by Wurundjeri Way and Charles Grimes Bridge with only the new Jim Stynes pedestrian and cycle bridge providing a

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connection. The existing sheds and park are in the process of being redeveloped and provide the opportunity to support biodiversity along the Yarra River and links through to the city.

Victoria Harbour East Precinct

The Victoria Harbour street layout has strong connection to the CBD with Collins and Bourke Streets extending through and converging at the community hub at Dock Square and the Library.

Victoria Harbour West Precinct

As the remainder of North Wharf is developed in future, this new precinct will be finer grained with a more local character and close connection with the water on this narrow peninsula. There are opportunities to create a diverse urban forest in this precinct with the small streets and local parks containing a mix of species that can be quite different in character.

Yarra's Edge Precinct

The southern side of the river includes a continuous corridor of parkland along the waterfront and the avenue planting along Lorimer Street. The smaller streets are important in creating a more intimate scale alongside the tower developments.

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Map 6: canopy cover and biodiversity 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 or decking that cannot accommodate adequate soil volume for a tree. Planting configuration should seek to maximise canopy cover in all cases.

Biodiversity

The Yarra and Moonee Ponds Creek are important ecology corridors and the precinct plan will look to enhance habitat and biodiverse connections along these waterways and the drainage lines that feed into them.

Opportunities to enhance biodiversity would include selecting bird and pollinator attracting species and adding layers of vegetation to provide structural diversity. Avenue and linear open space corridors along Harbour Esplanade and Docklands Boulevard will also play a key role in supporting biodiversity. Other streets may also provide opportunities for understorey planting.



Minimum canopy of 20%

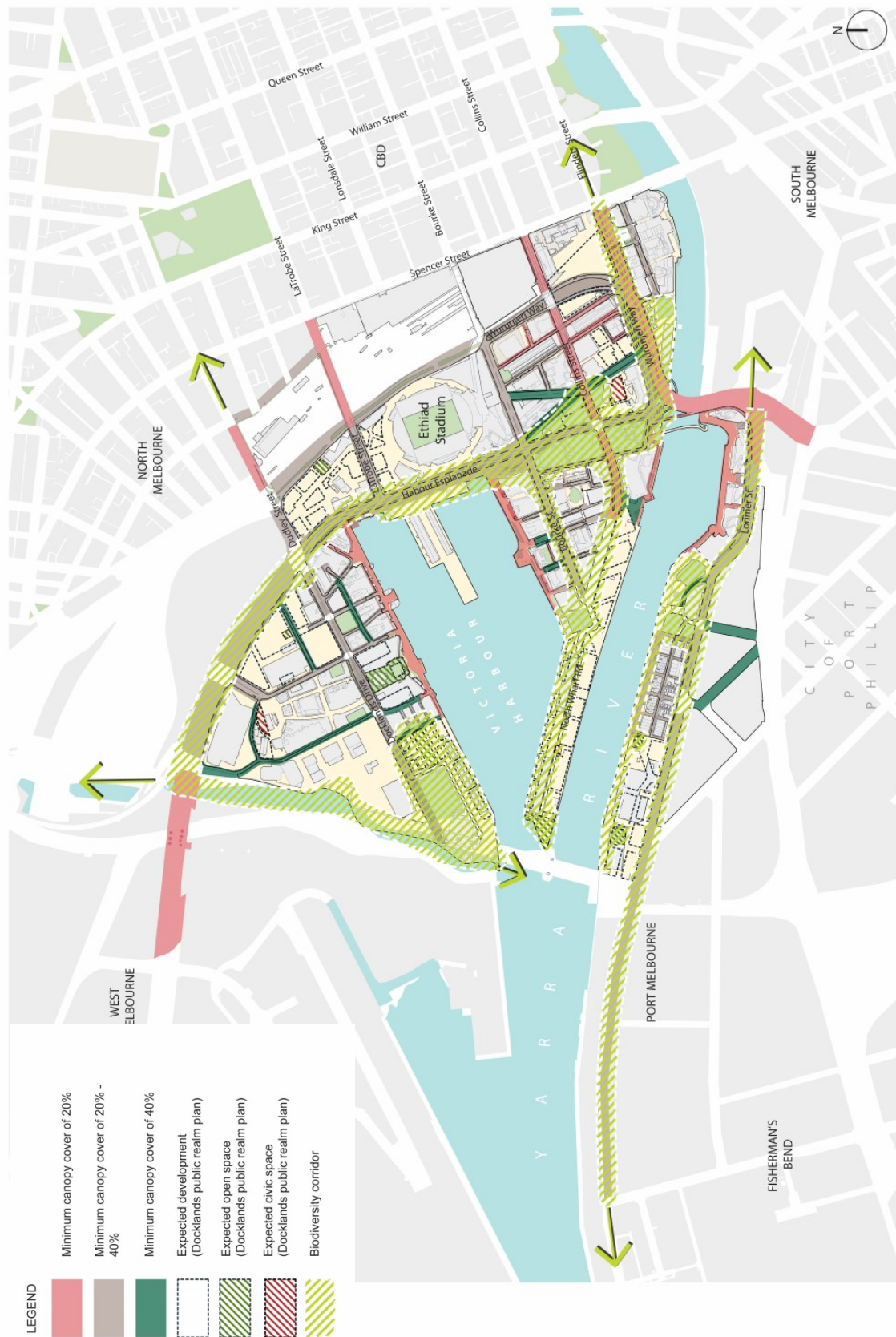
Canopy of 20 – 40%



Minimum canopy cover of 40%

Biodiversity planting

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Map 7: what should stay and what should change?

Corymbias and Angophoras (gums), figs, planes and eucalypts are core genera within Docklands'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. 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.

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LEGEND	
Existing open space	
Proposed genus change	
Section of land not managed or maintained by City of Melbourne	
Expected development (Docklands public realm plan)	
Expected open space (Docklands public realm plan)	
Expected civic space (Docklands public realm plan)	
Street with majority plane tree (<i>Platanus</i>) population	
Street with plane tree (<i>Platanus</i>) integrated with other tree species	
Street with majority gum tree (<i>Angophora</i>) population	
Street with gum tree (<i>Angophora</i>) integrated with other tree species	
Street with majority gum tree (<i>Corymbia</i>) population	
Street with gum tree (<i>Corymbia</i>) integrated with other tree species	
Street with majority Eucalyptus population	
Street with Eucalyptus integrated with other tree species	
Street with majority fig tree (<i>Ficus</i>) population	
Street with majority fig tree (<i>Ficus</i>) integrated with other tree species	

LEGEND

Change from plan in roadside:

1

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.

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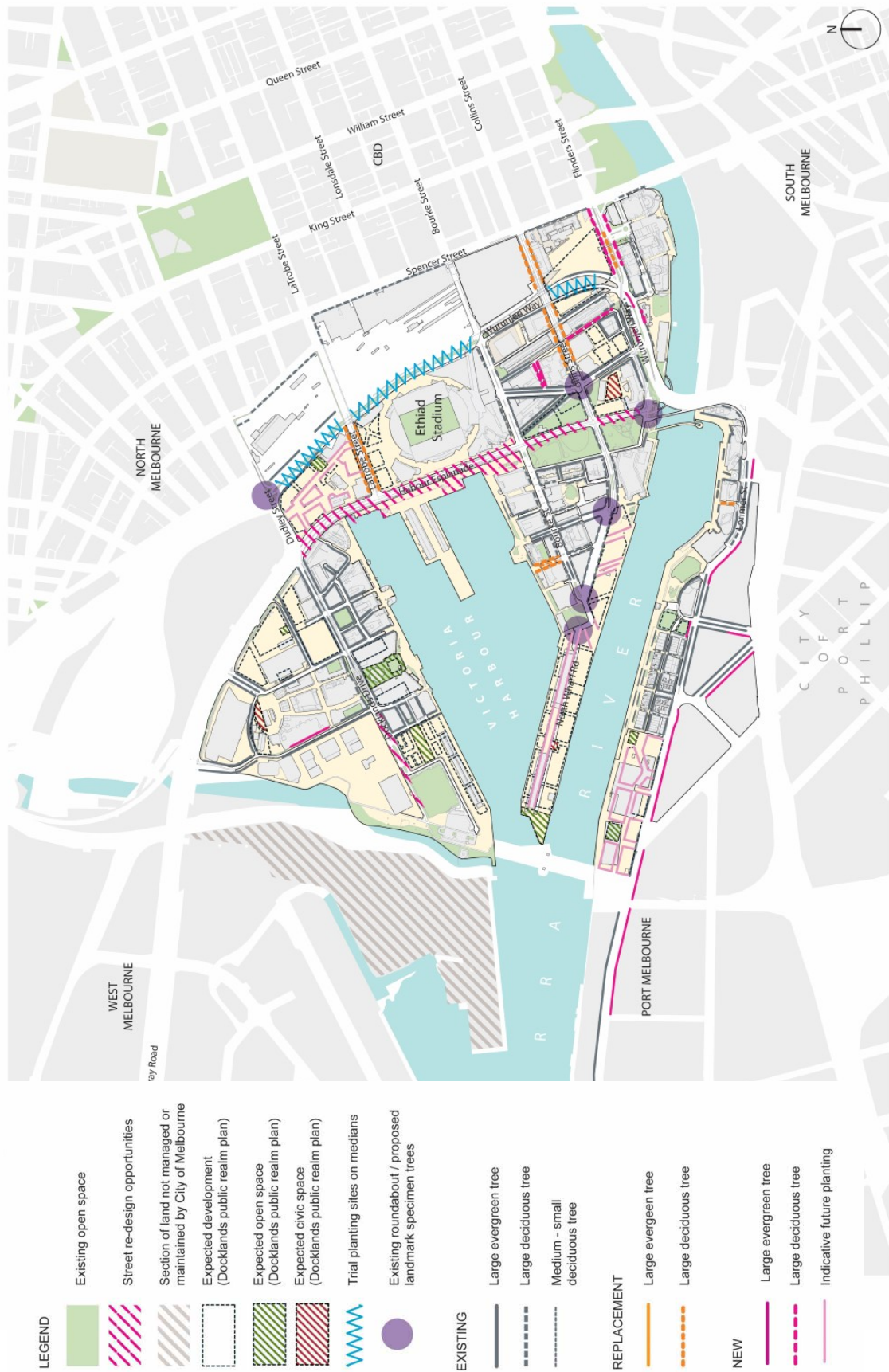


Map 9: 10-year planting plan

This plan provides direction on where new and replacement planting is to occur across Docklands. 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.

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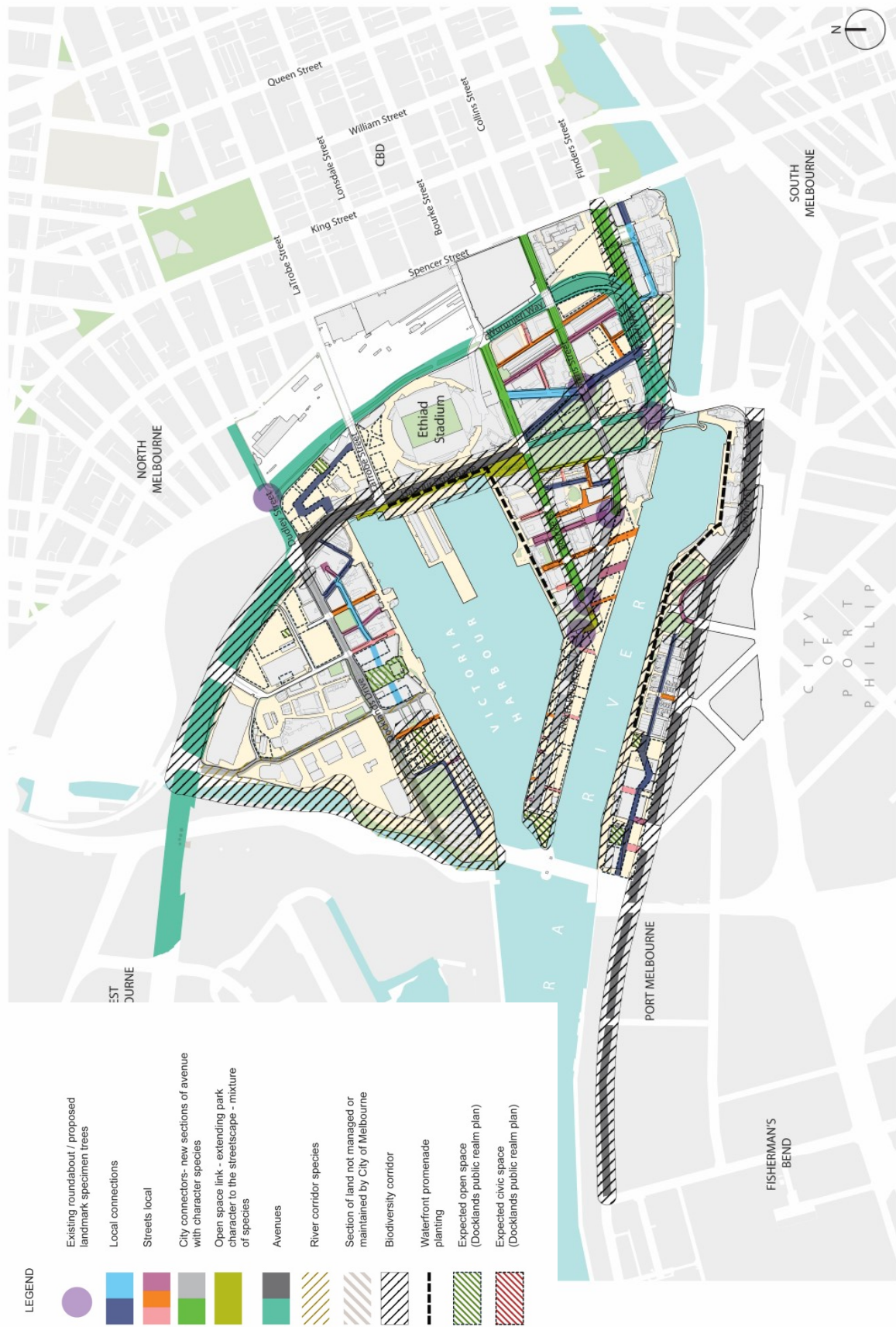
Map 10: guide to species change

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. 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. When appropriate, use informal mixes of species along perimeters of parks and gardens or where vegetation from private gardens overhangs the streets.

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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 Docklands, Guiding Principles and Planting Plan. Elms and planes are key genera within Docklands, 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 Docklands'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 Docklands Trees (Limited Future Use)

Evergreen

Angophora costata, Smooth-barked Apple
Corymbia citriodora, Lemon Scented Gum
Corymbia maculata, Spotted Gum
Ficus macrocarpa var. *Hillii*, Hill's Fig
Platanus sp., Plane

Large Trees for Streets

Evergreen

Araucaria spp.
Calodendron capense,
Cinnamomum camphora, Camphor Laurel
Eucalyptus tricarpa, Red ironbark
Ficus sp.
Harpephyllum caffrum, Kaffir plum
Pinus sp.

Deciduous

Quercus sp.
Toona ciliata, Australian red cedar

Medium Trees for Streets

Evergreen

Banksia integrifolia, Coastal Banksia
Banksia serrata, Saw Tooth Banksia
Brachychiton sp.
Buckinghamia celsissima, Ivory curl tree
Cupaniopsis anachardioides, Tuckeroo
Eucalyptus leucoxylon subsp. *megalocarpa*, Red flowering yellow gum
Eucalyptus mannifera, Canberra Gum
Elaeocarpis reticulatus, Blueberry Ash
Geijera parvifolia, Wilga
Hakea bucculenta, Red Pokers
Hakea francisiana, Grass Leaf Hakea
Laurus nobilis, Bay Laurel

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Olea europea, Olive
Podocarpus elatus, Plum pine
Syzygium spp. (Waterhousea)
Tristaniaopsis laurina, Kanooka

Deciduous

Brachychiton sp.
Celtis australis, European nettle tree
Fraxinus pennsylvanica, Green ash
Koelreuteria sp.
Melia azedarach, Australian white cedar
Sapium sebiferum, Chinese tallow tree
Stenocarpus sinuatus, Firewheel tree
Ulmus parvifolia, Chinese Elm

Large Feature Trees

Agathis robusta, Queensland Kauri
Angophora floribunda, Rough-barked Apple
Araucaria heterophylla, Norfolk Island Pine
Araucaria cunninghamii, Cook's Pine
Ficus macrophylla, Moreton Bay fig
Flindersia australis, Crows Ash
Livistonia australis, Cabbage tree palm
Phoenix canariensis, Canary Island date palm
Pinus sp.
Quercus accutissima, Sawtooth oak
Schinus sp.
Washingtonia robusta, Mexican fan palm
Washingtonia filiera

Medium Feature Trees

Afrocarpus falcatus (trial), sickle-leaved yellowwood
Arbutus unedo, Strawberry Tree
Buckinghamia celsissima, Ivory curl tree
Brachychiton sp.
Callitris glaucophylla, White cypress pine
Dracena draco, Dragon blood tree
Ficus rubiginosa, Port Jackson fig
Grevillia robusta, Silky oak
Casuarina & Allocasuarina species, She Oak

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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 volunteer as a Citizen Forester, please email your details to urbanforest@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 urbanforest@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 urbanforest@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>