

DRAFT

URBAN FOREST STRATEGY



Mildura Rural City Council

mesh

ACKNOWLEDGEMENT OF COUNTRY

Mildura Rural City Council acknowledges the Traditional Custodians of the land, which now comprises the Mildura Rural City municipality.

We pay our respects to Elders past and present, and celebrate and respect their continuing cultures and acknowledge the memories of their ancestors.



ACKNOWLEDGEMENTS

The preparation of this Urban Forest Strategy (the Strategy) has been informed by best practice literature and expert advice from:



Rain Consulting, a team of engineers who bring creative solutions to water outcomes and provided integrated water management advice.



Homewood Consulting, a team of experienced and qualified arboricultural consultants, who collected tree data and provided specialist technical advice.



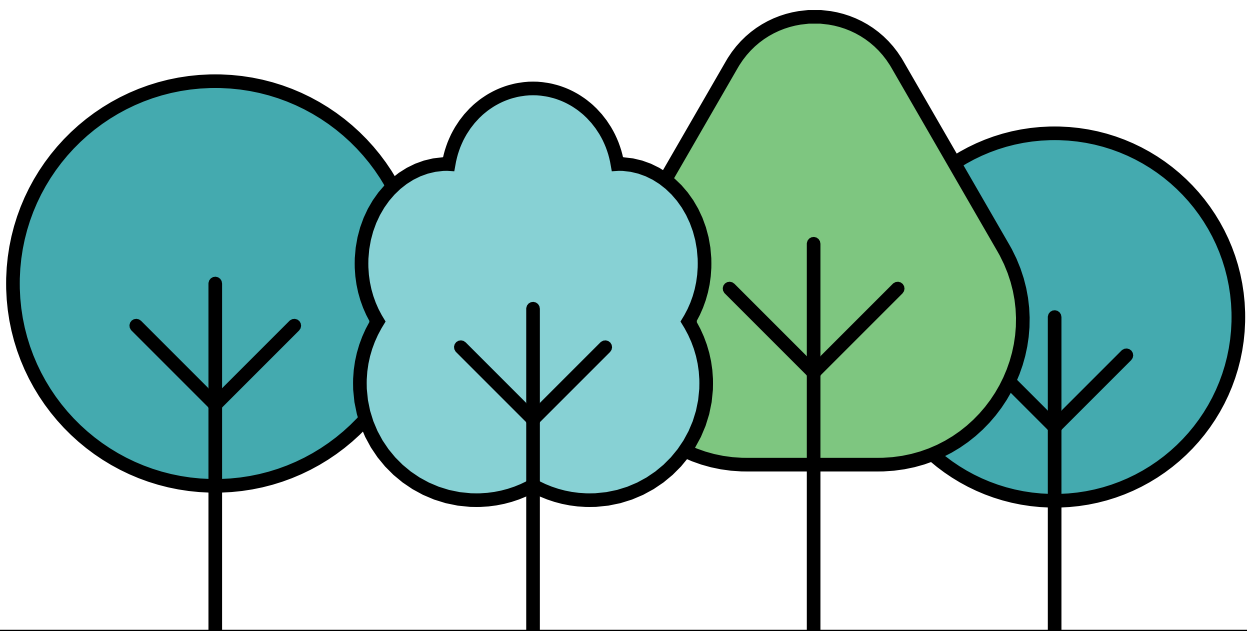
XMAP, an aerial survey and remote sensing organisation who completed the thermal mapping outputs.

Integral to the delivery of the Strategy has been local experience from community members, interest groups and stakeholders. We would like to acknowledge the community members who completed surveys and attended workshops to provide an invaluable local perspective. We would also like to acknowledge the government agencies, authorities and Mildura Rural City Council (Council) staff who participated in the development of the Strategy.

The key to a successful urban forest is to provide the best conditions that allow newly planted trees to thrive. This includes regular water systems and space for tree roots and branches to expand freely. This will, in turn, ensure all tree plantings contribute to a net expansion of the overall green canopy year after year.

Council is grateful to the key community stakeholders, other key government and independent agencies for their generous voluntary contribution of their time, goodwill and active input into the preparation of this strategy. Their input ensures local knowledge and different expertise are used to coordinate a tailored-made approach for implementation.

A complete list of stakeholders involved in the development of the Strategy is presented at Appendix 1.



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PROLOGUE

Mildura is often thought of as a regional centre with a flat and dry landscape located on the edge of the desert. The common perception is that it is a place that consistently experiences extreme heat conditions and prolonged drought. However, Mildura's climate and terrain is more complex.

Its geographical positioning at the confluence of Australia's two longest rivers, Darling-Barka and Murray Rivers, has strongly influenced Aboriginal cultural practices and connections that continue today. Urban development since colonial settlement has also relied on this same point of confluence of two major river systems and has been subject to significant modifications through farming, irrigation and river trade. The Murray River was once recorded as a blue stream adorned with water lilies (Wentworth Heritage Study, 1989). This is by no means a description of what can be seen today, however, its banks and broader flood plain areas remain resource rich with splendid stands of River Red Gums.

Mildura's latitude means that it receives more natural daylight than Melbourne and the rest of Victoria. It enjoys a generally warm temperate climate across the seasons, although is subject to the risk of frost in winter. Summers are hot and dry, and years of low rainfall can make summers even markedly hotter. There is often a higher chance of consecutive days above 40 degrees Celsius across December and January.

Mildura Rural City Council has a number of policies and strategies in place that aim to protect community wellbeing in response to local climate conditions. There is a growing threat of extreme heat during summer, as well as a lack of shade in the public realm, which poses a risk to the community's social and physical wellbeing. It also impacts Mildura's appeal for tourists and visitors. The current individual response to hot summers is a dependence on air-conditioning, for those who can afford it, and it is anticipated that there will be a significant increase in energy demand for cooling as temperatures rise.

In response to this Council has adopted several strategies that look to passive cooling techniques aimed at cooling streets and entire precincts and reducing energy demand and carbon emissions. These include:

- **CBD Plan** 2020-2035 requires Council to promote more energy efficient housing design and cooler streetscapes using a comprehensive street tree planting program, under Direction 4 of the Plan.
- **Cool It Street Program** and **CBD Regener8** are tree planting programs currently in progress, which have included distributing free trees to local residents.
- **CBD Access and Mobility Strategy** provides more inviting active transit options supported by increased shade provision along key access routes for cyclists, pedestrians and those relying on the bus service.
- **Mildura's Public Open Space Strategy** identifies several distinct gaps in local parkland provision to be addressed.

As demonstrated over recent years, Mildura's climate can vary significantly within broader climate trends. Mildura's rainfall, for example, has been highly variable. Within a four-year period between 2018 and 2022 Mildura experienced its driest year on record, with 116.5mm of rain in the 2019 calendar year and a record run of consecutive days over 40°C. Within that same period, by the end of 2022 Mildura encountered one of its more generous annual rainfalls of 492mm, characterised by sudden torrential downpours. 80mm of rain was recorded in just one day on 27 January 2022 and within half a day 25mm of rain was recorded on 13 October within the same year. This rainfall combined is almost the total annual rainfall for 2019. These significant single day rainfall events highlight the volatile variation in rainfall patterns in between long dry spells. This poses particular challenges for designing drainage systems and passive watering systems, the latter being essential to designing a successful Urban Forest Strategy.

At present, Mildura's urban infrastructure does not sufficiently support existing street trees. Water Sensitive Urban Design elements are needed to make better use of major rainfall events by temporarily harvesting or infiltrating stormwater to flow directly to tree roots, ultimately contributing to a healthier urban forest and reaching canopy cover targets. Temporary water storage can also prevent flash flooding, soil erosion and habitat loss commonly experienced during a major downpour. This is largely due to an over-reliance on underground drainage systems to efficiently drain stormwater away.

The significant variation in local annual rainfall within four years demonstrates why the use of the average statistical indicator is neither useful nor valid when planning for ongoing street tree health.

Although the general trend is that rainfall will decline and climate conditions are becoming warmer and drier, Mildura will also experience:

- More frequent and intense downpours;
- More heat extreme, hot days (greater than 30°C), longer warm spells; and
- An increase in average temperatures across all seasons.

These wild swings from one weather extreme to another pose a particular challenge when planning for tree and human health.

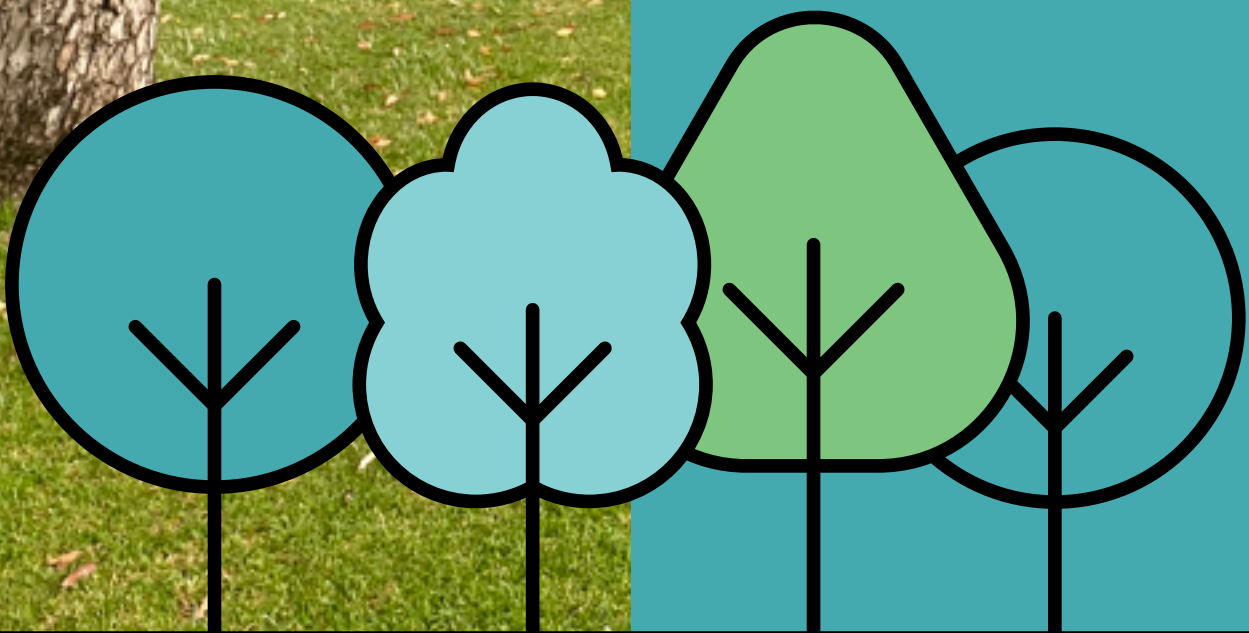


Therefore, the key question for an Urban Forest Strategy for Mildura is:

How can tree growth best be supported, through water sensitive urban design and other coordinated approaches that are more supportive and responsive to extreme variations in climate and weather from year to year?

Reliance on average annual rainfall data neither assists in planning for peak rainfall events, nor the inevitability of drought conditions.

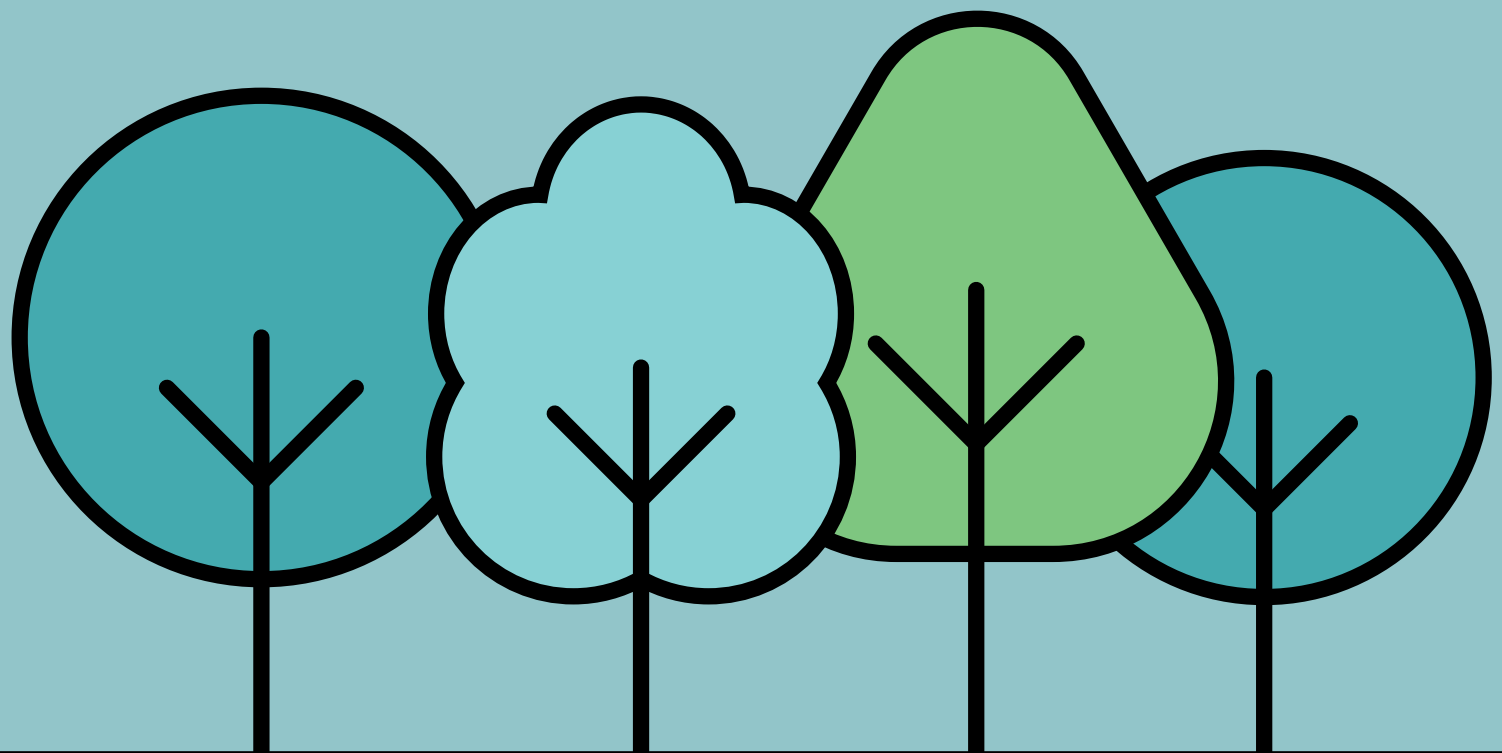
Creating an ever-expanding urban forest in Mildura is complicated. It will rely on the goodwill and co-operation between all key stakeholders and the community. It also requires more than simply planting new trees. We must incorporate climate change resilience strategies, account for weather fluctuations, factor in stressful climate conditions and provide responsive tree management to protect tree health and performance.



1. INTRODUCTION

An Urban Forest is a nature-based solution to urban challenges such as summer heat and other climate impacts or consequences.

- Trees are beneficial to human health and general wellbeing, they filter air pollution to give us clean air to breathe.
- Trees are essential to the process of making rain and preserving and enriching soil.
- In urban settings, trees can assist in managing peak stormwater challenges when integrated with local streets and parklands.
- Trees also create more attractive and amenable neighbourhoods in which to live.
- For local wildlife, urban forests can provide important habitat to strengthen biodiversity.
- In Mildura, where "summer" tends to last from October through to March, trees offer a cost effective, equitable and efficient method of mitigating urban heat so that streets and neighbourhoods across the municipality are shaded and cooler through the warmer months.



1.1 PURPOSE OF THE URBAN FOREST STRATEGY

Mildura's Urban Forest is made up of all the trees and shrubs present within urban areas. The purpose of the Urban Forest Strategy (the Strategy) is to ensure a progressive net expansion of Mildura's Urban Forest each year, with a focus on improving:

- Tree canopy coverage
- Tree health
- Tree distribution and
- Species diversity.

The Strategy sets out specific targets across each of these four categories, and outlines the strategic plan that will be used to achieve these targets.

The Strategy provides recommendations for improvements to the tree population in the public realm, as this is land that is controlled by Mildura Rural City Council. The actions set out in the Strategy aim to enhance community access to attractive streets and parkland and to create an overall cooling effect on neighbourhoods and public precincts across the municipality.

Although this Strategy focusses on government-owned land, an open invitation is extended to all landowners, to join with Council in creating a Mildura that's a more attractive and cooler place to live in summer.

The Strategy has been developed in consultation with key stakeholders and community who have guided the development of the targets, strategies, and actions. It adopts an evidence-based approach, drawing upon data collected on all street trees across the settlements of Irymple, Merbein, Mildura and Red Cliffs. The Strategy outlines key focus areas for new plantings and identifies a series of strategies and actions to enact improvements in urban forest outcomes.

The Strategy is supported by an implementation plan that outlines the key steps required to deliver the urban forest outcomes.

1.2 SCOPE OF THE URBAN FOREST STRATEGY

The Strategy provides direction for trees that Council manages in urban areas, including street trees and vegetation within parks and open space, nature strips and road reserves.

In recent years Homewood Consulting has conducted a review and assessment of street trees across the settlements of Irymple, Merbein, Mildura and Red Cliffs. In 2019 every street tree asset was assessed and recorded in the Mildura locality, and in 2021 every street tree in Merbein, Irymple, and Red Cliffs was assessed and recorded.

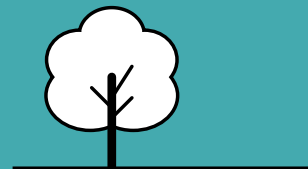
As part of this assessment, it was found that the existing urban forest comprised:



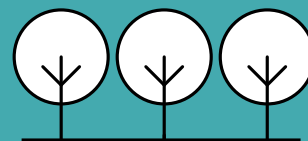
TREES



POTENTIAL PLANTING SITES



TREE STUMPS



HISTORIC RECORDS (REMOVED TREES)

This data has informed the preparation of the following components of the Strategy:

- The existing conditions of Mildura's urban forest
- The future opportunities
- Identification of the priority planting areas

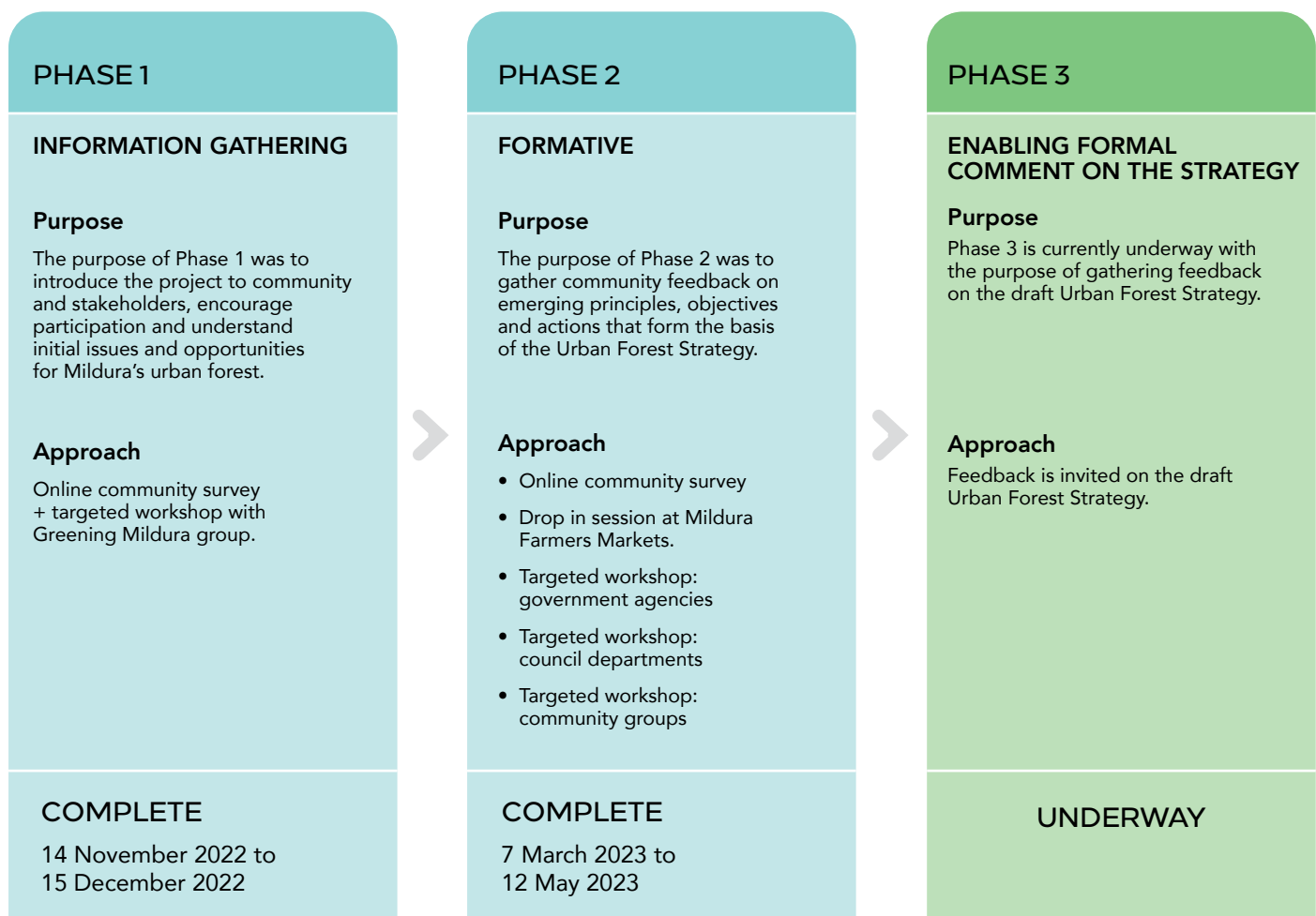
There are several smaller townships across the municipality, including Ouyen, Nichols Point, Werrimull, Walpeup and Murrayville. Due to data constraints, these townships were not included in this initial mapping exercise, however, site visits to these locations were conducted in November 2022 and examples of many thriving tree species in those towns were recorded. It's considered that the targets, strategies and actions outlined in this Strategy can be applied to these locations.



1.3 COMMUNITY AND STAKEHOLDER CONSULTATION

Community and Stakeholder consultation was essential input to the development of the Strategy. This information and knowledge has informed the vision, objectives, and strategic actions. The stakeholders involved in the development of the UFS are identified in Appendix 1.

Three phases of community and stakeholder engagement were undertaken to prepare the Strategy:



KEY FINDINGS

The findings from the Phase 1 and 2 engagement processes are summarised in the:

- **Mildura Urban Forest Strategy Phase 1 Community Engagement Summary Report** (March 2023) and
- **Mildura Urban Forest Strategy Phase 2 Community Engagement Summary Report** (May 2023).

A summary of what we heard is as follows:

In PHASE 1 we heard that the community...

values shaded public open spaces as they provide safe and accessible areas to rest, sit and play outdoors. We heard from the community that trees are valuable to residents for the heat protection they provide, as well as providing a welcoming and attractive environment that creates a sense of pride among the community.

The community expressed that their main concerns about trees in their neighbourhood have to do with the maintenance that trees require, and that greater consideration should be given to species selection to ensure the right size and type is planted. The consultation process has shown there is lack of consensus among the community about which tree species are most and least preferred. This is further explored in Section 7.

In PHASE 2 we heard from the community...

that there are a broad range of planting methods that they would like to be considered when planning for Mildura's urban forest, such as water irrigation systems, soil type, pruning practice, and protective measures. Many community members expressed an interest in helping to care for the tree population, with involvement ranging from planting for and maintaining the tree on their property, to participating in community planting days and helping to raise tree education and awareness.



1.4 POLICY CONTEXT

There are a range of Council policies and strategies that support the need for the development of the Strategy (see Table 1). The Mildura Rural City Planning Scheme also provides policy direction and support for the Strategy (see Table 2).

COUNCIL POLICY / STRATEGY	RELEVANCE TO THE URBAN FOREST STRATEGY
Community Vision 2021 – 2040	The Community Vision introduces five vision statements the community has prepared to guide Council decision making. The vision statements relate to Environment, Community, Place, Economy and Leadership. We will be a place to live, belong and visit with infrastructure and development that enhances our lifestyles. The vision statement related to Place seeks to enhance the built environment.
Council Plan 2021 – 2025	The Council Plan builds upon the Community Vision and sets out the strategic direction for Council for the next four financial years. The Council Plan includes a strategic indicator to achieve a net increase in trees.
Cool It Summary Report	The Cool It summary report identifies areas that are vulnerable to heat across the municipality. The Cool It summary report provides direction for tree planting to address heat vulnerability, a key driver for the Strategy.
Environmental Sustainability Report 2012 – 2022	Establishes a series of targets for environmental sustainability outcomes, including biodiversity. The Strategy assists to deliver the targets related to biodiversity outcomes.
Public Open Space Strategy 2021	Aims to create a diverse and integrated network of public open space for both recreation and the conservation of natural and cultural environments. The Strategy assists to deliver the targets of more shaded open spaces.
CBD Plan 2020 - 2035	Sets out a strategic vision and framework to guide the growth, development and enhancement of the CBD to 2035. The Strategy supports the delivery of Objective 3 which seeks to achieve a seasonal planted oasis.
CBD Access and Mobility Strategy	Aims to improve access and mobility to and around the Mildura CBD, including seeing more people walking, cycling or scooting to the CBD. The Strategy seeks to deliver on these objectives by making streets cooler and more comfortable for active travel.
Mildura Rural City Council Significant Tree Register 2020	Identifies trees on Council land that are of significance in the municipality. The Strategy seeks to protect and enhance tree population which is consistent with the objectives of the register.
Climate Emergency Plan (underway)	On 24 February 2020, Council became the 30 th Local Government in Victoria to declare a climate emergency. A Climate Emergency Community Advisory Group is being established to guide the development of a Climate Emergency Plan. The Strategy seeks to address the impacts of climate change through a net increase in tree canopy each year.
Land Manager's Consent Policy CP061	Identifies policy regarding tree removal and compliance. The Strategy supports tree protection policy and recommends further actions are taken to support compliance.
MRCC Roundabout Landscaping Policy OP199	Supports the delivery of landscaping and vegetation in the public realm. The Strategy seeks to develop and support landscaping policy so that it is more compatible with Mildura's urban forest targets.

Table 1. Relevant policy and strategy documents

PLANNING SCHEME CLAUSE	RELEVANCE TO THE URBAN FOREST STRATEGY
<i>State Policy</i>	
<i>Clause 12.01-1S Protection of biodiversity</i>	Seeks to establish, protect and re-establish the links between important areas of biodiversity, including through stabling a network of green spaces.
<i>Clause 13.01-1S Natural hazards and climate change</i>	Seeks to respond to the risks associated with climate change in planning and management decision making processes.
<i>Clause 15.01-1S Urban design</i>	Seek to ensure development provides landscaping that supports the amenity, attractiveness and safety of the public realm.
<i>Clause 15.01-3S Subdivision design</i>	Seeks to create landscaped streets and a network of open spaces to meet a variety of needs with links to regional parks where possible.
<i>Clause 15.01-4S Healthy neighbourhoods</i>	Seeks to provide amenities and protection to support physical activity in all weather conditions.
<i>Clause 18.01-1S Land use and transport integration</i>	Seeks to design neighbourhoods to better support active living.
<i>Clause 18.02-1S Walking</i>	Seeks to design walking routes to be comfortable by providing shelter from the sun through canopy trees, verandas and other structures.
<i>Clause 18.02-2S Cycling</i>	Seeks to increase cycling by providing vegetation to shade cycling routes.
<i>Local Policy</i>	
<i>Clause 12.01-1L Protection of biodiversity</i>	<p>Seeks to:</p> <ul style="list-style-type: none"> • Discourage native vegetation removal in urban development. • Maintain existing wild life corridors along road and railway reserves. • Support biolinks and environmental nodes between areas of significant public land.
<i>Clause 15.01-1L Urban design in Mildura</i>	<p>Seeks to:</p> <ul style="list-style-type: none"> • Require residential neighbourhoods to incorporate shaded vegetated greenways or linear parks to connect areas of activity. • Design roads in new residential neighbourhoods that are able to accommodate canopy tree planting. • Incorporate fast growing tree species in the development of new estates. • Encourage development to increase tree cover in streets, backyards and as broad scale revegetation.
<i>Clause 15.01-3L Mildura subdivision design</i>	<p>Seeks to:</p> <ul style="list-style-type: none"> • Design roads in new residential neighbourhoods that are able to accommodate canopy tree planting. • Require residential neighbourhoods to incorporate shaded vegetated greenways or linear parks to connect areas of activity.

Table 2. Relevant planning scheme policy

1.5 CURRENT COUNCIL AND COMMUNITY PRACTICE

Understanding current urban forest practice is important context for this Strategy. There are several initiatives underway that are successfully contributing to an expanded urban forest, including internal practice and community-led projects.

CURRENT PLANTING PRACTICE

Council has a team of professionals responsible for the planting and care of the municipality's tree population. In 2021, this team was responsible for planting a total of 1,300 trees across the municipality, and in 2022, 1,250 trees were planted.

The regular maintenance program comprises tree pruning, watering, replacement, planning and assessment. At the time of planting, a new tree receives on average 12 - 15 litres of water when initially planted.



NEW TREES PLANTED

1,300 2021

1,250 2022



WATER REQUIRED

12-15L WHEN PLANTED

30-35L PER WEEK

2 YEARS AFTER PLANTING



Toorak Avenue was part of the Tree Replacement Program, this street is now one of the shadiest streets in Mildura.



Example from Railway Reserve West which was part of the Tree Replacement Program and underwent a community tree planting day with local schools and community groups in 1998 to improve the amenity of a rail reserve used as a walking and cycling path.

COMMUNITY PARTNERSHIPS

Council also partners with the community on a range of tree related projects. As such, Mildura's existing urban forest has been shaped by a range of local initiatives undertaken by Council and community groups and is the result of many decades of community pride and great work.

During the late 1990's and early 2000's Council supported the Tree Replacement Program where residents were directly involved in establishing new trees in their street. Some of the streets included in the program were Wattle Avenue, Princess Street and Toorak Ave. Residents were involved in this collective project to select suitable species and plant them alongside Council staff. As a result of this initiative these streets now have healthy tree canopies.

The Tree Replacement Program has since evolved into the Cool It Street Program, whereby the community nominates which streets they would like to transform with new tree plantings to create healthier and greener neighbourhoods. Council then works with residents to transform a selected list of streets.

The Cool It Street Program empowers residents to make decisions about their street and neighbourhood, increases shade, uniformity and visual amenity in the street, increases property values, and brings residents together to tackle a problem as a collective.

This program complements the CBD Urban Regeneration project, which is another local initiative. This project aims to provide more shade and improved amenity for the community within the Mildura CBD by planting up to 500 new trees across the retail precinct.

These community projects align with the Civic Pride Action Plan 2023, an internal Council initiative which identifies Council projects to improve the presentation of neighbourhoods and evoke a sense of pride across the municipality.

In addition to these projects, the voluntary involvement of community groups is essential to the stewardship and care of Mildura's greenery. The community-led organisation, Greening Mildura, works with Council and other local stakeholders to create opportunities for community involvement in tree stewardship, community education and awareness on urban forestry, and to expand Mildura's tree coverage.

WHOLE OF COUNCIL SUPPORT

The delivery of tree planting and maintenance, as well as the delivery of community partnership initiatives, requires buy in and involvement from a broad range of Council departments often including engineering, planning, infrastructure, parks and open space, communication, community partnerships and landscape teams. Improved co-ordination across key functional units within Council is crucial (see Figure 1).

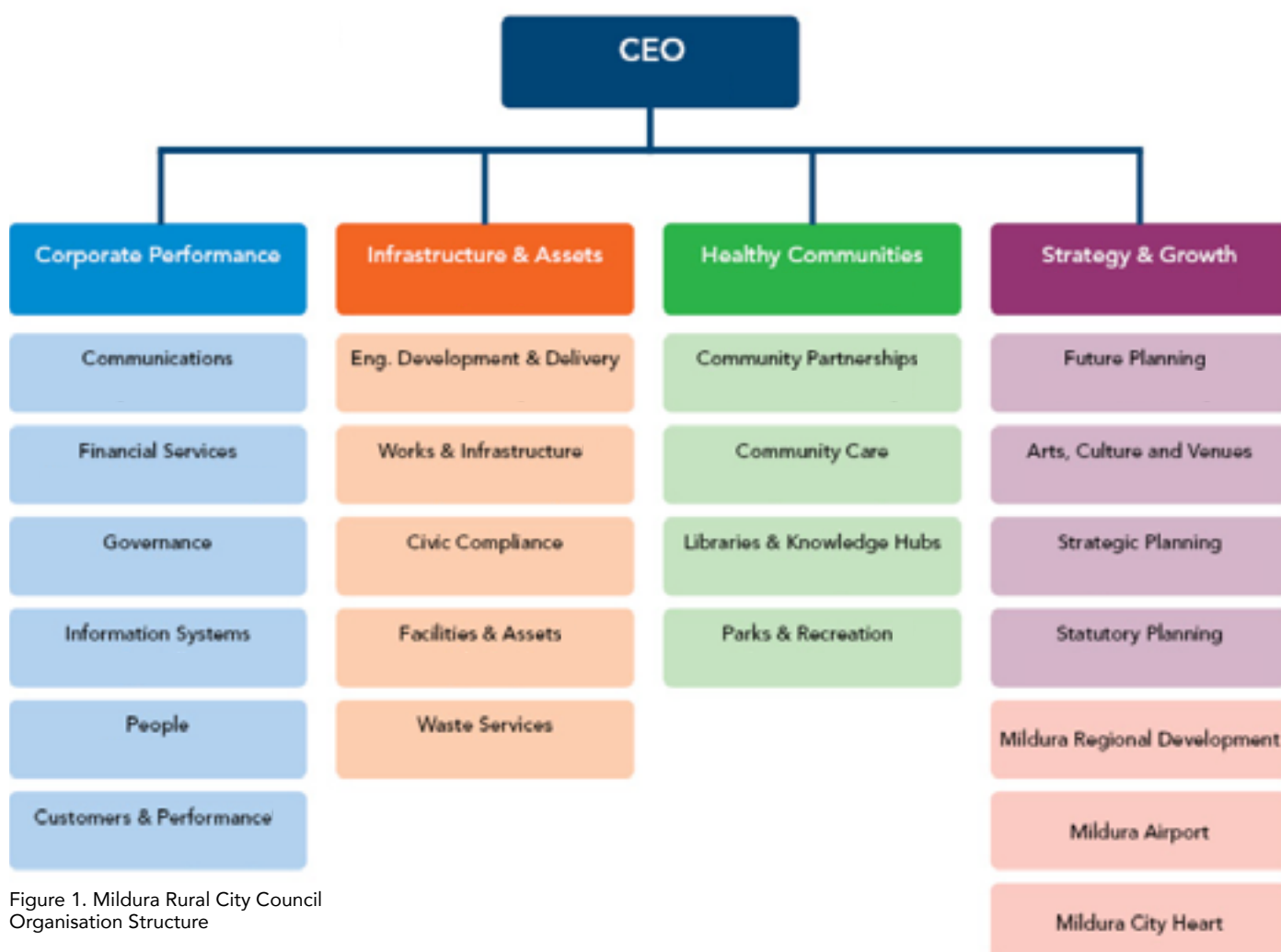


Figure 1. Mildura Rural City Council Organisation Structure

1.6 HOW TO READ THE MILDURA URBAN FOREST STRATEGY

As set out below, the Strategy is organised into five parts.

PART 1

INTRODUCTION AND CONTEXT

Outlines the scope and purpose of the urban forest strategy and introduces the policy context.

PART 2

BACKGROUND

Sets out why increasing the tree population is important and introduces the targets for the urban forest.

PART 3

EXISTING CONDITIONS

Assesses the current urban forest against the targets to establish the existing conditions.

PART 4

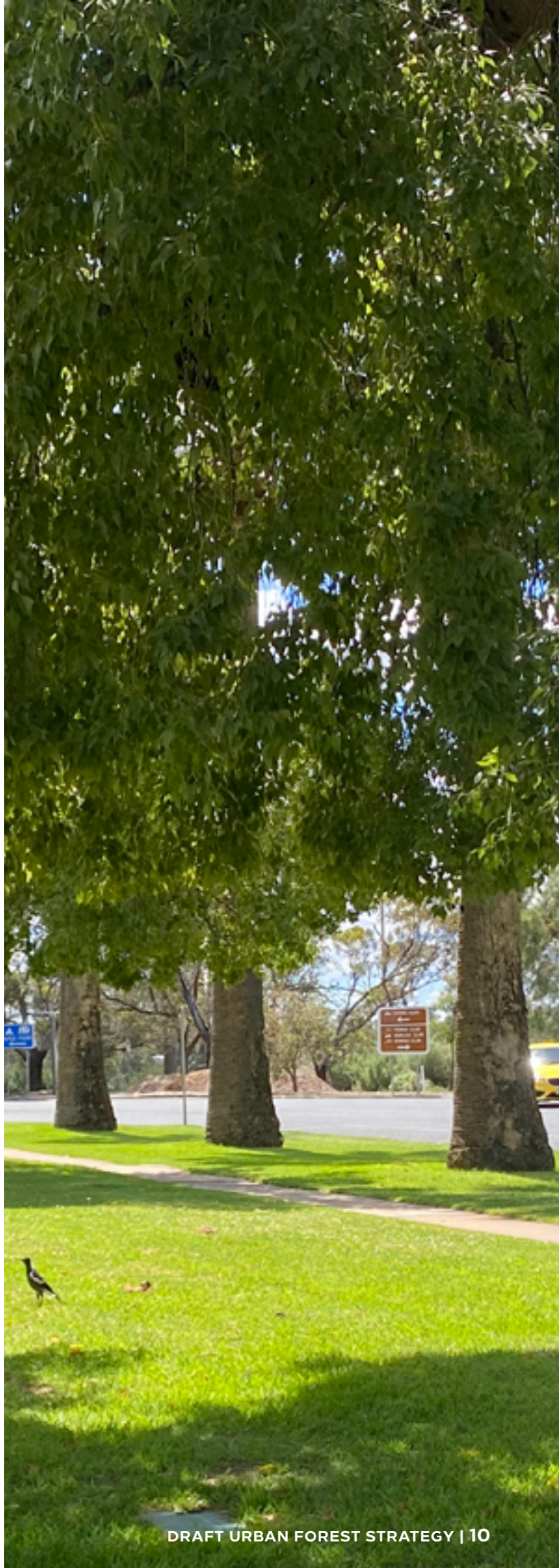
STRATEGIC PLAN

Introduces the vision and objectives and outlines the strategies that will work to achieve the objectives.

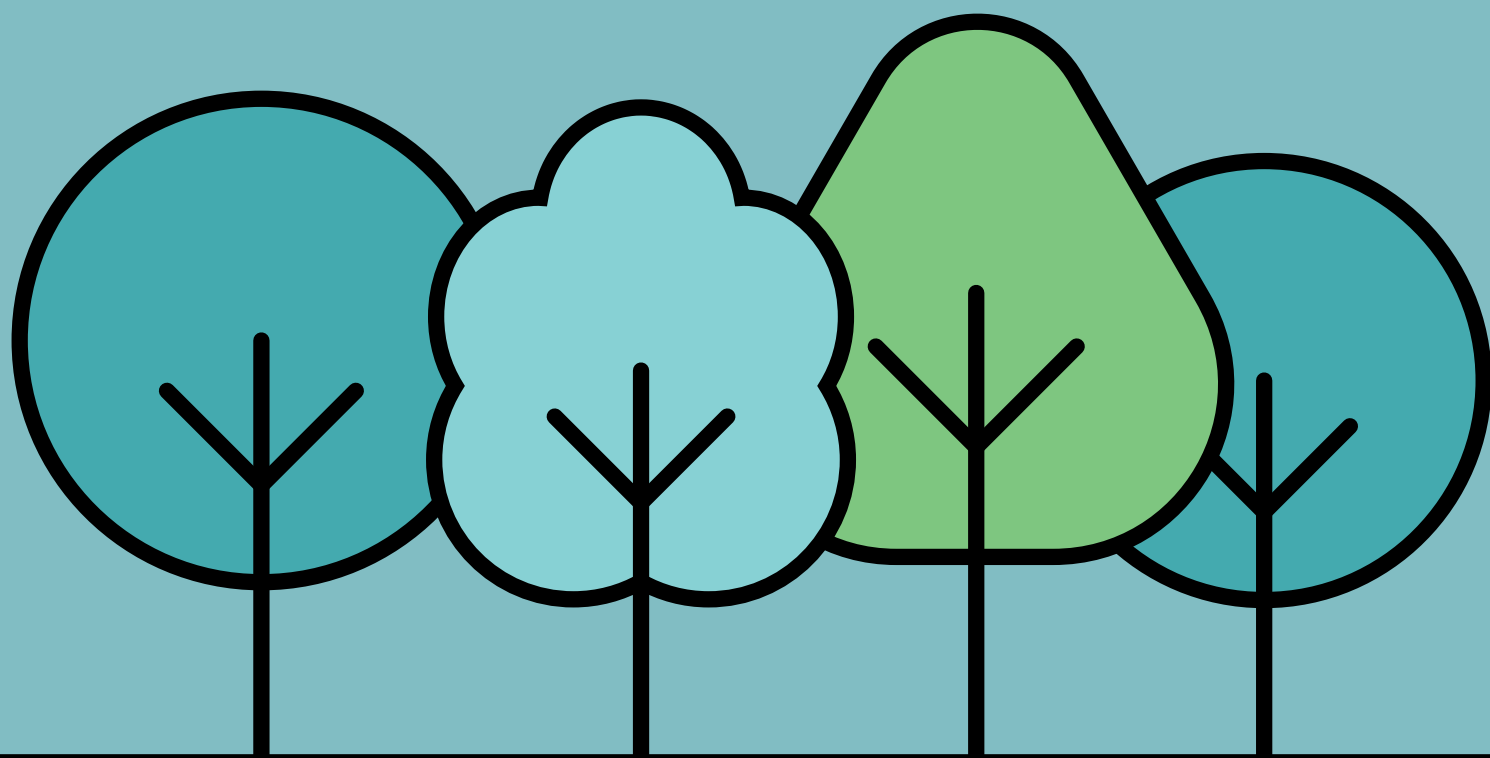
PART 5

ACTION AND IMPLEMENTATION

Identifies the actions required to achieve the strategies and outlines the implementation plan to deliver the actions.



2. BACKGROUND





2.1 IMPORTANCE OF THE URBAN FOREST STRATEGY

THE URBAN HEAT ISLAND EFFECT

Urban locations have areas of dark surfaces such as roads, which absorb, store and slowly release heat. This is referred to as the urban heat island effect, which occurs when urban areas have a higher air temperature than surrounding rural locations.

Mildura and its surrounding localities experience hot summers and cool winters. As the area experiences prolonged periods of hot weather in the summer months, it is particularly prone to the urban heat island effect.

Urban locations contain more heat generating materials and activities than non-built-up areas such as car use, cooling systems and structures and general materials that absorb and release heat.

WHY IS THE URBAN HEAT ISLAND EFFECT IMPORTANT IN A MILDURA CONTEXT?

According to Victorian Government research the Mildura region will be particularly vulnerable to the impacts of Climate Change. Under a high emissions scenario, the region is expected to experience more days of extreme temperature. On average between 1981 and 2010, Mildura experienced 8 days per year when the temperature exceeded 40°C. By the 2050s, under a high emissions scenario, this is expected to increase to between 15 and 23 days. The increase is slightly less under a medium emissions scenario, reaching 11 to 17 days on average.

Minimum (usually overnight) temperatures are also expected to increase. For example, Mildura's daily minimum temperature exceeded 22°C on average 12 days per year between 1981 and 2010. Under a high emissions scenario, by the 2050s, these hot nights are expected to occur 23 to 37 days per year on average.

Due to the urban heat island effect these increases in average temperatures will be apparent in urban areas, meaning mitigating heat through increased tree canopy coverage will be particularly important.

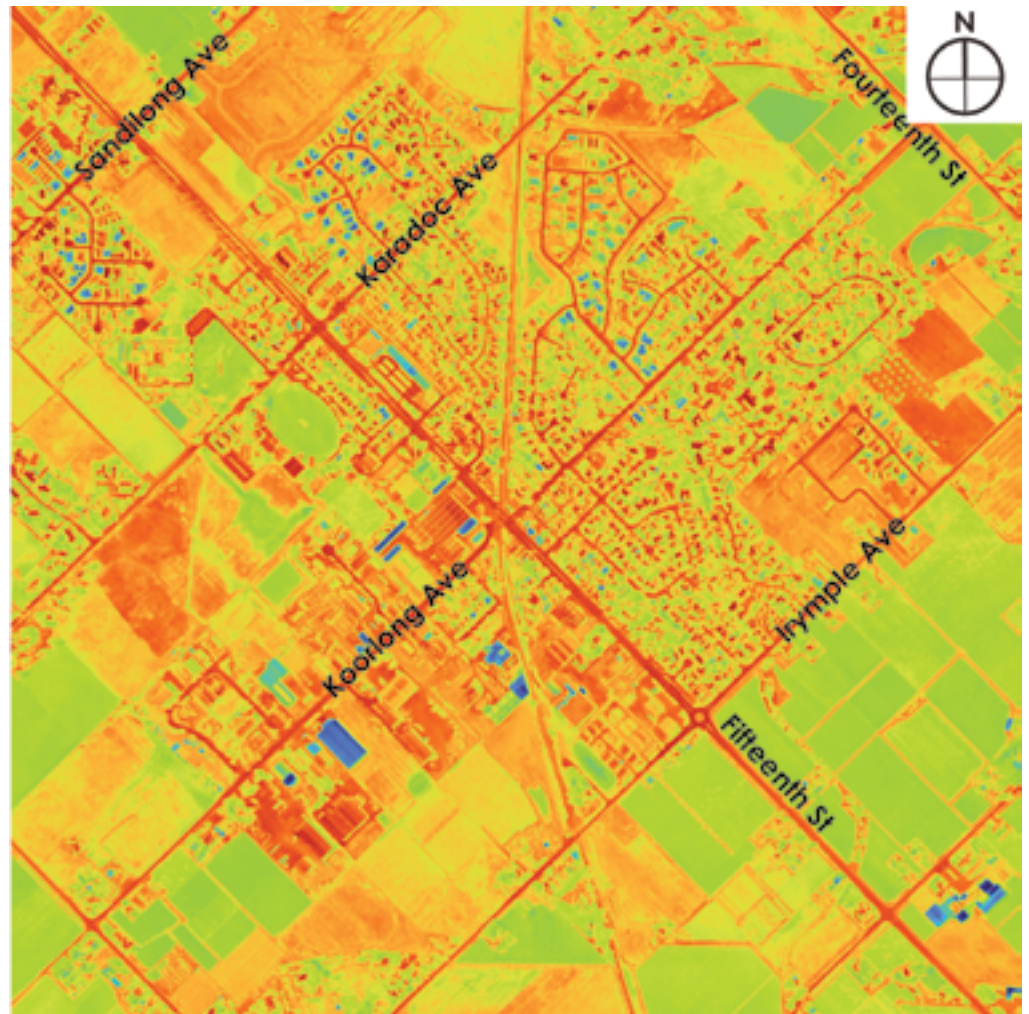
THERMAL IMAGERY

Thermal imagery captured on 2, 3 and 4 December 2022 demonstrates the urban heat island effect. Over these three days Mildura and surrounding townships experienced temperatures ranging from 30 – 36°C. Thermal imagery captured via plane shows the surface temperature across the built-up locations of the municipality (Figure 2).

This mapping shows:

- Maximum surface temperatures were recorded at 65°C, with averages of 41°C – 57°C.
- The Mildura area included hotter surface temperatures in the south-west which corresponds with newer subdivision areas.
- Parks and open spaces have lower surface temperatures.
- Most streets have elevated temperatures.
- In Mildura, there are a clusters of streets and precincts that reach extreme temperatures including built up areas of Eighth St, Ninth St, Tenth St and Eleventh St, industrial areas along Benetook St and the CBD.
- The smaller settlements of Merbein, Murrayville, Underbool and Werrimull had the most extreme surface temperatures captured.
- Water bodies, vegetated areas and irrigated farmland generally have cooler surface temperatures.

IRYMPLE



MILDURA

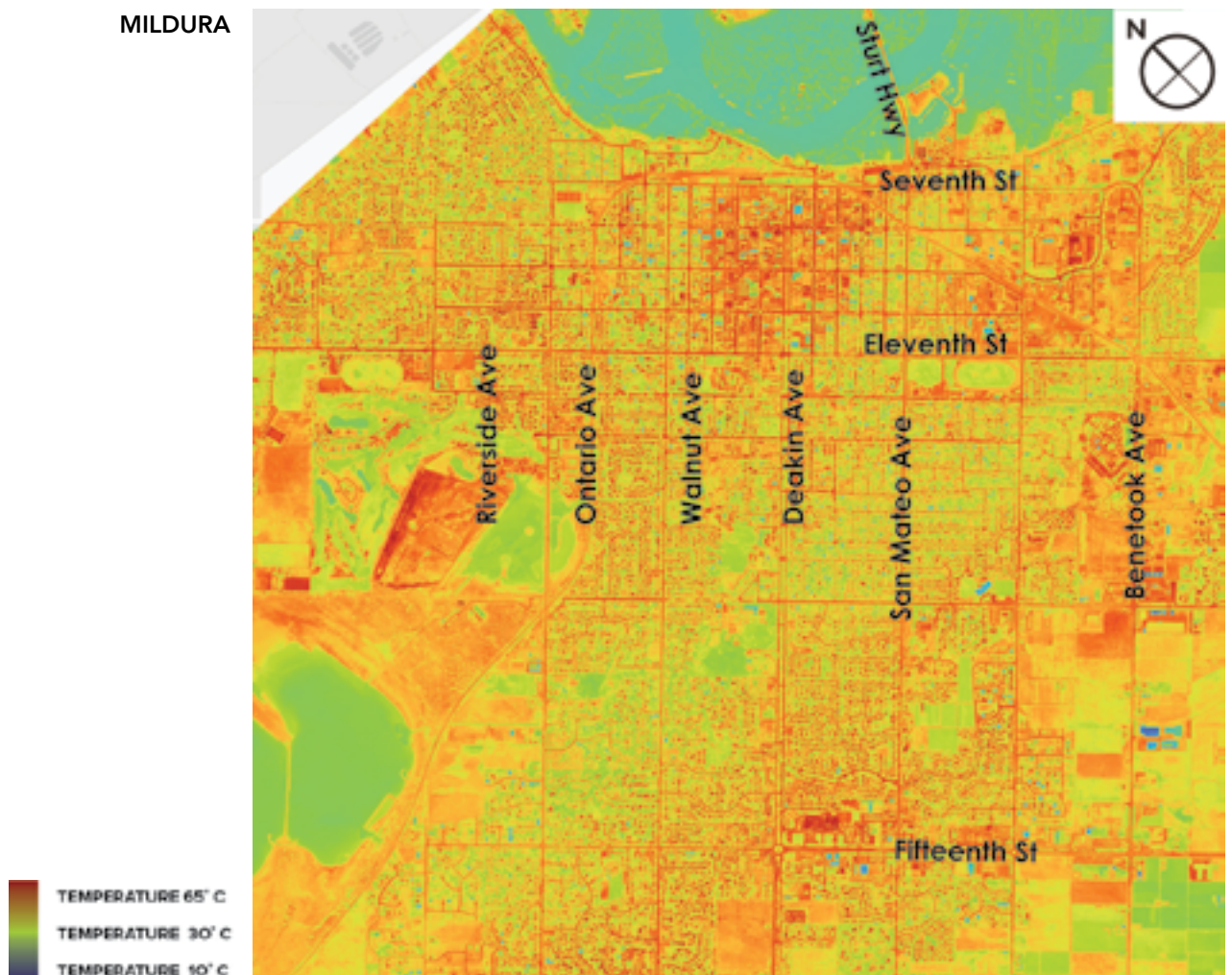
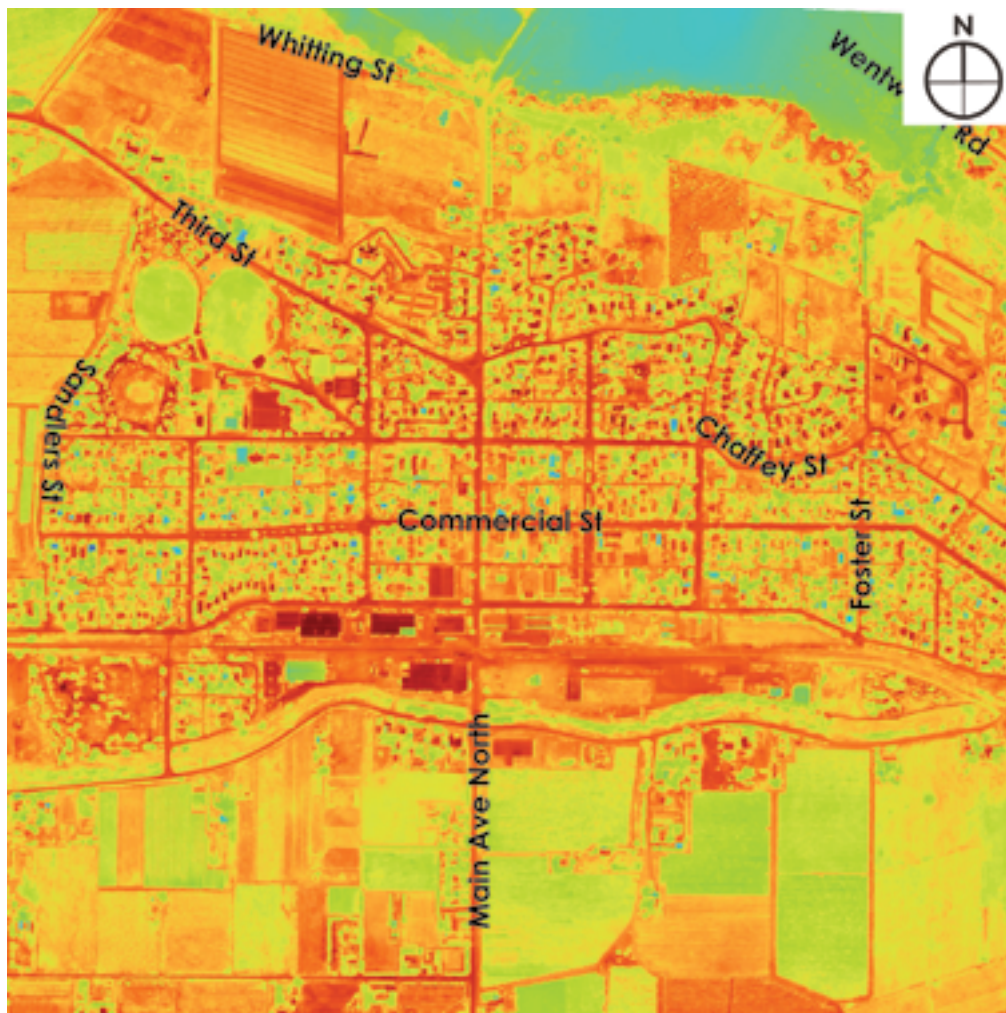
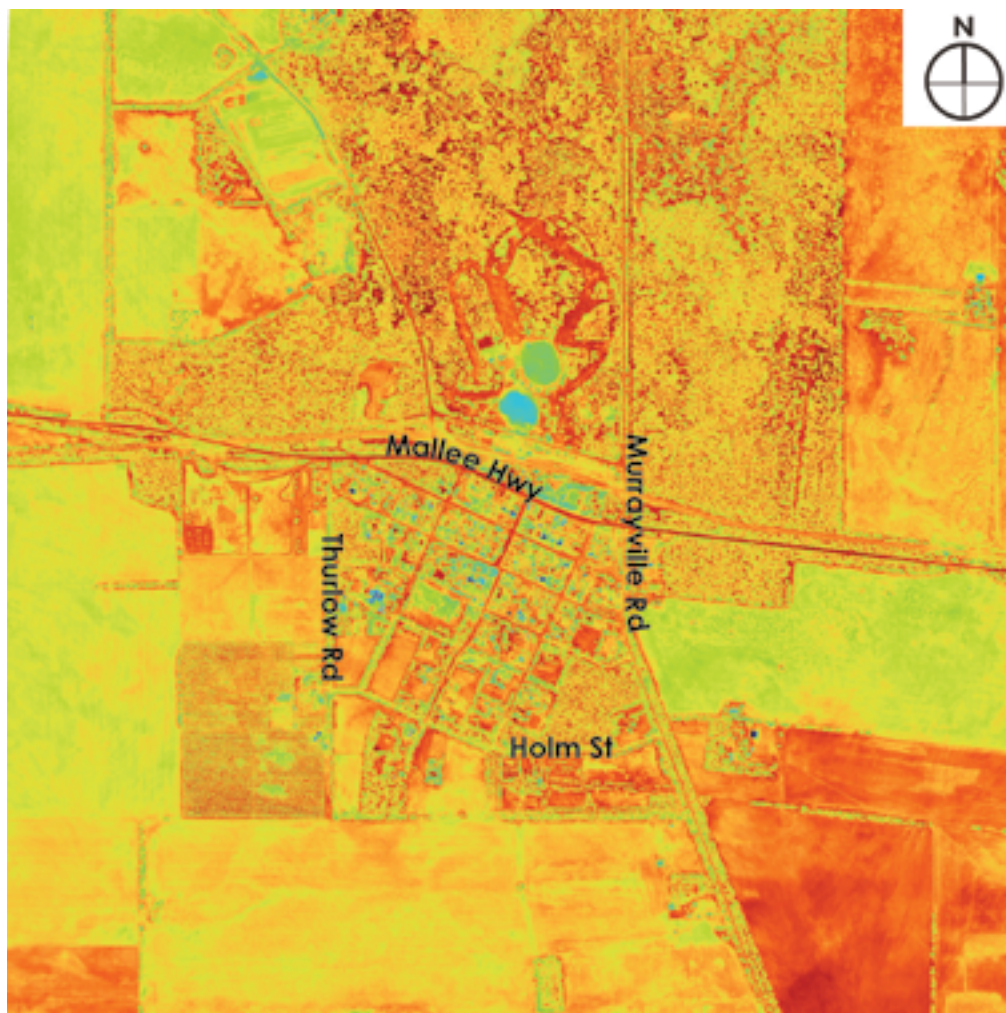


Figure 2. Thermal mapping outputs



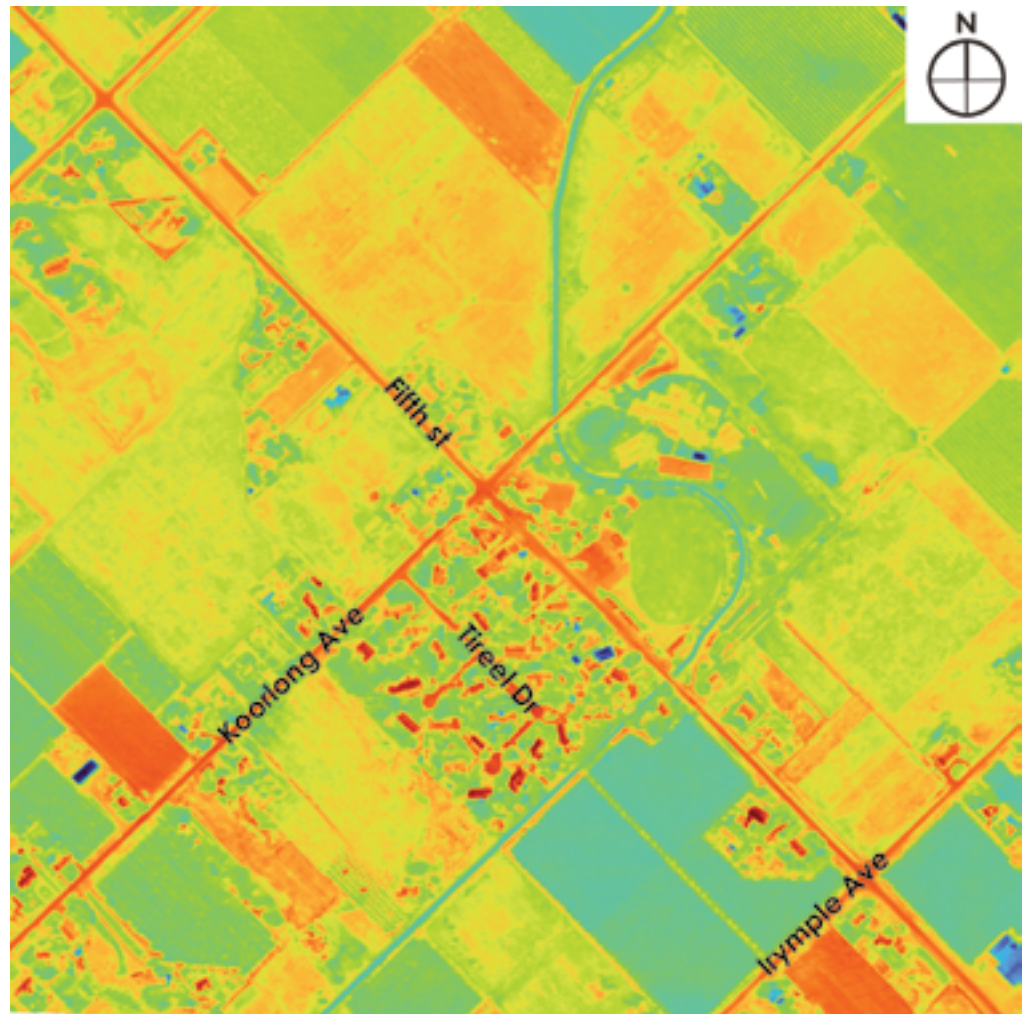
MERBEIN



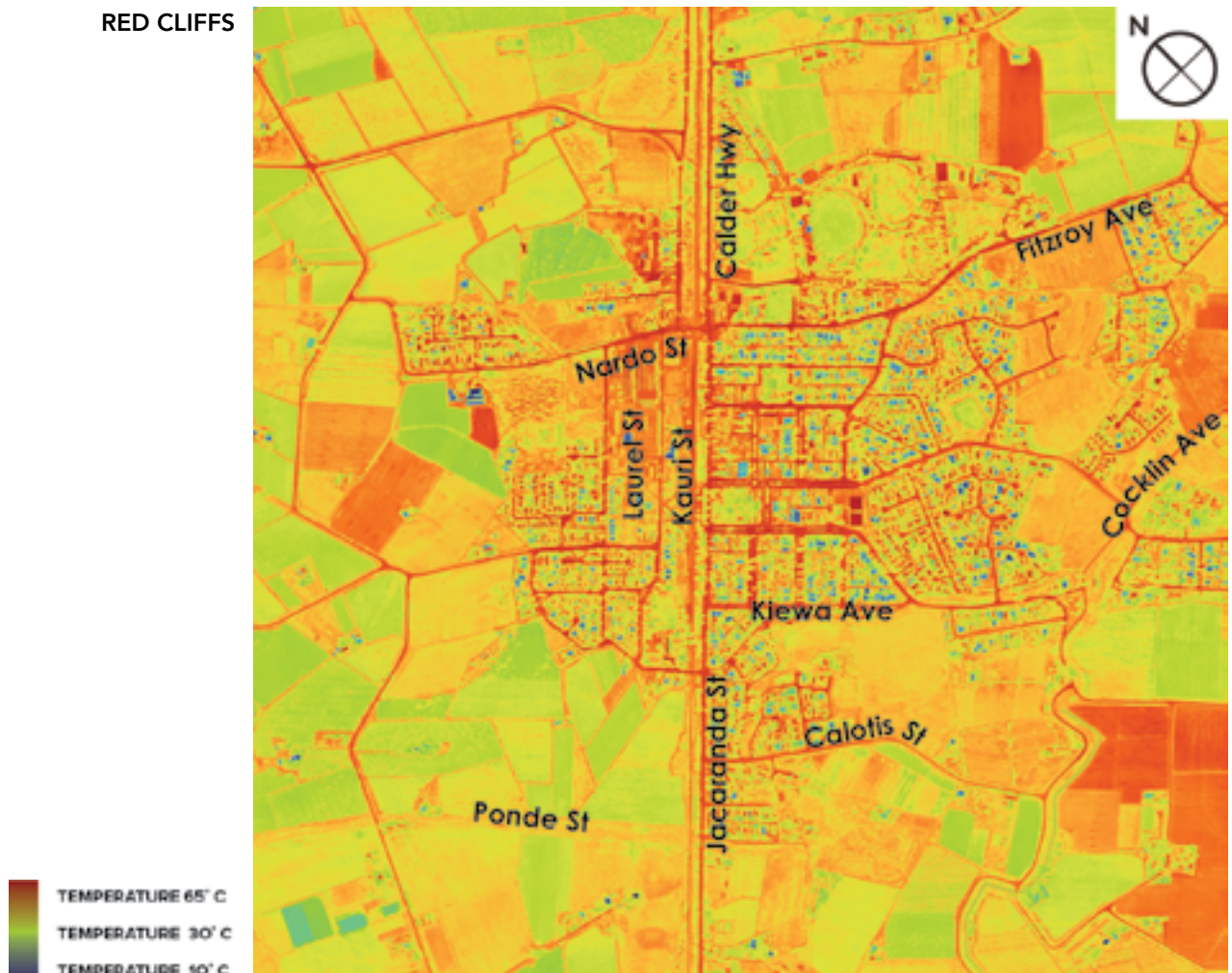
MURRAYVILLE

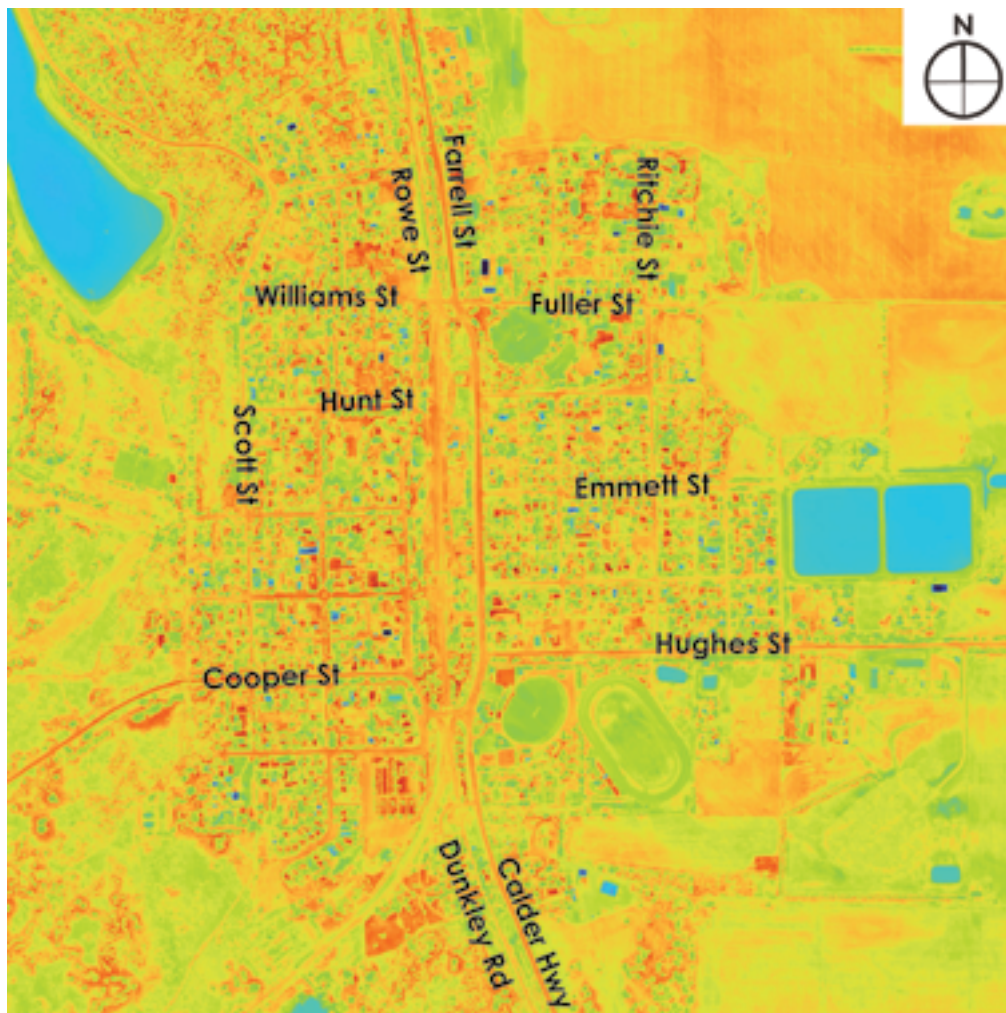


NICHOLS POINT

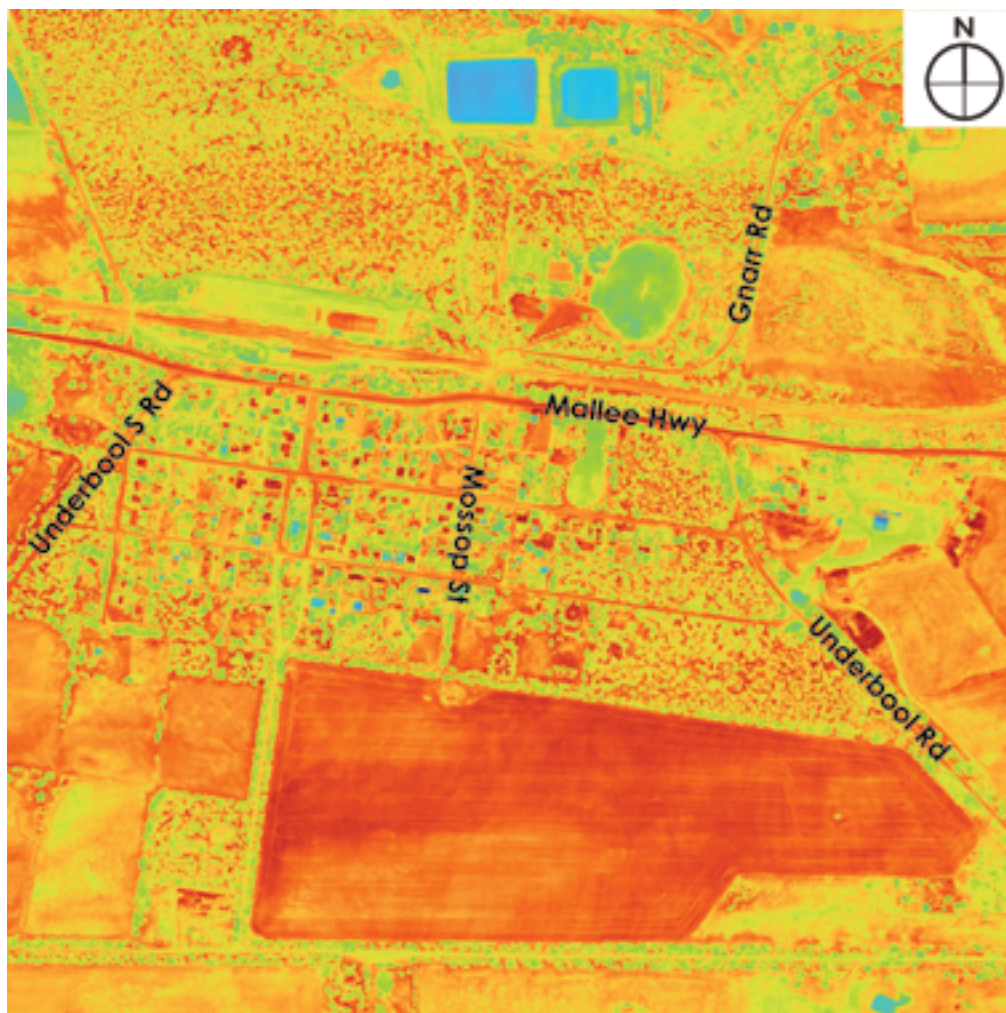


RED CLIFFS





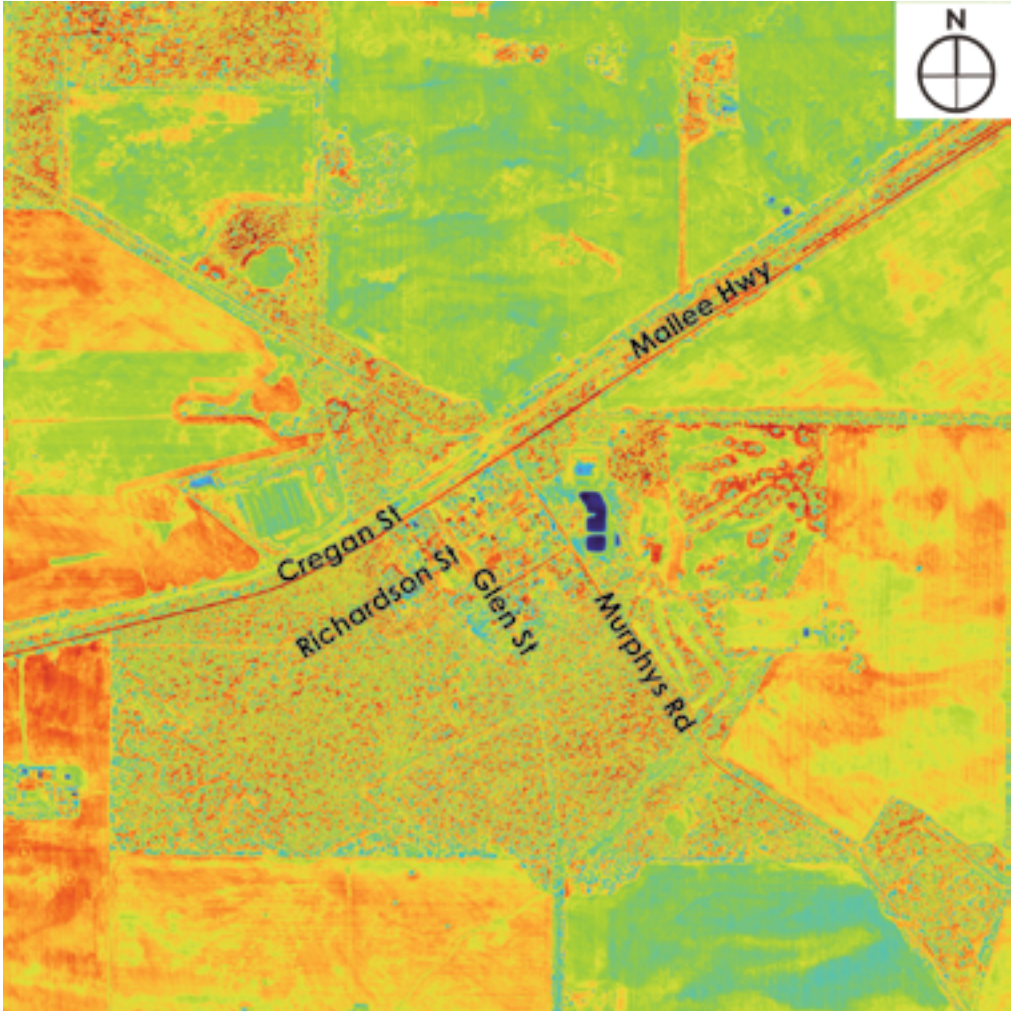
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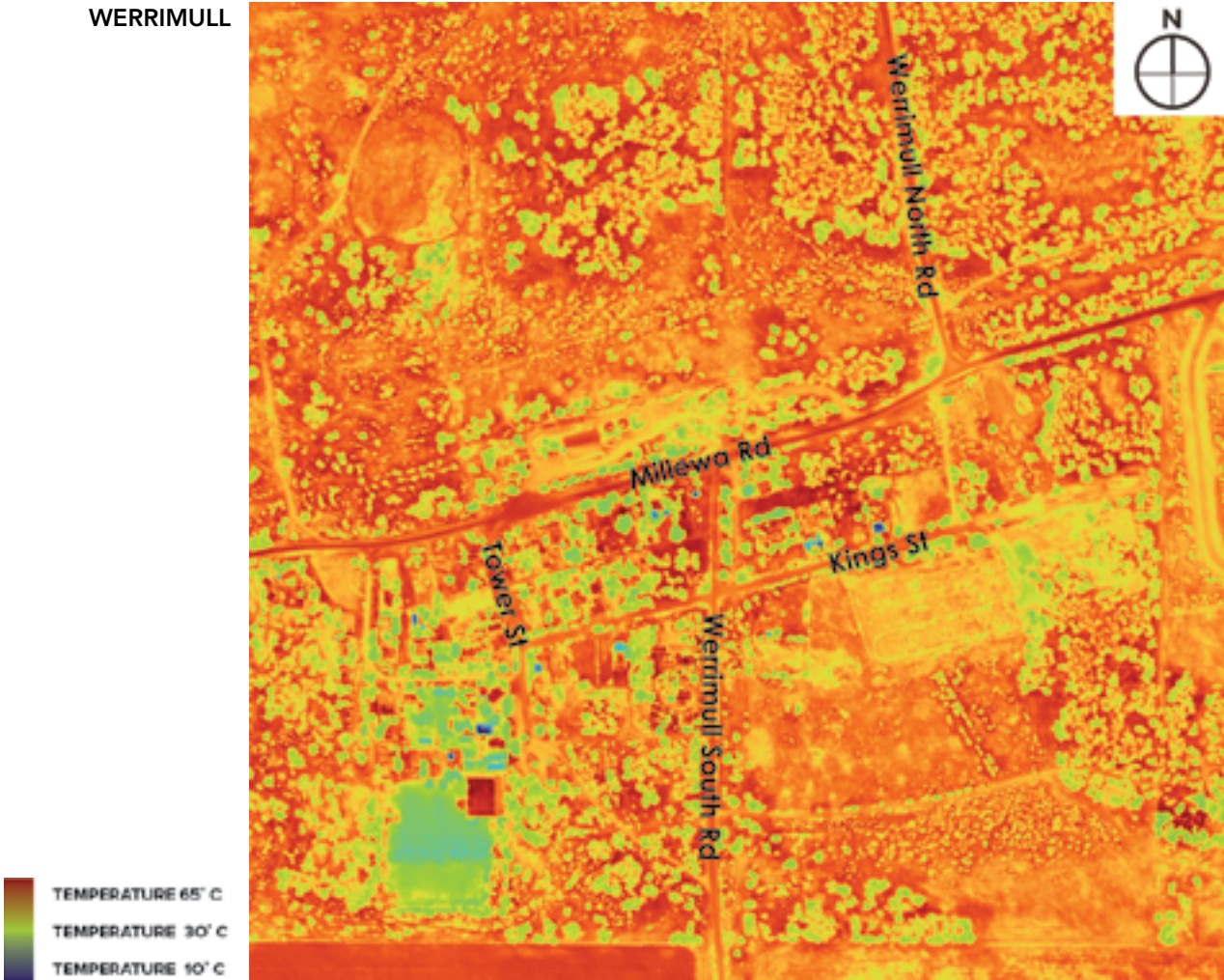
UNDERBOOL



WALPEUP



WERRIMULL



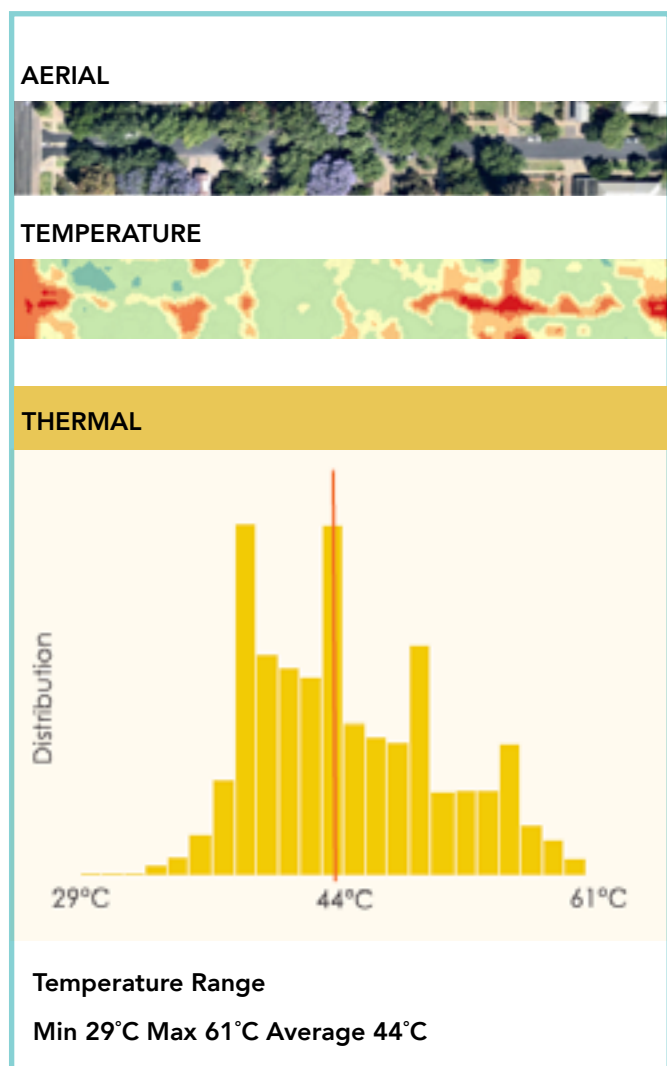
CASE STUDIES

URBAN HEAT

Tree canopy coverage increases the amount of shade, which in turn helps reduce the urban heat island effect. Two locations in Mildura have been analysed to understand the different surface temperature outcomes when a street is shaded compared with a non-shaded street. The Toorak Avenue example demonstrates good canopy coverage outcomes while the San Mateo Avenue example represents key opportunities for increased coverage.

Toorak Avenue recorded minimum surface temperature of 29°C where San Mateo Avenue recorded a minimum surface temperature of 36°C (Figure 3). These case studies demonstrate the benefit tree canopy can provide in contributing to cooler streets.

TOORAK AVENUE



SAN MATEO AVENUE

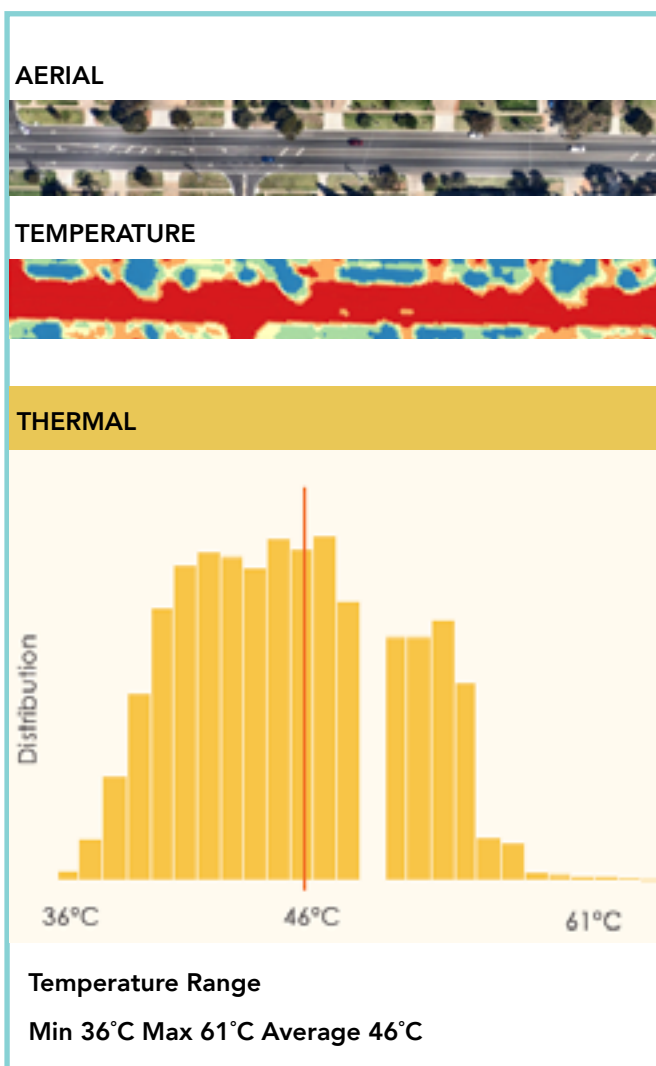


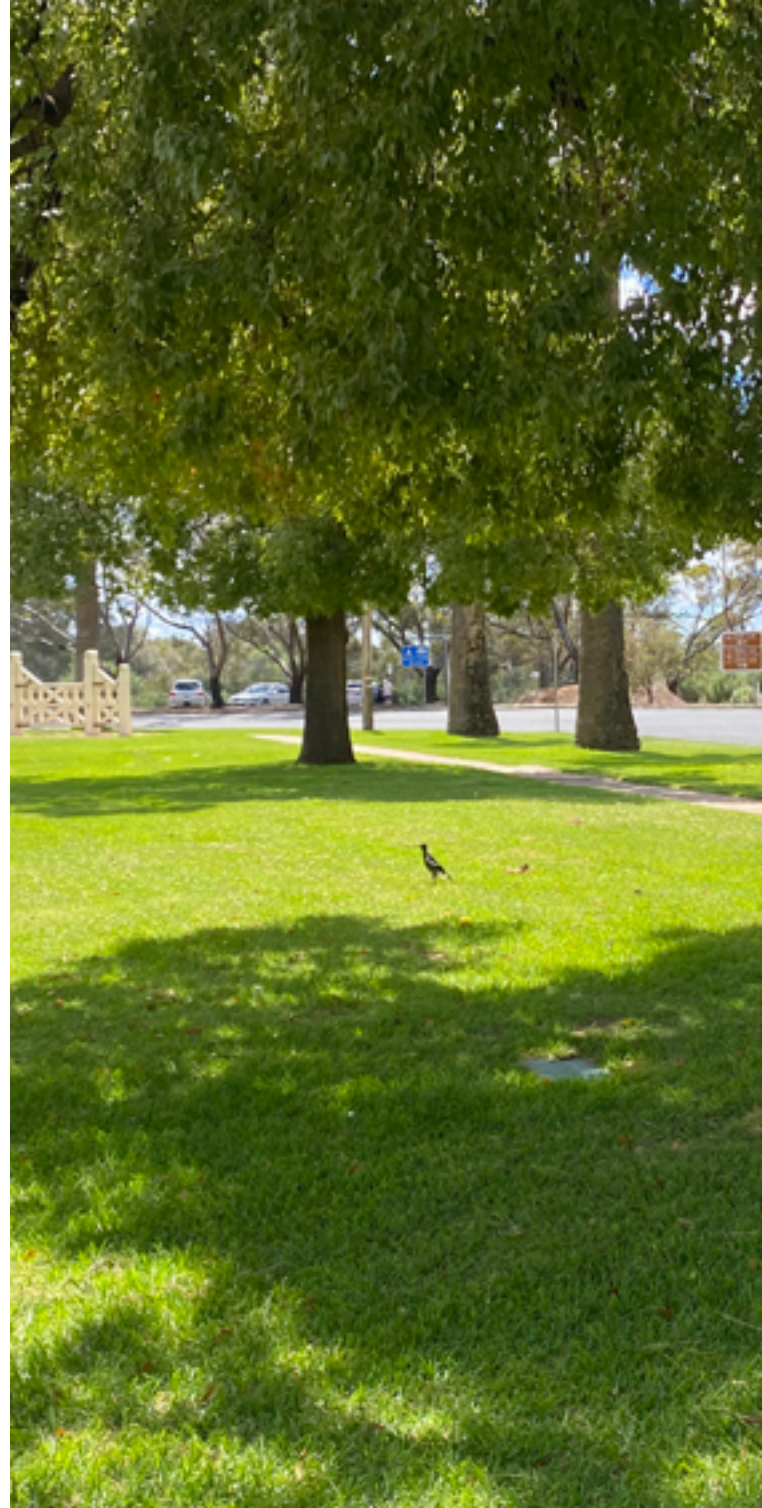
Figure 3. Case study Toorak Avenue and San Mateo Avenue



2.2 BENEFITS OF AN URBAN FOREST

An urban forest provides a broad range of environmental, social, cultural, and economic benefits. We heard from the community that they value their urban forest because:

- Trees provide shade and make streets more appealing.
- Attractive landscaped settings provide inviting places to gather and meet friends.
- Different trees in the landscape provide scenic views.
- Trees can provide a break from the heat.
- Trees protect cars and homes from the sun.
- Local wildlife like birds and insects are attracted to trees.



DID YOU KNOW?

TREES MAKE IT RAIN!

Did you know trees can make it rain? Research from Science Direct suggests that on average, 40% or more of the rain over land originates from evaporation and transpiration of water from vegetation. Trees also make rain by taking water from under the soil and releasing water vapour through their leaves into the air to create clouds. This has many benefits in a hot, dry climate like Mildura, both for agricultural production, environmental protection, and community wellbeing.



ENVIRONMENTAL BENEFITS

Reduce carbon

Trees are carbon sinks, reducing CO_2 within the atmosphere.

Stormwater runoff

Tree canopies and root systems can reduce stormwater flows and pollutants flowing into water systems.

Reduced air pollution

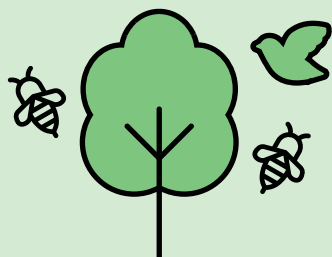
Through photosynthesis, trees remove pollutants from the air.

Habitat

Trees provide habitat for animals both above and below ground.

Flood risk mitigation

Trees play a vital role in reducing flooding by slowing down the flow of rainwater, absorbing rainwater and reducing erosion.



SOCIAL BENEFITS

Increased pedestrianism

Walking becomes more enjoyable, a preferred pastime and mode of transport.

Social cohesion

Attractive parkland and shaded walking and cycling networks facilitate impromptu or planned social gathering.

Reduced stress

Access to greening is known to reduce anxiety and stress.

Identity of place

Street trees are known to give a street or place an identity.

More appealing streetscapes

Green streets are more visually appealing and attractive.

Reduces sun exposure

More shade can significantly reduce sun-exposure and associated negative health impacts.



CULTURAL BENEFITS

Creation of local identity

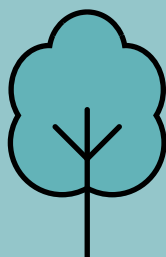
A city's landscape helps define its character. Trees and vegetation can physically define a place, and trees provide landscape amenity and integrate nature into the urban environment.

Reinforcing traditional owner's status

Culturally significant trees are a vital and tangible link to the continuous connection to place for traditional owners. They are clear evidence of traditional owners' existence on this land for thousands of years, prior to European settlement.

Culturally significant trees

Provide opportunities to interpret and connect to the landscape and are cultural markers to pass valuable cultural knowledge to subsequent generations.



ECONOMIC BENEFITS

Increased property values

Trees create amenity which is proven to increase property values by 30%.

Reduced energy costs

Shade provision can cut down on the need for artificial cooling systems by 10-15%.

Reduction in health related costs

More green spaces, encourages people to get outside and live a healthier lifestyle.

Retail / food and beverage spending

People will spend more time somewhere its cool and shaded by up to 20%.

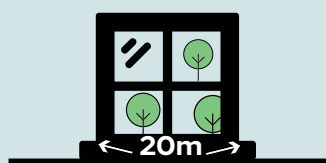


2.3 TARGETS FOR A HEALTHY URBAN FOREST

The strategies and actions included in this document are based on the understanding that a healthy urban forest should meet a series of targets to maximise the resilience, effectiveness and overall health of the tree population.

These targets are based on best practice urban forest outcomes and relate to tree distribution, canopy coverage, useful life expectancy and species diversity.

TREE DISTRIBUTION



TARGET

Ensure lots have visibility to at least 3 trees within 20 metres from their lot frontage.

Providing an equitable distribution of trees across all urban areas ensures equal access to the benefits that trees provide, including the protection from heat, biodiversity, and general amenity. In some precincts identified by the heat mapping as being deficient in tree cover, priority actions are needed.

The 3-30-300 rule has been defined by the Nature Based Solutions Institute for greener and healthier cities. The rule states that everybody should be able to see at least 3 larger-sized trees from their home, workplace, or place of study. Everybody should also live in a neighbourhood with at least 30% canopy cover. Finally, it should not take you more than 300 metres to get to the nearest high-quality public green space.

TREE CANOPY COVERAGE



TARGET

Achieve a 30% net canopy coverage.

A canopy coverage of 30% is considered an ideal target to provide shade and reduce the effects of extreme heat. In order to achieve this target the trees in both the public and private realm will need to contribute.

This Strategy focuses on the role Council can play in improving canopy coverage outcomes in the public realm. As a public asset this land is managed by Council, and as such, the proportion of total vegetation and total tree canopy can be more easily influenced than it can on private land.

USEFUL LIFE EXPECTANCY (ULE)



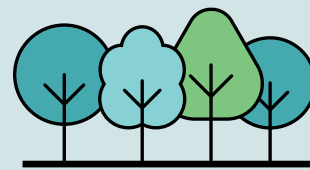
TARGET

Ensure no more than 10% of the tree population has a ULE under 10 years.

Useful Life Expectancy (ULE) is the estimate of how long a tree will be effective in the urban landscape and considers the full lifecycle of the tree. It takes into consideration tree health, structure, and risk. Ensuring the general tree population has a high ULE is a way to ensure that urban greening benefits will be lasting.

Understanding the tree populations ULE indicates when components of the tree population will eventually need to be replaced. The ongoing care and maintenance of trees should aim to achieve the best possible ULE so that trees can grow into maturity and provide maximum community benefits.

SPECIES DIVERSITY



TARGET

Achieve a 10/20/30 mix, a tree population should not be comprised by more than 10% of any one species, 20% of any one genus and 30% of any one family.

A best practice standard for a healthy tree population is to aim for the 10/20/30 rule in species diversity. That is, a tree population should not be comprised by more than 10% of any one species, 20% of any one genus and 30% of any one family.

This target helps to strengthen local biodiversity by ensuring local wildlife have access to habitat. Tree diversity also shows a tree population is resilient to risks such as disease.

It's recognised that there are many considerations that go into selecting a species that responds to the local context. Being cognisant of this target, while considering the local environment and the specifics of the tree planting site will guide species selection into the future.