



URBAN GREENING STRATEGY

2022-2032



ACKNOWLEDGEMENT OF COUNTRY

We remember and respect the Ancestors who cared for and nurtured this Country.

Dhumaan gayin ngarrakalu kirraanan barayidin.

It is in their footsteps that we travel these lands and waters.

Ngarrakalumba yuludaka bibayilin barayida baaduka.

Lake Macquarie City Council acknowledges the Awabakal people and Elders past, present and future.

Lake Macquarie City Council dhumaan Awabakala ngarrakal yalawaa, yalawan, yalawanan.

Wording by the Aboriginal Reference Group and translated by Miromaa Aboriginal Language and Technology Centre.





SNAPSHOT OF KEY ACTIONS

GOAL	TARGETS	ACTIONS
1. Increase the extent and quality of greening in public spaces	1.1 Achieve a 10 per cent increase in tree canopy cover in suburbs vulnerable to urban heat by 2030	<ul style="list-style-type: none"> • Develop one, four and 10-year programs to increase tree canopy cover • Develop program to protect and proactively maintain existing trees • Update local planning provisions
	1.2 Aim for 30 per cent tree canopy cover in all residential zones, 25 per cent in all business zones and 15 per cent in all industrial zones	<ul style="list-style-type: none"> • Develop program to ensure accurate and timely measurement of urban tree canopy cover and health (five yearly) • Investigate financial funding models to ensure continuity of green infrastructure provision. Integration of new financial tools into standard local government financial accounting practices • Develop program for restoration of formalised water courses back to semi-natural treatment following water-sensitive urban design principles
2. Increase the extent and quality of greening in new developments	2.1 Aim for 30 per cent tree canopy cover potential in new residential zones, 25 per cent in new business zones and 15 per cent in new industrial zones	<ul style="list-style-type: none"> • Investigate options to amend local planning provisions to ensure provision of deep soil spaces within medium to higher density urban typologies for a sustainable urban tree canopy • Investigate options to amend Council's planning provisions to include minimum tree canopy cover controls in target areas
3. Activate community greening of the City	3.1 Aim to register 1000 community planted street trees per year for the next 10 years	<ul style="list-style-type: none"> • Review eligibility criteria for community environment grants program to enhance urban greening outcomes • Develop and implement urban forest citizen science programs and opportunities for community involvement in research and data collection. • Develop key health and wellbeing indicators to benchmark contribution of urban greening to human health and monitor (five yearly) • Design verge garden guidelines • Design web-based tool to inform species selection for future climate scenarios

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EXECUTIVE SUMMARY

The vision for our city is to balance our cherished environments with our need for great spaces to live and visit, smart transport options and a thriving economy; which adapt and strive to be fair for all.

Lake Macquarie's landscape is made up of natural waterways and ridgelines, bushland and protected areas, open spaces and parklands, rural landscapes, the coast and lake, and urban landscapes. With the lake at its core, this environment has been managed by the Awabakal people as a cultural landscape for thousands of years.

Residents and visitors love these green and blue open spaces, as they provide a natural background for a healthy lifestyle. People visit open spaces to connect with family and friends, to play and be active, or just to be outside. These open spaces are fundamental to life for people in Lake Macquarie. The COVID-19 pandemic has highlighted the importance of quality green space to people's health and wellbeing.

Urban heat and heatwaves are a significant and growing issue for Lake Macquarie. Recent summer weather patterns in conjunction with projected increases in the frequency and duration of extreme weather events, including heatwaves, will put pressure on our community and infrastructure. Urban heat affects vulnerable communities including the elderly, families with young children and culturally diverse communities. Exacerbated by climate change, Lake Macquarie is projected to experience an additional 5 days per year over 35°C by 2030 and up to almost one month per year by 2090.

In response to these challenges, one key objective of the Urban Heat Strategy is to increase the amount of green cover and vegetation in urban areas. A 10 percent increase in tree canopy cover is known to reduce urban temperatures by around 1°C. There are many other benefits of urban greening, including improved amenity and air quality, improved mental and physical health of the community due to access to high quality green space, increased trade in commercial centres, and increased property prices with 3-5% higher property prices in greener neighbourhoods.

This strategy presents a vision for urban greening in Lake Macquarie, which recognises that green urban spaces make a major contribution to the high level of liveability of our city and must remain a fundamental part of our urban landscape. This will require ongoing commitment.

Trees in an urban landscape are critical to the creation of more liveable neighbourhoods. Although many trees live a long time (many live for more than 100 years), it must be realised that like any living system they have a limited life. For a range of reasons a tree in an urban area will often have a shorter useful life expectancy. Throughout the life cycle of any urban tree, maintenance should be undertaken. This helps support a healthy tree, and a sustainable overall urban forest. When a tree comes towards the end of its safe useful life, removal and replacement must be undertaken to create a sustainable urban forest. The right tree in the right spot is one of the most critical decisions that impact on the whole of life cycle cost of trees. Management of urban trees must be undertaken using an asset management framework approach which provides for the ongoing, sustainable provision of the benefits trees provide to the community.

VISION

A healthy, diverse and resilient urban forest that actively supports the health and wellbeing of our communities, contributes to the liveability of neighbourhoods, and protects and enhances our unique natural landscapes.

Buran-ngayarun:

Karrakalumuliku, kawal, birral-ngatan watiya-watiyalang.

Anawa ubanyalai marung yantiku, kakilabatiku, mirumaliku kawalngatan kakiliku kukarri-ngayarun.

Awabakal language: wording translated by Miromaa Aboriginal Language and Technology Centre.





MESSAGE FROM THE MAYOR


There are plenty of great reasons to get outside and hug a tree.

They provide shade and shelter. They're wonderful habitats for native birds and animals. They clean our air and cool our suburbs. And they have been shown time and again to provide significant mental health benefits for people living in greener environments.

Planting more trees, and increasing the amount of quality green space across new and existing urban development in Lake Macquarie is key to our new Urban Greening Strategy.

So too is the management of those trees and green zones, ensuring we maximise their lifespan, their benefit to our community and their potential to act as green corridors for wildlife.

Even a relatively modest 10 per cent increase in the amount of tree canopy in suburbs vulnerable to urban heat will reduce temperatures in those areas by as much as one degree Celsius.



That's a significant benefit, particularly with the effects of global climate change gradually taking hold.

Encouraging the community to embrace trees on their streets and in their suburbs forms part of our plan.

So too is setting targets for tree canopy coverage in residential developments, business precincts and industrial zones.

Achieving these goals will go a long way to ensuring the 'concrete jungle' never eclipses the real-life greenery we all need to live and thrive.

Councillor Kay Fraser
Mayor

SETTING THE SCENE

What is the purpose of this strategy?

Urban greening is about strategically increasing the quality and quantity of all vegetation and open green space within an urban setting. A component of this is the 'urban forest', the sum of all of the trees, plants and greenery across all land types.

Cities across Australia and elsewhere are measuring the health, diversity and extent of their urban forests, setting targets and realigning their operational programs to work towards improving green cover and delivering strategies that respond to the challenges posed by urban heat island effects. More Australians die from extreme heat events than any other natural disaster. Extreme heat events can also have additional impacts on an individual's health and wellbeing, as well as result in disruption to transport, utilities and other services.

We want to reduce the impacts to people caused by urban heat across Lake Macquarie.

One of four adaptation categories identified in Council's Urban Heat Strategy is to increase green cover and vegetation, including preparing an Urban Greening Strategy. To a large degree, the amount and type of green cover across the urban landscape is also the reason for the high level of liveability of our city. When recently surveyed, our community emphasised the importance of greening for community wellbeing, shade in communal areas and outdoor facilities, and to support biodiversity in the city.

The purpose of this Urban Greening Strategy is to develop an action plan to deliver our vision to reduce urban heat effects, increase liveability and provide cool, comfortable and shaded respite for people living in an urban setting. This strategy also identifies actions to encourage investment in green infrastructure on private land.

STRATEGIC CONTEXT

Integrated Planning and Reporting Framework

The Lake Macquarie City Integrated Planning and Reporting Framework (Figure 1) supports the Community Strategic Plan, Delivery Program and Operational Plan. The Framework includes a suite of integrated plans that set out a vision, goals and strategic actions to achieve them. It involves a reporting structure to communicate progress to Council and the community, as well as a structured timeline for review to ensure the goals and actions are still relevant. Urban greening goals and targets will be measured and reported through this framework.

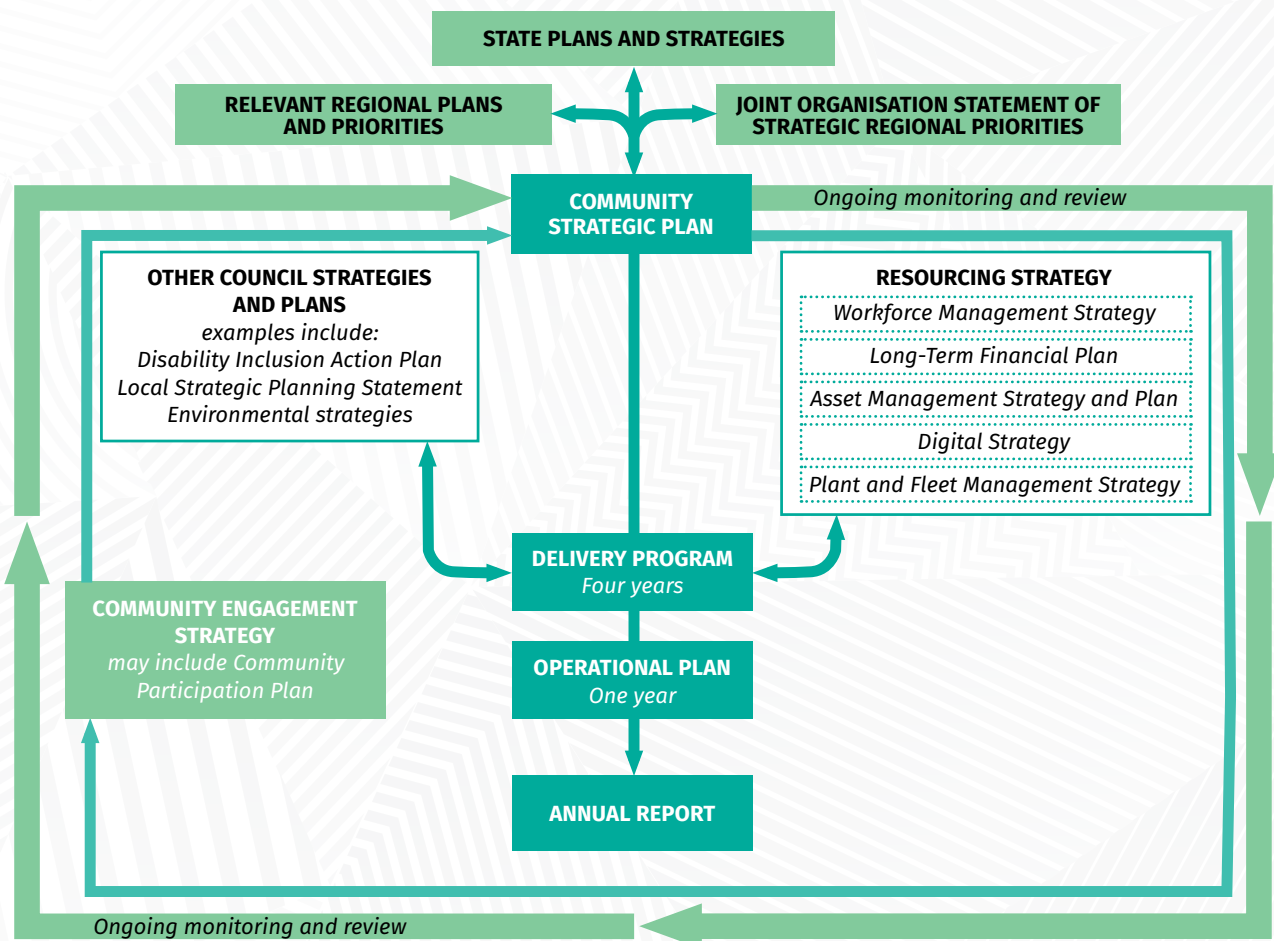


Figure 1: Our Integrated Planning and Reporting Framework (IP&RF)



Community Strategic Plan

The Lake Macquarie Community Strategic Plan was developed in consultation with the community and sets out the city vision and community values. The vision and values reflect the priorities of our residents and shape policies and plans prepared by Council, including this strategy. The Urban Greening Strategy aligns with the objectives of four of the seven key focus areas of the Community Strategic Plan, as shown below.



UNIQUE LANDSCAPE

- Natural environments are protected and enhanced
- We have vibrant town centres and villages
- New development and growth complements our unique character and sense of place
- Our natural landscape is an integral part of our city's identity



LIFESTYLE AND WELLBEING

- Our community has access to adaptable and inclusive community and health services
- Our public spaces help us feel healthy and happy



MOBILITY AND ACCESSIBILITY

- People of all abilities use and enjoy our places and spaces



CONNECTED COMMUNITIES

- Public spaces help connect us with each other and the world
- Our community responds and adapts to change

Local Strategic Planning Statement

The Lake Macquarie City Local Strategic Planning Statement (LSPS) supports the primary planning goal for Lake Macquarie ‘to be one of the most productive, adaptable, sustainable and liveable places in Australia’.

In the future, our centres and their surrounds will be more pedestrian friendly and encourage the use of active transport such as walking and cycling as the preferred way to move around the city. This strategy supports the delivery of this preference for active transport through encouraging sustainable, attractive, shaded places where people will prefer to use active transport. The LSPS also seeks to provide an

abundance of high quality indoor and outdoor spaces to connect with others, enjoy nature, relax or get active. A highly developed network of sustainable green infrastructure will make a large contribution to the achievement of this goal.

The LSPS outlines how we will achieve our city’s vision and uphold the community’s values through strategic planning. The LSPS includes a strategy to enhance the blue-green grid and urban tree canopy. The Urban Greening Strategy aligns with the principles of all of the planning priority areas in the LSPS, and will assist in the delivery of the urban component of the blue-green grid and tree canopy.

PLANNING PRIORITY 1

A CITY OF VIBRANT CENTRES – WHERE PEOPLE LIVE, WORK, VISIT AND PLAY

- Deliver streetscape and public domain improvements to attract private investment in economic centres
- enhance urban greenery to address heat island effects and to increase shade
- Encourage more cycling and walking in and around centres, lively footpath trading, and a robust night-time economy

PLANNING PRIORITY 2

A CITY TO CALL HOME – WHERE DIVERSE HOUSING OPTIONS CATER TO EVERYONE’S NEEDS

- Ensure new growth areas are highly liveable and well serviced with access to services, facilities and social opportunities by a range of transport modes
- Improve the pedestrian environment to support access to neighbourhood destinations with a diversity of services and social purposes

PLANNING PRIORITY 3

A CITY OF PROSPERITY – THAT ATTRACTS INVESTMENT, CREATES JOBS, AND FOSTERS INNOVATION

- Maximise the potential of existing infrastructure and natural assets to encourage investment and economic and employment growth
- Ensure the urban environment will support a thriving city that attracts more people to live, work, invest

PLANNING PRIORITY 4

A CITY OF CLOSE CONNECTIONS – WHERE PEOPLE, GOODS AND SERVICES MOVE EFFICIENTLY

- Provide a road network which allows for the efficient movement of freight and commuters, while ensuring local streets maintain a social function and opportunities for social interaction
- Ensure walking and cycling routes are of high-amenity, safe and comfortable to and around centres and other important local destinations

PLANNING PRIORITY 5

A CITY OF PROGRESS AND PLAY – WHERE PEOPLE COME TOGETHER IN NATURAL AND VIBRANT PUBLIC SPACES

- Provide a variety of public space in and around centres incorporating green spaces that provide comfort, attractiveness, shade and natural habitat
- Ensure that natural areas are connected with urban areas and there are more opportunities to enjoy the city's natural environment

PLANNING PRIORITY 6

A CITY WITH A VAST NATURAL ENVIRONMENT – THAT IS VALUED, PROTECTED AND ENHANCED

- Avoid and minimise the impact of development on areas of high ecological value, while supporting opportunities to enjoy our natural areas
- Protect and enhance important biodiversity areas and corridors
- Enhance water quality and the health of aquatic areas in Lake Macquarie, its tributaries, and coastal streams
- Provide more trees and gardens within urban environments to provide visual relief, comfort, shade, and urban habitat
- Integrate and connect natural areas with open spaces, including the lake foreshore

PLANNING PRIORITY 7

A CITY OF RESILIENCE – WHERE THE PEOPLE AND PLACES ARE RESPONSIVE AND PROACTIVE TO CHANGE

- Identify significant changes in global and local social, climatic and economic trends
- Identify areas and issues that need adaptation plans
- Identify diverse water supply options and opportunities and capacity to deliver services through times of constraint



SUSTAINABLE DEVELOPMENT GOALS

Like many others, Lake Macquarie faces the ongoing challenges of protecting and enhancing our natural landscapes while supporting the development of a sustainable, resilient city and communities – maximising the wellbeing of the city’s residents whilst reducing the city’s ecological footprint.

The sustainable development goals (SDG'S) provide a framework for the integration of environmental, social, economic and governance aspects of sustainability into local government responsibilities. Council’s Sustainability Policy commits us to using the SDG framework as a way of implementing our sustainability initiatives and this strategy’s management actions are mapped across the relevant SDGs in recognition of their importance in driving local, sustainable and inclusive development.

The Urban Greening Strategy will help Council make progress on six UN Sustainable Development Goals, in particular:

- Clean water and sanitation
- Decent work and economic growth
- Sustainable cities and communities
- Climate action
- Life below water
- Life on land

The Sustainable Development Goals have been linked with key goals of the Urban Greening Strategy (Table 1).



Table 1: Links to Sustainable Development Goals

GOAL 1 *Increasing the extent and quality of greening in public spaces*

SDGS LINKS



GOAL 2 *Increasing the extent and quality of greening of new developments*

SDGS LINKS



GOAL 3 *Activate community greening of the city*

SDGS LINKS



CONNECTING WITH COUNTRY

Lake Macquarie City is within the traditional country of the Awabakal people. The first principle of the NSW Government Connecting with Country Draft Framework is to help all of us – Aboriginal and non-Aboriginal people – to work together collectively, respectfully, and with open minds to unite our complementary knowledge. Government does not speak for Country in the sense that word is understood by Aboriginal and Torres Strait Islander peoples.

The Connecting with Country Draft Framework sets the structure for developing connections with Country that can inform the planning, design, and delivery of built environment projects in NSW. The ambition of Connecting with Country is that everyone who is involved in delivering government projects will adopt the following commitment:

Through our projects, we commit to helping support the health and wellbeing of Country by valuing, respecting and being guided by Aboriginal people, who know that if we care for Country – it will care for us.

This Urban Greening Strategy presents an opportunity to start using the Connecting with Country Framework. Together, the strategies for connecting will help to apply cultural awareness and knowledge of Country to projects.

Through cultural awareness, all project team members can begin to follow these pathways:

- learning from first languages and placenames
- developing mutually beneficial relationships with Country
- reawakening memories of cultural landscapes
- finding common ground.

The actions highlighted in this strategy such as developing a program to engage with First Nations' languages and placenames to learn more about trees and vegetation on Country can help Council achieve commitments made in our Aboriginal Community Plan. This will help to provide opportunities for equal access to services that encourage and support cultural identity, strengthen respect, understanding and preservation of Aboriginal culture, language and heritage within Council and the wider community. This strategy contains actions aimed at improved service provision through business partnerships.

WHAT WE HAVE LEARNT FROM THE COMMUNITY SO FAR

In March 2021 we sought early feedback from the community to assist in preparing a draft Urban Greening Strategy. The feedback sought was in the form of a survey and map asking people to share areas they think need more greening, current green spaces they love and ideas for community greening initiatives.

The top themes that emerged from consultation included:

- the need for more trees
- planting to provide/assist habitat and wildlife
- importance that greening has for community wellbeing
- concerns regarding clearing for development
- planting for more shade in communal areas and outdoor facilities
- the need for more tree lined streets
- planting more native species
- planting to support corridor connectivity.

These themes have been integrated into this strategy through setting tree canopy targets for existing and new urban developments. These actions will guide further work to achieve the targets and levels of service identified in this strategy.



WHY URBAN GREENING?

Urban heat

Urban heat and heatwaves are a significant and growing issue for Lake Macquarie. Recent summer weather patterns along with projected increases in the frequency and duration of extreme weather events, have been resulting in heatwave conditions and put pressure on our community and our assets.

The urban heat island effect refers to the condition where urban areas experience a high temperature when compared to surrounding, more rural areas and those areas that have higher percentages of vegetated cover (parks and bushland reserves). Additionally, surface thermal mass temperature associated with paved materials retain heat, and limit cooling at night.

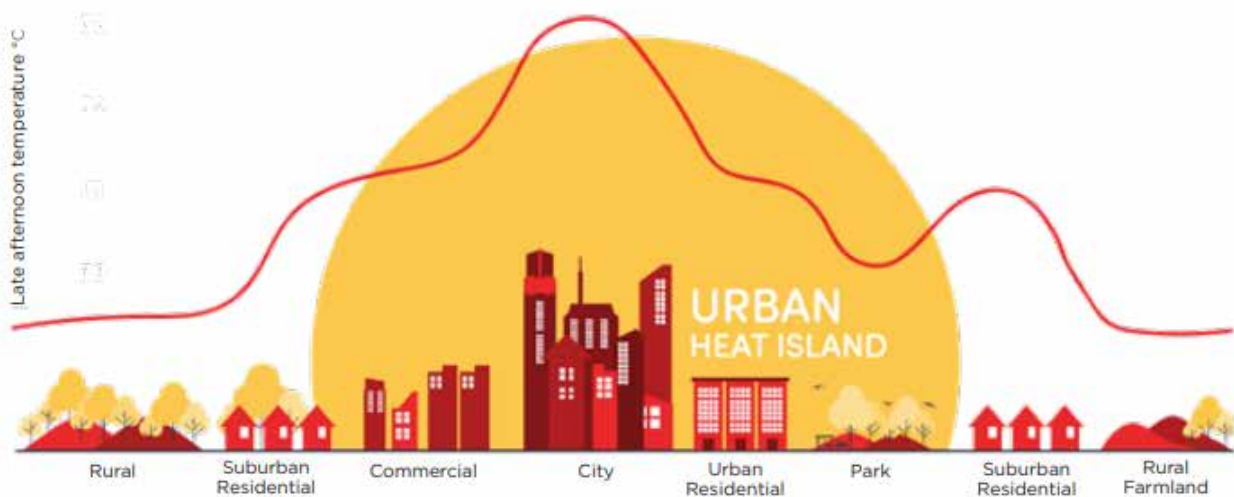
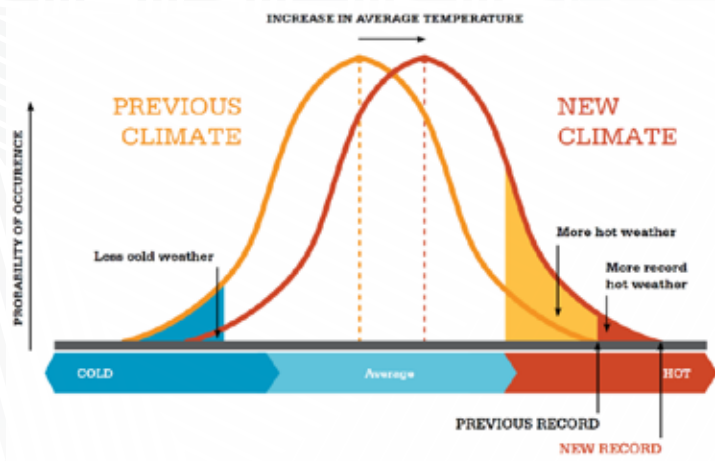


Figure 2: Urban areas experience higher temperature when compared to surrounding, more rural areas and those areas that have higher percentages of vegetated cover².

The frequency, extent and duration of extreme heat events is projected to increase in the future (Figure 2) with potential impacts on people, infrastructure, economic activity and the environment (Figure 3).

Figure 3: As the climate changes, Lake Macquarie is experiencing an increasing number of hot days and heatwaves³.



Urban heat impacts all aspects of our cities

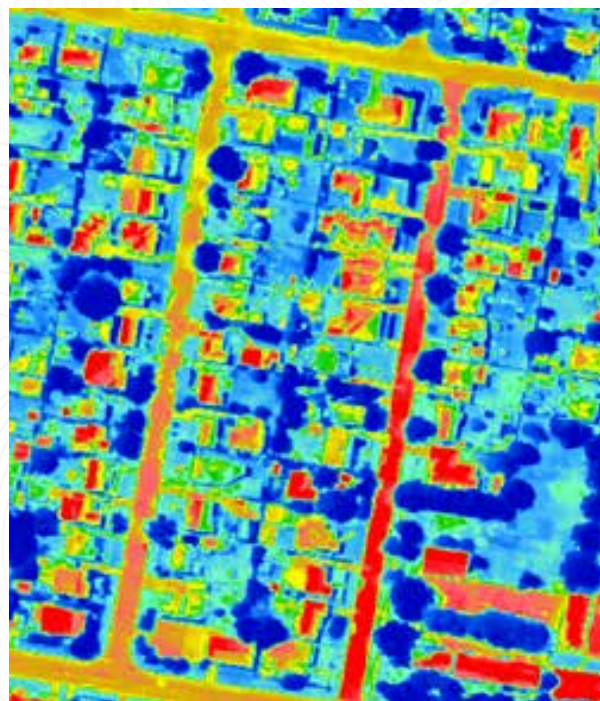


Figure 4: Urban heat impacts on cities⁴.

Analysis of thermal images over suburbs revealed that hotter surfaces across the city were linked to darker, built surfaces such as asphaltic concrete (AC) roads and darker coloured roofs. Newer roads were found to retain more heat than older roads. These types of surfaces absorb and hold heat, creating higher urban temperatures⁵ (Figure 5). Providing more shade over roads by planting street trees is an easy way to reduce these temperatures⁶.



Figure 5: Darker road surfaces absorb more heat throughout the day. Temperatures on darker coloured roads can be as high as 70°C on a summer day.



The Urban Heat Strategy and the Urban Greening Strategy are complementary and share several common objectives, but also include other important themes, as outlined in the figure below.

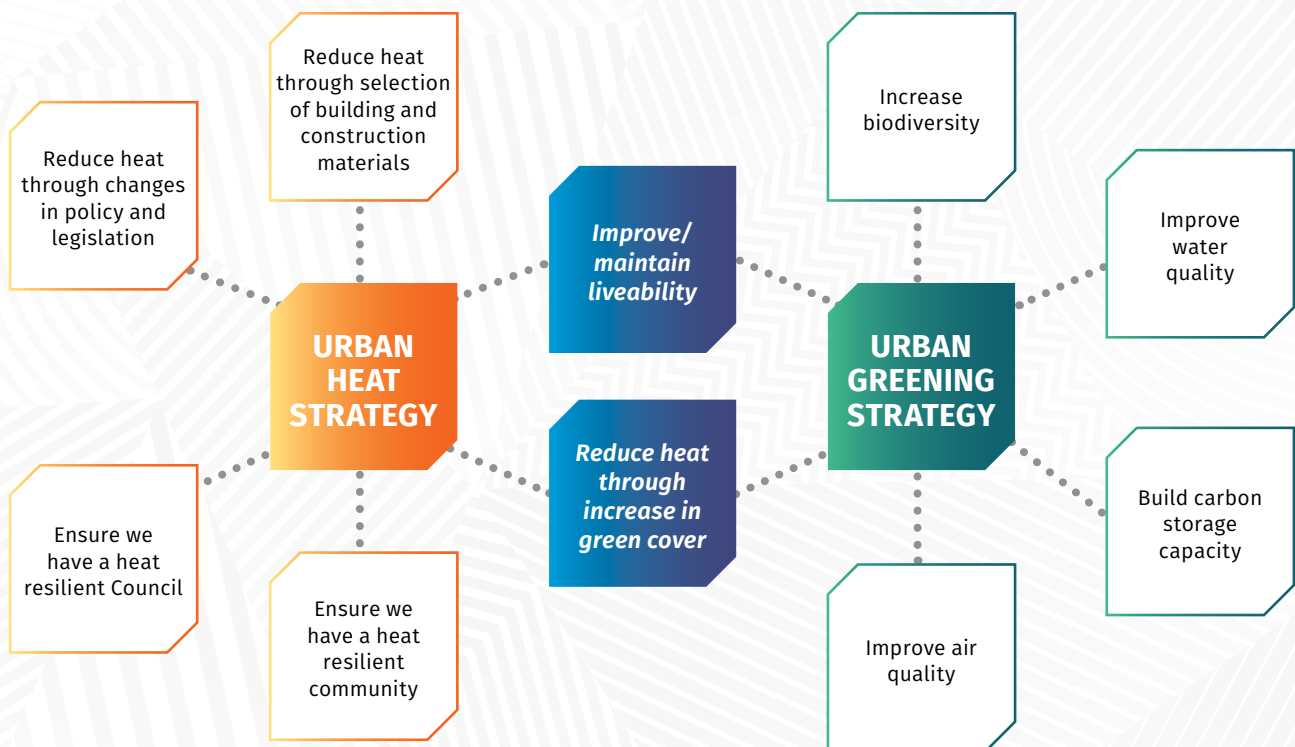


Figure 6 Relationship between the objectives of the Urban Greening Strategy and the Urban Heat Strategy

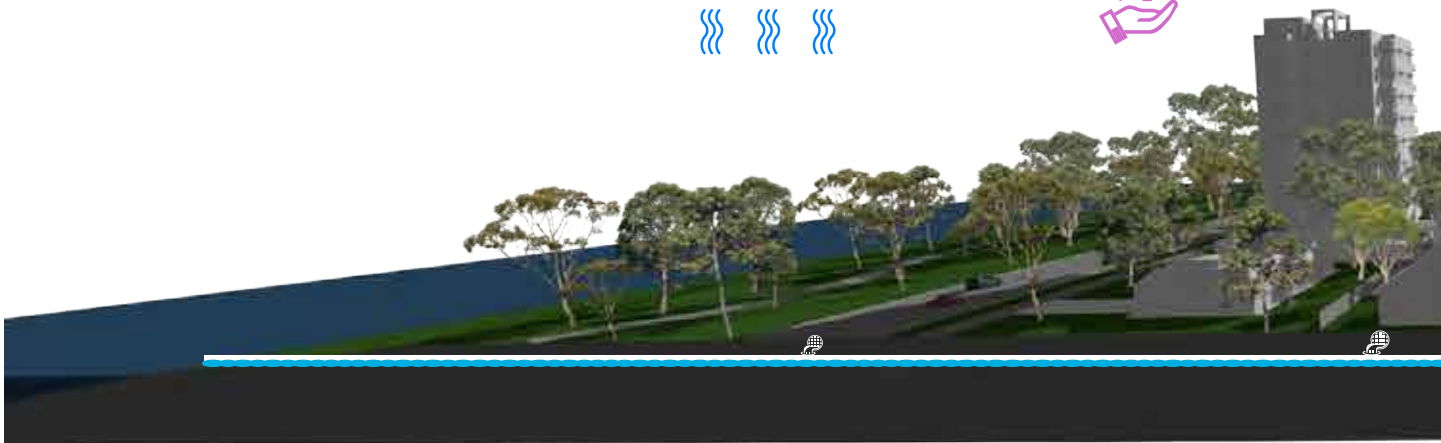
The benefits of urban greening



20% INCREASED BUSINESS
activity in greener commercial centres



AIR POLLUTION REDUCED
\$15 savings per tree through
reduced hospital visits

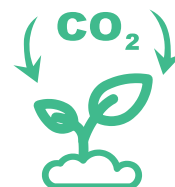


RECREATION

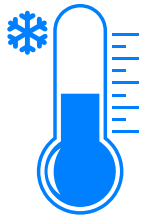
MIXED USE 



STORMWATER REDUCTION
through reduced blockages to
urban drainage systems



CARBON SEQUESTRATION
A medium-sized street tree can
sequester 10 tonnes of carbon



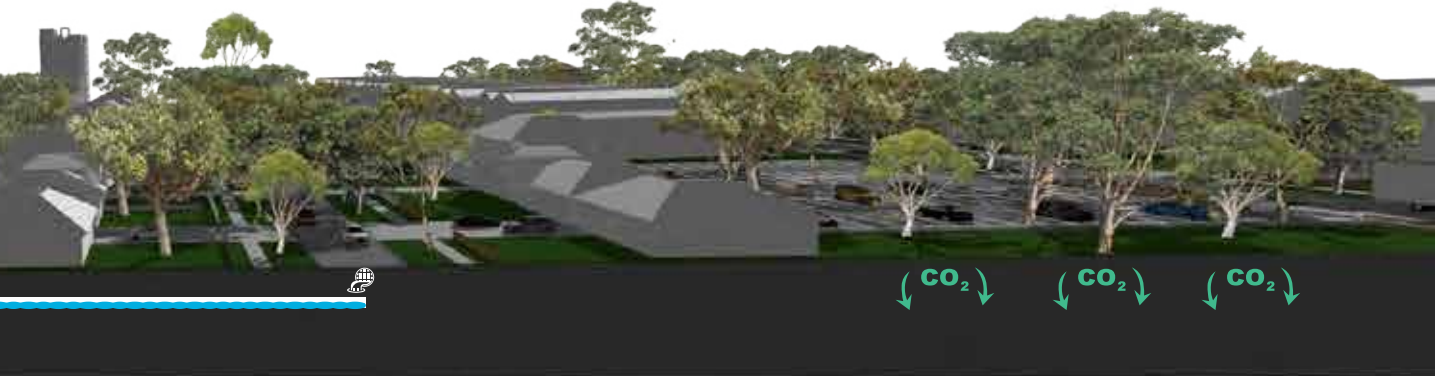
GREEN IS THE NEW COOL

Trees and vegetation cool the city
A 10% increase in tree canopy can reduce temperatures by 1°C



REDUCED BILLS BY 5-10%

Trees planted in the right place can reduce heating and cooling costs



RESIDENTIAL 

INDUSTRIAL



3-5% HIGHER PROPERTY PRICES
in greener neighbourhoods

The benefits of urban greening



**NATURE IMPROVES
PRODUCTIVITY**



**NATURE WHERE WE LIVE AND
WORK REDUCES STRESS**



ACTIVE LIFESTYLE



**3-5% HIGHER PROPERTY PRICES
in greener neighbourhoods**



CYCLES INCREASED



HUMAN PHYSICAL HEALTH AND WELL-BEING IMPROVED



FEWER HEAT RELATED DEATHS





OUR TREE CANOPY COVER

Tree canopy cover contributes to mitigation of the urban heat-island effect. It also helps to improve the amenity and attractiveness of urban environments, including protection from over-exposure to UV radiation by creating more shade and producing cleaner air. Tree canopy also contributes to an integrated and connected network of green infrastructure. Green infrastructure alternatives to tree canopy such as green roofs, green walls, pergolas with climbers, podiums, planters, and lawns and gardens still play an important role in urban areas, but do not deliver benefits on the same scale.

Council completed an investigation of tree canopy cover across the city to establish a baseline (2018), and enable future comparisons of change in tree canopy cover over time (Tree Canopy Cover Assessment Report). The study analysed tree canopy cover within the city's footprint, across all suburbs, and compared land use zones to inform management and planning of green infrastructure. This benchmark assessment enables Council to set agreed levels of service for shade and amenity provided by tree canopy cover. This also allows Council to anticipate the future benefits of enhancing tree canopy cover in urban areas while building a more liveable, cool city.

The total percentage tree canopy cover across the local government area was found to be 61 per cent. Compared to other regions in NSW, this overall figure is relatively high, although this reflects the relatively undeveloped western portion of the city, and the large proportion of land under conservation (just over 50 per cent). Large districts in the West and North Wards have been identified for future urban development, and so tree canopy cover in these regions is likely to be reduced in the future. Tree canopy cover in more developed urban residential areas was found to be comparatively low (generally between six and 18 per cent).

In less developed urban areas, tree canopy cover was found to be highly variable between suburbs. The average tree canopy cover of suburbs was 44 per cent, but this varied between six and 82 per cent. Overall, the average tree canopy cover percentage is skewed by a small number of suburbs with very high tree canopy cover located in conservation areas and riparian zones. This can be seen in the eight suburbs that support tree canopy cover of greater than 70 per cent. The suburbs with high tree canopy cover all have a large proportion of land under conservation.

Tree canopy cover

Figure 7: Tree canopy cover by suburb

AVERAGE LAKE
MACQUARIE
SUBURB

44%

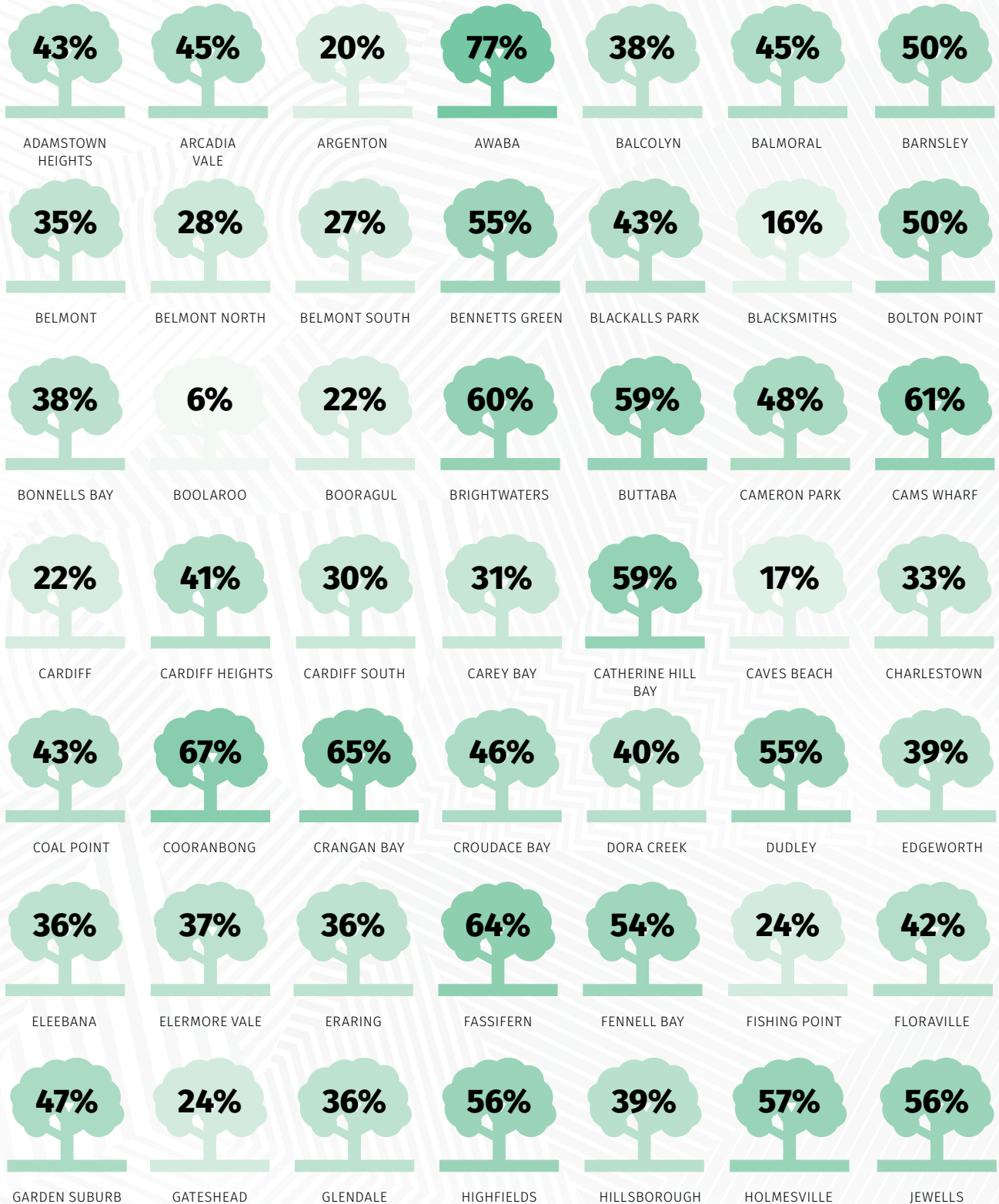
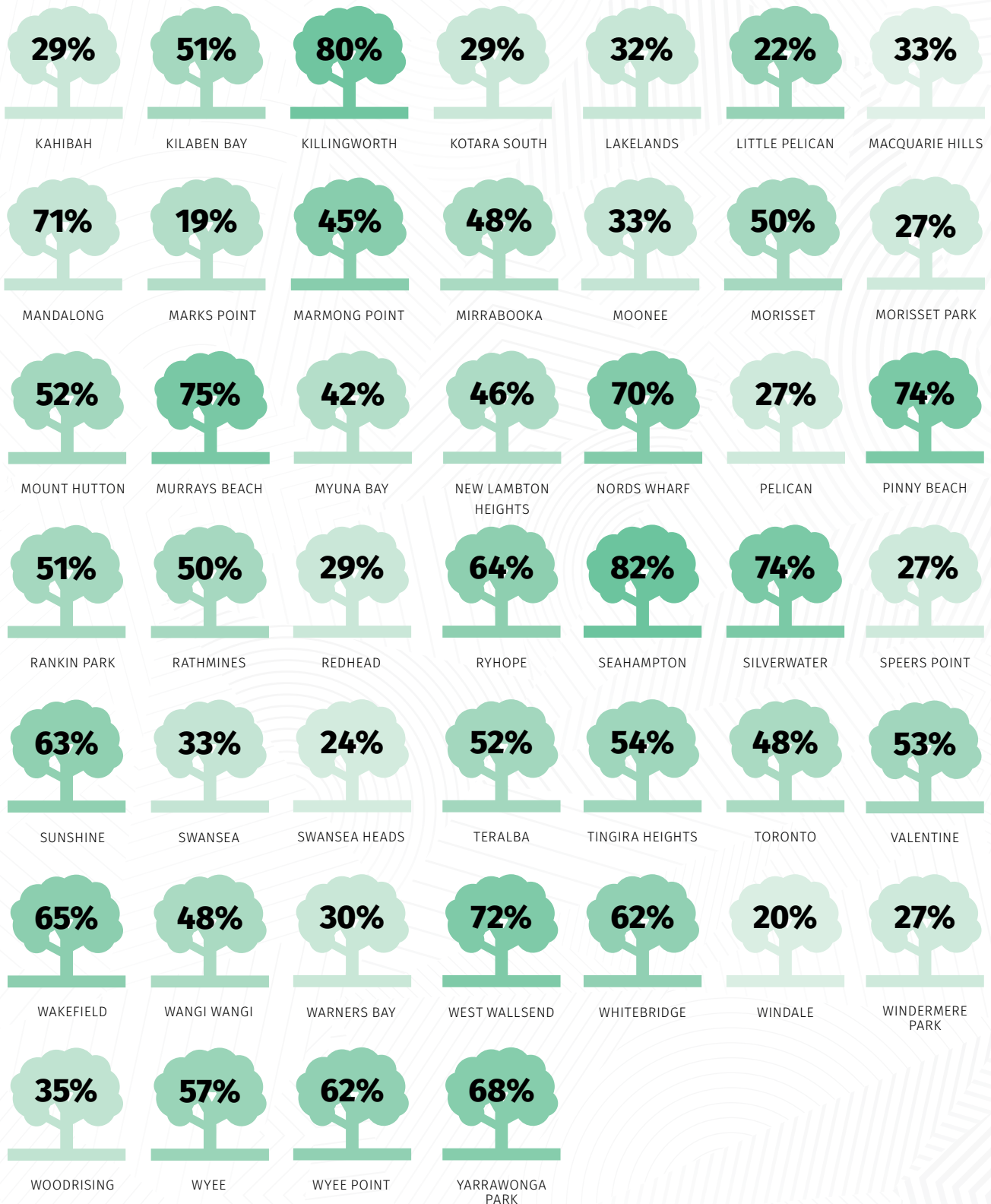
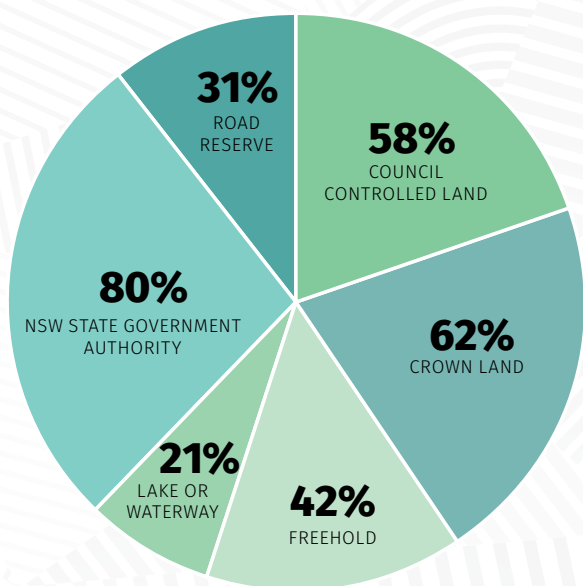


Figure 7: Tree canopy cover by suburb



Tree canopy cover varies under different land ownership, and is related to specific land use types. Forty two percent of land in Lake Macquarie City is owned or managed by public authorities. Public land is used for a wide range of purposes, including satisfying the requirements of urban areas such as roads, recreation and community use. Public land is also used for biodiversity conservation purposes, and so generally, the highest percent tree canopy cover is found on land controlled by the State Government, mostly in National Parks and State Forests.

Percentage tree canopy cover by land ownership category



The tree canopy cover assessment report (under separate cover) provided information about where canopy cover is low at present, and where it is at risk of decline into the future, and explored several case studies in further detail identifying the highest priority for action, including:

- suburbs experiencing urban heat
- pedestrian networks
- active transport routes
- residential areas
- roads reserves, and
- critical environmental corridors.

A range of recommendations, challenges, and opportunities were provided in the report across four key themes which emerged from the case studies to provide a framework for the next steps.

- Priority planning and policy
- Vegetation management
- Blue-green grid
- Community engagement

The tree canopy cover assessment report recommended tree canopy cover target setting as a high priority. The assessment found that integration of urban green infrastructure, and its multiple benefits, into the city is urgently required to build a liveable city. Fourteen key suburbs are immediately vulnerable to urban heat, and compared to the national average⁸, many other suburbs have very low tree canopy cover. Urgent increases to tree canopy cover are required in the communities vulnerable to urban heat by 2030. Increased tree canopy cover in these suburbs will take about eight years to start taking effect, and will markedly improve liveability for residents. This work needs to start now.

The four key principles of urban greening of **integration, connectivity, multifunctionality, and participation**, have been used to prioritise actions and will help to offset climate change by reducing flood risk and overheating provide protection from over-exposure to UV radiation and promote access to open space, nature, and sport, improving the visitor experience and quality of life for all residents. Longer term targets of a minimum level of shade and amenity provision to all residents in all suburbs will take a long-term commitment, and based on the amount of work to be done, will only be practically achievable over many years, and rely on external funding and community participation.

NSW Government Greener Neighbourhoods Guide

The NSW Government has developed a Greener Neighbourhoods Guide to support and complement other resources related to urban forestry and green infrastructure. This guide aims to support councils during the protection and enhancement of urban forests through strategic planning. This guide recommends identification of goals specific to Lake Macquarie that help to deliver quality of life, health and wellbeing, amenity, cooling, and habitat to urban areas.

Tree canopy targets suggested in the guide are precinct based, and different for private and public domains. The guide suggests minimum tree canopy cover targets of between 35-65 percent for open space and streets, and from 15-35 percent for areas of private domain depending on whether there is detached housing, attached dwellings or apartments associated with the development.

Recommended deep soil area targets for new development ranges from 15 percent in industrial lots to 35 percent in business parks. The guide recommends precinct-based tree canopy cover targets for residential areas ranges between 35-40 percent.

The guide has been prepared to inform high quality, innovative design that supports the health and well-being of the community.

The Lake Macquarie Environmental Sustainability Strategy and Action Plan 2020-2027 ESSAP has an agreed target of maintaining 57.5 percent of native vegetation cover across the city. This mainly relates to the retention of native bushland in conservation areas and riparian zones.

Our targets for tree canopy cover in each suburb will be moderated by the range of land use zones in order to ensure they remain practically achievable. For example, where a suburb has a high proportion of private land ownership (and corresponding low tree canopy cover), tree canopy cover targets in public land (mainly streets and parks) must be increased to achieve the overall target.

In addition to these long-term objectives, opportunities for priority urban greening actions will be undertaken as soon as possible in the following areas with very low tree canopy cover integrated with existing Council projects where resources permit:

- Car parks
- Principal pedestrian network
- Modified waterways
- Critical habitat, wildlife and transit corridors.

The potential of our targets to be practically achieved against what is actually possible has been tested through a detailed remote sensing, gap analysis and modelling process. An urban greening prioritisation tool has been developed to aid decision-making during project planning and implementation. The next step is to identify precise tree and vegetation placement in relation to the physical limitations of each site, and to determine species selection and suitability. Species choice and location are the critical decisions to make sure the right tree goes in the right place, especially in terms of planting climate-ready species.

The suite of tree canopy cover targets in this strategy complement the existing ESSAP target of maintaining 57.5 percent native vegetation cover across the city by including non-native species planted in urban areas.

Actions that relate to achieving these targets include developing one, four and 10-year programs to support increasing tree canopy cover to reach staged urban greening targets and alignment with Council's operational, delivery and strategic plans. Development of a program to protect and proactively maintain existing trees will also be crucial to achieving these targets.

Meeting tree canopy cover targets is not all about tree planting. Due to the changing nature of land tenure and zoning evident in some undeveloped suburbs, maintaining the existing tree canopy cover through ongoing development will be a challenge. This is where actions that relate to changing planning policy and revision of vegetation regulation provisions (Local Environment Plan, Development Control Plan), and reconciling existing tree policies and guidelines will be key to the success of this strategy.



HOW ARE WE GOING TO RESPOND?

Our commitment to urban greening

Council's 2021-2022 Operational Plan and Budget commits to finding ways to maintain the overall ratio of tree cover while increasing the green infrastructure in rapid-growth areas. Ideas include tree-lined streets, parks and sports fields, suburban gardens, and newer concepts such as green roofs and green walls.

This strategy defines foundation principles governing the planning, management and maintenance of green infrastructure on public and private land. Guided by these principles, actions have been identified to achieve identified urban greening targets, drive local projects and make meaningful positive change to our local urban environment.

Three goals to realise the vision

- 1.** Increase the extent and quality of greening in public spaces
- 2.** Increase the extent and quality of greening of new developments
- 3.** Activate community greening of the city



URBAN GREENING PRINCIPLES

INTEGRATION



Green infrastructure is integrated into the existing built form such that views are reasonably shared, and reasonable access to sunlight is maintained. Areas of landscape planting will improve visual amenity, privacy, outlook, views and recreational opportunities for residents. During planning stages of projects, consideration is given to hazards such as extreme weather events and bush-fire.

CONNECTIVITY



Optimising connectivity ensures that the contributions of green spaces anchors sustainable development while maximising health and wellbeing of people. Linkages are fostered through enhancing existing assets, creating green spaces that will keep urban areas cool, encourage healthy lifestyles, enhance local habitat, and ensure ecological resilience.

Connectivity provides access between places, encourages walking and cycling, highlights landscape, and supports local economies. By providing informal places for people to visit and interact, social capital is created. Future investment in parks and recreation plays a vital role in our ability to attract business to the city and create jobs.

MULTIFUNCTIONALITY



Multifunctionality represents the ability of green infrastructure to deliver multiple uses simultaneously. Multifunctional green spaces are high-quality and high-performing and maximise local habitat, social, environmental, and economic benefits. An example of this might be a gently sloping grass swale that floods during periods of heavy rain that has the dual purpose of being used as a night time outdoor cinema when the weather is dry.

Green infrastructure projects can deliver multiple objectives by framing and shaping the growth of sustainable communities and strengthening our image and identity. They help offset climate change by reducing flood risk and overheating, and promote access to open space, nature, and sport, improving the visitor experience and quality of life for all.

PARTICIPATION



Embracing participation means involving stakeholders in the development and implementation of neighbourhood, local, district, and regional green infrastructure plans and actions. Embracing diversity and collecting knowledge, opinions, and perspectives from a wide range of users such as community, workers, Indigenous groups, and visitors provides more balanced and inclusive solutions.

OUR URBAN TREE CANOPY COVER TARGETS

GOAL

1

Increase the extent and quality of greening in public spaces

- 1.1 Achieve a 10 per cent increase in tree canopy cover by 2030 in the 14 suburbs categorised as vulnerable to urban heat
 - 1.2 Aim for 30 per cent tree canopy cover in all residential zones, 25 per cent in business zones and 15 per cent in industrial zones
-

GOAL

2

Increase the extent and quality of greening in new developments

- 2.1 Aim for 30 per cent tree canopy cover potential in new residential zones, 25 per cent in new business zones and 15 per cent in new industrial zones.
-

GOAL

3

Activate community greening of the city

- 3.1 Aim to register 1000 community planted street trees per year for the next 10 years
- 3.2 Aim to activate community urban greening



CASE STUDY

ARGENTON

Each suburb has been assessed for targeted urban greening. Firstly, specifically targeted at suburbs that are vulnerable to urban heat, and then designed to support locations where the demand for urban greening is highest. This includes locations such as car parks, footpaths near schools, shops and railways stations.

Argenton has been used as a case study to describe how urban greening can provide cooling and other benefits to the community. This also demonstrates how the response to the demand for urban greening in each suburb will vary based on land use mix and other locality-based factors.

Funding of urban greening projects and the ongoing maintenance of newly created green infrastructure will be drawn from a range of sources including private funding, and state and local government funding. Feeding into Council's long-term financial planning process, operational plans moving forward will provide the details of cost-benefit analysis for specific projects.

The estimate of total funding required to achieve the stated targets is less than \$0.5m per year. The large majority of this will likely come from state government grants and private sources, supplemented by commitments that will be considered as part of Council's future Operational Plans. Ongoing maintenance requirements for the programmed newly planted street trees in particular, has been estimated to be an additional \$15,000 each year the program is delivered.

GOAL 1.1

ACHIEVE A 10 PERCENT INCREASE IN TREE CANOPY COVER BY 2030

20-22%
BY 2030

Providing solutions to urban heat through targeted increases in tree canopy cover is feasible over the longer term, and is made easier when green infrastructure is acknowledged under an asset management framework. Incorporation of asset management principles into the management of green infrastructure will support Council delivering our defined levels of service in the most cost-effective manner, balancing cost, risk and performance.

Argenton, for example has been noted as one of Lake Macquarie's most heat vulnerable suburbs, and is at risk of temperature increases of more than 1°C by 2030 and 4°C by 2090. Using the urban forest as part of the solution, we assessed the tree canopy cover across the entire suburb and found it is one of the lowest in the city at 20 percent. Within the suburb, the Conservation zones (5 percent of the total land) support 56 per cent tree canopy cover, which is likely to be stable into the future. Argenton residential areas (20 percent of total land), currently have only 14 per cent canopy cover.

Using a staged approach, mitigation of the 1°C temperature rise by 2030 through tree planting is achievable. The greening target for Argenton would be 22 percent tree canopy cover by 2030.



Argenton could achieve these targets by firstly assuming tree cover on private land will come to the average figure of 15 per cent canopy cover, then maintaining the existing tree cover on Council-controlled land, while increasing street tree planting with a target of 31 per cent tree canopy cover in road reserves. With the combination of land ownership, zones and amount of land under the care and control of Council, an overall figure of 30 per cent tree canopy could ultimately be attained through this practical and necessary sharing of responsibility for tree canopy planting between the community and Council.

In terms of cost and practicality, this translates into planting trees that cover 40 per cent of 18ha of road reserve, with a starting point of 18 per cent cover. Although slightly less effective at reducing urban heat, layered landscape planting could be arranged to support tree planting, such as shrubs and ground covers surrounding street trees where required.

If Council relied on doing all of this work alone, then targets could be achieved by planting 206 medium-sized (10mx10m canopy) trees in the road reserves by 2030. At the current cost of street tree planting of \$1000/tree/100m² landscaped area, the budget for Argenton street tree planting/heat mitigation strategy would cost an estimated \$206,000 over eight years, or less than \$30,000 per year until 2030. Alternative approaches integrating new planning provisions for infill development and community action to increase urban greening on private land, the burden on Council resources would be much less.

Using efficiencies achieved by larger, better coordinated street tree planting programs, and other strategies to achieve cost reduction, these figures would be substantially reduced. Close analysis of maintenance requirements needs to be undertaken where landscaped garden areas are proposed. Maintenance costs of landscaped garden areas can range from between \$6-8 per square metre per year, compared to an estimated \$3-5 per square metre per year for a street tree over its life time. These figures demonstrate the comparatively lower costs of planting trees over other urban greening alternatives while achieving the same benefits. When compared to alternatives, tree planting is about 60 per cent more cost effective in terms of long-term maintenance.

It is likely that other adaptive measures will also need to be considered by residents in Argenton who are not able to rely on localised increased canopy cover to reduce temperatures. Of course, these increases in green cover will need to be balanced with the future population and housing growth predicted in Argenton into the future. This is where the current urban design challenge rests. Some of the benefits that we can expect from increased greening in Argenton include increased house values (up 3-5 per cent in greener suburbs), healthier lifestyles for residents because of improved amenity and increased active lifestyles. Urban heat island effects will be reduced, creating a more liveable suburb. Businesses may expect up to 20 per cent more business in economic centres with improved amenity through urban greening.

MONITORING AND EVALUATION

Monitoring and evaluation will be undertaken against the priorities set out in policies and plans prepared by Council, including this strategy. Evaluation of the Urban Greening Strategy will be undertaken every four years with progress measured by the percentage of actions commenced and completed.

Scorecard

INCREASE THE EXTENT AND QUALITY OF GREENING IN PUBLIC SPACES



**10% TREE CANOPY COVER
INCREASE IN THE 14
SUBURBS VULNERABLE
TO URBAN HEAT**



**10%
INCREASE**

ACTIVATE COMMUNITY GREENING OF THE CITY



**TREES PLANTED
EACH YEAR IN URBAN
AREAS BY THE
COMMUNITY FOR THE
NEXT 10 YEARS**

ANNUAL LEVEL
2020/2021

120

TARGET

1000

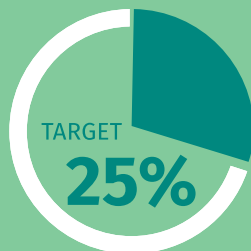
**INCREASE THE EXTENT AND
QUALITY OF GREENING OF NEW
DEVELOPMENTS**



**RESIDENTIAL
ZONES 30%
TREE CANOPY**



**COMMERCIAL
ZONES 25%
TREE CANOPY**



**INDUSTRIAL
ZONES 15%
TREE CANOPY**





ACTION PLAN

Actions have been linked with the overarching goals detailed in the strategy. Including community engagement at the appropriate level, these actions will guide further work to achieve the targets and service levels identified in the Urban Greening Strategy. In some cases, actions will rely on collaboration and partnerships with others, access to external funding or resolution of local planning issues. The implementation of this strategy will be considered within the context of Council’s overall priorities, and the competing demands of other areas and strategies within Council.

RELEVANT TARGETS	ACTION	TIMEFRAME	RESPONSIBILITY
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1. INCREASE THE EXTENT AND QUALITY OF GREENING IN PUBLIC

1.1 *Achieve a 10 per cent increase in tree canopy cover in suburbs vulnerable to urban heat by 2030*

1.1.1 Develop one, four and 10-year programs to increase tree canopy cover

1-4 years




ES
IP
CW

1.1.2 Develop program to protect and proactively maintain existing trees

1-4 years

ES
CW
PCR

C SPACES

MONITORING/EVALUATION/OUTCOMES	STRATEGIC LINKS	SDG	SDG TARGETS
<p>Targeted tree canopy cover percent increase achieved in 14 urban heat vulnerable suburbs</p>	Ageing Population Plan 2018-2022		11.3
	Child and Family Strategy 2021-2024		11.4
	Energy Resilience Plan 2012		11.6
	Environmental Sustainability Strategy and Action Plan 2020-2027		11.7
	Event and Festival Strategy and Action Plan 2019-2024		15.5
	Heritage Strategy		15.9
	Housing Strategy 2021		
	Night-Time Economy Action Plan 2019-2024		
	Parks and Play Strategy 2021		
	Parking Strategy 2018		
	Plan of Management Community Land 2011		
	Public Amenities Strategy 2021		
	Urban and Public Art Strategy 2019-2029		
	Walking, Cycling and Better Streets Strategy 2031		
	West Wallsend Heritage Management Strategy 2020		
	Youth Strategy 2020-2023		
	<p>No net decline in urban forest size and quality</p>		Arts Heritage and Cultural Plan 2017-2027
Asset Management Strategy 2013		11.4	
Destination Management Plan 2018-2022		11.6	
Energy Resilience Plan 2012		11.7	
Environmental Sustainability Strategy and Action Plan 2020-2027			15.5
Event and Festival Strategy and Action Plan 2019-2024			15.9
Heritage Strategy			
Housing Strategy 2021			
Night-Time Economy Action Plan 2019-2024			
Parks and Play Strategy 2021			
Parking Strategy 2018			
Plan of Management Community Land 2011			
Public Amenities Strategy 2021			
Sports Strategy 2021-2031			
Urban and Public Art Strategy 2019-2029			
Walking, Cycling and Better Streets Strategy 2031			
West Wallsend Heritage Management Strategy 2020			
Youth Strategy 2020-2023			

RELEVANT TARGETS

ACTION

TIMEFRAME

RESPONSIBILITY



1. INCREASE THE EXTENT AND QUALITY OF GREENING IN PUBLIC

1.1 *Achieve a 10 per cent increase in tree canopy cover in suburbs vulnerable to urban heat by 2030*

11.3 Develop Urban Greening Prioritisation Tool to inform green infrastructure project planning decisions

1-4 years

ES
IP
CW

11.4 Update local planning provisions

1-4 years

ES
IP

C SPACES

Tool developed

Energy Resilience Plan 2012
 Housing Strategy 2021
 Night-Time Economy Action Plan 2019-2024
 Parks and Play Strategy 2021
 Parking Strategy 2018
 Public Amenities Strategy 2021
 Sports Strategy 2021-2031
 Urban and Public Art Strategy 2019-2029
 Walking, Cycling and Better Streets Strategy 2031
 West Wallsend Heritage Management Strategy 2020
 Youth Strategy 2020-2023



11.3
 11.4
 11.6
 11.7



15.5
 15.9

Vegetation regulation provisions developed

Arts Heritage and Cultural Plan 2017-2027
 Better Buildings Strategy 2018
 Environmental Sustainability Strategy and Action Plan 2020-2027
 Heritage Strategy
 Housing Strategy 2021
 Night-Time Economy Action Plan 2019-2024
 Parks and Play Strategy 2021
 Parking Strategy 2018
 Plan of Management Community Land 2011
 Urban and Public Art Strategy 2019-2029
 Walking, Cycling and Better Streets Strategy 2031
 West Wallsend Heritage Management Strategy 2020
 Youth Strategy 2020-2023



11.3
 11.4
 11.6
 11.7



15.5
 15.9



1. INCREASE THE EXTENT AND QUALITY OF GREENING IN PUBLIC

1.2 Aim for 30 per cent tree canopy cover in all residential zones, 25 per cent in all business zones and 15 per cent in all industrial zones

1.2.1 Develop program to ensure accurate and timely measurement of urban tree canopy cover and health (five yearly)

1-4 years

ES

1.2.2 Investigate financial funding models to ensure continuity of green infrastructure provision. Integration of new financial tools into standard local government financial accounting practices (IP&RF)

4-10 years

ES

1.2.3 Develop program for tree planting in high profile City gateway locations

1-4 years

ES
NA
CW
AM
CP

C SPACES

Program to measure urban tree canopy cover developed and implemented

Environmental Sustainability Strategy and Action Plan 2020-2027
 Event and Festival Strategy and Action Plan 2019-2024
 Housing Strategy 2021
 Night-Time Economy Action Plan 2019-2024
 Parking Strategy 2018
 Walking, Cycling and Better Streets Strategy 2031
 Youth Strategy 2020-2023

	8.2
	8.9
	9.1
	9.5
	11.3
	11.4
	11.B
	15.A
	17.16
	17.17

Investigation report received

Arts Heritage and Cultural Plan 2017-2027
 Better Buildings Strategy 2018
 Environmental Sustainability Strategy and Action Plan 2020-2027
 Heritage Strategy
 Housing Strategy 2021
 Night-Time Economy Action Plan 2019-2024
 Parks and Play Strategy 2021
 Parking Strategy 2018
 Plan of Management Community Land 2011
 Urban and Public Art Strategy 2019-2029
 Walking, Cycling and Better Streets Strategy 2031
 West Wallsend Heritage Management Strategy 2020
 Youth Strategy 2020-2023

	8.9
	15.5
	15.8
	15.A

Program developed

Energy Resilience Plan 2012
 Circular Economy Framework
 Environmental Sustainability Strategy and Action Plan 2020-2027
 Plan of Management Community Land 2011

	11.4
	11.6
	11.B
	12.2
	13.1
	13.2
	13.B
	15.1
	15.2
	15.4
	15.5
	15.9



1. INCREASE THE EXTENT AND QUALITY OF GREENING IN PUBLIC

1.2 Aim for 30 per cent tree canopy cover in all residential zones, 25 per cent in all business zones and 15 per cent in all industrial zones

1.2.4 Investigate program to identify, measure and build carbon sequestration sites

1-4 years

ES

1.2.5 Develop program for restoration of formalised water courses back to semi-natural treatment following water-sensitive urban design principles

4-10 years

ES
NA
CW
CA
IAM

1.2.6 Develop program to support greening with sustainable water supplies

1-4 years

ES
AM
CP

1.2.7 Develop and implement a program to reduce mowing/slashing on Council land in appropriate areas and return relevant sites to natural areas

1-4 years

ES
NA
CW

1.2.8 Design Tree Management Plans (Parks) and integrate into existing asset management framework

4-10 years

ES
NA
AM

MONITORING/EVALUATION/OUTCOMES	STRATEGIC LINKS	SDG	SDG TARGETS
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C SPACES

Investigation report received	<ul style="list-style-type: none"> Arts Heritage and Cultural Plan 2017-2027 Environmental Sustainability Strategy and Action Plan 2020-2027 Housing Strategy 2021 Night-Time Economy Action Plan 2019-2024 Parks and Play Strategy 2021 Plan of Management Community Land 2011 Urban and Public Art Strategy 2019-2029 Walking, Cycling and Better Streets Strategy 2031 Youth Strategy 2020-2023 	  	<ul style="list-style-type: none"> 14.1 14.2 6.6 15.1 15.2 15.5
Program developed	<ul style="list-style-type: none"> Circular Economy Framework Environmental Sustainability Strategy and Action Plan 2020-2027 Housing Strategy 2021 Parking Strategy 2018 Plan of Management Community Land 2011 Public Amenities Strategy 2021 Sports Strategy 2021-2031 Urban and Public Art Strategy 2019-2029 Walking, Cycling and Better Streets Strategy 2031 	 	<ul style="list-style-type: none"> 6.4 6.5 6.6 15.1 15.5
Program developed	<ul style="list-style-type: none"> Energy Resilience Plan 2012 Circular Economy Framework Environmental Sustainability Strategy and Action Plan 2020-2027 Plan of Management Community Land 2011 		<ul style="list-style-type: none"> 15.1 15.5
Program developed	<ul style="list-style-type: none"> Asset Management Strategy 2013 Destination Management Plan 2018-2022 Event and Festival Strategy and Action Plan 2019-2024 Heritage Strategy Housing Strategy 2021 Night-Time Economy Action Plan 2019-2024 Parks and Play Strategy 2021 Parking Strategy 2018 Plan of Management Community Land 2011 Public Amenities Strategy 2021 Sports Strategy 2021-2031 Urban and Public Art Strategy 2019-2029 Walking, Cycling and Better Streets Strategy 2031 West Wallsend Heritage Management Strategy 2020 	 	<ul style="list-style-type: none"> 11.3 11.4 15.1 15.5
Program developed			



2. INCREASE THE EXTENT AND QUALITY OF GREENING OF NEW DEVELOPMENTS

2.1 Aim for 30 per cent tree canopy cover potential in new residential developments, 25 per cent in new business zones and 15 per cent in new industrial zones

2.1.1 Investigate options to amend local planning provisions to provide deep soil spaces within medium to higher density urban typologies for a sustainable urban tree canopy

1-4 years

ES
IP
DAC

2.1.2 Amend local planning provisions to include minimum tree canopy cover controls in target areas

1-4 years

ES
IP

2.1.3 Investigate process for tree protection during events to ensure protection of Council street and park trees

4-10 years

ES
IP
DAC

DEVELOPMENTS

LEP/DCP provisions mandating new developments have minimum deep soil spaces

Crime Prevention Strategy
Housing Strategy 2021
Parks and Play Strategy 2021

	11.3
	11.4
	11.6
	11.7
	15.2
	15.3
	15.5
	15.9
	13.2

LEP/DCP provisions for new residential developments to achieve minimum tree canopy cover percent targets

Arts Heritage and Cultural Plan 2017-2027
Child and Family Strategy 2021-2024
Energy Resilience Plan 2012
Environmental Sustainability Strategy and Action Plan 2020-2027
Housing Strategy 2021
Night-Time Economy Action Plan 2019-2024
Parks and Play Strategy 2021
Parking Strategy 2018
Plan of Management Community Land 2011
Public Amenities Strategy 2021
Sports Strategy 2021-2031
Urban and Public Art Strategy 2019-2029
Walking, Cycling and Better Streets Strategy 2031
West Wallsend Heritage Management Strategy 2020
Youth Strategy 2020-2023

	11.3
	11.4
	11.6
	11.7
	15.2
	15.3
	15.5
	15.9
	13.2

Investigation report received

Event and Festival Strategy and Action Plan 2019-2024
Heritage Strategy
Housing Strategy 2021
Night-Time Economy Action Plan 2019-2024
Parks and Play Strategy 2021
Parking Strategy 2018
Plan of Management Community Land 2011
Sports Strategy 2021-2031
Urban and Public Art Strategy 2019-2029
Walking, Cycling and Better Streets Strategy 2031
West Wallsend Heritage Management Strategy 2020
Youth Strategy 2020-2023

	11.4
	11.7
	15.5
	12.8
	17.16
	17.17



3. ACTIVATE COMMUNITY GREENING OF THE CITY

3.1 Aim to register 1000 community planted street trees per year for the next 10 years

3.1.1 Review eligibility criteria for community environment grants program to enhance urban greening outcomes.

1-4 years

ES
CoPa

3.2 Aim to activate community urban greening

3.2.1 Develop key health and wellbeing indicators to benchmark the contribution of urban greening to human health and measure (five yearly)

1-4 years

ES

3.2.2 Design verge planting guidelines

1-4 years

ES
DAC
AM
CoPa
PCR




3.2.3 Design web-based tool to inform species selection for future climate scenarios, extreme weather events, view corridors, solar access, and integration into the existing built form

1-4 years

ES
CW

MONITORING/EVALUATION/OUTCOMES	STRATEGIC LINKS	SDG	SDG TARGETS
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Program developed and integrated into 1, 4- and 10-year programs	Arts Heritage and Cultural Plan 2017-2027		17:16
	Environmental Sustainability Strategy and Action Plan 2020-2027		17:17
	Event and Festival Strategy and Action Plan 2019-2024		11.3
	Housing Strategy 2021		11.4
	Night-Time Economy Action Plan 2019-2024		11.6
	Urban and Public Art Strategy 2019-2029		11.7
			15.A

Indicators developed and recognised	Event and Festival Strategy and Action Plan 2019-2024		11.3	
	Youth Strategy 2020-2023		11.4	
			11.6	
				15.2
				15.5
				15.9
			17:16	
			17:17	

Guidelines developed	Arts Heritage and Cultural Plan 2017-2027		11.6
	Environmental Sustainability Strategy and Action Plan 2020-2027		11.B
	Event and Festival Strategy and Action Plan 2019-2024		
	Night-Time Economy Action Plan 2019-2024		12.8
	Parks and Play Strategy 2021		
	Parking Strategy 2018		
	Plan of Management Community Land 2011		
	Sports Strategy 2021-2031		3.9
	Walking, Cycling and Better Streets Strategy 2031		
	Youth Strategy 2020-2023		

Tool developed	Arts Heritage and Cultural Plan 2017-2027		15.5
	Destination Management Plan 2018-2022		15.A
	Event and Festival Strategy and Action Plan 2019-2024		11.3
	Heritage Strategy		11.4
	Night-Time Economy Action Plan 2019-2024		11.7
	Parks and Play Strategy 2021		
	Urban and Public Art Strategy 2019-2029		
	Walking, Cycling and Better Streets Strategy 2031		



3. ACTIVATE COMMUNITY GREENING OF THE CITY

3.2 Aim to activate community urban greening

3.2.4 Develop and implement urban forest citizen science programs and opportunities for community involvement in research and data collection.

1-4 years

ES
CoPa

3.2.5 Develop operational guidelines to ensure suitable mulch generated from tree pruning is available for use in community greening activities

1-4 years

ES
CW
Waste

3.2.6 Continue annual accredited membership of Tree Cities of the World










1-4 years

ES
NA

3.2.7 Devise program to review the effectiveness of the native plant giveaway to improve urban greening outcomes.

1-4 years

ES
CoPa

MONITORING/EVALUATION/OUTCOMES	STRATEGIC LINKS	SDG	SDG TARGETS
Program developed	Environmental Sustainability Strategy and Action Plan 2020-2027 Housing Strategy 2021 Parks and Play Strategy 2021 Walking, Cycling and Better Streets Strategy 2031 Youth Strategy 2020-2023	 	11.4 11.7 17.16
Guidelines developed	Environmental Sustainability Strategy and Action Plan 2020-2027 Youth Strategy 2020-2023	  	11.4 11.6 11.7 15.1 15.2 15.3 15.4 15.5 17.16
Membership maintained	Circular Economy Framework Environmental Sustainability Strategy and Action Plan 2020-2027 Waste Strategy 2015-2023		11.3 11.4 11.7
Program developed	Destination Management Plan 2018-2022	  	11.3 11.4 11.6 11.7 11.B 15.1 15.2 15.3 15.4 15.5 15.8 15.9 17.16 17.17

GLOSSARY

Canopy cover

The percentage of urban land covered by tree canopy when viewed from above.

Carbon sequestration

The process by which trees absorb and assimilate carbon dioxide from the atmosphere.

Ecosystem services

Benefits provided to humans by goods and services delivered by ecosystems.

Evapotranspiration

The process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration from plants

Green infrastructure

The term 'green infrastructure' (GI) is used to describe the network of green spaces that intersperse, connect and provide vital life support for humans and other species within urban environments. It includes elements such as green networks and links, cemeteries, community gardens, domestic gardens, roof gardens, green walls, living walls and verges (adapted from Australian Institute of Landscape Architects). Green infrastructure is a 'strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services'.

Green infrastructure means a network of green spaces, natural systems and semi-natural systems, including waterways, bushland, tree canopy, green ground cover, parks and open spaces, that:

- supports sustainable communities
- is strategically designed, and managed to support a good quality of life in an urban environment.

Tree amenity

A quality, feature or attribute of the tree that makes it pleasant, attractive and agreeable, which is conducive to the comfort, convenience and enjoyment of people. It is a physical feature which increases attractiveness and value of a site through contributions to the physical, psychological or material comfort of people and which facilitates happiness, pleasure, enjoyment and contentment.

Urban forest

An urban forest is broadly defined as the collection of green spaces, trees and other vegetation that grows within an urban area on both public and private land.

Urban heat island (UHI)

Many urban areas experience elevated temperatures compared to their outlying surroundings, this difference in temperature is what constitutes an urban heat island (US EPA, 2008).

Useful life expectancy (ULE)

An estimation of the useful life remaining for a given tree taking account of its current health condition and known typical lifespan expected for the species in its given location and situation.

Water-sensitive urban design (WSUD)

Integrating water cycle management into urban design processes and outcomes.

Open space

Open (or not built upon) land that accommodates recreation or provides relief from the built environment. Together, public and private open space contribute to the total open space resource.

Public open space

Open space that is publicly owned and managed by local, state or federal government and is accessible to the public.

Private open space

Open space that is on private property that is not always accessible to non-owners and non-members, such as backyards, privately-owned golf courses and racecourses, and internal open space provided in unit blocks.

Recreation

Recreation covers the broad range of activities that people undertake when engaging in leisure for fun, relaxation or fitness. Recreation can be undertaken indoors or outdoors, and covers a diverse range of activities that help us to stay physically and emotionally healthy and to interact and connect with our families and our communities.

Thermal comfort

An acceptable thermal environment is one in which at least 80 per cent of the occupants would find conditions thermally acceptable. Over the last decade (2010-2020), the average number of days of strong heat stress (>35°C) was 11.5 days (±4.5).

Universal Thermal Climate Index

(Matzarakis and Mayer, 1996)

Above 41°C	Very strong heat stress
35°C to 41°C	Strong heat stress
23°C to 35°C	Moderate heat stress
18°C to 23°C	Comfortable
8°C to 18°C	Slight cold stress
4°C to 8°C	Moderate cold stress
Below 4°C	Very strong cold stress.

Physiological equivalent temperature (PET)

Air temperature at which the heat balance of the human body is maintained with core and skin temperature equal to those under the conditions being assessed. PET is based on the calculation of temperature with the combination of globe temperature, wind speed, and air temperature for outdoor comfort evaluation. People's behaviour such as clothing being worn and metabolic rate are included.

Urban density

High-density areas: more than 60 dwellings/ha (more than 250 people/ha)

Medium-to low-density areas: 30 - 60 dwellings/ha, (60-250 people/ha)

Low density areas: less than 30 dwellings/ha (less than 60 people/ha).

For more information



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