AUGUST 2023

URBAN FOREST STRATEGY 2023–30

A framework for protecting and enhancing Kingston's urban forest

City of KINGSTON

Acknowledgement of Country

The City of Kingston proudly acknowledges the Bunurong People of the Kulin Nation as the Traditional Owners and Custodians of this land, and we pay our respect to their Elders, past, present and emerging.

Council acknowledges the Bunurong's continuing relationship to the land and waterways and respects that their connection and spiritual identity are maintained through ancient ceremonies, songlines, dance, art and living culture. We recognise that the knowledge and wisdom of Country have always been here, and it is our vital responsibility to listen, learn and stand in solidarity.

Council will seek to support and enable current and future generations of Traditional Owners to care for and respect Country and will seek out Bunurong Land Council perspectives and continue to shape Council action accordingly.

Other Acknowledgements

Greener Places, Better Spaces & Living Melbourne, The Greener Neighbourhood Guide, the Department of Environment, Land, Water and Planning.

Consultancies: Xylem Trees, Lyndal Plant Urban Forester, Mosaic Insights, Player Piano, Meg Caffin and Lachlan Hughes.

Bayside City Council, Moreland City Council, Manningham City Council, Melbourne City Council and Frankston City Council.

Cover image: Hannah Lin.

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Executive Summary

This is the City of Kingston's first Urban Forest Strategy.

It aims to protect and enhance our urban forest, increasing our tree canopy cover from 12.3% to 15.3% by 2030 and to 20% by 2050.

This is ambitious but achievable based on Kingston's history, dominant land use types, scientific modelling, and technical feasibility.

In developing this Strategy, we have drawn on Kingston City Council and the Kingston community's many strengths, including a widespread appreciation of nature and a willingness to embrace change when opportunities arise. We have identified opportunities that exist due to our unique position in Melbourne's southeast, recognised gaps in our current knowledge and organisational capability, and we are planning for immediate and long-term threats as the impacts of climate change intensify.

The Kingston community loves trees.

Our urban forest is made up of all the trees, vegetation, soil and water on both public and private land across the city. Our community values our urban forest highly. But there is work to be done to shift the way we think about, value, protect and enhance our urban forest.

The Kingston community loves trees. Feedback on our Climate & Ecological Emergency Response Plan and our Urban Cooling Strategy highlighted how important Kingston's natural environment is to our community for amenity, biodiversity, pollution prevention and climate resilience. Community feedback on our approach to developing our Urban Forest Strategy reinforced these attitudes and told us where our community wants action.

Our urban forest is in decline – but we can reverse this trend.

Kingston's tree canopy cover is currently low – just 12.3% – and is in decline. To successfully protect and enhance Kingston's urban forest, it is crucial that Council and the community work together, seek advice from Traditional Owners, and focus on understanding a range of views. Through listening, sharing knowledge and delivering change, the benefits provided by the urban forest can be maximised, in turn benefiting the entire Kingston community.

OUR OBJECTIVES AND OUTCOMES

Objective 1: Strengthen enforcement, controls and incentives

- Increased tree and vegetation cover on private land.
- Stronger protection of trees and vegetation on private land.
- Increased use of green infrastructure in private developments.

Objective 2: Improve strategic and operational decision making

- Increased tree canopy cover across Council-managed land, with an average 30% tree canopy cover in parks and reserves.
- Increased diversity and resilience of Council-managed trees.
- More equitable distribution of tree canopy cover across our suburbs, including increased links between areas with recognised biodiversity value.
- Blue-green infrastructure integrated into all capital works projects.

Objective 3: Enhance communication and engagement

- Improved community understanding of the benefits of trees, and stewardship of our urban forest.
- Increased community participation in greening and biodiversity programs.
- Council's progress in achieving the aims of the Urban Forest Strategy publicly communicated in a timely and accessible manner.

Objective 4: Effective partnerships and advocacy

- Council has clear policy positions for the future of our urban forest and demonstrates consistent advocacy in this area.
- Traditional Owners' views are embedded into the management of our urban forest.
- Council has effective partnerships and can demonstrate project successes.

Objective 5: Improve data collection, analysis and monitoring

- Council's tree data is accessible, up-to-date and informs strategic and operational decision making.

ACHEIVING OUR TARGETS

To achieve our targets, tree removals on private, residential land must be halved; new plantings on private land must double; and high quality, well-maintained new plantings on Council land must continue.

At the same time, we need to prepare for the impacts of climate change that will create stress for our urban forest. This means integrating blue-green infrastructure into landscapes, selecting climate-resilient species and planting canopy shade trees in urban hot spots.

CRITICAL AND HIGH-PRIORITY ACTIONS

Given the immediacy of the challenges, Kingston's Urban Forest Strategy prioritises actions that can result in meaningful increases in tree canopy cover in the shortest amount of time.

The most critical actions seek to immediately address avoidable and illegal tree removals, audits to identify gaps in our street tree plantings, and the development of a community focused engagement and communications program.

High-priority actions are focused on ensuring that replacement trees are planted and maintained at a rate that will compensate for approved removals.

Modelling predicts these actions will contribute 3% to Kingston's tree canopy cover by 2030.

In addition to these critical and high-priority actions, support for community-led initiatives, school-based programs, and community education will aim to increase the value community members place on trees and their sense of stewardship of these amazing assets. Targeted advocacy will ensure other major land holders within the municipality are equally focused on protecting and enhancing our urban forest.

Kingston's Urban Forest Strategy is a key deliverable of our Climate and Ecological Emergency Response Plan. Council understands that significant, additional, urgent action is fundamental to addressing our ecological emergency.

CURRENT ACTIONS PROTECTING AND ENHANCING OUR URBAN FOREST

Significant work is already underway to protect and grow trees and vegetation across Kingston:

- **Free plant giveaways**
  - » Each Autumn, thousands of native plants are given to residents. Over 17,000 plants have been distributed since the program was established in 2019.
- **Increased spending on tree planting and management**
  - » Over 12,000 semi-advanced trees were planted between 2018 and 2022, contributing 1% to Council's tree canopy. In 2023, Council has increased their street tree planting program a further 70% to approximately 4,500 street trees, in addition to planting approximately 45,000 native and indigenous plants.
- **Partnering with Traditional Owners and the community**
  - » Council is working alongside the Bunurong Land Council, Friends Groups and volunteer working bees to protect and enhance biodiversity through weed management and revegetation programs.
  - » The Gardens for Wildlife is a free program helping residents, businesses, kindergartens, and schools to create more wildlife friendly habitats in their gardens and learn about growing indigenous plants. Over 500 properties have participated in the highly popular program since it was established in 2020.

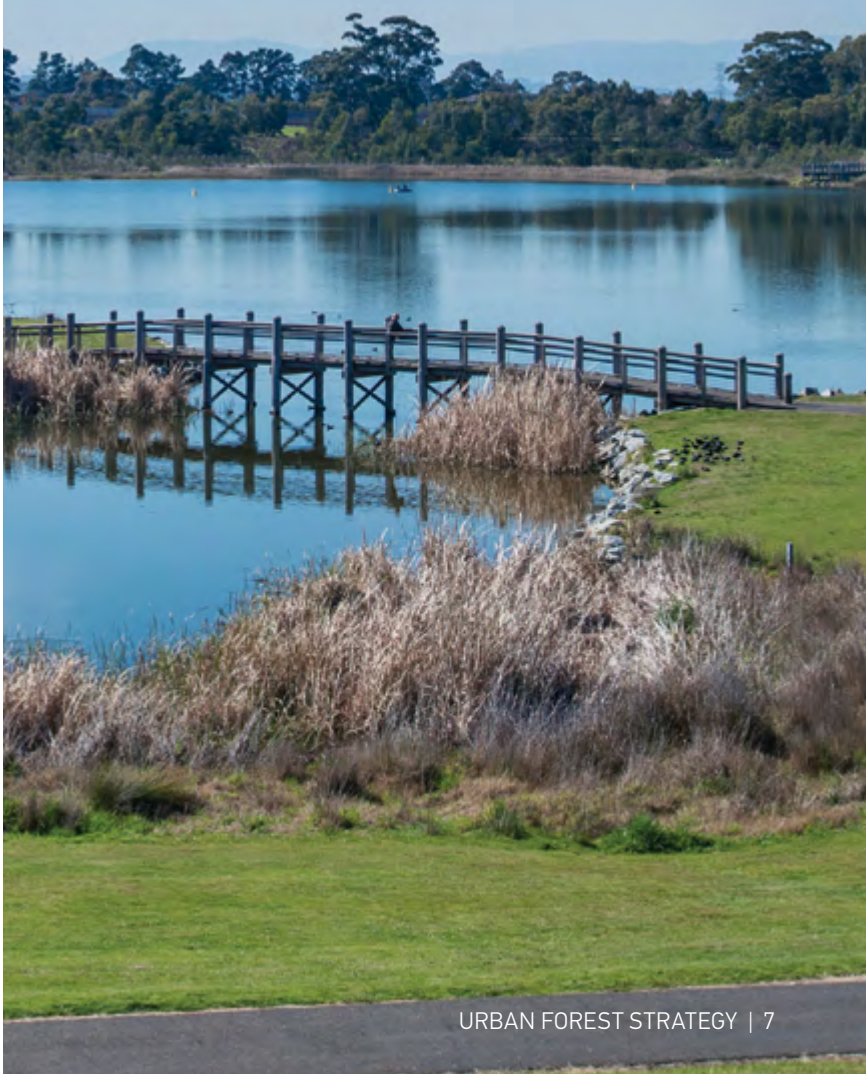
- **Tree protection and planning controls**
  - » Applications for permission to remove one or more protected trees have increased in recent years. Kingston's Community Local Law and Significant Tree Register are important tools to protect trees and ensure replacement plantings occur, while stronger statutory controls are developed and approved.
  - » Council has been working with the community to develop new residential planning controls. These changes will strengthen landscaping requirements for new residential developments, including specific requirements for the planting of canopy trees and the use of green infrastructure.
- **Strong advocacy**
  - » Kingston Council strongly advocates for 3:1 replacement of all removed trees for major state government transport projects, and significant residential and industrial redevelopments.
  - » Where golf courses seek to cease operations, Council advocates for the land to be used for public or private open space purposes that allow the land to retain its green and open vistas.

Definition

Urban forest

/uh·buhn fo·ruhst/
noun

1. All of the trees and vegetation – and the soil and water that support them – that grow in an urban area.



1

Background

1.1 WHAT IS AN URBAN FOREST?

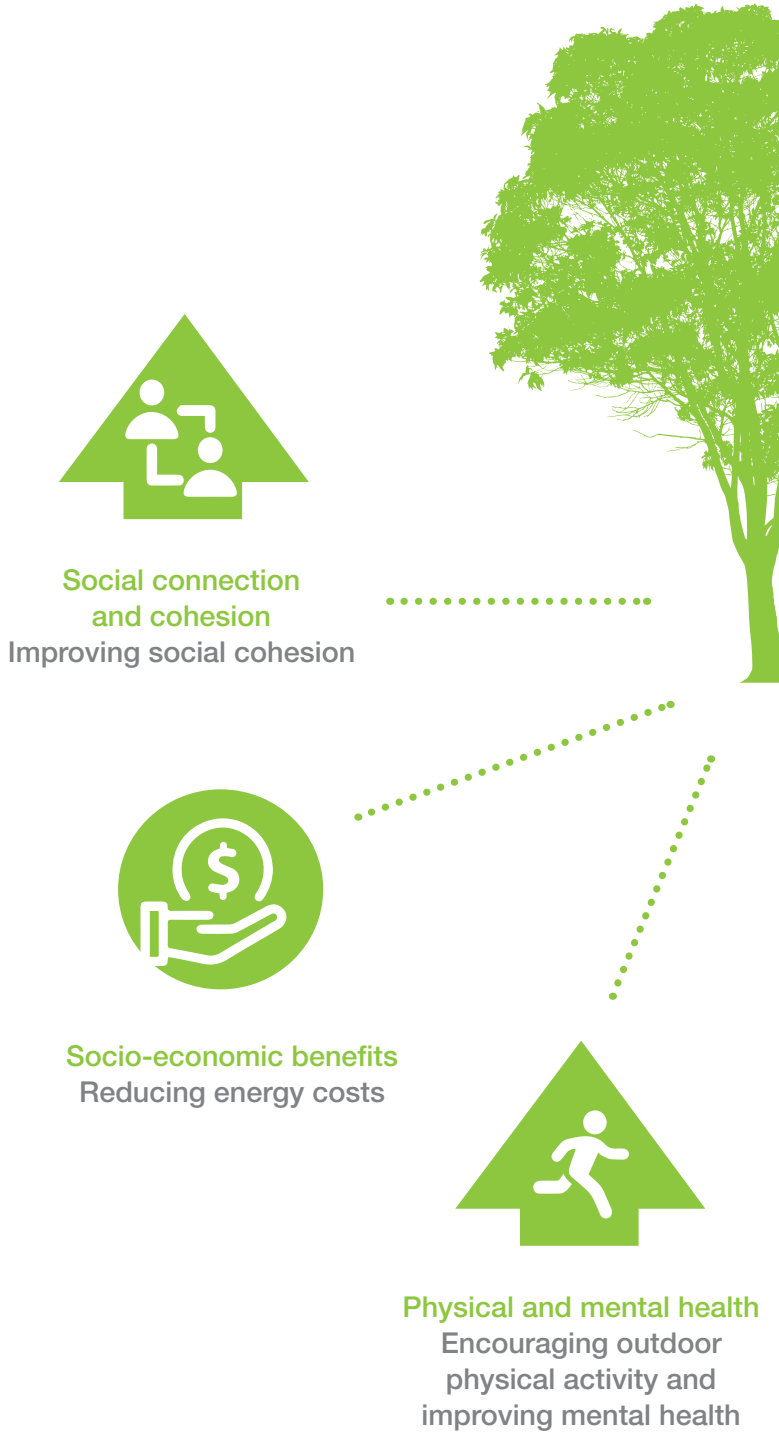
Kingston's urban forest is all the trees and other vegetation – and the soil and water that supports it – within the city. It incorporates vegetation in streets, parks, gardens, boulevards, car parks, wetlands, railway corridors, community gardens, green walls, balconies, roofs and front and back yards.

Urban forests provide critical ecosystem services, such as air and water filtration, shade, habitat, oxygen, carbon sequestration and nutrient cycling. The urban forest also provides a connection to nature that is highly valued in urban areas.

Urban forestry considers the cumulative benefits of trees and vegetation across a town or city. Looking holistically at the urban forest and its associated ecosystem services helps us consider the broader issues of climate change, urban heat, biodiversity loss and population growth that can be influenced by and can affect the urban forest[1].

Management of the urban forest extends well beyond local government. Residents, schools, community groups, developers, business, industry and state and federal government agencies all have important roles to play.

The City of Kingston is responsible for managing the urban forest on Council land, local roads, footpaths, and infrastructure such as drainage. However, Council's influence extends beyond that to trees and vegetation within the private realm, and what it asks of other levels of government. These responsibilities are key focus areas of this Strategy.



Pictured centre: Benefits of nature and the urban forest – extracted from *Living Melbourne: Our Metropolitan Urban Forest* (2019), The Nature Conservancy and Resilient Melbourne.

Ecosystem health
Improving habitat
for native species

Connection to Country
Building stronger individual
and collective identity

Ecosystem services
Providing shade
and cooling our city

1.2
URBAN FOREST BENEFITS

The Kingston community loves trees and vegetation. Feedback on other strategies and plans has highlighted how important Kingston's natural environment is to our community in terms of amenity, biodiversity, pollution prevention and climate resilience. Trees and vegetation provide a range of social, economic and environmental benefits, including:

- Increased connection to nature
- Reduced urban heat and hot spots
- Increased amenity
- Improved liveability, mental health and wellbeing
- Greater use of active transport (via shaded walking and cycle paths)
- Increased habitat and biodiversity corridors
- Improved human thermal comfort
- Reduced mechanical cooling requirements, energy use and bills
- Reduced carbon in the atmosphere
- Reduced air pollutants
- Increased storage of carbon for the longer term
- Reduced local impacts of flooding
- Increased property value.

More people are choosing to live in cities. This presents a series of challenges that reduce and threaten the liveability of our cities.

Kingston's Community Vision includes building the most liveable and sustainable city in Victoria. Nature is increasingly recognised as one of our most valuable, resilient assets for maintaining and improving liveability. To unlock the economic health and social dividends that strengthen our ability to thrive, we must protect and enhance our urban forest[2].

1.3
OUR URBAN FOREST

Trees and vegetation are a part of Kingston's character. The story of Kingston's Sandbelt began almost 80,000 years ago[3].

Kingston Urban Forest Timeline

80,000 to 6,000
years ago

Over thousands of years sea levels rise and fall, progressively forming the sandbelt region characterised by its parrallel sand dunes. The original custodians of the land, the tribes of the Kulin Nation, use fire to alter the species composition in favour of fire adapted plants. Ten vegetation communities develop across the sandbelt, including heathland, wet heathland, swamp scrub, wetlands, coastal and grassy woodland. The Carrum Carrum Swamp, covering 5,000 acres is rich in terms of plant and animal numbers and diversity. Coastal scrub and Coastal banksia woodland extend 500m inland in places.

120
years ago

European settlers arrive. Sand mining commences. Dune areas become dominated b
introduced grasses. European plants and animals are widely introduced. Some remn
communities can be found in parks and reserves, along creeks and railway lines and

Year
2000

Urban development and densification alters the r
it is believed that less than 2% of the areas origi

Year
2001

Council amends Local Law No. 5 (E
of significant trees and vegetation b

Year
2007

Kingston's Biodiversit

Year
2008

Council i
protect t
neighbou

Year
2010

Kingston's Tree Management and Technical Guidelines are developed.

ntroduces the Significant Tree Register and associated planning overlay (ESO3) to rees identified as significant, with the aim of preserving the municipality's leafy urhood character, cultural heritage, history, and biological diversity.

y Strategy is adopted.

Environment and Amenity) to include the protection by requiring a permit for their removal.

natural landscape to such an extent that nal plant communities remain intact.

y weeds and ant vegetation on some golf courses.

Year
2012

Kingston's Green Wedge Plan is published.

Year
2014

Kingston's tree canopy cover is 13.1%.

Year
2019

Kingston's Street and Park Tree Management Strategy is adopted.

Kingston joins with 40 other organisations and formally endorses *Living Melbourne: Our Metropolitan Urban Forest* – a strategy for a greener, more liveable Melbourne.

Year
2020

Kingston declares a Climate & Ecological Emergency and resolves to ensure a 3:1 replacement of all removed trees and 2:1 replacement of native vegetation.

Year
2021

Kingston's Climate and Ecological Emergency Response Plan is endorsed with a priority to develop an Urban Forest Strategy.

Year
2022

Kingston's tree canopy cover is 12.3%. Climate change, urban heat and loss of biodiversity continue to be identified as key issues by the Kingston community via a range of consultations.

1.4

WHO MANAGES THE URBAN FOREST?

It's important to understand who has responsibility for planting, maintaining, and replacing trees and other vegetation across the city.

PUBLIC

Kingston City Council:

Trees and vegetation located in Council parks and reserves, around community buildings, and street trees.

Council also has agreements with other state agencies such as VicRoads, Melbourne Water and Parks Victoria for maintaining some of the trees and vegetation on or around state/crown land.

In the coming years, Council will also be handed responsibility for maintaining the trees and vegetation established as part of Level Crossing Removal Projects (LXRP).

Other Public Land Managers:

Trees and vegetation on public land owned and managed by other state government departments and agencies responsible for education and health, roads, rail, airport infrastructure and other services and utilities.

PRIVATE

Trees and vegetation across residential, industrial and commercial areas, in private schools, large parts of the green wedge, and on privately owned roads and golf courses.

Kingston City Council retains an important regulatory role in relation to protecting and enhancing trees and vegetation on private land through the planning scheme and Community Local Law.

1.5
TREE CANOPY COVER

Tree canopy cover is the area of tree canopy that covers a specific area of land – for example, municipality, suburb, street, land type or block. This important measure of urban forest represents many of its benefits, such as the amount of shade provision, stormwater interception, carbon storage and sequestration, and amenity. Tree canopy is an important starting point for understanding the extent of the urban forest.

In 2022, Council commissioned a detailed analysis of the city's urban forest using LiDAR, aerial imagery and machine learning. Results from this analysis describe Kingston's urban forest via a range of metrics including baseline canopy cover and vegetation condition. This method of analysis will allow Council to track these metrics accurately and cost-efficiently over the lifespan of this strategy.

WHAT IS LiDAR?

Light Detection and Ranging, or LiDAR, is an active remote sensing method used to accurately measure the landscape in three dimensions. When combined with 2-D aerial imagery, LiDAR is an extremely powerful tool for mapping vegetation in both natural and urban environments.

LiDAR is forecast to be an increasingly useful tool for monitoring compliance and assessing the success of developed programs aimed at tree protection and enhancement[4].

The analysis showed Kingston's tree canopy cover is 12.3%.

Figure 1.
An aerial photograph of a residential area in Kingston showing tree canopy outlines as measured by LiDAR and AI. Like tree growth rings, each outline represents one year across the study period (2014 to 2022).

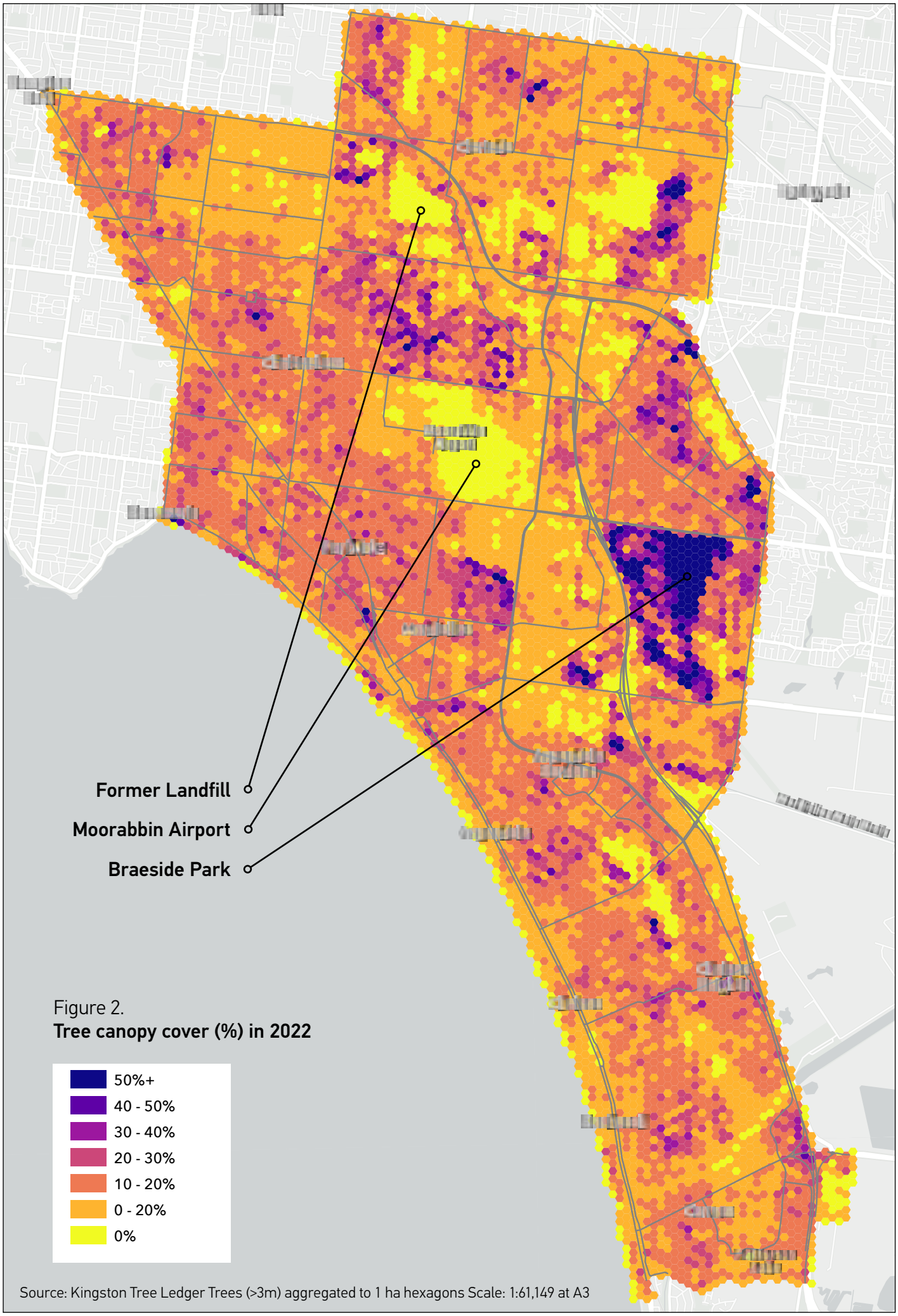
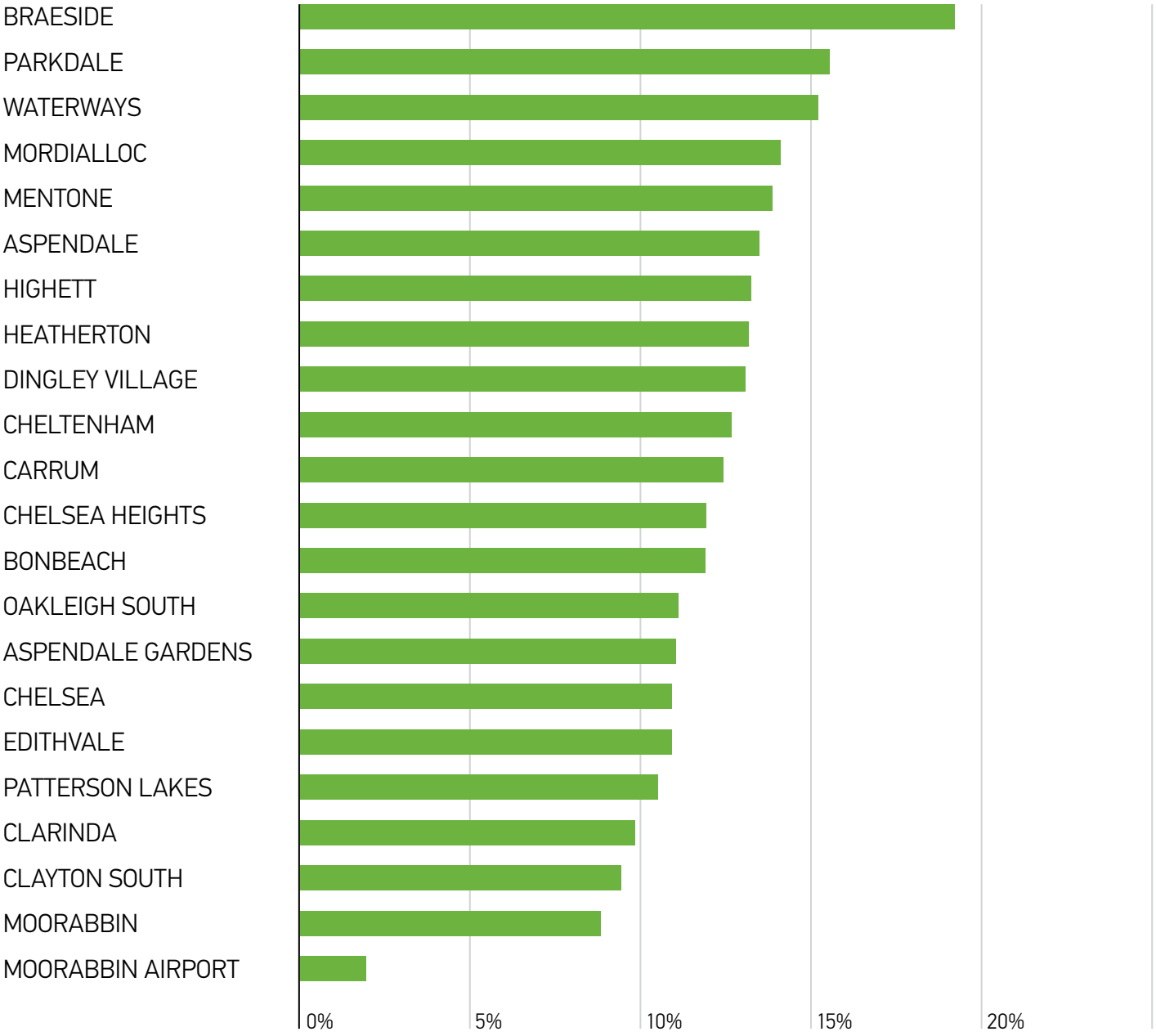


Figure 2.
Tree canopy cover (%) in 2022

Source: Kingston Tree Ledger Trees (>3m) aggregated to 1 ha hexagons Scale: 1:61,149 at A3

Kingston's canopy is not uniform and varies across suburbs.

Figure 3.
Tree canopy cover (%) by suburb in 2022

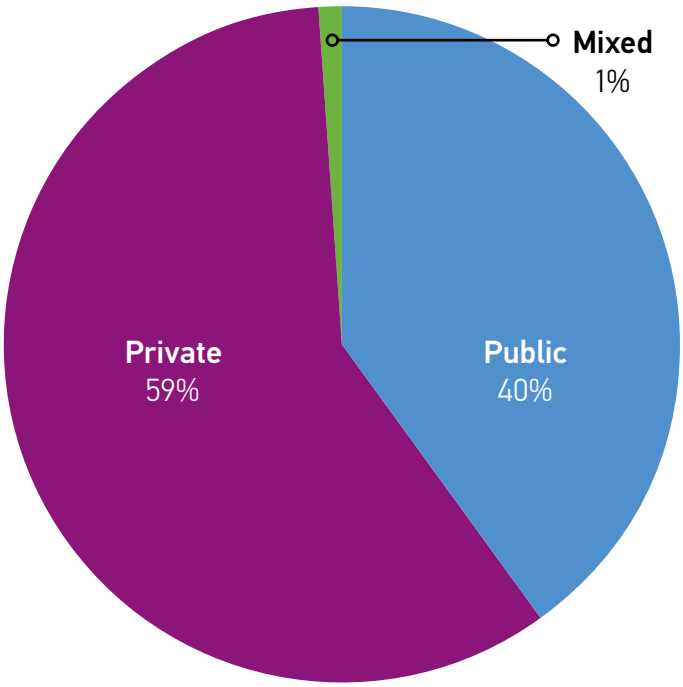


Note: Slight differences between the data presented above and that cited in Kingston's Urban Cooling Strategy are attributable to updated LiDAR data.

1.5.1
LAND OWNERSHIP AND USE

At a land ownership and land use level, there is variation in canopy cover as well. This reflects Kingston's unique geology, land typology and history, including extensive areas of former landfill, significant industrial precincts, an aviation precinct (Moorabbin Airport) and large public and private golf courses. Of the 1,127 ha of Kingston's canopy cover, it is estimated that 40% is on publicly owned land, 59% is in private ownership, with the rest classified as mixed use.

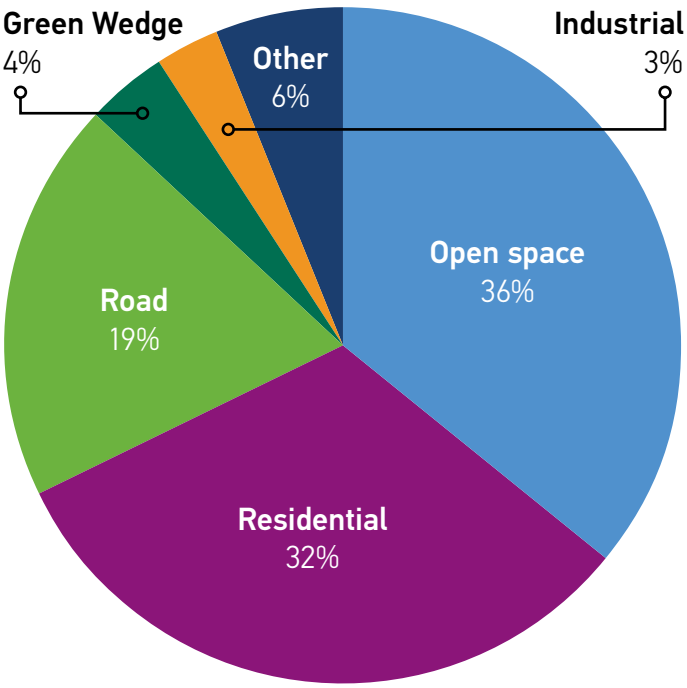
Figure 4.
Tree canopy cover by ownership
(as % of total LGA) **in 2022**



The majority (86.8%) of Kingston's canopy cover is in open space, residential land and roads. Nearly one-third (32%) of Kingston's canopy cover is on residential land – which comprises nearly one-third (32.9%) of land within the municipality. While residential land contributes to a significant portion Kingston's canopy cover, only 3.9% of residential land is covered by tree canopy.

In comparison, over one-third (36.2%) of Kingston's canopy cover is in open space – which comprises less than one-fifth (18.3%) of land within the municipality. Yet, 24.3% of open space is covered by tree canopy.

Figure 5.
Tree canopy cover by land use breakdown
(as % canopy cover that is land use) **in 2022**



Note: Open Space includes all parks and reserves (including those managed by Parks Victoria and Melbourne Water), conservation areas, foreshore areas and golf courses across Kingston.

The majority (86.8%) of Kingston's tree canopy cover is in open space, residential land and roads.

Table 1.
Tree canopy cover and land use breakdown for 2022

Land Use Classification	Canopy as % of total LGA	Land use as % of total LGA	% of land use that is canopy	% of canopy that is land use
Open space	4.5	18.3	24.3	36.2
– Golf courses	1.5	6.3	23.2	11.9
– Council-managed parks and reserves	1.2	7.2	16.2	9.4
– Council-managed natural resource areas	0.4	1.6	22.2	2.82
Residential	3.9	32.9	3.9	32
Road	2.3	17.5	13	18.6
Green Wedge	0.5	6.6	0.5	4.1
Industrial	0.4	11.4	0.4	3.3
Other (water bodies, utilities & services)	0.3	5.8	0.3	2.7
Education & Medical	0.2	1.4	11.3	1.3
Transport (airport & rail), commercial and mixed use	0.2	6.2	0.2	1.8
Total	**12.3**	**100**	**NA**	**100**

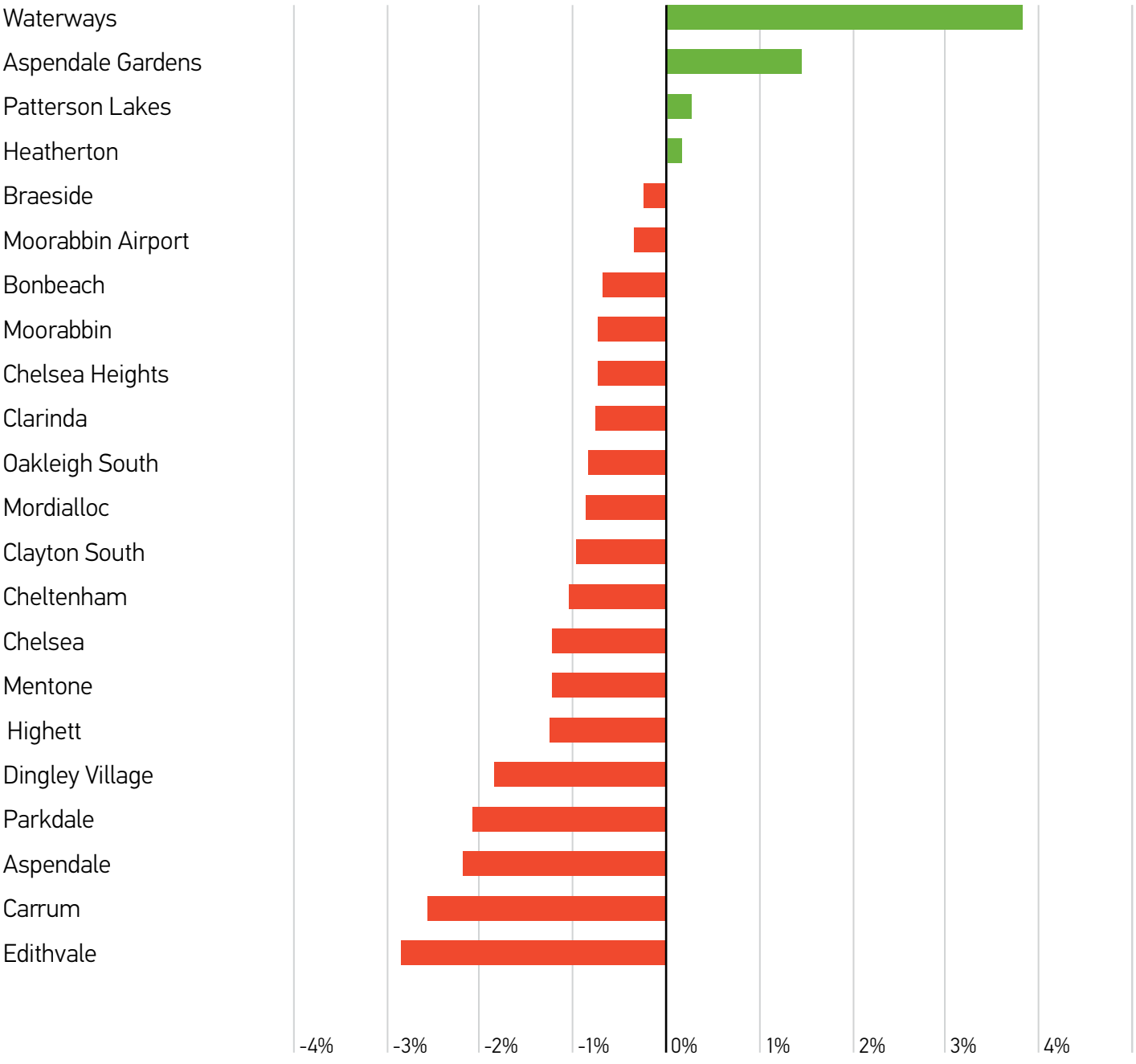
Note: Conservation areas include foreshore areas. Many conservation areas are also within Council-managed parks and reserves.

Golf courses within Kingston provide almost as much tree canopy cover as all Council-managed parks, reserves and conservation areas combined.

1.6
TREE CANOPY COVER CHANGE

Kingston's canopy has changed over time and this change varies across suburbs. The greatest loss is in Edithvale and Carrum, with the greatest gain in Waterways and Aspendale Gardens.

Figure 6.
Tree canopy cover change (%) by suburb between 2014 and 2022



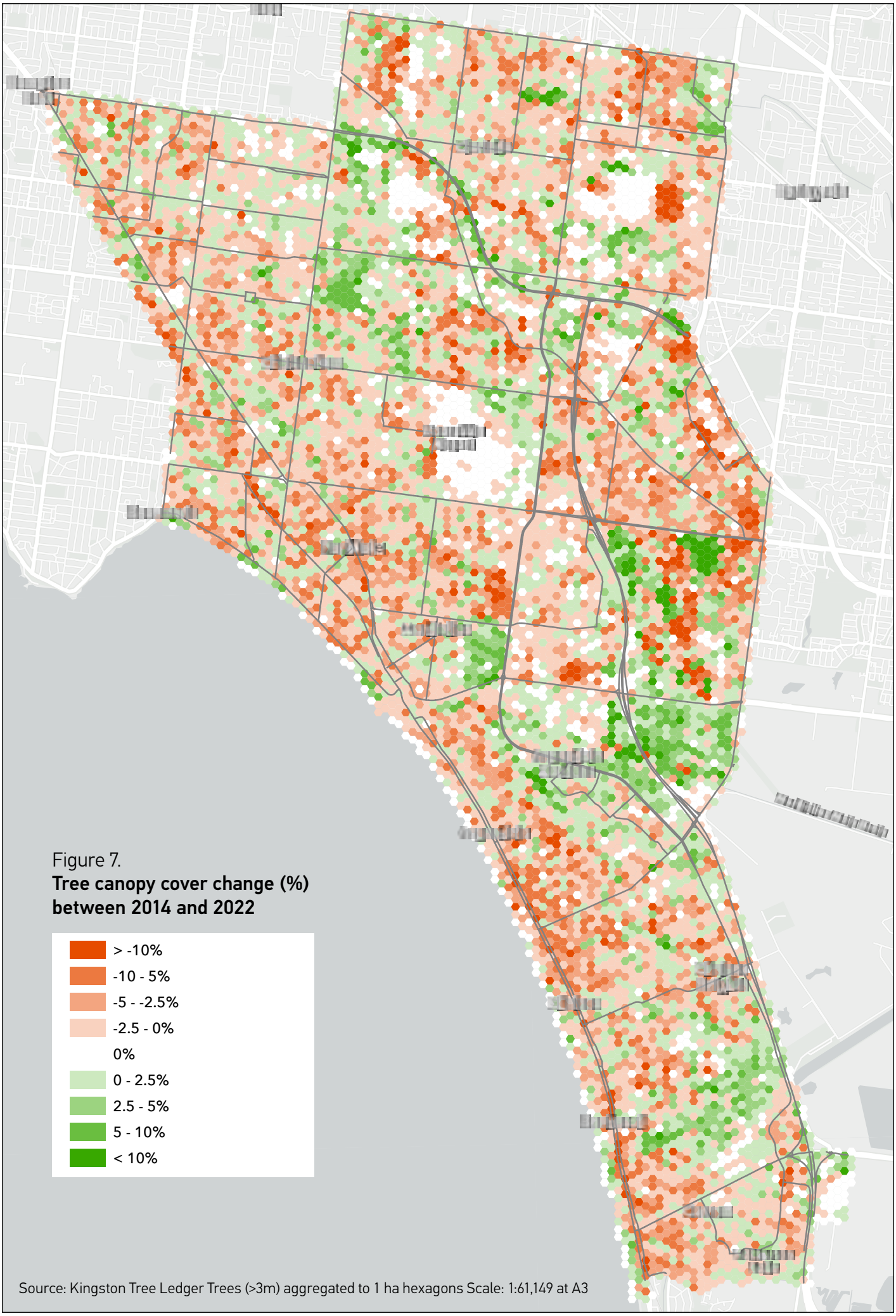


Figure 7.
Tree canopy cover change (%) between 2014 and 2022

Source: Kingston Tree Ledger Trees (>3m) aggregated to 1 ha hexagons Scale: 1:61,149 at A3

Kingston's canopy can be further analysed to understand what has influenced this change over time.

Figure 8.
Overall tree canopy cover change (%) between 2014 and 2022

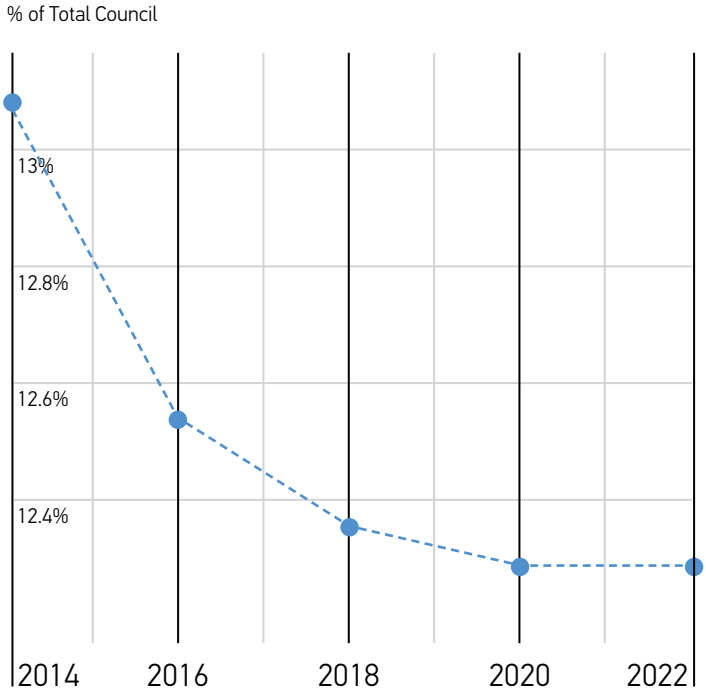
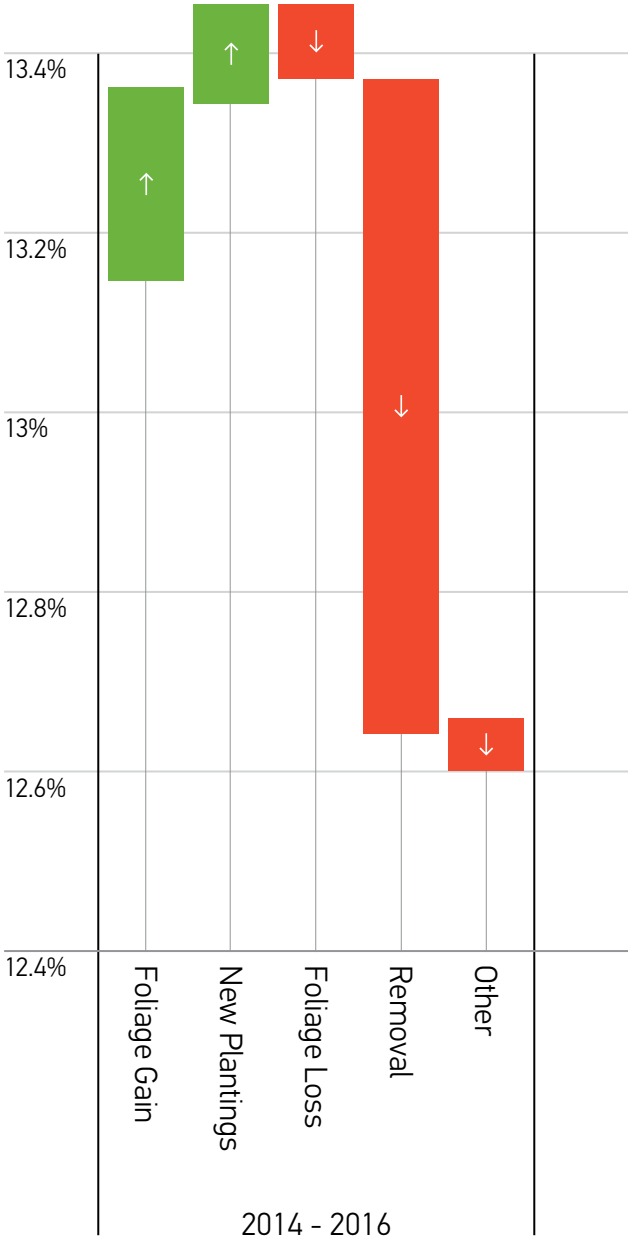
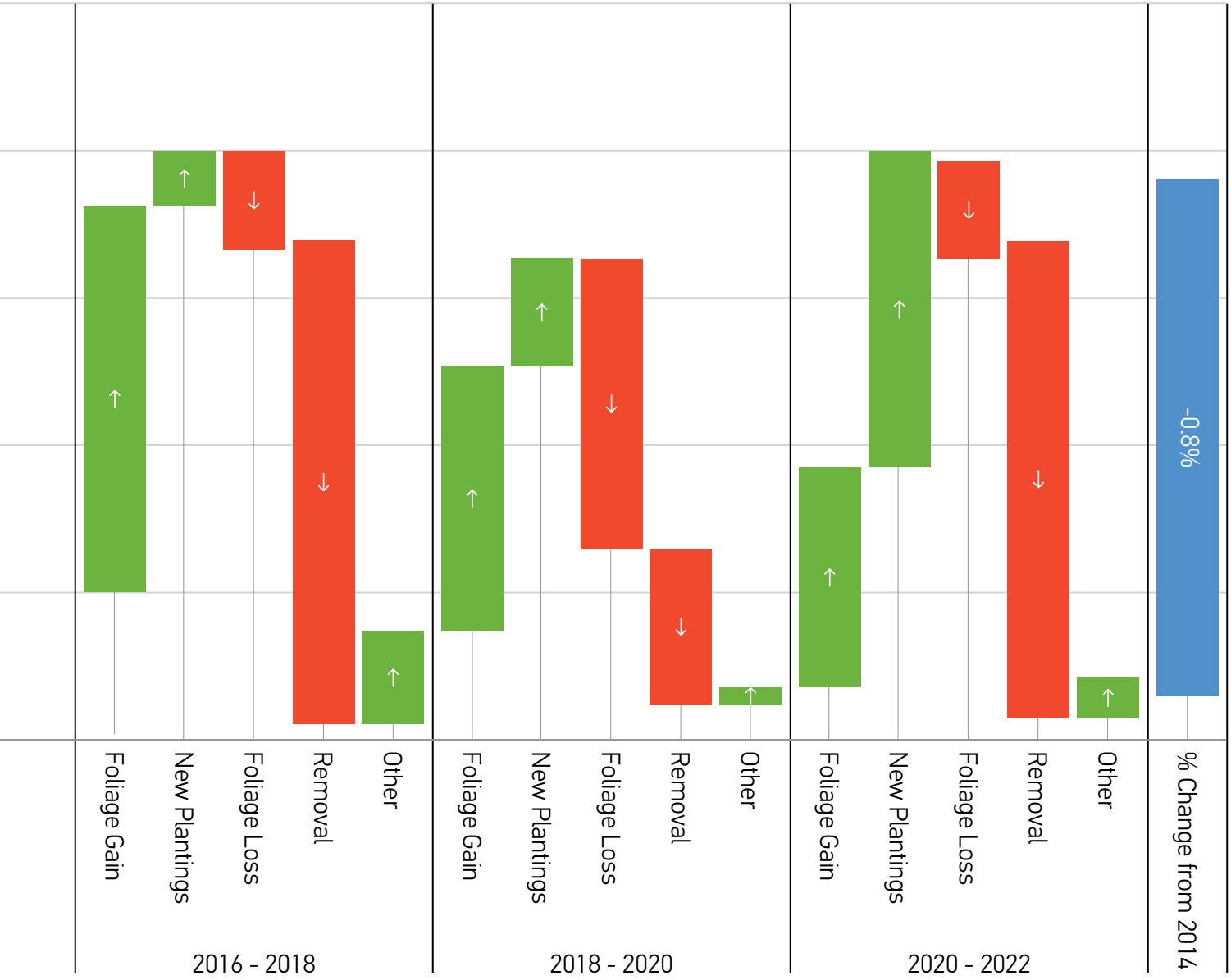


Figure 9.
Overall tree canopy cover change (%) broken down by factor, between 2014 and 2022



The LiDAR data enables us to analyse data over four consecutive periods between 2014 and 2022, enabling change in tree canopy cover over time to be measured. The data shows a 0.8 percentage point decline (from 13.1% to 12.3%) in canopy cover between 2014 and 2022.

Since 2014, despite significant established tree foliage gain and growth in new plantings, Kingston's canopy cover has declined as a result of tree removal.



1.6.1
TREE CANOPY COVER CHANGE FACTORS

Our analysis has identified four main factors that influence to canopy cover change:

- **Tree removals:** Trees that have been removed during the study period (e.g. 2020 to 2022).
- **New plantings:** Woody plants that have grown >3m tall during the study period. There are typically a few years delay between when a tree is planted and when it is classified as a 'new tree'.
- **Foliage loss and gain:** Tree crown growth/loss, this is primarily influenced by environmental conditions, tree health and maintenance (e.g. pruning).

Kingston's focus on planting trees is beginning to be seen in the data. However, ongoing tree removals are continuing to offset the gains from plantings. Foliage gain during recent La Niña climatic conditions has also contributed positively.

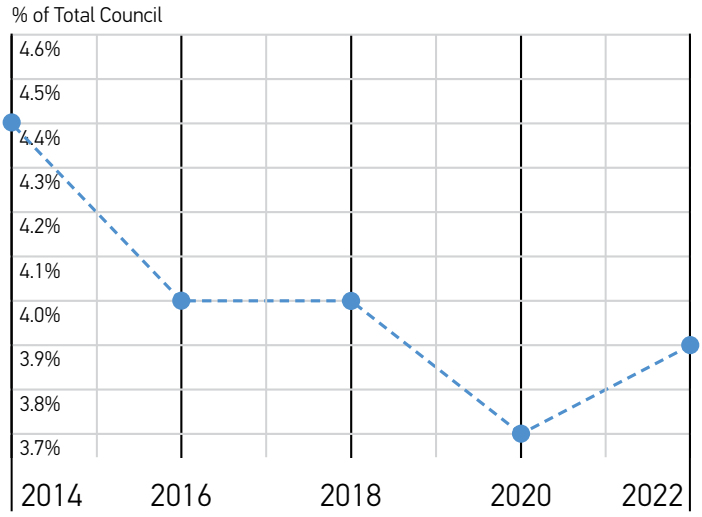
Refer to the Appendix for detailed maps for each canopy change factor – foliage growth, new trees and tree removals – across the municipality between 2014 and 2022.

1.6.2
PRIVATE RESIDENTIAL LAND

Tree removals on private residential land are the largest contributing factor to Kingston's canopy cover decline. This has resulted in a 0.5 percentage point loss (from 4.4% to 3.9%) in overall canopy cover between 2014 and 2022. This is despite foliage gain, and a recent increase in new plantings.

Refer to the Appendix for a detailed breakdown of tree canopy cover change factors on private residential land.

Figure 10.
Tree canopy cover change (%) on private residential land between 2014 and 2022



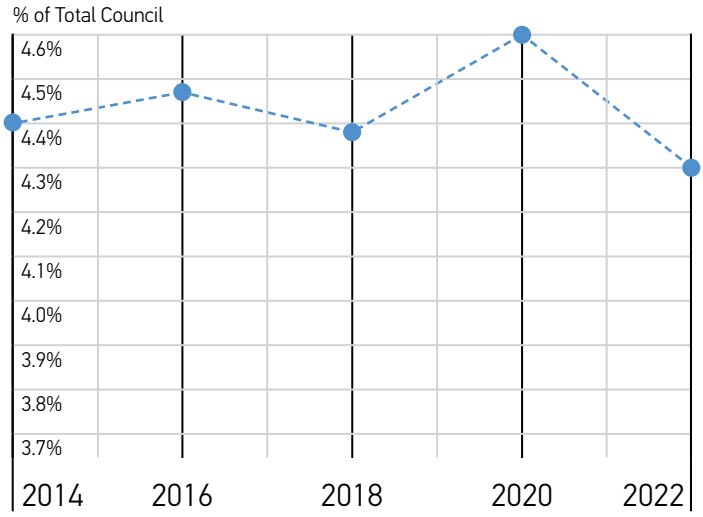
Tree removals on private residential land are the largest contributing factor to Kingston's canopy cover decline.

1.6.3
OPEN SPACE

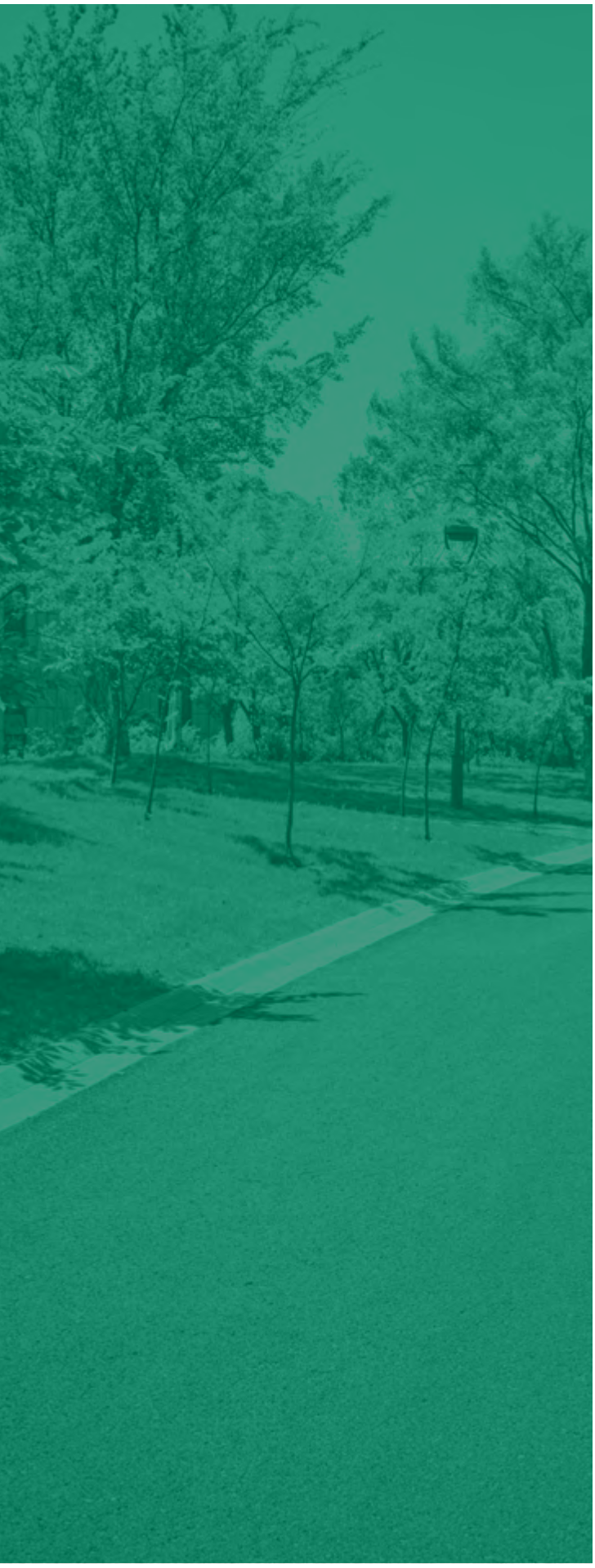
Canopy cover change in open space is mostly stable but with variability in the canopy change factors. This is due to the underlying land uses– golf courses, parks and reserves, and conservation areas – each with different management priorities. Tree removals in open space are largely compensated for by new plantings resulting in a 0.06 percentage point loss (from 4.4% to 4.34%) in overall canopy cover between 2014 and 2022.

Refer to the Appendix for a breakdown of tree canopy cover change factors in open space.

Figure 11.
Tree canopy cover change (%) in open space between 2014 and 2022



Tree canopy cover change in open space is mostly stable.



1.6.4
GOLF COURSES

Canopy cover on golf courses is 23.2% and contributes 1.47% to overall canopy cover. Between 2014 and 2022, the canopy cover on golf courses declined, resulting in a 0.11 percentage point loss (1.58% to 1.47%) in overall canopy cover.

Golf course out-of-play areas often include significant areas of trees and vegetation. Studies of urban green spaces in the greater Melbourne have shown golf courses to be important for urban biodiversity conservation.[5]

However, golf in Victoria is in transition as it responds to changing demographic and participation trends. Due to these trends and increasing operating costs one club in Kingston has closed and the landowner is seeking to transition this site into other uses. These changes foreshadow potentially significant impacts to our urban forest.

1.6.5
PARKS & RESERVES

Canopy cover in Council-managed parks and reserves is 16.2% and contributes 1.16% to overall canopy cover. Between 2014 and 2022, the canopy cover in these areas declined, resulting in a 0.06 percentage point loss (1.22% to 1.16%) in overall canopy cover.

It is increasingly recognised that parks and reserves offer multiple, concurrent uses; active and passive recreation, social and leisure opportunities and connection to nature. Council recognises the need to balance these uses with the needs of the community. Once adopted, Kingston's Open Space Strategy (currently under review) will provide additional information on this issue.

Council estimates that Council-managed parks and reserves have the capacity to contribute an additional 22.2 ha of tree canopy cover by 2030. This would increase canopy cover across Kingston by less than 1%. Refer to Section 3.1 for further information.

1.6.6
CONSERVATION AREAS

Kingston's conservation areas are an important component of Kingston's urban forest and include a diverse range of ecosystems including wetlands, woodlands, heathlands and grasslands. Council's overall objective for the management of conservation areas is to improve biodiversity by restoring ecological funcitions, educing weed cover and strengthening habitat linkages.

Canopy cover in Council-managed conservation areas is 22.2% and contributes 0.35% to overall canopy cover. Between 2014 and 2022, the canopy cover in these areas remained stable.

It's important to appreciate that canopy trees are not a dominant feature of some vegetation communities in Kingston. Council's key measure for the success of its conservation area management programs is vegetation quality. For more information, please refer to Kingston's Biodiversity Strategy (currently under review).

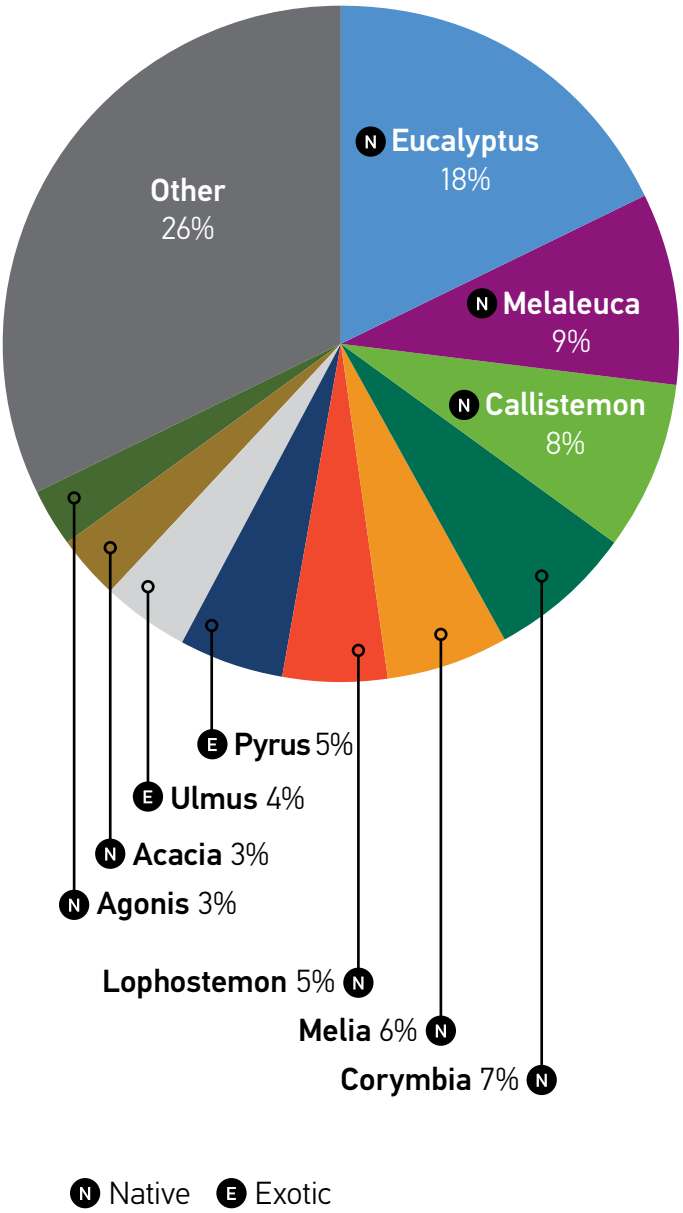
1.7
COUNCIL-MANAGED TREES

Kingston's Tree Asset Register (part of Kingston's asset management system) contains data on more than 81,000 Council-managed trees in parks and streets. Although the data is only partially complete it still gives us a general picture of the diversity of Council-managed trees.

1.7.1
DIVERSITY

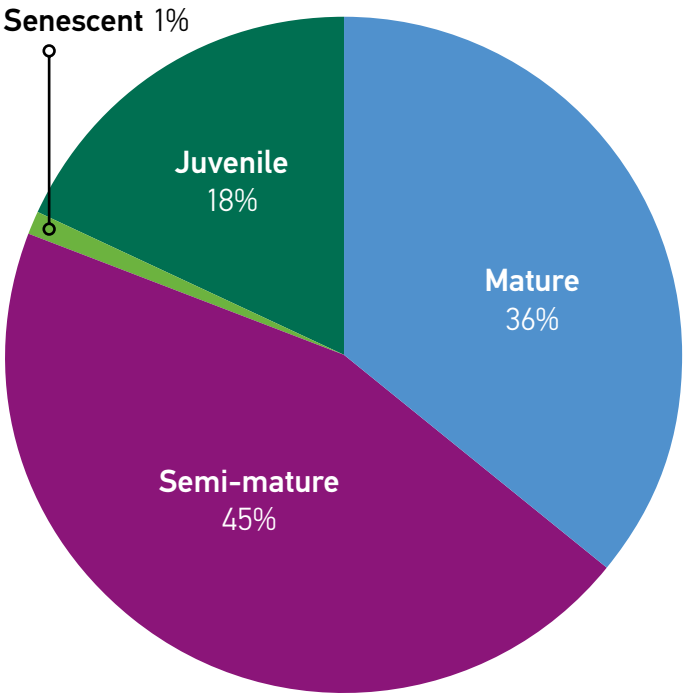
Over two-thirds (68%) of Council-managed trees come from just 10 different genera, of which 8 are Australian native. Council is continually reviewing species diversity to ensure it remains appropriate in terms of overall health, vigour and habitat potential in the context of climate change. Industry standards recommend that no one family dominates by more than 30–40%, no genus by more than 20% and no species by more than 10%.[6]

Figure 12.
Top 10 genus of Council-managed trees



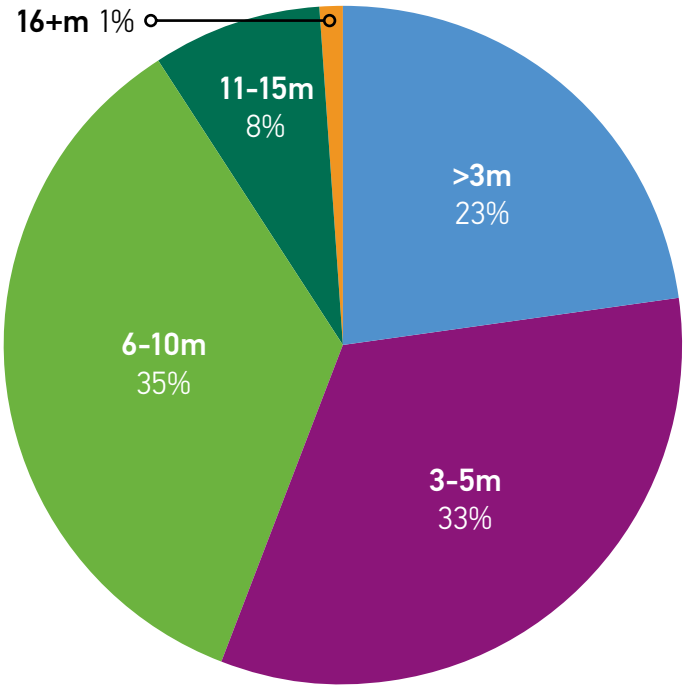
Council's trees are dominated by mature and semi-mature trees, and align with industry standards, which recommend 15%–30% Juvenile; 30%–45% Semi-mature; 25%–30% Mature; and less than 5% Senescent. This demonstrates Council's management approach of replacing trees that have reached the end of their useful life expectancy.

Figure 13.
Life stage classes of Council-managed trees



Almost one-quarter (23%) of Council-managed trees are less than 3 metres tall. Over two-thirds (68%) are 3 to 10 metre. With less than one-tenth (8%) more than 11 metres tall or taller. Council plants tree species selected for their suitability to the site and considers a range of factors including aesthetics, function, future-climate suitability and the presence of overhead powerlines.

Figure 14.
Height classes of Council-managed trees



1.8
HOW DO WE COMPARE?

Kingston's tree canopy cover is 12.3% and is considered low relative to other metropolitan municipalities. This reflects our unique geology, land typology and history, including a range of land uses not typically found in middle-ring metropolitan areas. This includes the Moorabbin Airport, extensive areas of former landfill in Kingston's Green Wedge and state-significant industrial precincts that have historically restricted the ability to expand canopy cover.

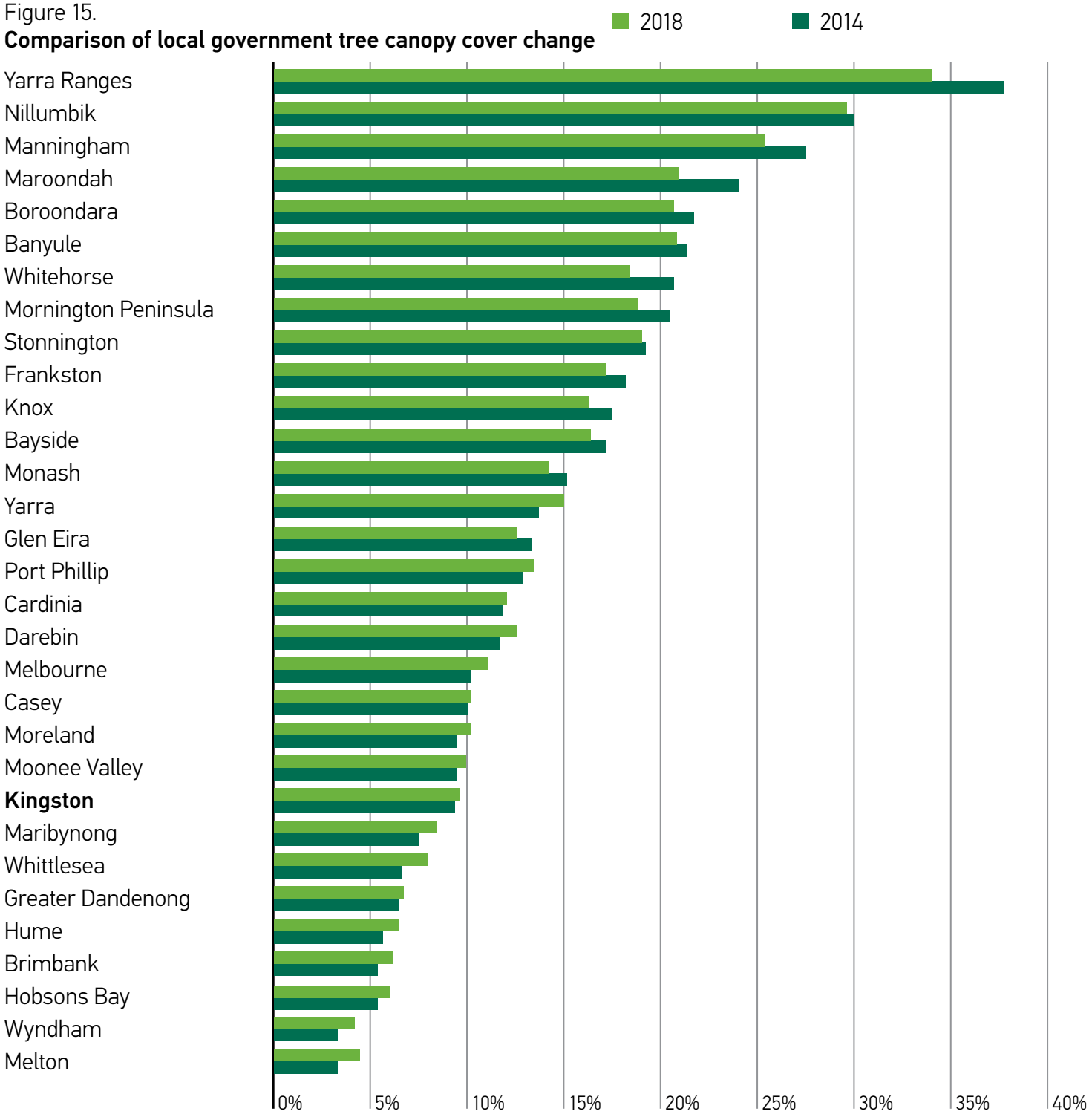
As detailed earlier, the change in tree canopy cover between 2014 and 2022 is likely the result of Council's tree planting programs and replanting requirements on private land via local laws and the planning scheme, coupled with favourable growing conditions since 2016. To some extent, these have 'offset' the loss of canopy trees on private residential land.

Trees being removed are generally 8 to 10 meters in height that have taken many years to mature.

Should this business-as-usual trajectory continue, Kingston's tree canopy cover will continue to decline.

Based on state government supplied data, tree cover change can be compared against other metropolitan municipalities.

Figure 15.
Comparison of local government tree canopy cover change



Source: Local Government Comparison of tree cover change 2014–2018 (ABS urban centres and localities)[7]


DRIFTA

2
Why Now?

2.1
KINGSTON'S COMMUNITY VISION

Kingston is a resilient, inclusive and diverse community. We are building the most liveable and sustainable city in Victoria.

We champion and nurture our green and open spaces creating a safe, healthy environment.

Our shared legacy connects our community, embracing innovation, and making Kingston the place to live.

A whole of community response is required to realise this vision, and Council recognises that the status quo in tree and vegetation management, community attitudes and investment will have to change.

In 2020, Kingston declared a climate and ecological emergency. It is recognised that trees and vegetation draw down and sequester carbon from the atmosphere. Development of Kingston's Urban Forest Strategy is a priority action of Council's *Climate and Ecological Emergency Response Plan*.

2.2
ISSUES & CHALLENGES

Climate change

The global community is on track to reach 2°C of global warning before 2050. We're already experiencing the impacts of a 1.4°C increase. Climate change will lead to increased urban temperatures and more variable rainfall[8]. This will pose a challenge for urban trees and vegetation, exacerbating existing threats including pests and diseases, extreme heat and drought, and severe storm events.[9]

Extreme heat

As climate change occurs over the next 30 years, heat exposure will continue to cause greater impacts on individual and community wellbeing. Increasing canopy cover, is recognised as an effective approach for reducing urban heat through transpiration and shading.

Urban development

Urban densification through infill development (94% of planning applications over the last 5 years) and population growth (forecast to grow 19% by 2036[10]) are placing pressure on our urban forest. Current, planning controls are insufficient to protect and enhance trees and vegetation on development sites. Council requires robust planning controls to protect existing vegetation and require replacement canopy tree planting and the use of green infrastructure.

Biodiversity loss

After the Black Summer fires of 2020, the Threatened Species Commission identified 810 priority species (flora and fauna) and ecological communities for urgent management intervention to avoid their extinction[11]. Climate change is expected to increase the risk of extinctions. Kingston's Biodiversity Strategy (currently under review) seeks to address specific threats within Kingston including urbanisation, fragmentation and invasive species.

Competition for space

The importance and value of public open spaces have noticeably increased in the last few years (this is particularly apparent since the pandemic). Balancing the growing demand for recreational facilities that accommodate local and regional sports with Council's vision for greening and open spaces will intensify as the population of Kingston and surrounding areas grow.

An aging population

By 2036 more people aged 75+ will be living in Kingston. Without help, older people may be unable to manage private trees effectively.

Land use and availability

Kingston has a unique land use typology with significant areas of the Green Wedge (former landfill sites), golf courses, established industrial areas, Moorabbin Airport, and wetlands.

Low canopy cover in many of these areas is a result of their historic or current land use, which also limit opportunities for increased canopy cover. However, these areas may still contribute to our urban forest using green infrastructure.

Conversely, potential changes in land use in areas of higher canopy cover, such as the development of golf courses, threaten the important contribution these areas make to our urban forest.

State infrastructure projects

Major infrastructure projects such as road and rail upgrades are required to accommodate the needs of Melbourne's growing population. These projects often result in a net loss of canopy cover in the short-to-medium term, until replacement plantings establish and mature.

For example, The Level Crossing Removal Project (LXRP) has so far resulted in a net loss of overall canopy across Kingston of 0.4%. LXRP report that over 1,500 trees and over 200,000 shrubs, groundcovers and grasses will be planted along the rail corridor and new station precincts to replace removed vegetation. LXRP also predict a net gain in native vegetation, though these gains will be achieved outside impacted areas of Kingston.

Additional level crossing removals and future infrastructure projects are expected to further impact our urban forest.

Water for greening

Water is vital for the health of the trees and vegetation in our open spaces, and their proper functioning as cool refuges for the community. With climate change and population growth, Melbourne's drinking water supplies are in high demand. Water sensitive urban design (WSUD) and alternative water sources such as recycled water or treated stormwater will be crucial for irrigating our open spaces into the future.

Budget constraints

The Council budget provides for a full range of Council services. Providing these services costs more than the total rates collected, and cost pressures are predicted to increase.

2.3
WHAT WE'VE HEARD

In March 2022, Council asked for feedback from the community on our approach to Urban Forest Strategy development, particularly:

- What needs to happen to protect Kingston's urban forest?
- How can we expand Kingston's urban forest in a way that benefits our whole community?
- Concerns about Kingston's urban forest.

The community was also asked to provide information on the best trees in Kingston and where there should be more. In summary:

- The Kingston community highly values the biodiversity, shade and aesthetic benefits of trees.
- Planning controls and improved maintenance are key to effectively managing Kingston's urban forest.
- To protect and enhance our urban forest, the community supports better use of nature strips, preventing major projects from removing vegetation and the planting out of public spaces.
- Some in the community fear large trees close to houses and workplaces.
- Community education is vital.
- A number of specific public locations should be targeted for increased planting.
- Financial penalties and incentives to protect significant trees and encourage appropriate native plantings make sense to the community.

Following this, the draft Urban Forest Strategy was prepared and presented to the community for feedback between December 2022 and March 2023.

The consultation process indicated a strong level of support for the draft Strategy, and for Council and the broader community to take action to protect and enhance the urban forest in the City of Kingston.

The draft strategy was subsequently edited to address concerns and recommendations raised in feedback.

Consultation on other recently developed Council strategies (Urban Cooling Strategy, Climate & Ecological Emergency Response Plan, Health and Wellbeing Plan, Housing Strategy and Neighbourhood Character Assessment, Open Space Strategy), Council resolutions, community petitions and letters to Council all highlight the high level of community interest in Kingston's urban forest.

As part of Kingston's declaration of a climate and ecological emergency, Council resolved to:

> *'ensure there is a net gain of trees and of native vegetation in Kingston by ensuring that every tree removed is replaced by at least three trees, that other native vegetation that is removed is replaced twofold as close as possible to where it has been removed from, with the costs borne by whatever developer or infrastructure authority has required the removal'.*

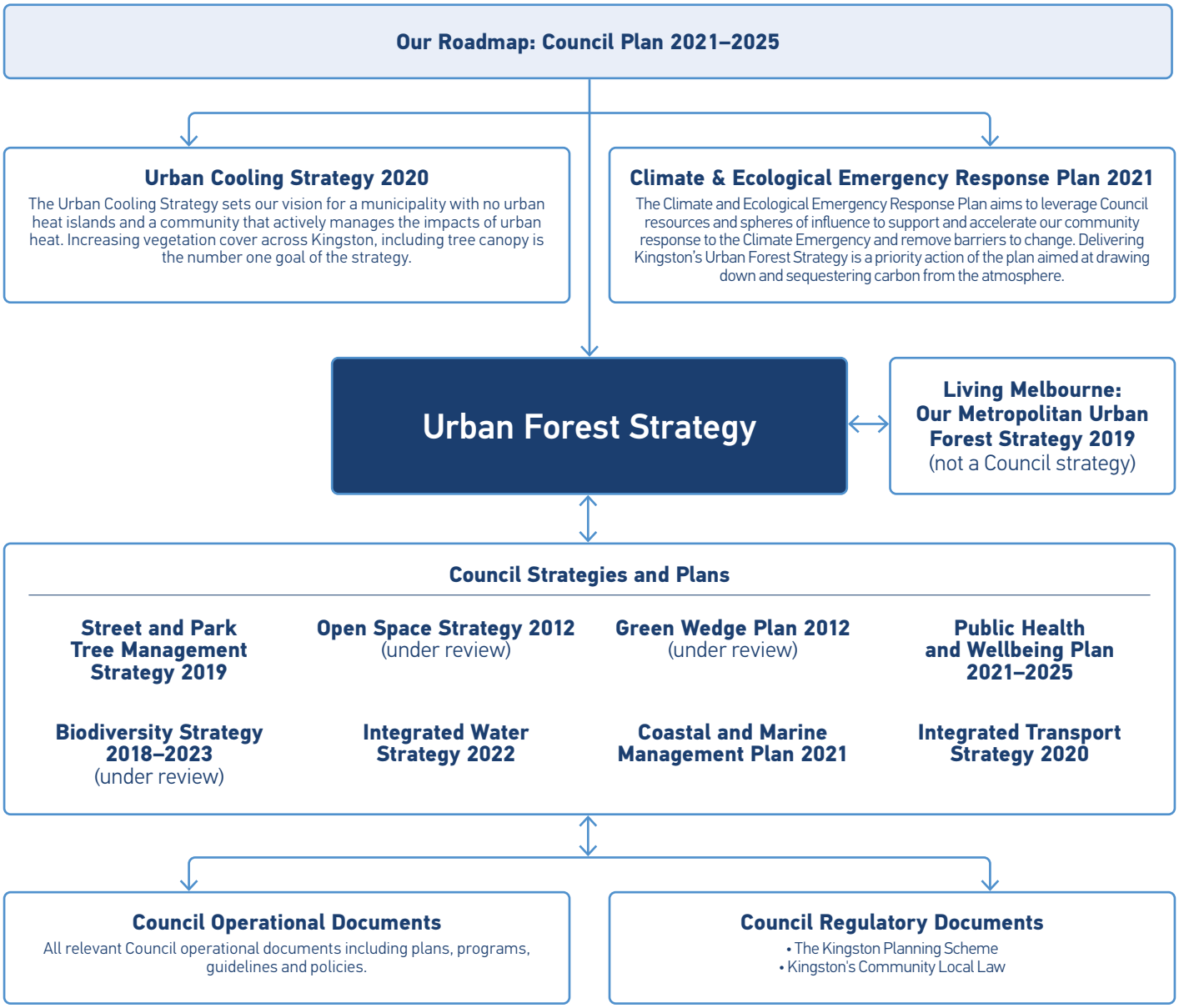
In line with our community vision, Council is determined to enhance Kingston's urban forest. This Strategy sets out a range of actions aimed at realising that vision in a measurable and achievable way within this Strategy's life.

2.4
RELATED COUNCIL PLANS & STRATEGIES

Council has a range of documents that support the protection and enhancement of trees and vegetation across the city. The relationship between these documents is illustrated in Figure 16.

Important Council strategies and plans, that have a strong alignment with the Urban Forest Strategy are discussed in the Appendix.

Figure 16.
The Urban Forest Strategy strategic context



"Increase Kingston's tree canopy"

"Plant new trees and protect the old ones"

"Get the Urban Forest Strategy done now"

"Safeguard trees from development"

"The solution is simple, capture carbon with trees"

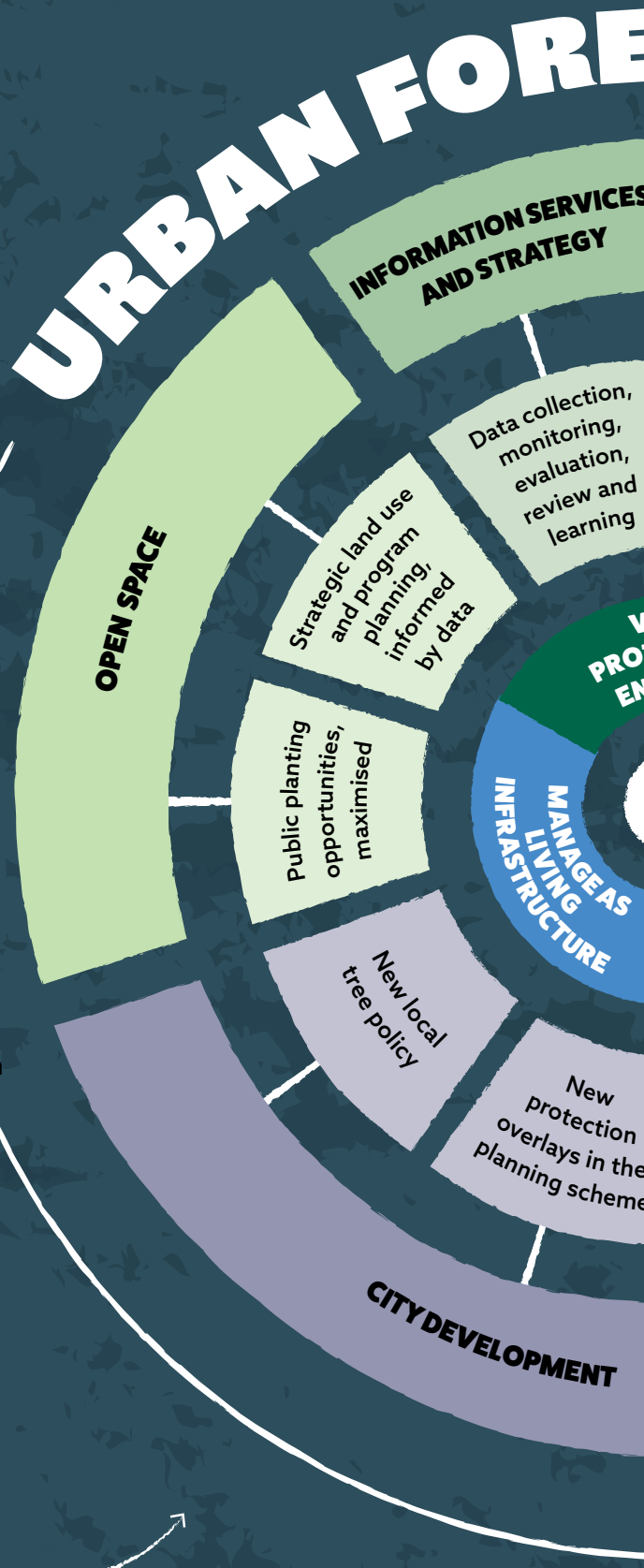
Community consultation on the Climate & Ecological Emergency Plan and Urban Cooling Strategy

Lorem ipsum

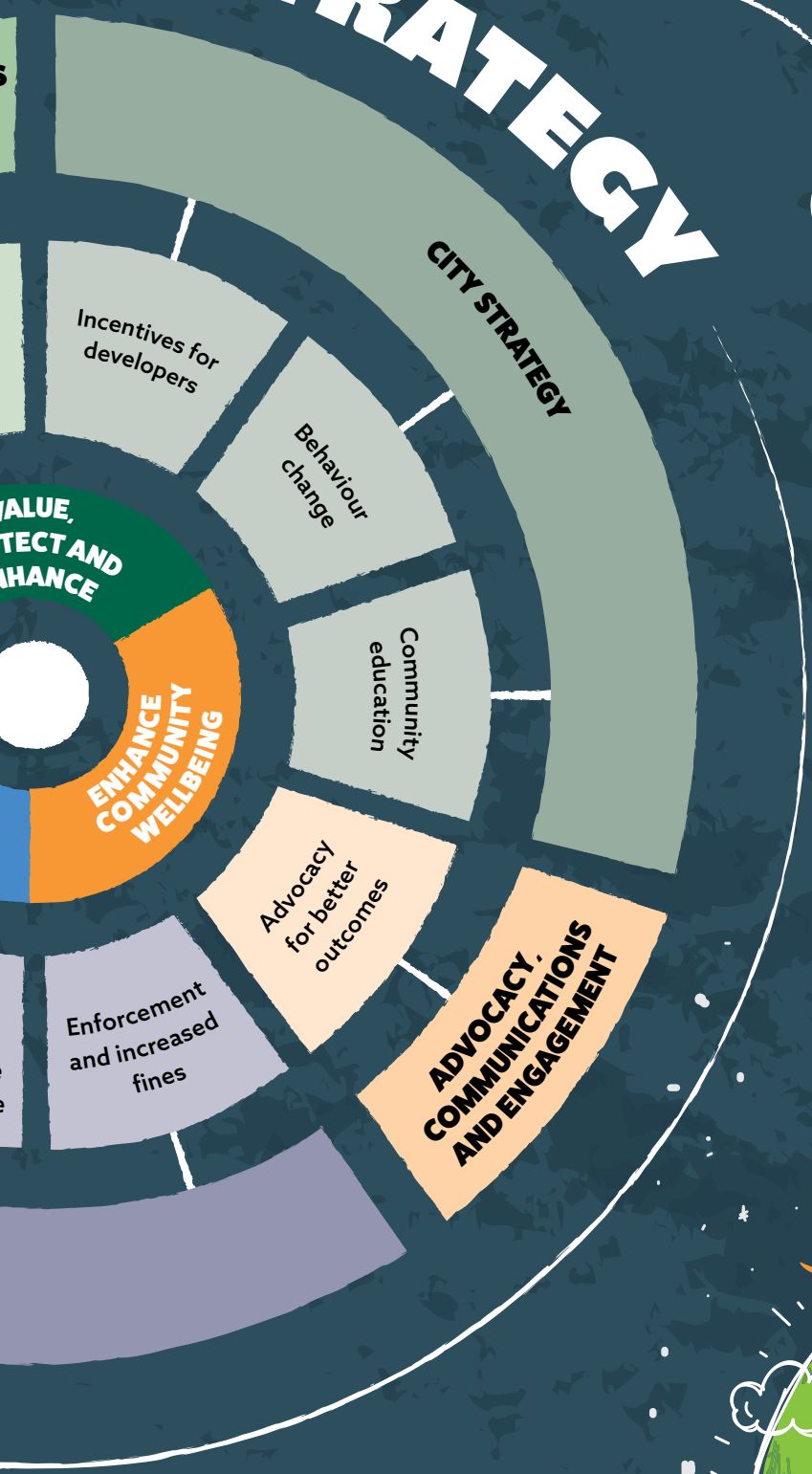
Deliberative engagement and Council's new community vision

A mandate for protecting and expanding the urban forest within Kingston on private and public land through:

- Meaningful targets
- Scalable programs
- Shared learnings



EST STRATEGY



City of KINGSTON

Tree canopy cover
15.3% by 2030 and 20% by 2050.

OBJECTIVE 1.
Strengthen enforcement, controls and incentives

OBJECTIVE 2.
Improve strategic and operational decision making

OBJECTIVE 3.
Enhance communication and engagement

OBJECTIVE 4.
Effective partnerships and advocacy

OBJECTIVE 5.
Improve data collection, analysis and monitoring

3

Our Approach

Kingston's approach to Urban Forest Strategy development is underpinned by a detailed analysis of Council's current approaches and gaps in knowledge, capability and policy, an extensive data review, an opportunity assessment, bench-marking, and a review of best-practice urban forest management both here and overseas.

3.1 CHOOSING A CANOPY COVER TARGET

Research suggests that the community health benefits provided by the urban forest are higher where there is a minimum of 30% tree canopy cover.[12]

Given Kingston's low baseline of 12.3% tree canopy cover, it is important to understand the relative contribution different land ownership and land use areas can make to increasing our tree canopy cover.

In 2022, Council assessed of the capacity of Council-managed parks and reserves to contribute to an increase in tree canopy cover. Several factors were considered, including the future use of the space, the available planting area and the planting type. Opportunities for boundary, infill, pathway and carpark plantings were all identified. Small opportunities for mini-forests were also identified in some reserves. Overall the assessment estimated that Council-managed parks and reserves have the capacity to contribute 22.2 ha of tree canopy cover by 2030. This would only increase Kingston's overall canopy cover by <1%.

Recognising this limitation, Council has set ambitious but acheivable targets, and developed a multifaceted action plan to address the factors influencing canopy cover change on both public and private land.

Tree canopy cover targets of 15.3% by 2030 and 20% by 2050 are considered appropriate for this first version of Kingston's Urban Forest Strategy.

SCENARIO A – NO CHANGE	SCENARIO B- MAINTAIN	SCENARIO C – ENHANCE
No further planting and no action.	Planting of public land only.	Planting on public land and other actions focused on private land.
No canopy increase on public land.	Modest canopy increases on public land.	Increase in canopy cover on Council-managed streets, parks and reserves, contributing to a 1% gain in the overall canopy cover by 2030.
Ongoing decrease in canopy on private land.	Canopy on private land remains stable (unlikely without active intervention). Increase in foliage growth as a result of La Niña to 2023.	Increase on private land made up of foliage growth, fewer tree removals and ongoing increases in new tree plantings, contributing to a 2% gain in the overall canopy cover by 2030.
Overall canopy cover of <12% by 2050.	Overall canopy cover of 15% by 2050.	Overall canopy cover of 15.3% by 2030 and 20% by 2050.

3.1.1
ACHIEVING KINGSTON'S TARGET

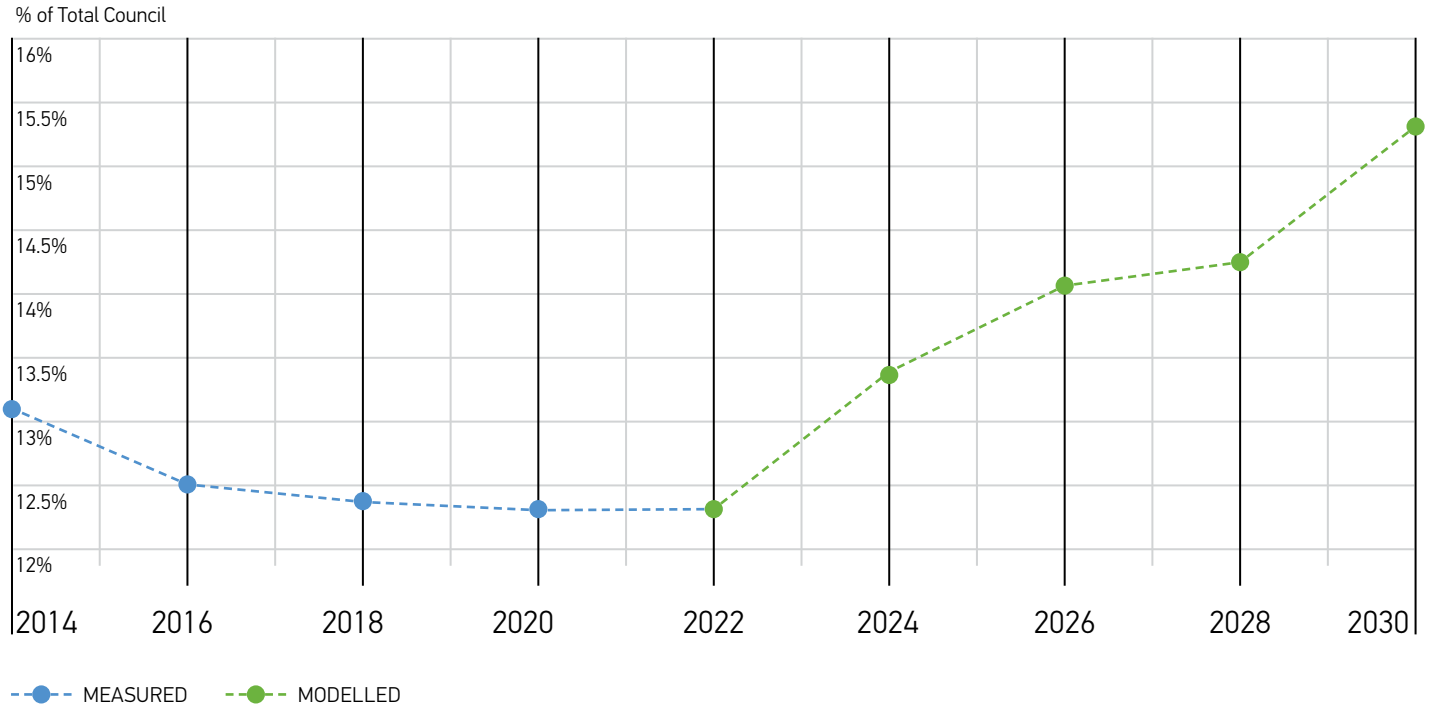
To reach our tree canopy cover target the following must be achieved:

- **Increasing overall tree canopy cover to 30% for Council-managed public parks and reserves. Opportunities also exist in carparks, along walking and cycling paths, and in limited parts of the foreshore and conservation areas.**
- **Ongoing, high-quality, well- maintained new tree plantings on Council roads and streets until 2025.**
- **Halving tree removals on private, residential land.**
- **Doubling new tree plantings on private, residential land.**

Modelling using LiDAR and aerial imagery estimates a 3% increase in canopy cover to 15.3% by 2030. Based on this, 20% by 2050 is considered achievable, but this target will be reviewed in 2030 and potentially revised.

Refer to the Appendix for a breakdown of the tree canopy cover change modelling by factor (tree removals, new trees, foliage loss and gain).

Figure 17.
Measured tree canopy cover change between 2014 and 2022, and modelled change to 2030



3.2
AIMS

Kingston's Urban Forest Strategy has three aims which describe the changes we're hoping to achieve:

- **Value, protect and enhance our urban forest** – through education on the benefits of trees and vegetation, fostering community stewardship, strengthening our regulatory approach to protection and planting, and expanding our planting programs.
- **Manage our urban forest as living infrastructure** – using a data-driven approach to grow a more equitable, diverse and resilient urban forest, and through best practice tree and vegetation management to maximise the benefits and minimise the risks.
- **Support community health, wellbeing and resilience to climate change** – using blue-green infrastructure to reduce potable water use, the local impacts of flooding, and urban heat, and increase active transport along shaded walking and cycling paths.

3.3
OBJECTIVES

Kingston's vision for our urban forest will be realised through five objectives:

1. **Strengthened enforcement, controls and incentives**
2. **Improved strategic and operational decision making**
3. **Enhanced communication and engagement**
4. **Effective partnerships and advocacy**
5. **Improved data collection, analysis and monitoring**.

4
Action Plan

Kingston's Urban Forest Strategy is underpinned by an Action Plan which details priority actions, key tasks, responsibilities, resource requirements and intended outcomes.

4.1
TIMEFRAMES

Actions will be prioritised as follows:

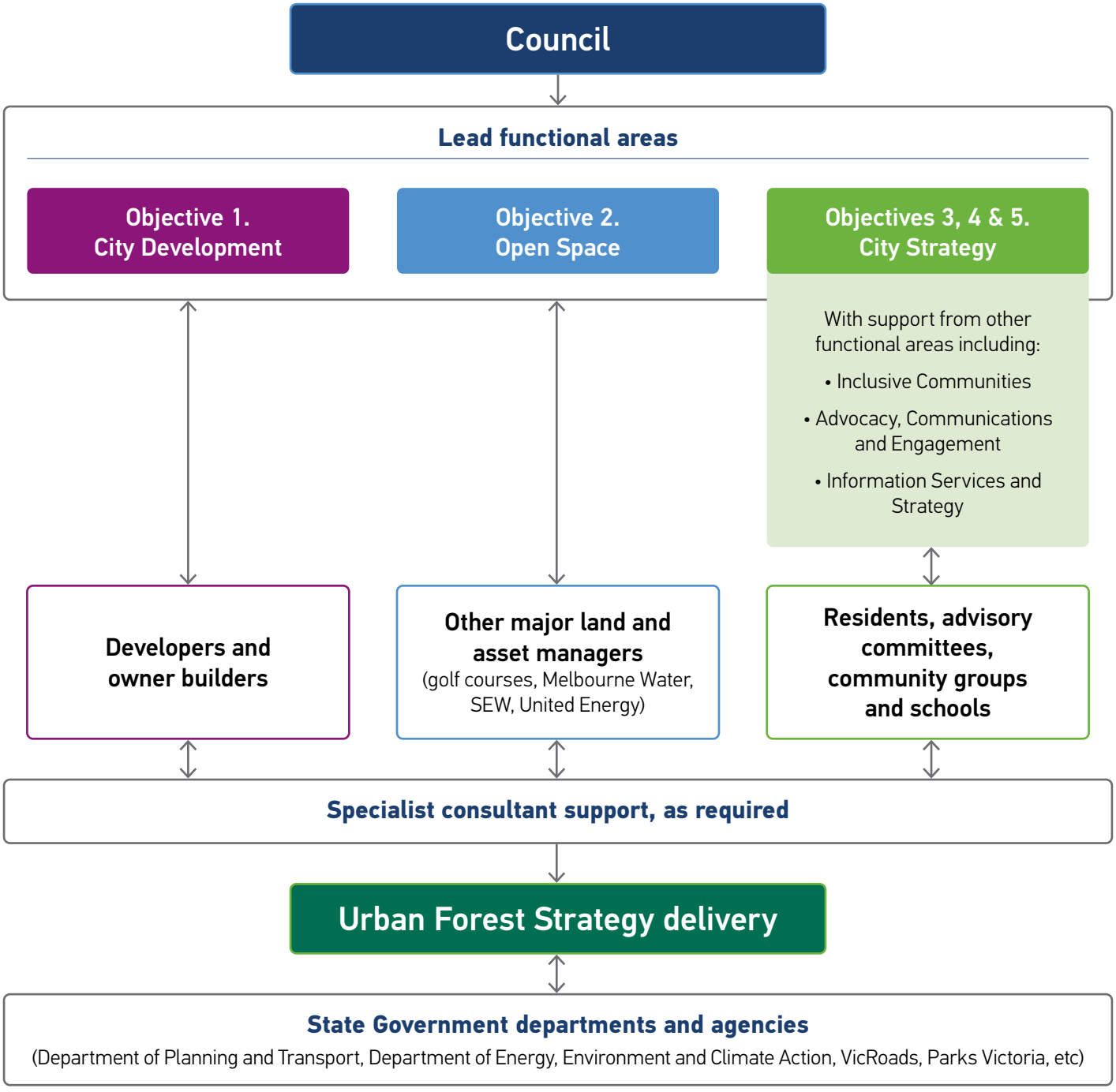
- Critical actions will be delivered within the next 12 months
- High-priority actions within the next two years and on-going
- Medium-priority actions within five years
- Low by year seven.

4.2
GOVERNANCE

Internal staff representing the key functional areas across Council will oversee the implementation of the Strategy relevant to their area of responsibility in collaboration with the community and other agencies and with assistance from various specialist consultants as required.

Council's Open Space and Environment Advisory Committee meets quarterly and will be an important source of community input as the delivery of the Strategy progresses. As a key deliverable of the Climate & Ecological Emergency Response Plan, updates will form part of regular reports to Council.

Figure 18.
The Urban Forest Strategy governance structure



Objective 1.
Strengthen Enforcement, Controls & Incentives

Nearly two thirds (59%) of Kingston's canopy cover is on private land. So the protection of trees and vegetation, and the expansion of the urban forest on private land must be the highest priority.

PLANNING SCHEME AMENDMENT C203

For several years Council has been working with the community to develop new residential planning controls. As part of this process Council commissioned the development of Landscape Character and Assessment Guidelines, which identifies eleven landscape character precincts that reflect the natural, human and cultural characteristics of the landscape.

These changes will introduce new residential planning policy, zones, overlays and provisions. Key outcomes are strengthened landscaping requirements for new residential developments, including specific requirements for the planting of canopy trees and the use of green infrastructure.

Kingston's Community Local Law protects trees over 110 cm in circumference when measured at their base. Applications to prune or remove protected trees are assessed by a qualified arborist and consider aesthetics, health and safety, property damage, nuisance and any other relevant matters. Since 2018, Council has received approximately 3,300 permit applications to prune or remove protected trees, of which more than 700 applications to remove a tree have been refused. The overwhelming majority of permits issued for the removal of a protected tree include a condition to plant a replacement tree.

Existing planning controls – including but not limited to, the Significant Tree Register – protect trees and vegetation if they are identified as having important biodiversity, habitat, cultural, heritage or amenity value. Existing residential planning controls also support the retention of mature trees and vegetation, and the planting of new trees or the use of green infrastructure.

More robust planning requirements will result in planning decisions informed by a greater range of considerations, including:

- Identified significant vegetation that contributes to amenity and character
- Trees and vegetation that contribute to the environmental significance of an area
- Trees and vegetation that contribute to the enhancement of habitat and habitat corridors for fauna
- Trees that contribute to conserving the natural, cultural, and historical heritage of Kingston.

This will result in increased tree and vegetation retention, and development designs that provide sufficient area for the planting and future growth of canopy trees.

Enhancing compliance monitoring, expanding penalties and developing incentives based on tree valuations will also contribute to greening outcomes.

Outcome 1: Increased tree and vegetation cover on private land.
Outcome 2: Stronger protection of trees and vegetation on private land.
Outcome 3: Increased use of green infrastructure in private developments.

Lead Department: City Development

Priority Actions	Key tasks	Priority
Enhance Council's compliance program (method, extent and timing) to ensure tree protection and enhancement are maximised	• Increase checks against existing and new planning permit requirements and endorsed plans, commence local law permit audits relating to tree retention and replacement requirements, improve Council's reaction time when trees are illegally removed, pursue all non-compliances and publicise success stories to encourage compliance and discourage breaches	Critical
	• Investigate the extension of other compliance checks (water, ESD, building) to include trees and complete follow-up checks at agreed intervals • Use LiDAR to complete spot checks	High
Strengthen planning requirements to ensure canopy trees are retained and space is provided for additional trees	• Support state government-led planning scheme changes aimed at cooling and greening • Ensure all local, state and federal legislative requirements and policies aimed at tree and vegetation protection and enhancement are considered whenever a planning permit is triggered • Review Kingston's significant tree register • Investigate expanding planning overlays that protect existing significant/ important trees and vegetation, particularly on major land use types such as golf courses • Investigate strengthening local council policy within the planning scheme to protect and enhance significant/ important trees and vegetation, particularly in industrial and commercial zones • Embed tree and vegetation protection and enhancement requirements into all Council policies, strategies and operational procedures. • Via any proposed planning scheme amendment, seek opportunities to: » Require canopy tree planting and integrated WSUD in car parking areas » Require green infrastructure (including) for developments not subject to the Better Apartment Guidelines. • Advocate to the state government for stronger permit triggers and decision guidelines for encroachment into tree protection and structural root zones • Continue to implement the Kingston Landscape Character Assessment: Character Analysis and Landscape Guidelines through Amendment C203 to the Kingston Planning Scheme • Develop mechanisms to address tree removals when a planning permit is not required (single dwellings) or when prohibitive insurance claims are lodged	High

Priority Actions	Key tasks	Priority
Expand fines and other penalties	• Advocate for increased penalties based on VCAT decisions and magistrate fines • Input into Community Local Law reviews to enhance street tree protection commensurate with the tree value • Investigate the use of bonds linked to Kingston's Tree Valuation Method for protecting Council and other significant trees on development sites • Send reminder notices and issue penalties for local law non-conformances • Undertake an internal review of processes, responsibilities and costs for taking magistrates court action and defending Council positions at VCAT	Medium
Expand incentives program	• Continue Council's plant giveaway program • In target areas, offer tree vouchers or rebates for significant tree protection, maintenance or new green infrastructure – consider linking incentives to property canopy cover. This may form part of Council's successful Gardens for Wildlife program • Investigate 'stacked' incentives where tree removals may result in other on-site requirements, such as more drainage infrastructure (commensurate with the tree value)	Medium
Develop greening fund	• Investigate establishing a mechanism through which any bonds, fines or compensation are used to support greening and cooling initiatives, such as: » In-home help for vulnerable community members (see below) » Rebates for tree protection and maintenance (see above) » Alternative pavement treatments when vehicle crossovers are proposed on constrained sites, ongoing maintenance, etc.	Low

DID YOU KNOW?

Since 2019, Council has been giving away native plants to residents.

To increase the city's canopy and reduce the impacts of climate change, Council introduced a tree give-away program in 2019 for residents linked to the rates notice. Following feedback, the program was expanded to include native shrubs, grasses and groundcovers as well as doubling the number of plants available. During the autumns of 2021 and 2022, over 10,000 plants were made available. In total, over 12,000 plants have been distributed since the program was established.

Objective 2.
Improve Strategic & Operational Decision Making

18.3% of Kingston's 91 km^2 is open space, parks and reserves. Expansion of the urban forest in these high-use areas must be prioritised, particularly in Council-managed areas. Streetscapes also represent an opportunity for infill and replacement plantings that link biodiversity areas and maximise canopy cover.

Council's Tree Management and Technical Guidelines set out the operational parameters for tree establishment, maintenance, protection and removal across the city. In general, Council allocates one tree per residential nature strip, two on every corner and two per double-fronted block or where the nature strip can facilitate more. Since 2018, Council has planted over 12,000 trees, contributing over 1% to Council's overall tree canopy cover and helping to reverse the loss of canopy elsewhere.

Field-based tree surveys will be undertaken to enhance the accuracy of data in Council's asset management system and improve the strategic management of Council-managed trees. Street tree locations currently constrained by VicRoads safety requirements, overhead power lines, underground services, limited space or amenity concerns will continue to be the subject of targeted advocacy and community education initiatives. In the meantime, the planting out of all viable street tree locations and maximising opportunities to increase canopy in Council parks and reserves are high-priority actions of this Strategy.

Images 6 & 7.
Successful street tree plantings
in Cheltenham and Clayton South.

STREET TREE PLANTING

Council prioritises planting areas with low canopy cover to assist in reducing heat island effects in socially vulnerable areas. These include Clayton North, Cheltenham, Mordialloc Creek and Chelsea Heights. Tree planting in parks and reserves will also be undertaken to complement open space improvement works and capital projects.

In 2018–19, Council planted over 2,000 street and park trees. This increased to 2,500 in 2019–20, 3,700 in 2020–21 and 4,200 in 2021–22. Council is now spending around $1.47 million on tree planting and management annually.

Residents receiving a new street tree are encouraged to adopt their tree and assist with establishment by providing additional watering over the summer months.

Outcome 4: Increased tree canopy cover across Council-managed land, with an average 30% tree canopy cover in parks and reserves.

Outcome 5: Increased diversity and resilience of Council-managed trees.

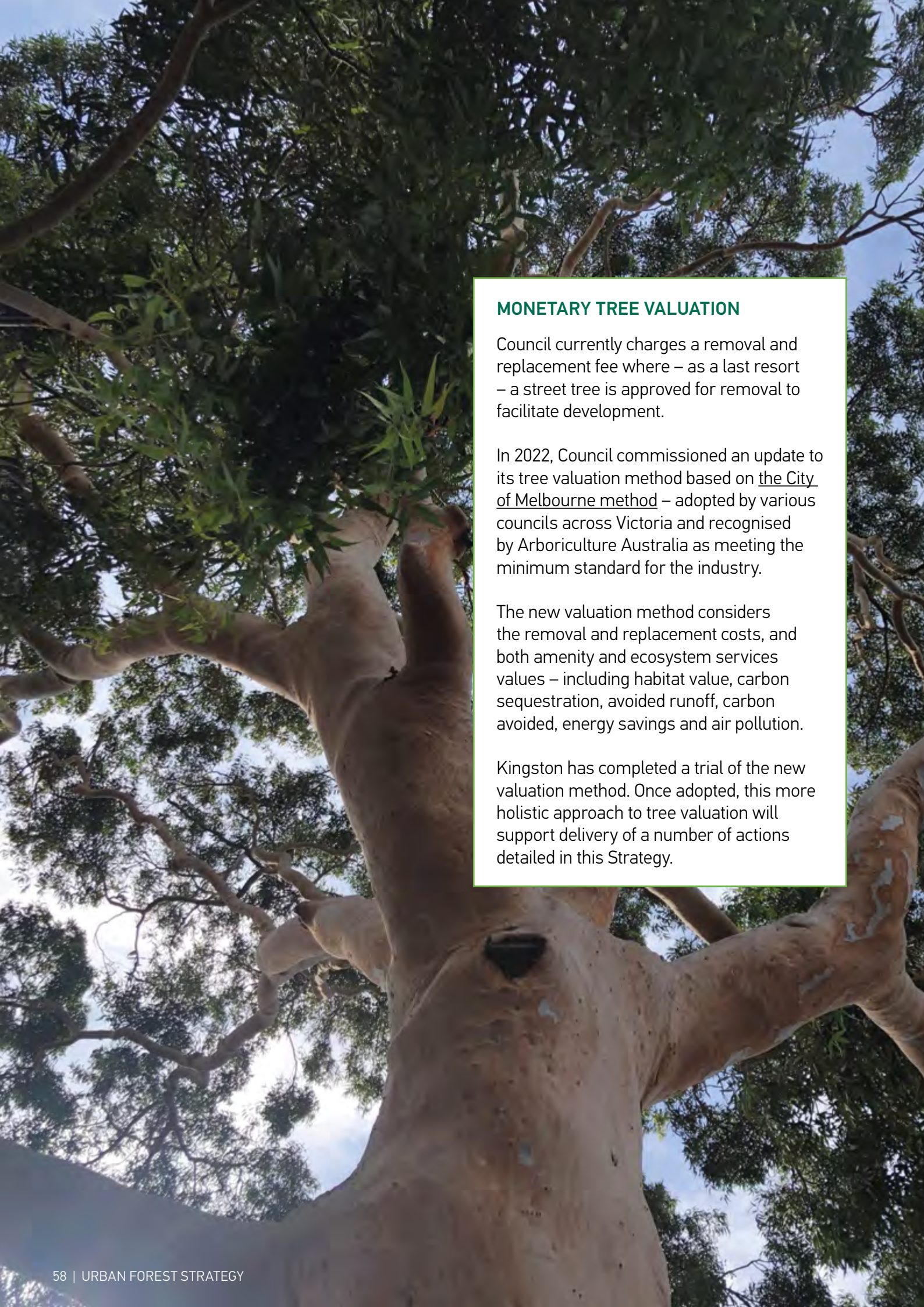
Outcome 6: More equitable distribution of tree canopy cover across our suburbs, including increased links between areas with recognised biodiversity value.

Outcome 7: Blue-green infrastructure integrated into all capital works projects.

Lead Department: Open Space & City Strategy

Priority Actions	Key tasks	Priority
Informed operational decision-making	• Complete field-based tree surveys within parks, reserves and streets to maintain existing tree inventory data	Critical
	• Complete valuations of trees on Council land planned for removal and balance protection against other options/capital expenditure required to retain the tree • Incorporate passive tree irrigation and other engineering solutions into capital program delivery, such as road upgrades, precinct renewals, recreation facility and open space improvement projects • Continue to participate in state-led programs aimed at building climate-resilient urban forests • Review and update Council's Tree Management and Technical Guidelines, including sections related to species selection in a changing climate, allergies tree repurposing and tree valuation • Update other guidance documents, technical specifications and watering and soil management programs to better support greening outcomes, as required • Include tree and vegetation protection and enhancement in all relevant Council tenders	High
Improved strategic decision-making, including land use and master planning processes	• Via strategic land use and integrated transport planning, free up areas of urban space for living infrastructure • Ensure space for trees and passive irrigation is accommodated in the urban landscape, especially during design processes. 30% canopy cover for activity centres should be targeted • Review and update Council's Street and Park Tree Management Strategy as required • Incorporate opportunities to protect trees, increase tree canopy cover to 30% and support biodiversity into master planning processes for Council-managed parks and reserves • As opportunities arise, include consideration of any new or emerging technologies which may support tree planting on rehabilitated landfill sites across Kingston's Green Wedge, and identify opportunities to expand the urban forest and double canopy cover (noting contamination constraints)	High

Priority Actions	Key tasks	Priority
Priority areas planted out	• Ensure priority areas identified in the Street Tree Planting Plan and via field-based surveys are planted out, and streetscapes filled wherever feasible • Review the Street Tree Planting Plan, and update priority planting areas, as required • Combine the results of the Parks and Reserves Capacity Assessment with the Open Space Strategy to prioritise areas of public land for enhanced canopy • Ensure opportunities to increase tree canopy cover to 30% across Council-managed parks and reserves are prioritised alongside other land uses	High
Major projects protect trees and maximise enhancement opportunities	• Advocate for maximum tree protection and 3:1 replacement of all removed trees through major state government transport projects and significant residential and industrial redevelopments	Medium
Informed risk management and customer care	• Investigate opportunities to expand the provision of in-home care / tree maintenance services (such as arboricultural services and gutter clearing) • Collect internal knowledge and develop more comprehensive tree information for customer care	Medium



MONETARY TREE VALUATION

Council currently charges a removal and replacement fee where – as a last resort – a street tree is approved for removal to facilitate development.

In 2022, Council commissioned an update to its tree valuation method based on the City of Melbourne method – adopted by various councils across Victoria and recognised by Arboriculture Australia as meeting the minimum standard for the industry.

The new valuation method considers the removal and replacement costs, and both amenity and ecosystem services values – including habitat value, carbon sequestration, avoided runoff, carbon avoided, energy savings and air pollution.

Kingston has completed a trial of the new valuation method. Once adopted, this more holistic approach to tree valuation will support delivery of a number of actions detailed in this Strategy.

Objective 3.
Enhance Communication & Engagement

A focus on Council-managed land and changes to planning controls will result in only modest canopy cover increases. The key to achieving our tree canopy cover target lies with the role of our community and other major landowners and land managers.

Since 2019, there has been a steady increase in the number of tree removal applications. Understanding the true value of a tree can disincentivise removal and enhance protection. Support for community-led initiatives, school-based programs and community education on trees and vegetation – including benefits, how to help and what to grow – will help build the urban forest of the future.

Outcome 8: Improved community understanding of the benefits of trees, and stewardship of our urban forest.

Outcome 9: Increased community participation in greening and biodiversity programs.

Outcome 10: Council's progress in achieving the aims of the Urban Forest Strategy is publicly communicated in a timely and accessible manner.

Lead Department: Advocacy, Communications and Engagement

Priority Actions	Key tasks	Priority
Develop an engagement and communications program to understand community attitudes and improve the perceived value of trees	• Research community attitudes, perceived risks and benefits of trees to develop appropriate engagement and communication materials	Critical
	• Collate and share knowledge as part of a Council-resident partnership focused on urban greening on private property, particularly space-constrained new developments • Investigate tree identification labels and interpretive signage for significant trees	High
Develop a value proposition associated with living infrastructure that can be communicated to developers and other landowners	• Add canopy cover % to rate and instalment notices to encourage protection and increase coverage – consider linking to penalties and/or incentives (see above) • Mandate use of the Green Factor Tool, communicate opportunities to enhance greening within industrial precincts and other large developments and highlight economic benefits[13] • Using Council's tree valuation method, include individual tree values in local law decisions and planning referrals	High
Support and leverage existing and new volunteer greening and biodiversity programs (including Gardens for Wildlife)	• Strengthen partnerships with major private landowners, such as golf course owners and greening agencies such as Landcare, Greening Australia, Greener Spaces Better Places, biodiversity networks and greening community groups • Leverage the success of Council's Gardens for Wildlife program and expand its scope and reach	Medium
Leverage the role of Bush Kinder within the community and better support schools	• Investigate the viability of expanding Bush Kinder within Kingston • Leverage existing Council run, school-based sustainability programs to include urban forest-specific learning objectives	Medium

WHAT IS THE GREEN FACTOR TOOL?

Designed by the City of Melbourne for landscape architects, architects, consultants and other built environment professionals who want to assess the credentials of their project's green infrastructure, the tool provides users with a Green Factor Score that considers the relative volume and efficacy of green elements, in comparison to the overall area of the site. A score of 0.55 is targeted for all developments excluding industrial which should seek to achieve 0.25.

Kingston *Gardens for Wildlife*

Gardens for Wildlife is a free program that helps residents develop wildlife friendly habitat in their gardens. Kingston offers:

- A free garden assessment to discuss how you can increase habitat in your garden
- Educational workshops and events throughout the year to learn more about indigenous plants and wildlife gardening
- Volunteer opportunities to get involved in biodiversity projects.

The free Gardens for Wildlife Booklet can be downloaded and provides information about habitat gardening, biodiversity and attracting wildlife to your garden.

Objective 4.
Effective Partnerships & Advocacy

Having clear goals, seeking out Traditional Owner perspectives, sharing knowledge and campaigning alongside other local councils, partners and the community will drive advocacy outcomes.

Council has a strong advocacy focus and is already working with Traditional Owners, major development, statutory and other authorities across the city. In 2020, Melbourne Water completed an extensive greening and cooling project at Edithvale Wetland Reserve and is planning another major planting at Wannarkladdin Wetlands in Patterson Lakes. In addition to the work of friends groups and volunteer working bees, Council's Conservation Officers are working alongside rangers from the Bunurong Land Council on a multi-year weed management program to protect and enhance some of Kingston's most significant natural areas. Council will continue to encourage all land managers and government agencies to achieve their own canopy targets as soon as possible and maximise opportunities to protect and enhance the urban forest across the city.

Outcome 11: Council has clear policy positions on the future of our urban forest and demonstrates consistent advocacy in this area.

Outcome 12: Traditional Owners' views are embedded into the management of our urban forest.

Outcome 13: Council has effective partnerships and can demonstrate project successes.

Lead Department: Advocacy, Communications and Engagement

Priority Actions	Key tasks	Priority
Strengthen our advocacy position and focus	• In collaboration with other councils across Melbourne, continue to develop advocacy positions and lobby the state government for: » Undergrounding powerlines » Changes to the Victoria Planning Provisions and other policy instruments that will deliver greener and more climate-resilient cities. For example, mandating use of the Green Factor Tool for large developments which is voluntary at present, including tree and vegetation protection under the Building Act, stronger tree and structural root zone protections as well as increased penalties and fines » A review of the VicRoads/ Department of Transport and Planning tree policies to include the utilisation of traffic barriers/reduced speed limits to enable the planting of large trees along appropriate sections of major roads/boulevards (with VicRoads support and funding) » Maximum tree protection and 3:1 replacement of all removed trees for all major infrastructure projects and significant residential and industrial redevelopments » Ongoing, appropriate and detailed tree and vegetation monitoring	High
Support and enable current and future generations of Traditional Owners to care for and respect Country	• Seek out Bunurong Land Council perspectives and continue to shape Council action, including investigating repurposing removed trees for cultural uses	Medium
Partner with the state government and other agencies	• Support Melbourne Water, South East Water, Parks Victoria and other relevant state government entities to achieve their own canopy targets as soon as possible and maximise opportunities to protect and enhance urban forest across the city • Seek out funding opportunities to support initiatives being led by VicRoads, such as road safety barriers to facilitate increased plantings along major roads • Work with emergency service providers and energy distributors to manage fire risk in a way that minimises impacts on the urban forest (undergrounding of powerlines)	Medium

WORKING WITH OTHER MAJOR LANDOWNERS IN KINGSTON

When Council assessed the ability of open spaces, parks and reserves to contribute to an increase in canopy cover, other major landowners – Melbourne Water, VicRoads, VicTrack and Parks Victoria – were engaged to understand their capacity to contribute to increased canopy across Kingston. While most rated future tree planting opportunities as low, opportunities identified by South East Water and Melbourne Water will be the focus of ongoing, site specific engagement.

Objective 5.
Improve Data Collection, Analysis & Monitoring

Strong investment in Kingston-wide aerial image capture and analysis, and increased resources to support Council's asset and information management systems will enable evidence-based decision-making and improve the effectiveness of urban forest management and monitoring programs.

Continued use of technology to track our urban forest (LiDAR, aerial imagery and machine learning) will enable a range of accurate and repeatable metrics to be captured, including:

- Accurate tree and vegetation canopy cover by land use over time
- Changes to individual trees over time
- Tree height and health
- Council-wide tree canopy and vegetation cover forecasting to 2030
- An assessment of the biomass and storage of carbon and change over time
- Identification of areas of significant vegetation and significant individual trees.

Outcome 14: Council's tree data is accessible, up-to-date and informs strategic and operational decision making.

Lead Department: Information Services and Strategy

Priority Actions	Key tasks	Priority
Aerial imagery analysis (annual)	• Analyse changes in the extent of Kingston's urban forest canopy using aerial imagery	High
Improve Council's Information Management Systems (IMS)	• Improve the functionality and use of Council's IMS to record tree information in the private realm and monitor the effectiveness of planning changes	Medium
Improve Council's Asset Management System (AMS)	• Improve the accuracy and functionality of Council's Tree Asset register using data collected during field-based tree surveys	Medium
LiDAR capture and analysis (every 2-5 years)	• Commission LiDAR to measure the height, structure, health and extent of Kingston's urban forest with a high degree of accuracy	Low
Ongoing monitoring and reporting	• Develop a 'tree data project' or similar that consolidates data sources, assesses the effectiveness of Council programs and strategies, and establishes channels to inform strategic and operational decision-making	Low

4.3
EQUITY & ACCESSIBILITY

Ensuring all members of the Kingston community help shape and have equitable access to our urban forest is a priority. In many circumstances, disadvantaged and vulnerable members of our community do not have equitable access to decision-making processes, resources, and economic or social opportunities. This means that policies, programs and services are likely to be experienced differently and have different outcomes for those who are more vulnerable.

We know disadvantaged and vulnerable members of our community will be disproportionally impacted by climate change, such as localised flooding and increased urban heat; decreased access to green, public open spaces; and increased costs associated with heating and cooling. Given this, Kingston's Urban Forest Strategy seeks to leverage existing organisational processes to ensure:

- Urban forest-related policies, programs and services recognise and address drivers of inequality
- Unintended consequences of urban forest-related policies, services or projects do not inadvertently reinforce or contribute to inequality
- Harmful attitudes and social norms that underpin drivers of inequality are challenged throughout Urban Forest Strategy delivery.

In 2022, Council officers completed an equality impact assessment. A range of actions were identified based on feasibility and impact. These have been included in the action plan above or will be addressed as part of other Council policies, programs and services.

As trees take at least eight years before they are mature enough to contribute to the urban forest in a meaningful way, the benefits of the various Council actions detailed in this Strategy are unlikely to be fully realised until 2040.

4.4
RESOURCING & INVESTMENT

As detailed above, Kingston has prioritised a number of Council actions that have the capacity to deliver outcomes and achieve our tree canopy cover target.

While some project work can be absorbed by existing teams and some significant operational expenditure is already included in other budget allocations, additional Council resources are required to effectively support the delivery of the Urban Forest Strategy. These are for planning and enforcement, GIS/mapping and data management, field-based tree surveys and community engagement. It is assumed that Council's commitment to the street tree planting program will continue as long as required. The additional cost of achieving the outcomes detailed in the Strategy is estimated to be at least $1.96 million over the next five years.

5

Ongoing Monitoring & Evaluation

The lifespan of this Strategy is seven years from 2023 to 2030. A review of this Strategy's Action Plan will occur in 2030 and will include:

- An updated analysis of Kingston's urban forest metrics, including tree canopy cover
- An evaluation of the implementation status of actions
- A report on progress towards achieving targets and outcomes, lessons learned and any changes required such as additional investment, resources or a change in strategic or operational direction
- A review of the 2050 tree canopy cover target.

Glossary

Ecosystem services

The benefits people obtain from the natural environment. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life.

Geographic Information System (GIS)

A system that creates, manages, analyses, and maps all types of data.

La Niña

A climatic driver which influences year-to-year climate variability. In southern Australia, it is usually characterised by increased rainfall, cooler daytime temperatures, a shift in temperature extremes and decreased frost risk.

Light Detection and Ranging (LiDAR)

LiDAR is an active remote sensing method used to measure the landscape in three dimensions accurately. When combined with 2-D aerial imagery, LIDAR is an extremely powerful tool for mapping vegetation in both natural and urban environments.

Living infrastructure

Living infrastructure refers to all of the interconnected ecosystems within an urban catchment, including the 'green infrastructure' of trees, gardens, green walls and roofs, parks, reserves and open spaces, and the 'blue infrastructure' of our waterbodies including lakes, wetlands and waterways.

Senescence

The process of aging in trees and other vegetation. Trees can have both stress-induced and age-related developmental aging. This late stage of a tree's life is characterised by a decline in the volume of the crown and root system.

Tree canopy

The uppermost trees or branches of trees in a forest, forming an almost continuous layer of foliage. The topmost layer of bioactivity in a forest setting.

Tree canopy cover

Tree canopy cover is the area of tree canopy that covers a specific area of land – for example, municipality, suburb, street, land type or block. This important measure of urban forest represents many of its benefits, such as the amount of shade provision, stormwater interception, carbon storage and sequestration, and amenity.

Urban forest

All trees and other vegetation – and the soil and water that support them. Urban forest incorporates vegetation in streets, parks, gardens, plazas, campuses, river and creek embankments, wetlands, railway corridors, community gardens, green walls, balconies, roofs and front and back yards.

Water sensitive urban design (WSUD)

An approach to planning and designing urban areas to make use of water as a valuable resource and reduce the harm it causes to rivers and creeks.

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Appendix

Figure 19.
Foliage growth (2014-2022)

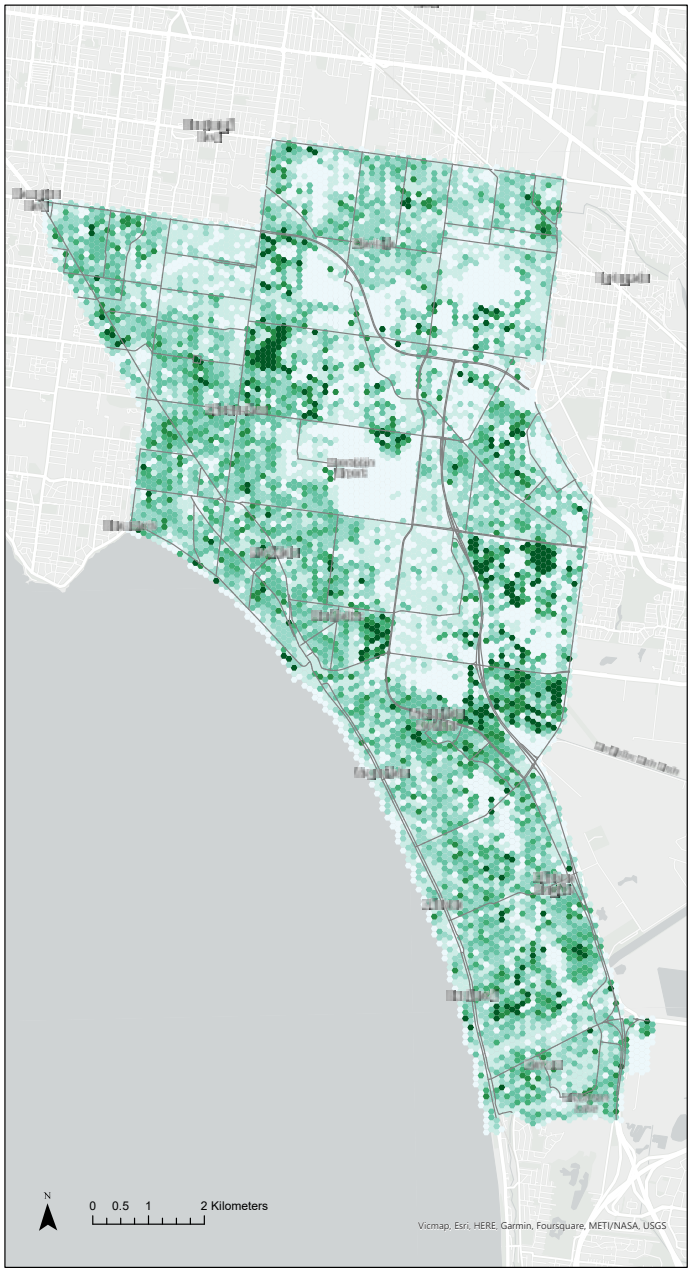

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Figure 20.
New plantings (2014-2022)

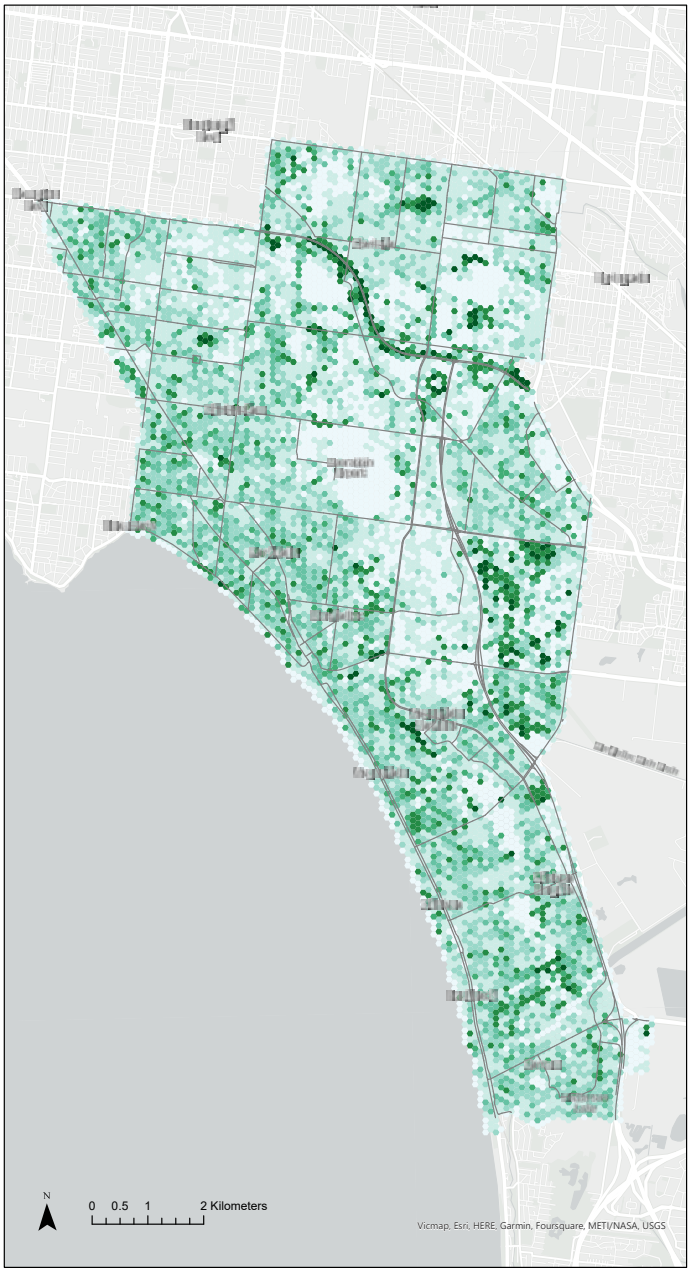

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Figure 21.
Tree removals (2014-2022)

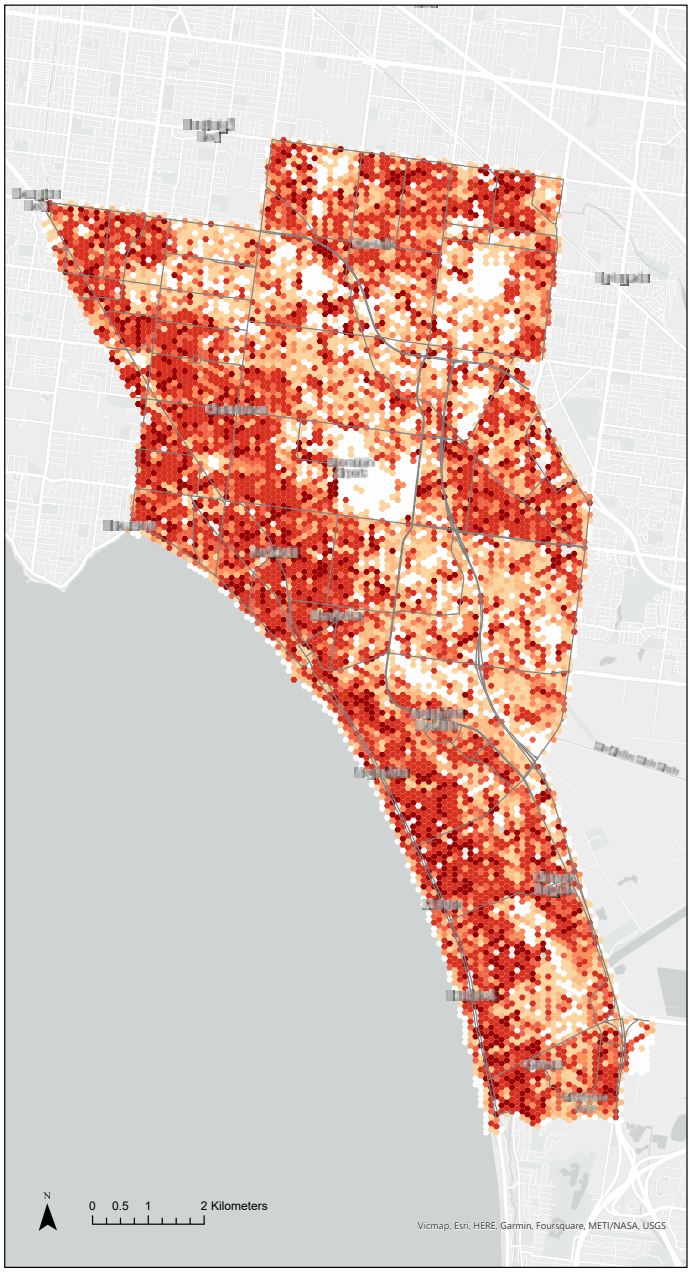

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Figure 22.
Private residential land - canopy cover change by activity

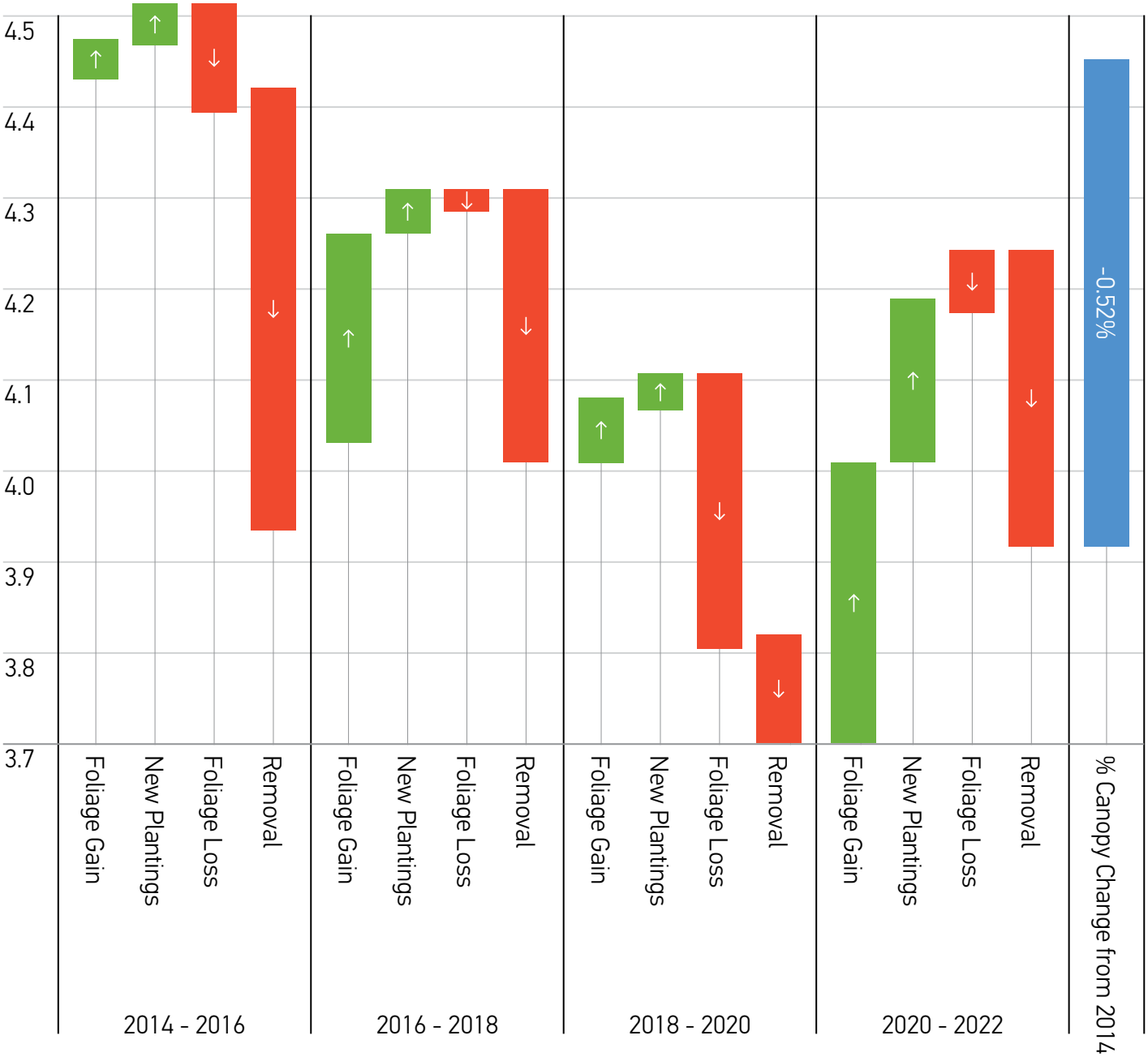


Figure 23.
Open space - canopy cover change by activity

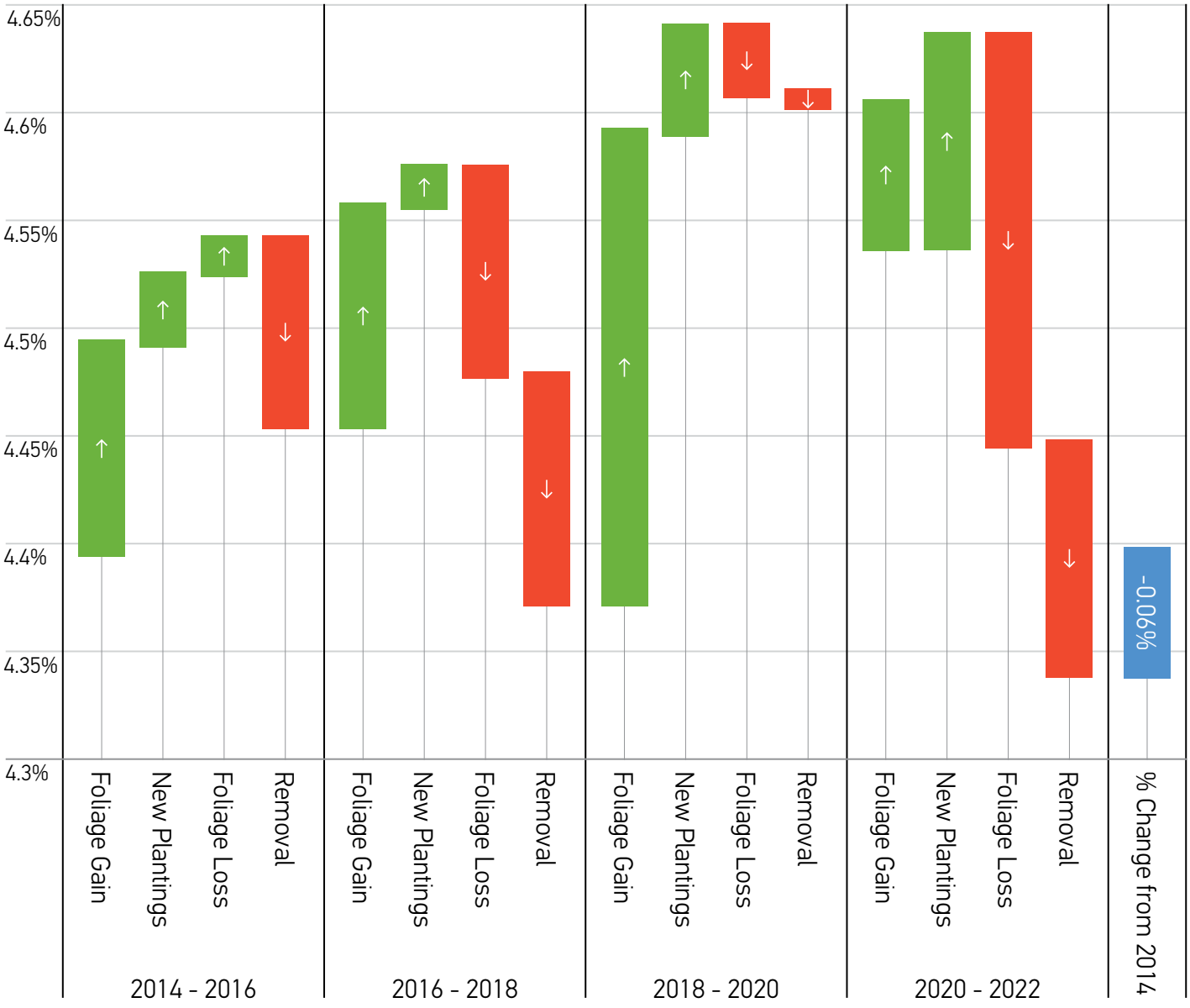
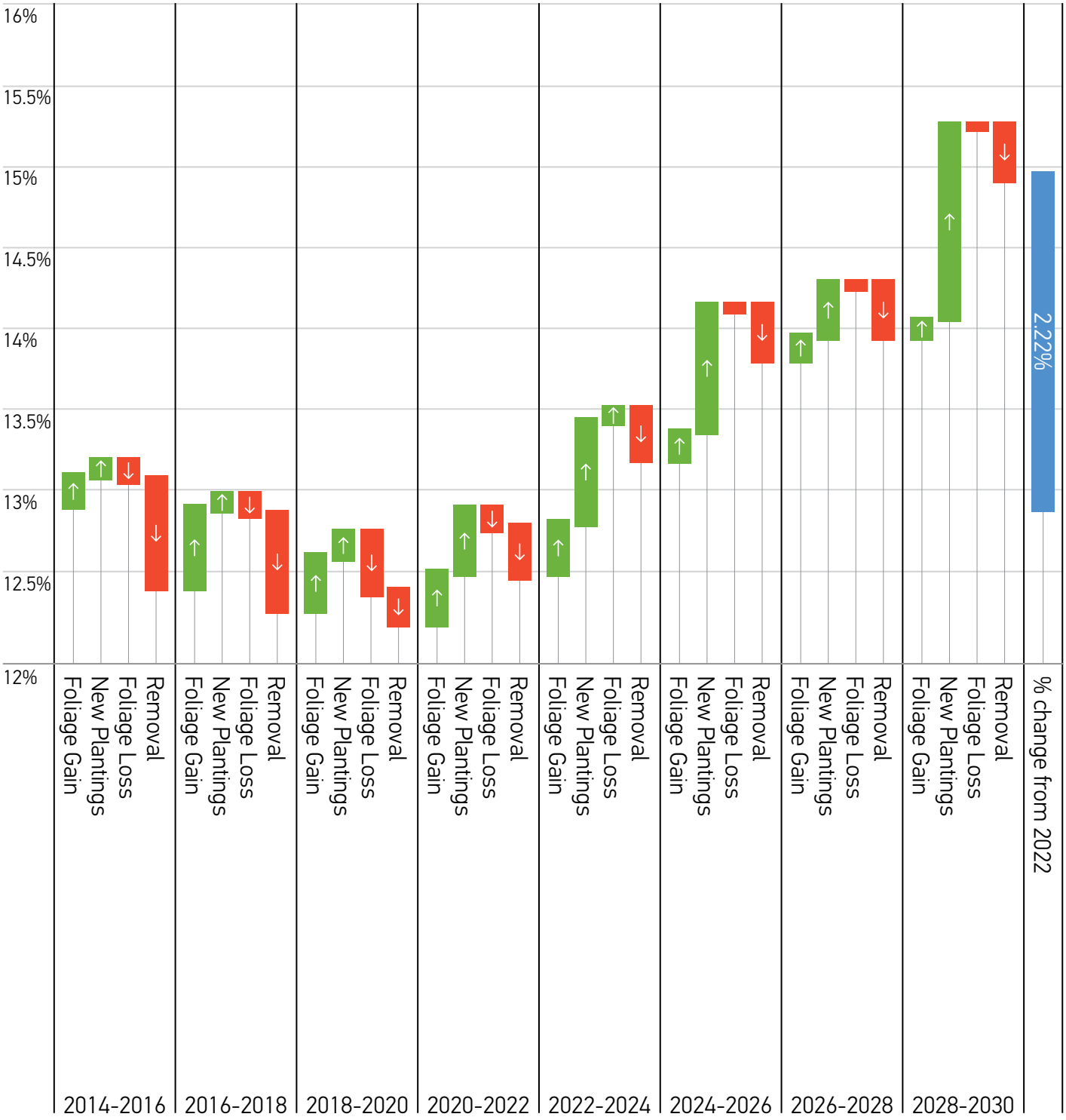


Figure 24.
Modelled canopy cover change to 2030 by actvity



* Note, whilst impossible to model, an average tree canopy cover across the city of 20% (minimum) by 2050 is considered achievable given the above trajectory

Table 2.
The Urban Forest Strategy strategic context

Strategy/Plan	Relevance to the Urban Forest Strategy
Living Melbourne: Our Metropolitan Urban Forest Strategy 2019 (not a Council strategy)	The *Living Melbourne: Our Metropolitan Urban Forest Strategy* sets a vision for a greener, more liveable Melbourne. In 2019, Kingston City Council was among 30 metropolitan Melbourne councils to endorse the strategy. Kingston's Urban Forest Strategy the first major step towards achieving the collective goals of Living Melbourne.
Street and Park Tree Management Strategy 2019	The Street and Park Tree Management Strategy sets Council's direction for maintaining and enhancing the urban forest on Council-managed land to underpin the sense of a happy and healthy community, and to maintain vibrant neighbourhoods, through sustaining the City's beautiful streetscapes and parklands.
Open Space Strategy 2012 (under review)	The Open Space Strategy guides local policy and decision making regarding open space provision, acquisition and management. Multipurpose open spaces can contribute to the expansion of our urban forest while balancing the sport and recreational needs of our community.
Biodiversity Strategy 2018–2023 (under review)	The Biodiversity Strategy sets out goals and strategic objectives for protecting, preserving and improving Kingston's biodiversity. Our conservation areas are an important component of our urban forest. The Urban Forest Strategy can contribute to improving our community's understanding and appreciation of trees and vegetation, enhance our management and improve linkages between our conservation areas.
Integrated Water Strategy 2020	The Integrated Water Strategy sets our vision to become a 'water sensitive city' with broad objectives to use our water wisely, protect our waterways from pollution and improve our flood management. The use of water sensitive urban design and alternative water sources for irrigation are vital for the future health and resilience of our open spaces. Expanding our urban forest can also contributing to reducing the local impacts of flooding.
Green Wedge Plan 2012	The Green Wedge Plan sets our vision for Kingston's green wedge to be an exemplar environmental and recreational resource for the local and regional community. Developing and managing land in the green wedge provides potential opportunities to expand Kingston's urban forest.

Strategy/Plan	Relevance to the Urban Forest Strategy
Public Health and Wellbeing Plan 2021–2025	The Public Health and Wellbeing Plan sets out Council's priorities and objectives to improve the health and wellbeing of the community. Key objectives of this Plan include improving the amenity of open spaces and the natural environment, plus increasing community resilience for health impacts of climate change. The Urban Forest Strategy can contribute towards achieving both of these objectives.
Coastal and Marine Management Plan 2021	The Coastal and Marine Management Plan guides the appropriate and effective management of our marine and coastal areas within Kingston. A key objective of the plan is to protect and enhance the environment, from our catchments through to the bay. The Urban Forest Strategy supports this objective through improving our community's understanding of the importance of coastal vegetation, developing partnerships with Traditional Owners, the community, other agencies, and using green-infrastructure for urban cooling in coastal areas.
Integrated Transport Strategy 2020	The Integrated Transport Strategy sets our vision for Kingston as a city with a connected, integrated, and sustainable transport network that is safe, health, accessible, reliable and efficient. A key objective of the strategy is to make active transport (walking and cycling) the preferred transport option, particularly for short local trips. The Urban Forest Strategy contributes to achieving this objective through tree planting programs aimed at increasing shade and cooling along walking and cycling routes.

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