2023

Urban Greening and Cooling Strategy

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WAVERLEY COUNCIL

Contents

We pay respect to the Bidjigal, Birrabirragal and Gadigal people, who traditionally occupied the Sydney coast and the land and sea country of Waverley, and to Elders past and present. We acknowledge the survival and ongoing resilience of indigenous ways of knowing, being and doing, and work to ensure the actions in this Environmental Action Plan help strengthen connection to culture and community. By respecting Aboriginal and Torres Strait Islander peoples' intrinsic relationship with the land and waters, we can value, learn and strengthen protection of our environment.

A Message from our Mayor

Council's ability to protect and enhance greening on both public and private land is critical to managing an effective local response to the Climate and Biodiversity Emergency and ensuring sustainable, liveable and resilient neighbourhoods.

Ensuring Waverley is nature positive, which means species and ecosystems are being restored and regenerated rather than diminished, will help us protect and sustain healthy trees which provide shade and shelter, improve air quality, absorb carbon and rainfall, cool local environments, and support our local native wildlife.

Protecting, restoring and repairing our urban vegetation will mitigate heat islands, reduce the need for air conditioning, and increase local amenity by encouraging walking and physical activity through our green spaces and village centres. The protection and preservation of urban vegetation is a crucial action for any organisation that is serious about addressing climate change.

This strategy, funded through the NSW Government Greener Neighbourhoods program, sets goals and actions which detail how increasing urban trees and vegetation, whether is public or private realm, can enhance our climate resilience. Further exploration of non-natural adaptations to projected urban heat increases will be addressed in Council's upcoming Climate Resilience and Adaptation Plan.

Paula Masselos, Mayor of Waverley

Introduction

Managing and enhancing urban trees and vegetation is essential to achieving two stated objectives from the Waverley Community Strategic Plan:

2.3 Prepare and adapt to the impacts of climate change

2.4 Protect and increase our local bushland, parks, urban canopy cover and habitat areas

Securing our tree canopy is also required by the Greater Sydney Region Plan, and Waverley's Local Strategic Planning Statement, which specify increased canopy cover to provide shade, reduce ambient temperatures and mitigate the urban heat island effect.

Local challenges to growing and maintaining tree canopy in Waverley include sandy coastal soils, extremely high density, large percentage of land in private ownership and high land values. However, mature trees, leafy parks and healthy bushland are key elements of local character, so in 2018 Council set strong targets to grow the urban canopy and shrubs in both public and private properties to a level of 29% to provide shade for open spaces and walking, and reduce heat, improve conditions for wildlife and improve amenity.

To further enhance climate resilience in Waverley, we are extending our target for increased vegetation cover. With funding from the NSW Government's Greener Neighbourhood grant, Council has developed this Greening and Cooling strategy to guide decisions and investments that coordinate the protection and management of urban trees and vegetation to achieve **new targets of 35% Green Cover by 2032, comprising 20% canopy cover and 15% shrub cover.**

Extending our green cover target from

by 2029 **by 2032**

To achieve this, Council will focus efforts around the following four goals:

1. Protect, restore and repair public trees and green space
2. Foster and value protection of vegetation on private land
3. Activate community stewardship for trees and greening and
4. Safeguard our trees and vegetation assets

Challenges

Waverley is densely populated with over 70,000 residents living in only 9.2 km^2. Over 80% of our homes are classified medium or high density, and average house prices are some of the highest in Australia.

With its iconic coastline, and a climate providing pleasant and almost year-round access to famous beaches and open spaces for a wide range of recreational activities, Waverley has high visitation, welcoming over 2 million visitors each year.

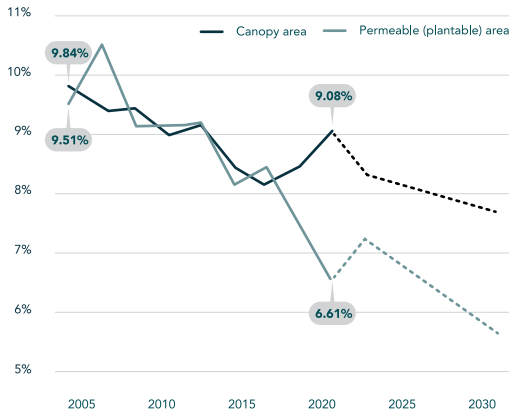
Set mostly on shallow, sandy soil overlying sandstone, Council works hard to support and manage public trees, vegetation and green spaces.

However, projected climate impacts for Waverley, including increasing temperatures and storm frequency, decreases in average rainfall, increases in extreme rainfall and shifting seasonality, present challenges to keeping our trees and vegetation healthy. Development pressures, vandalism and invasive species also threaten our vegetation assets. Without trees and shrubs, we will be unable to harness the cooling benefits that vegetation can provide, as temperatures increase under climate change.

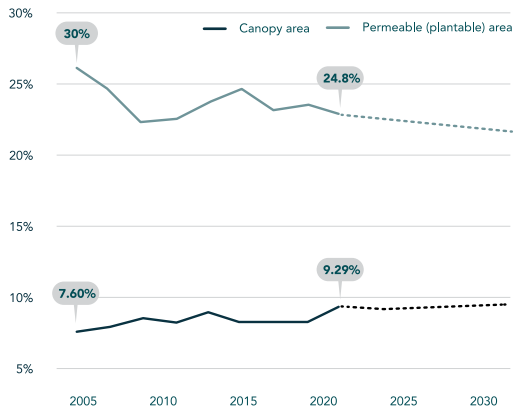
Despite historically low canopy and high levels of hard (non-permeable) surfaces, Council has increased vegetation cover since 2005 by successfully managing trees in our streets and parks. But establishing new public green space is difficult due to land prices and existing residential density. A recent aerial study* shows significant loss of trees on private land.

Increased building footprints reduce the amount of plantable land and available soil, deep enough to maintain existing vegetation levels. The amount of permeable (i.e. plantable) areas on private land, estimated to be only 6%, is also decreasing.

Private permeability and tree canopy (% cover)



Public permeability and tree canopy (% cover)



Once plantable area is gone, it cannot be recovered for planting in future. Therefore, this strategy sets targets to increase trees and vegetation in our public parks and streets, but to also protect vegetation and deep soil on private land, to activate community stewardship for greening initiatives and to safeguard the trees and vegetation that we have.

* This study used machine learning to map the presence of trees/vegetation and permeable surfaces using aerial photographs between 2005-2020. Variation in the historical record can be attributed to different seasons or shading detected in available photography.

Benefits of greening

Urban trees and vegetation ensure sustainable, liveable and resilient neighbourhoods. They shade and shelter, improve air quality, absorb carbon and rainfall, cool local environments, and support local wildlife.

Despite less than 2% of Waverley's pre-1788 bushland remaining, Waverley is home to significant local and regional biodiversity and currently supports 5.8 hectares of coastal native vegetation, 123 native plant species and over 50 native creatures. Council manages increasingly rare remnant coastal vegetation communities, a critically endangered ecological community and native vegetation in our parks and reserves. Native trees and vegetation provide an insight into pre-Colonial times and provide both shelter and food for the wide range of local birds, insects, reptiles and mammals that live here. Protecting and managing habitat corridors, including the remnant patches of Coastal Heath bushland along the coast between Dover Heights and Bronte, and supporting planted native bushland supports biodiversity in the area and ensure precious species and natural heritage are not lost.

Healthy tree canopy is increasingly recognised as an effective and acceptable tool for increasing climate resilience in urban neighbourhoods.[1] This is because all trees and shrubs provide shade and evapotranspiration, which reduces ambient temperatures and mitigates urban heat islands, which are urban hot spots where concentrated amounts of non-permeable and dark-coloured surfaces cause localised warming.[2] In fact, it has been calculated that every 10% increase in tree canopy cover can reduce land surface temperatures by 1.13° Celsius.[3] Vegetation is effective against localised flooding, as it can intercept, absorb and filter stormwater in urban settings.[4]

Healthy urban vegetation also provides a range of ecosystem services in addition to urban heat mitigation including protection for the health of soil and waterways, improved air quality and promoting social cohesion and wellbeing,[5] and helps to ensure that our open spaces are high-quality, and can continue to provide opportunities for passive and active recreation.

And while some residents may not value trees in some locations, it has been shown that street trees can increase real estate value. It has been calculated that a 10% increase in street tree canopy can increase the value of properties by an average of $50,000.[6]

Trees and vegetation, whether on streets or private properties, or in parks and bushland, can play a role in creating a *Nature Positive* Council where local species and ecosystems are being restored and regenerated, rather than declining. This strategy seeks to address the challenges to greening in both public and private spaces, so as to harness the multiple benefits that vegetation can provide and support enhanced climate resilience in Waverley.

1. Lee et al 2015
2. Mills 2014
3. Adams and Smith, 2014
4. Berland et al 2017
5. Threlfall C et al 2016, Chen W 2017, Ossola A et al 2015 and Rugel et al 2019
6. Swinbourne and Rosenwax, 2017

Healthy native shrubs in Varna Park

Rooftop SkyPark in Bondi Junction

Green walls at Whitton Lane

Waverley Community gardeners

Relaxing in Clementson park

Rooftop bushtucker at Westfield

Diamond Bay Bushcare volunteers

Langlee Lane shared garden

Council's Living Connections program

Iconic Species of Waverley

Waverley is home to rare and threatened plant species, as well as plants and animals that are rapidly disappearing, or have already disappeared, elsewhere in Sydney. Increasing canopy and understorey in Waverley will maximise opportunities to support and connect with local native animals and species, and assist adaptation of natural systems to the impacts of climate change.

Eastern Suburbs Banksia Scrub

Council is home to the critically endangered plant community Eastern Suburbs Banksia Scrub, which is protected under Commonwealth and State legislation. It occurs on nutrient poor aeolian solis, and can be found on private and public land adjoining York Road and within Queens Park.

Sunshine Wattle

Found only on coastal scrub on sandy soils, Council has supported the natural regeneration of the only population of Acacia Terminalis subspecies Eastern Sydney, a critically threatened pale yellow wattle near the coastal cliff of Dover Heights. The Waverley subspecies is hairier, possesses thicker flower stalk and wider seed pods. A fire temperature of 60 degrees is required for optimum germination.

Superb Fairy-wrens

The male Superb fairy-wren sports a sky blue-coloured cap, neck and face patch, which becomes iridescent during breeding season. The non-breeding males and females have mostly grey and brown plumage, and are harder to spot. Superb Fairy-wrens can be seen in areas of Waverley that offer understorey for shelter, such as along the coastal fringe in shrublands and heath vegetation, and in private gardens that offer dense native shrubs and bushes. This charismatic little bird lives in sedentary family groups, staying in the same territory for many years, while the young females have to leave that group and find and set up a territory in a new area.

New Holland honeyeaters

The New Holland honeyeater can be found in Coastal Heath and gardens, mainly where and banksias are found. An inquisitive and social bird that mixes with other types of honeyeaters, they mostly eat the nectar of flowers, but also eat fruit, insects and spiders, with most feeding taking place in lower areas of bushes and thickets. You can often see them perched on dead twigs at the top of a tree or shrub, as this offers them a safe 360 degree lookout.

Eastern blue-tongued lizards

One of the largest skinks in NSW, Blue Tongues can sometimes be found basking in sunny areas before taking cover or foraging for food like slow moving beetles or snails in the undergrowth. When threatened they might stick out and flatten their large blue tongue, to frighten predators away. If they have food and shelter, the Eastern Blue-tongue can breed every year, on average giving birth to 10 live young.

Microbats

Half of Sydney's 20 microbat species are listed as threatened, but some such as Gould's Wattled Bat *Chalinolobus gouldii* are found in areas of Waverley such as clifftop overhangs, where they roost in small colonies. MIcrobats can also been found in the stumps and hollow limbs of trees or in bird nests, and can sometimes be found around urban buildings. Microbats can sometimes be seen at night darting around bright lights to hunt for insects using echo-location, and can consume up to half their body weight in insects each night.

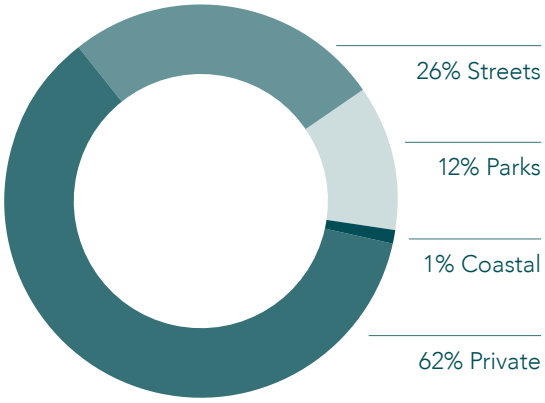
Where we are at

Council first set a target for increasing tree canopy and shrub cover in 2018. Recent assessment indicates that canopy has increased by 10% primarily in Council parks.

To ensure we manage and maintain these our vital environmental assets, Council has recently undertaken a comprehensive audit of all our public trees in parks and streets and recorded tree species, age, size, health, and potential risks.

Council has recently updated its Tree Management Guidelines and Policy to clarify and standardise our approaches to providing and maintaining our tree assets and ensuring we can replace and restock this renewable resource within Council's planning and budgetary cycles.

Land use in Waverley



Council has also strengthened regulatory controls to improve the quality of our public domain and included objectives to reduce urban heat islands and improve canopy and deep soil plantings in the Local Environmental Plan (LEP). Specifically through clause

1.2 *To achieve high quality public domain with significant tree canopy and accessible open space*

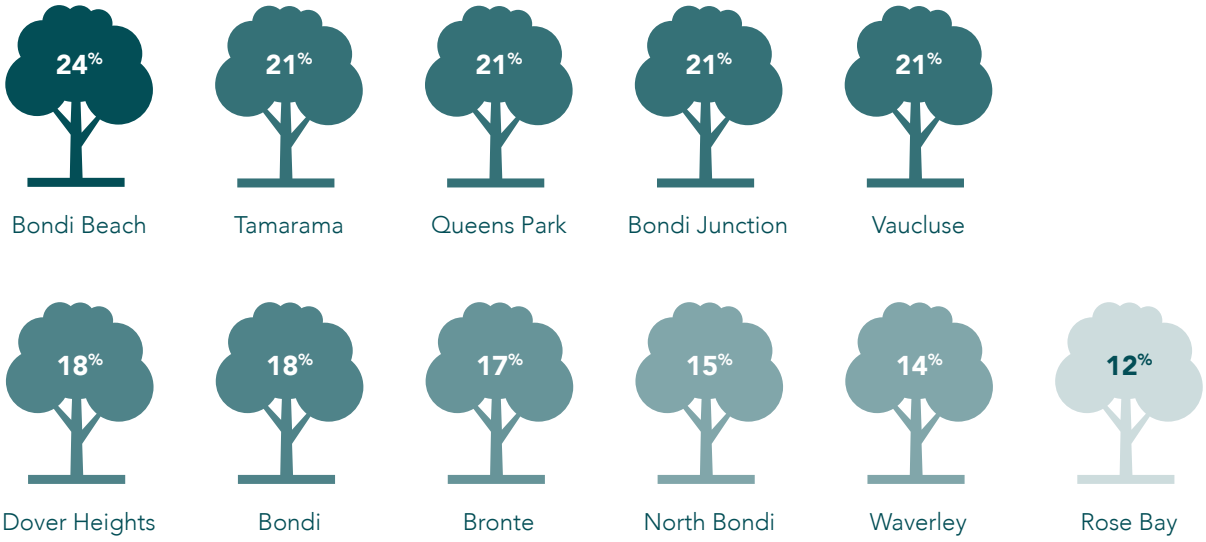
and through the inclusion of new objectives for low density, medium density and high density residential zones (R2, R3 and R4).

- *To promote development that incorporates planning and design measures that reduce the urban heat island effect*
- *To improve the urban tree canopy by providing high levels of deep soil planting and additional landscaping*

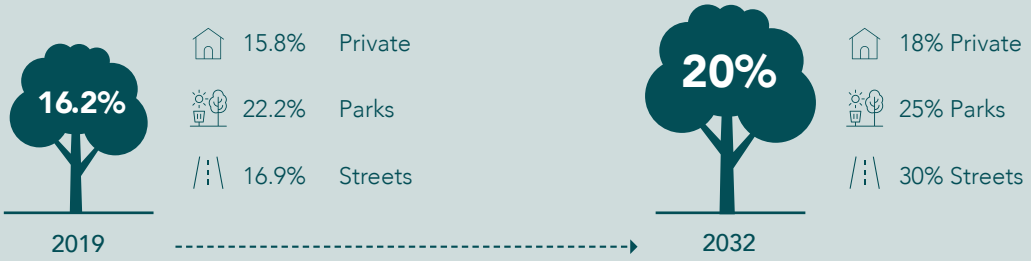
Council also, following extensive consultation, strengthened protections for canopy in the Waverley Development Control Plan (DCP) and improving tree replacement requirements.

The new strategy and targets build on the current actions and recognise the different challenges and opportunities that exist for sustaining trees in public and private spaces. It approaches local greening and cooling in consideration of ownership, related management responsibilities, community value and compliance actions.

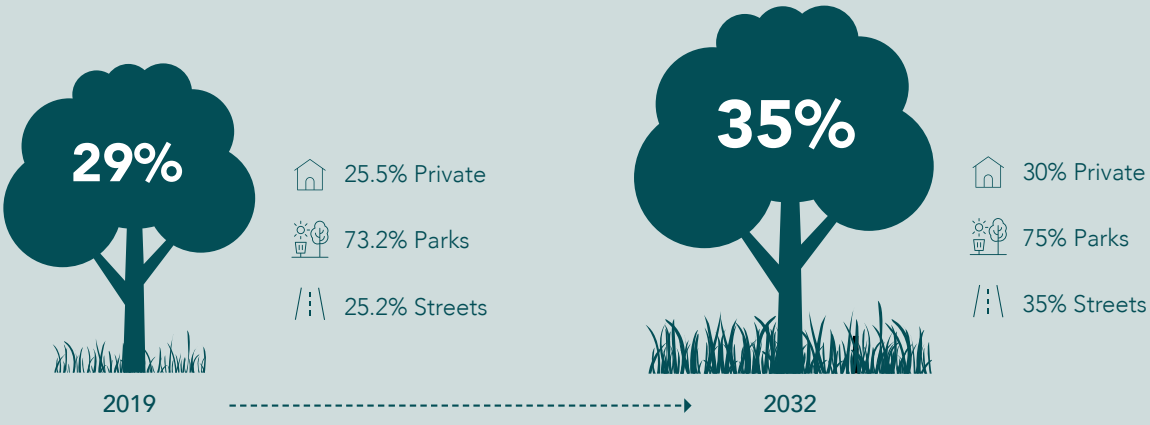
Canopy by suburb (2022)



LGA-wide canopy target



LGA-wide green cover target (includes canopy, shrub and vegetated ground cover)



GOAL 1

Protect, restore and enhance public trees and green space

DELIVERED BY OPEN SPACE AND RECREATION OPERATIONS // INFRASTRUCTURE SERVICES

Targets

30% Street Canopy (~500 trees p.a.)	25% Parks Canopy (~40 trees p.a.)	200sqm Increase public space permeability p.a.

Actions

1. Establish and promote LGA-wide targets with timeline and responsibility for implementation
2. Digitise the Public Tree Inventory on Council's asset management system and enable dashboards for public information on Strategy progress
3. Identify priority planting sites and large planting projects and publish online to confirm Council's mandate to plant
4. Implement strengthened tree protections, outlined in the LEP, DCP and Tree Management Policy and guidelines
5. Increase public space permeability and incorporate urban vegetation in streetscape upgrades, supported by strategic plans and budgets and the application of the Street Design Manual
6. Update species suitability lists to ensure species' selection prioritises suitable "climate ready" plants, that is those likely to survive and thrive in Waverley's projected climate
7. Establish management and maintenance priorities to protect the health of existing trees, shrubs and ground covers, including increased resources for establishment irrigation
8. Establish and coordinate pre-grow contracts with suppliers based on planting projections

GOAL 2

Foster vegetation protection on private land

DELIVERED BY URBAN PLANNING POLICY AND STRATEGY // ENVIRONMENTAL SUSTAINABILITY

Targets

20% Private Canopy

Minimise loss of deep soil

Actions

1. Implement strengthened tree protections, outlined in Waverley Local Environment Plan and Development Control Plan to protect vegetation on private property
2. Explore incentives for landowners to value, maintain and protect mature trees as an element of local character, through positive covenants, financial assistance or other support
3. Provide education and guidance on green roofs and walls
4. Investigate applying financial bonds for tree protection and public works on public land as part of development applications
5. Investigate strengthening deep soil protections in Development Assessment pathways

GOAL 3

Activate community stewardship for trees and greening

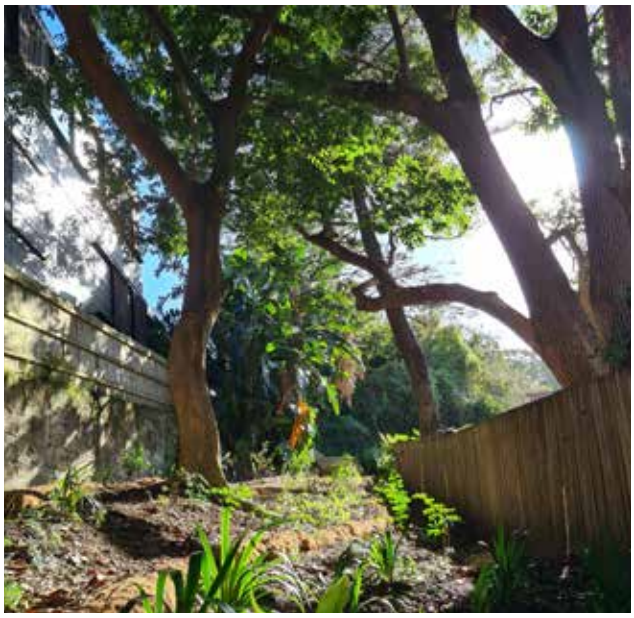
DELIVERED BY ENVIRONMENTAL SUSTAINABILITY // COMMUNITY PROGRAMS

Targets

- 1000 Habitat gardens
- 150 Approved verges
- 50 Tree requests
- 50 Significant trees identified
- 25 Community managed gardens

Actions

1. Promote and support habitat gardening including through Council's Living Connections program
2. Recognise, support and promote volunteer greening opportunities such as Bushcare and Cemetery gardening
3. Support capacity for best practice verge gardening and community gardening, including on private land
4. Identify opportunities to integrate woody meadows into verges and streetscapes
5. Call for community nominations of notable and significant local trees to finalise and update the Significant Tree Register
6. Investigate opportunities for private or corporate sponsorship of tree planting and carbon sequestration assets



GOAL 4

Safeguard our trees and vegetation assets

DELIVERED BY COMPLIANCE // FINANCIAL SERVICES // COMMUNICATIONS

Targets

Eliminate tree vandalism	No loss of remnant vegetation

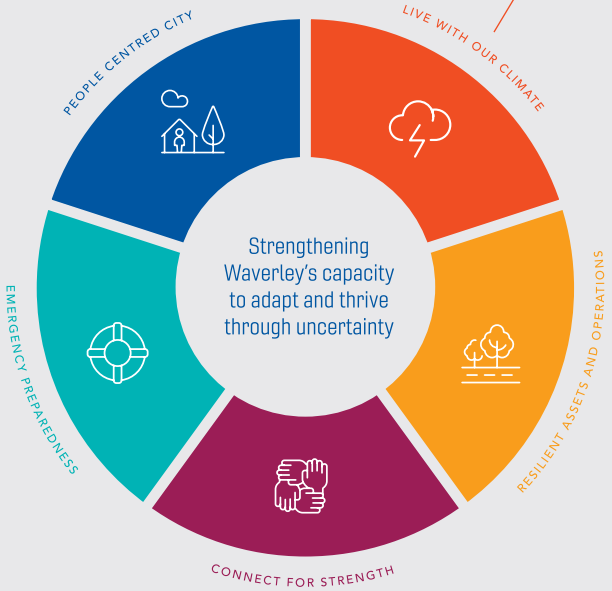
Actions

1. Improve compliance reporting on tree and remnant vegetation removal and vandalism
2. Implement Biodiversity Action plan and ecological restoration plans
3. Communicate progress on greening targets and successful prosecutions to the community
4. Separate referrals for tree protection orders from Development Assessment referral pathways
5. Increase tree permit and tree replacement fees to cover administrative, establishment and maintenance costs
6. Explore refunds for residents when onsite tree replacements reach 3 metres
7. Follow up on Development Assessments where trees and vegetation have been required as part of a development consent, prior to issuing Occupation Certificates

Context of the Urban Greening and Cooling Strategy

A hierarchy of statutory and non-statutory mechanisms govern vegetation management and protection within the Waverley LGA. This Strategy ensures management of our urban vegetation is in accordance with current legislative and regulatory requirements and aligns with policy, planning controls and community needs. This Strategy is one component of the actions required to enhance climate resilience as outlined in Waverley's Resilience Framework.

Resilience Framework and Goals



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Urban Greening and Cooling Strategy

INFORMED BY

Environmental Action Plan 2022-2023

Net Zero Targets

Waverley Climate Scenario

Climate Resilience and Adaptation Plan (in preparation)

Adopted in 2022, the Waverley Resilience Framework (right) responds to systemic resilience challenges across key functions of Council, including Environmental Sustainability, Planning, Infrastructure, Emergency Preparedness and Community Programs.

A Climate Resilience and Adaptation plan to address and reduce vulnerabilities for a broad range of projected risks is in development. It will include complementary actions to adapt to localised heat impacts, including material choices for capital works, supporting vulnerable residents in extreme events and mitigating risks for outdoor staff.

Community Aware & Safe | **Access & opportunity** | **Reduce climate risks** | **Resilient Systems** | **Improve social cohesion**

Monitoring Progress

We will report annually on the following outcomes of the strategy and publish progress against individual goals online, and review after 5 years (2027) to adjust actions or targets.

Objective	Increase canopy and greencover in Waverley to enhance cooling and climate resilience		
Outcomes	Healthy thriving trees, shrubs and ground cover on streets, parks and private land	Water sensitive urban design – including species, upgrades and operations	Reduced urban heat, including transport routes and biodiversity corridors
Indicators	Successful vandalism prosecutions (Council data) Annual Vegetation coverage data (NSW Govt)	Achievement of Council water targets (Council data) Public domain permeability trends (NSW Govt)	Minimisation of Urban Heat Islands (NSW Govt) Annual Local Temperature reductions (NSW Govt)