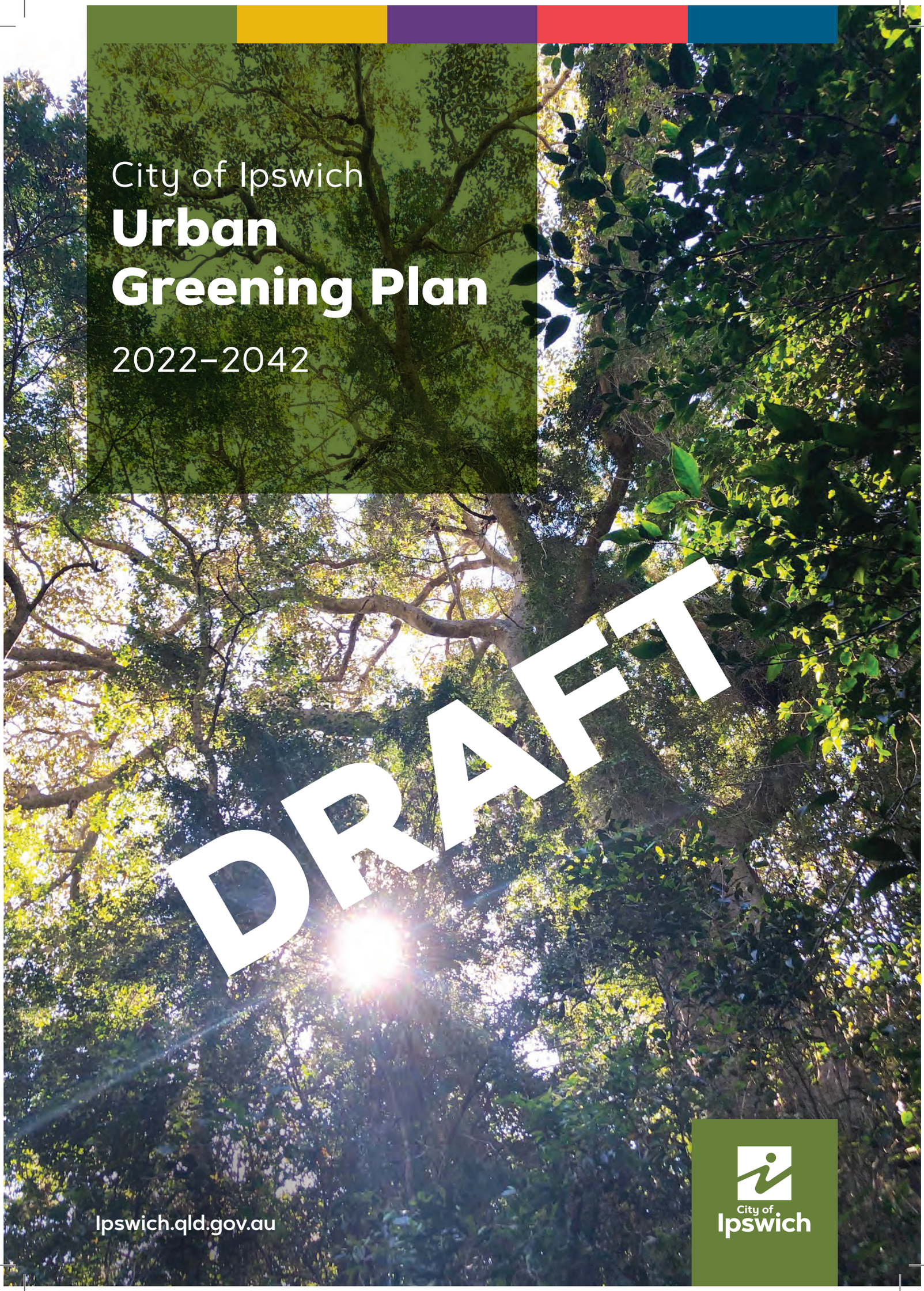


City of Ipswich

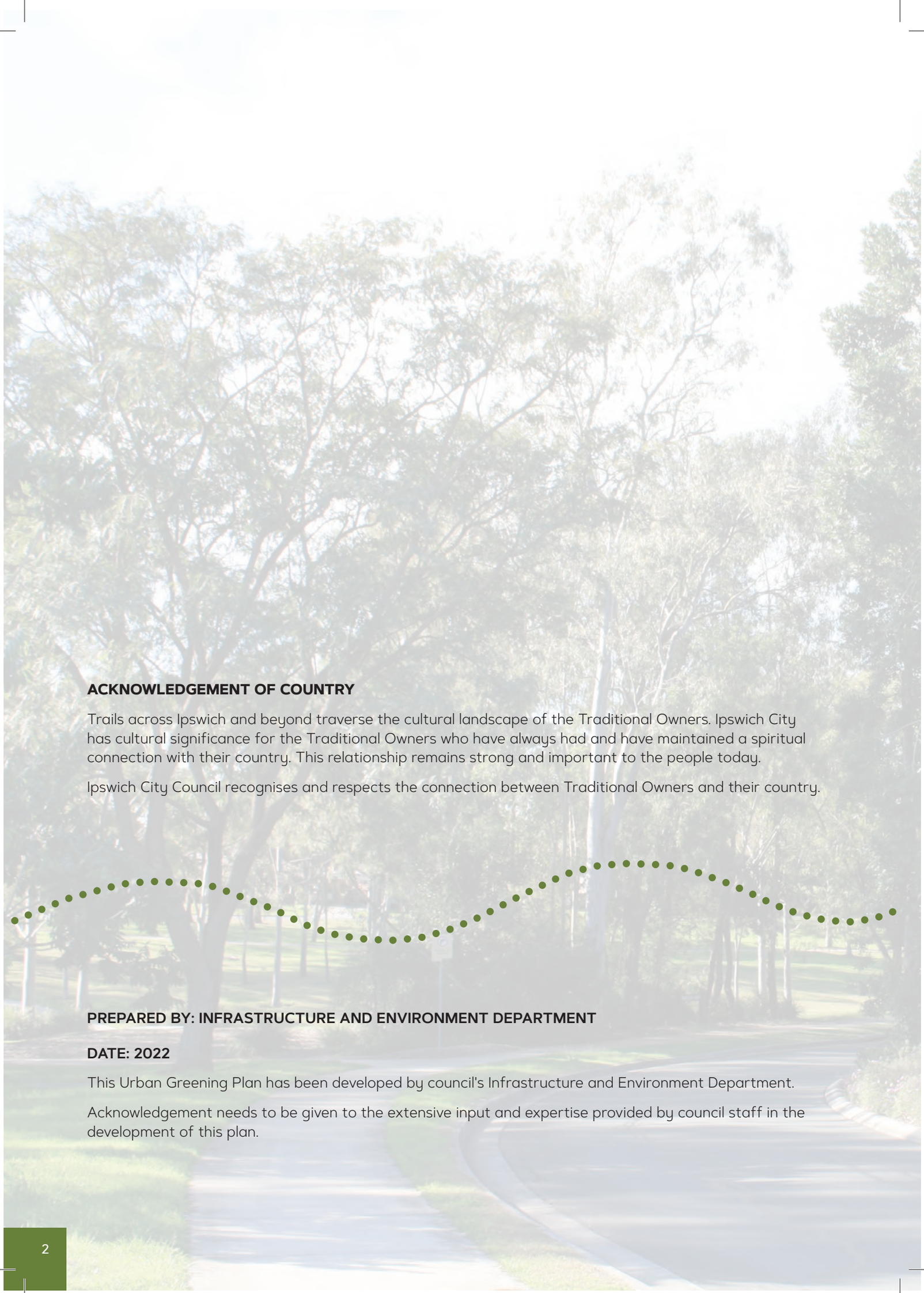
# Urban Greening Plan

2022–2042

DRAFT

Ipswich.qld.gov.au

City of Ipswich



## ACKNOWLEDGEMENT OF COUNTRY

Trails across Ipswich and beyond traverse the cultural landscape of the Traditional Owners. Ipswich City has cultural significance for the Traditional Owners who have always had and have maintained a spiritual connection with their country. This relationship remains strong and important to the people today.

Ipswich City Council recognises and respects the connection between Traditional Owners and their country.

**PREPARED BY: INFRASTRUCTURE AND ENVIRONMENT DEPARTMENT**

**DATE: 2022**

This Urban Greening Plan has been developed by council's Infrastructure and Environment Department.

Acknowledgement needs to be given to the extensive input and expertise provided by council staff in the development of this plan.

# TABLE OF CONTENTS


**1. EXECUTIVE SUMMARY ..... 4**

**2. INTRODUCTION ..... 5**
- 2.1 Vision ..... 5
- 2.2 Guiding Principles ..... 5
- 2.3 Opportunities ..... 6
- 2.4 Challenges ..... 7
- 2.5 Four Focus Areas ..... 7
- 2.6 How to Use This Document ..... 8

**3. DRIVERS AND BENEFITS OF URBAN GREENING ..... 9**
- 3.1 Document Hierarchy ..... 10
- 3.2 iFuture and Strategies ..... 11
- 3.3 Urban Biodiversity ..... 14
- 3.4 Greening as an Asset and Climate Change ..... 15
- 3.5 Urban Development ..... 16
- 3.6 Benefits of Urban Greening ..... 18

**4. SCOPE ..... 21**
- 4.1 Strategic Priorities ..... 23

**5. FOCUS AREAS, TARGETS AND ACTIONS ..... 22**
- 5.1 Focus Areas and Targets and Actions ..... 24
- 5.2 Monitoring, Evaluation and Reporting ..... 24

**6. CONTEXT AND SITE ANALYSIS ..... 35**
- 6.1 Ipswich Local Government Area ..... 37
- 6.2 Spatial Layers ..... 38
- 6.3 Ipswich Urban Footprint with Canopy Cover ..... 39
- 6.4 Waterways and Wetlands ..... 40
- 6.5 Urban Corridors ..... 41
- 6.6 Parks and Open Space ..... 42

**7. RACEVIEW CASE STUDY AND NEXT STEPS ..... 44**
- 7.1 Vegetation Changes Over Time ..... 45
- 7.2 Raceview – Land Use ..... 48
- 7.3 Raceview including Canopy Cover, Open Space, Waterways and Building Footprint ..... 49
- 7.4 Indicative Greening Investigation Areas ..... 50
- 7.5 Indicative Investigation of 400m Radius from Winston Glades Medical Centre ..... 51
- 7.6 Next Steps ..... 52

**8. GLOSSARY ..... 53**

**9. REFERENCE ..... 55**

# 1. EXECUTIVE SUMMARY

Urban greening is an important part of making a resilient and liveable city which protects vegetation and wildlife. The urban forest, urban corridors, and greening within public and private realms make up what we refer to as 'urban greening'. The intention of this Urban Greening Plan (the Plan) is to set an informed and evidence-based direction in achieving increased vegetation cover in priority areas within the urban footprint of Ipswich to best achieve the multiple benefits it can provide.

The outcome of the Plan is to provide a road map to improve urban conservation and urban biodiversity while increasing greening benefits. Urban greening benefits include mitigation of the impacts and effects of climate change, reduction of urban heat island effect, provision of shade and cooling, carbon sequestration, absorption of air pollutants, filtration of stormwater, provision of mental and physical health benefits, provision of habitat for urban flora and fauna, and increased aesthetic amenity and character values.

This Plan aims to strategically increase the quality and quantity of beneficial vegetation on a variety of land types within the urban footprint. This includes assessing and improving current conditions (canopy cover and connectivity of existing green space) as well as guiding future greening requirements through the implementation of greening projects which will be planned and delivered in collaboration with key stakeholders.

The key drivers for the plan include iFuture 2021–2026, specifically Theme 3 Natural and Sustainable, as well as various Ipswich City Council (ICC) policies and strategies.

The four focus areas of this Plan are:

- **Focus Area 1** – Green the urban footprint of Ipswich
- **Focus Area 2** – Manage the interface between greening and infrastructure
- **Focus Area 3** – Enhance biodiversity and waterway health
- **Focus Area 4** – Strengthen community education, awareness, and stewardship of urban greening.

Targets and key actions in relation to these focus areas have been developed through key stakeholder workshops and will be implemented through council programs.

The outcomes of the Plan will be achieved through validation of current spatial canopy cover information in conjunction with context and site analysis to identify and prioritise available sites to increase vegetation cover. In order to develop this, Ipswich City Council will:

**Review Current Conditions**

- Analyse canopy cover which has been derived from 2019 LiDAR information
- Allocate % canopy cover per suburb to identify priority suburbs with low % canopy cover
- Identify Australian Bureau of Statistics information on the location of socially vulnerable groups
- Identify council programs that could include greening into immediate and future works.

**Fill Knowledge Gaps**

- Undertake thermal heat mapping within the urban footprint to provide evidence based information on the hottest areas in the city. Overlay heat mapping with canopy cover, biodiversity mapping and socially vulnerable areas for priority greening projects
- Identify how greening can be incorporated into capital and operational works.

**Strategically Plan for Future Climates**

- Develop targeted actions that are driven by ICC policies and strategies
- Continue communication and planning with key stakeholders
- Plan trial planting programs incorporating species adapted to future climate predictions.

**Develop Implementation Plans, Measure and Reporting Mechanisms**

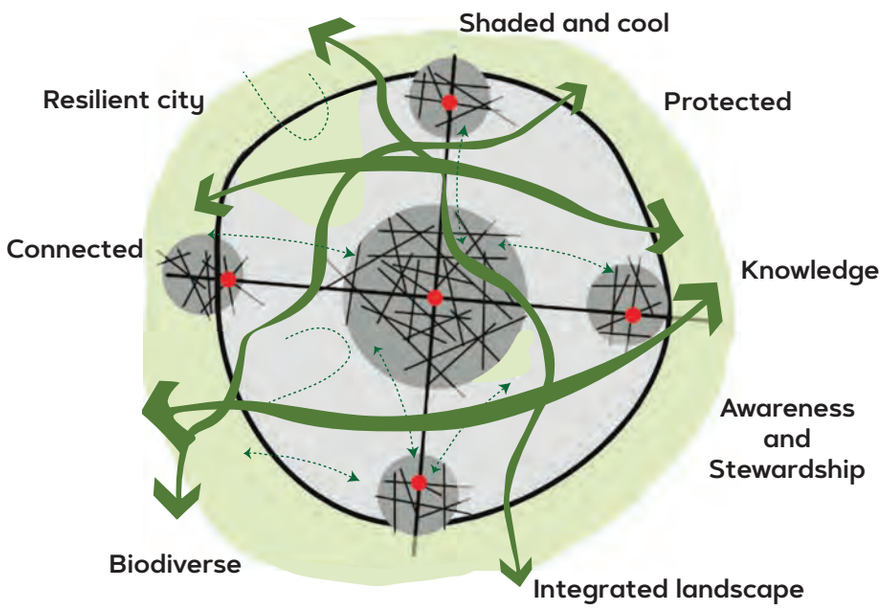
- Coordinate implementation plans with capital expenditure programs for immediate and future greening opportunities
- Measure greening projects through existing reporting mechanisms. This includes trees taken through the Free Tree Program, Council Nursery and Urban Greening Program.

# 2. INTRODUCTION

iFuture 2021–2026, Theme 3 Natural and Sustainable, outlines the development and implementation of an Urban Greening Plan to protect vegetation and wildlife living alongside our urban environment. The key drivers of the Urban Greening Plan include the city's current and emerging challenges along with the overarching goals set by the iFuture corporate plan, policies and strategies. These documents reflect the community's direction for the city in relation to urban greening.

## 2.1 Vision

Our vision is to have a connected, resilient, and valued greening of Ipswich that is protected, enhanced, and managed to provide benefits to the community and environment.




## 2.2 Guiding Principles

- **Promote greening** with species indigenous to the region and that contribute positively to the city's natural environment
- **Protect, maintain and enhance** existing vegetation
- **Maximise ecosystem services**, waterway health and biodiversity connectivity through implementation of greening plans, including the Habitat Garden program
- **Incorporate greening requirements** for climate adaptation and urban heat mitigation measures into council planning scheme policies, design guidelines, development approval process and capital expenditure programs
- **Promote active transport by increasing shade to parks and pedestrian walkways (shading of pathways program)** to encourage an active Ipswich where health benefits are realised and a reduction in carbon emissions is evident
- **Undertake evidence-based decision making** in relation to development of capital and operational works planting programs
- **Strengthen community knowledge**, awareness and stewardship of urban greening.

## 2.3 Opportunities

In addition to protection of vegetation and wildlife, there is an opportunity to strategically mitigate climate change and the urban heat island effect, and achieve a diverse range of benefits that encompass biophysical, economic, and social attributes. An evidence-based approach to greening identification and prioritisation will deliver multi-benefit outcomes for the environment and our community. This approach will use data such as canopy and biodiversity mapping, heat mapping, land use and land type, and Australian Bureau of Statistics data on socially vulnerable groups, etc. to identify priority areas. The identified opportunities have been divided into the three areas below:

**Planning Opportunities:**

- Incorporate greening requirements for urban heat mitigation measures into council planning scheme policies, design guidelines, development approval process, and capital and operational expenditure programs where suitable
- Undertake evidence-based decision making in relation to development of capital and operational works planting programs across the city
- Connect green corridors with public and private realms to develop a green city
- Develop and implement actions that increase habitat connectivity within the urban footprint
- Promote active transport through shading of pathways and bikeways, incorporate cool environments for resting. Align with iGO Active Transport Action Plan program
- Provide shade-ways in key streets which link residents to medical, educational, commercial areas as well as parks and open space
- Create shaded landscape areas that assist with improving mental and physical wellbeing
- Research and promote the installation of green walls and roofs across the city to reduce the urban heat island effect.

**Delivery Opportunities:**

- Maximise ecosystem services, waterway health and biodiversity connectivity through implementation of greening projects delivered via programs such as Habitat Gardens, Habitat Connections and Stormwater Quality Offsets Program
- Increase shade to parks and pedestrian walkways to encourage an active Ipswich where health benefits are realised and a reduction in carbon emissions is evident
- Increase carbon sequestration within vegetation and soil
- Implement water sensitive urban design solutions such as water smart street trees which use stormwater run-off for irrigation
- Manage the interface between trees and infrastructure through coordinated planning between departments
- Encourage developers and private land owners to value trees and green space as an asset
- Plant the right species in the right place, specified by suitably qualified and experienced advisor.

**Communication Opportunities:**

- Promote greening with species which are indigenous to the region and contribute positively to the city's environment
- Continue internal stakeholder collaboration in order to raise awareness and educate the importance and benefits of including greening as a design requirement in the project planning phase for long term benefits and cost-effective inclusion of greening
- Develop and implement a Community Engagement Plan for urban greening
- Develop a Greening Ipswich interactive map where the community can participate.

## 2.4 Challenges

- Successfully manage and maintain interface with infrastructure – sub surface utilities and vegetation
- Planting the right tree species in the right place. Reduction of removing and replacing incorrectly planted trees (costs can be redirected into evidence-based, planned greening)
- Availability of sufficient stormwater for irrigation purposes
- Climate change adaptation in a timely and cost effective way
- Reduction of urban heat island effect in a timely and cost effective way
- Urban intensification – further clearing of vegetation increase in impervious surfaces and accurately measuring and reporting on urban heat island effect
- Providing and maintaining soil volume and soil moisture availability for healthy tree growth within constricted locations
- Preventing vandalism to vegetation e.g. cutting trees to open up views; removing or damaging newly planted trees and associated planting.

## 2.5 Focus Areas

Four focus areas have been developed to deliver the guiding principles and opportunities and attempt to turn the challenges into opportunities. These areas have been investigated further to provide achievable and measurable targets and actions that will realise the Plan's vision.

- **Focus Area 1** – Green the urban footprint of Ipswich
- **Focus Area 2** – Manage the interface between greening and infrastructure
- **Focus Area 3** – Enhance biodiversity and waterway health
- **Focus Area 4** – Strengthen community education, awareness and stewardship of urban greening.

*Artist's impression of greened walkway for active (and inclusive) transport.*

## 2.6 How to Use this Document

The overarching purpose of this Plan is to set an informed direction in achieving increased vegetation cover, contributing to a resilient and liveable city, which protects vegetation and wildlife within the urban footprint of Ipswich. Increasing greening will work towards the mitigation of climate change and the urban heat island effect, improve shaded cycle and pedestrian ways, provide comfortable outdoor spaces for active travel, recreation, and improve mental and physical health. Additionally, increasing greening will enhance habitats and stengthen connectivity of urban corridors for fauna movement. The following sections illustrate the background information that underpins the Plan and associated targets and actions. The Plan has been organised into four sections.

### DRIVERS AND BENEFITS OF URBAN GREENING

This section investigates the drivers for urban greening, such as state and local government policies and strategies that will inform the direction of the Plan. Additional drivers include enhancing biodiversity values, impacts of urban development, and greening as an asset. This section also outlines the benefits of greening which include climate change adaptation, reduction of heat island effect, storm water reuse, habitat connectivity and provision of health and well being opportunities.

### SCOPE, FOCUS AREAS, TARGETS AND ACTIONS

This section describes the scope of the Plan which is contained within the urban footprint of Ipswich. The Guiding Principles, Opportunities, Challenges and Strategic Priorities inform the development of four Focus Areas. From the Focus Areas, targets have been developed to be measurable and achievable through actions, which will realise the Plan's vision.

### CONTEXT AND SITE ANALYSIS

Context and site analysis outlines the approach that will be undertaken to investigate and quantify current greening levels within each suburb of the urban footprint. Additionally, this section describes the land use zones and movement network that will be investigated along with developed spatial layers. Furthermore, four greening categories have been identified and will be investigated in each suburb at a granular level. This is to identify and prioritise sites for greening within 400m walkable area from amenities.

### RACEVIEW CASE STUDY AND NEXT STEPS

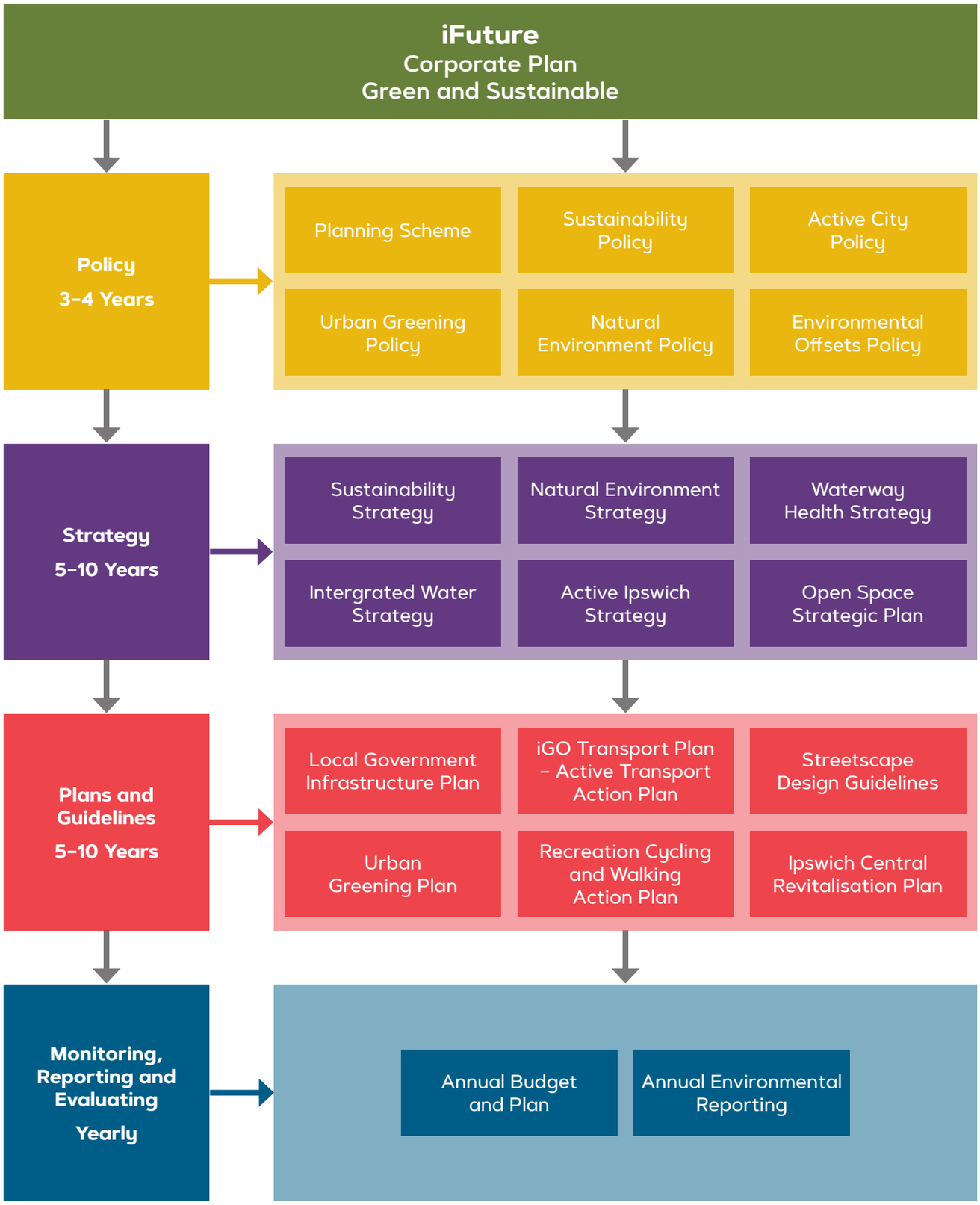
This looks at the suburb of Raceview as a case study for future investigation and evidence based planning of greening projects in other suburbs. It looks at the history of vegetation cover within a section of Raceview, canopy cover, land use and indicative 400m walkability areas to be investigated further. This section gives an example of current % canopy cover in streets within a 400m area of a medical centre, to highlight the need for greening and associated benefits to provide a comfortable environment for active transport etc.

# DRIVERS AND BENEFITS OF URBAN GREENING

*Image: New trees planted in Booval as part of the Urban Greening Program, 2021–2022. The trees will provide habitat value, shade, sequester carbon, improve visual amenity and increase property values.*

# 3. DRIVERS AND BENFITS OF URBAN GREENING

## 3.1 Document Hierachy



## 3.2 Strategic Context

The key drivers for the development of the Urban Greening Plan include council's current and emerging challenges, along with the overarching goals identified by our community.

The following section outlines the information taken from various plans and strategies that contribute to the development of the Plan. It is intended that the Plan is a tool that will be used to realise strategic actions from drivers such as:

**iFuture Corporate Plan 2021–2026**

*We are a city of centres, connected by a safe, reliable and sustainable transport system and a network of green spaces that connect us to the land where we can enjoy sport, creative pursuits, active recreation or relaxing time with our families and loved ones.* (iFuture Corporate Plan, p.3).

iFuture outlines a road map to a healthy, liveable and sustainable Ipswich. Council hopes to achieve a city that delivers a clean and green environment for the community.

**Planning Scheme**

Ipswich City Council's Planning Scheme states tree species and planting requirements are to ensure the urban forest is healthy, diverse and provides shade, habitat, visual amenity, makes use of stormwater run-off and sequesters carbon.

**Urban Greening Policy (current Urban Forest Policy)**

The purpose of the Urban Greening Policy is to strengthen council's commitment, approach and strategic direction for the protection, enhancement, management, maintenance and promotion of greening on public land within the urban footprint of Ipswich.

It also provides a framework for decision-making, documentation and standardised processes to ensure consistency of the enhancement, management and maintenance of trees on public land within the urban footprint of Ipswich.

**Sustainability Policy**

The purpose of the policy is to strengthen council's commitment to corporate sustainability by providing a set of guiding principles for the organisation to conserve and protect the natural environment; promote long term economic viability; and provide social wellbeing outcomes.

**Natural Environment Policy**

The purpose of the policy is to strengthen council's commitment to conserve, protect, enhance and restore the natural environment and its values, through the seven focus areas and associated principles.

- Biodiversity and Threatened Species Recovery
- Wetlands and Waterways Improvement
- Urban Biodiversity Enhancement
- Natural Area Restoration and Protection
- Experiencing Nature
- Community Awareness and Support
- Governance, Measuring and Reporting

**Environmental Offsets Policy**

This policy guides Council's assessment and decision making in relation to the use of environmental offsets.

**Active City Policy**

This policy provides a strategic framework for all sport, recreation, physical activity, active travel and outdoor/nature-based recreation undertakings conducted by Ipswich City Council.

**Sustainability Strategy**

The Sustainability Strategy and it's implementation will balance the protection of the environment and the pursuit of prosperity to ensure quality of life for the people of Ipswich from generation to generation.

The strategy includes information on Climate adaptation – Building our resilience to a changing climate will ensure we're able to continue to live comfortably and safely, and the impact to the environment is limited. The Sustainability Strategy contains Focus Area 2 Urban Heat and Urban Greening and associated implementation plans.

**Natural Environment Strategy (current Nature Conservation Strategy)**

The intent is to provide direction for Ipswich City Council to create a resilient natural environment and lessen the impact of processes such as climate change and increased population pressures. The Natural Environment Strategy deals largely with the terrestrial environment, with conservation activities within riparian and aquatic environments being directed through council's Waterway Health Strategy.

**Waterway Health Strategy**

The Waterway Health Strategy is council's overarching plan to connect the internal and external elements of waterway health management and provides a clear, coordinated framework for future improvement.

**Integrated Water Strategy**

Integrated water management seeks to cost effectively improve water management in a way that meets community expectations as well as maximising social and environmental benefits. It is about recognising all of the elements of the water cycle and considering the interactions between them when decisions are made.

**Active Ipswich Strategy**

The Active Ipswich Strategy and it's implementation plan aims to increase access and opportunity for participation in sport, recreation, physical activity and nature based recreation. The Active Ipswich Strategy includes the development of an urban design framework to guide our place making and liveability outcomes and that complements our new planning scheme, strategies, policies and plans. The framework will include urban greening.

**Local Government Infrastructure Plan**

The Local Government Infrastructure Plan (LGIP) is an opportunity to review and re-develop the parks desired standards of service and remove/add/change the service standards, embellishment and infrastructure in public parks. This includes the opportunity to re-think quantity, type and location of canopy provision. LGIP will include financial modelling. This could provide a pathway to introduce greening priorities into the Open Space Strategic Plan.

**iGO Transport Plan – Active Transport Action Plan**

In order to meet the growing travel demands of Ipswich and achieve a better quality of life for the community, council recognise that greater emphasis must be given to promoting and realising the opportunities and benefits associated with more sustainable forms of travel such as active transport (e.g. walking and cycling).

As a result, council has developed an Active Transport Action Plan (ATAP). This is a key action of iGO, the City of Ipswich Transport Plan, to guide the planning, delivery and promotion of facilities and programs to encourage more people to walk and cycle for transport purposes in Ipswich. One of the objectives of the ATAP is to make active transport comfortable, enjoyable and attractive for the people of Ipswich. Shade, through the provision of non-deciduous trees, will achieve this objective.

**Recreational Cycling and Walking Action Plan**

As an outcome of the Active Ipswich Strategy, the aims of the Recreation Cycling and Walking Action Plan include building a connected, sustainable, and safe recreational cycling and walking network. Also creating a connected, sustainable, and integrated network which will be provided through comfortable and attractive walking routes.

**Ipswich Central Revitalisation Plan**

The Ipswich Central Revitalisation Plan, principle 3, states businesses, residents and visitors to Ipswich Central enjoy access to a connected network of shady green streets and public spaces that make it comfortable and easy to get around throughout the day and throughout the year.

The key objectives are:

- 3A. Create a city that is connected to nature
- 3B. Create shady streets that prioritise the comfort and safety of pedestrians and cyclists
- 3C. Establish a transport hub at the heart of Ipswich Central
- 3D. Make it easy for visitors and residents to find their way

**Streetscape Design Guidelines**

The Guidelines provide information in relation to internal and external legislative requirements, ICC processes and technical information in relation to planting out streetscapes and preferred species list.

**Ipswich City Council Annual Plan and Budget**

Capital expenditure programs include:

- Streetscape Improvement Program – Urban Greening Program
- Active Transport Action Plan
- Stormwater Quality Offsets Program
- Habitat Gardens Program
- Habitat Connections Program

**Community Engagement**

Community engagement, education and awareness is a major driver in the development of the Urban Greening Plan. The results of community engagements by way of online survey undertaken for updating existing or developing new strategies has been used to inform the Plan. Community engagement outcomes for the development of strategies include:

- Sustainability Strategy
- Active Ipswich Strategy
- Recreational Cycling and Walking Action Plan
- iGo Active Transport Action Plan
- Natural Environment Policy
- Natural Environment Strategy
- Share your Green Ideas, Ti Tree Bioenergy Payment Program
- Ipswich Central Revitalisation Plan

Several responses in each report relate to climate change, increasing greening, and waterway health which aligns with the purpose and goals of this Urban Greening Plan.

A Community Engagement Plan will be developed as an outcome of this Plan. This will identify and prioritise community engagement events, identify avenues to educate and promote awareness and stewardship in relation to urban greening at neighbourhood levels.

*Scaly-breasted Lorikeet feeding in Melaleuca viminalis in an urban setting.*

## 3.3 Urban Biodiversity

Biodiversity is the variety of all life forms on earth – the different plants, animals and micro-organisms and the ecosystems of which they are a part (Dept. Agriculture, Water and the Environment). The ecosystem of Ipswich includes habitat for its diverse flora and fauna as well as ecosystem services such as healthy soil, water and air, temperature, climate regulation and habitat. Key threats to urban biodiversity and ecosystem services include climate change, increased urbanisation, and pest plant and animals.

By incorporating urban biodiversity, including ecosystem services, as a driver for the Plan, it is intended that current values will not only be protected and enhanced but will be increased. This will result in stronger habitat connectivity, increased food sources, shelter and shade for urban flora and fauna and assist in mitigating key threats.

Ipswich Nature Conservation Strategy, 2015, states an effective habitat network comprises of a system of core habitat areas connected through the landscape by corridors. Native habitats in Ipswich are currently in a fairly fragmented state, mainly as a result of human impact such as clearing of vegetation to allow for alternative land uses. Strengthening the habitat network is a way to combat the impacts of this fragmentation by connecting several habitats.

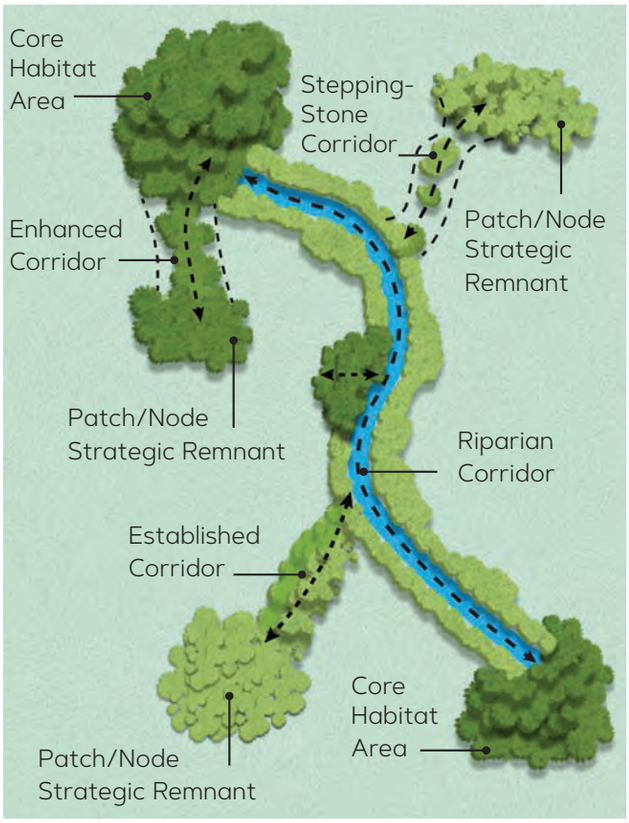
Urban corridors and habitats support local scale connectivity and ecosystem functioning, essential for the movement and long-term survival of urban populations of flora and fauna by connecting corridors, nodes and stepping stones of vegetation.

*Blue Faced Honey Eater feeding in Melaleuca viminalis in an urban setting.*

Corridors are areas that increase local connectivity and provide focal points for rehabilitation, aimed at battling fragmentation by encouraging an increase of the current vegetation cover. Some of these corridors also provide important external linkages out of the Local Government Area (LGA) and are a component of recognised terrestrial regional corridors such as the Flinders Karawatha Corridor.

The Flinders Karawatha Corridor is the largest remaining continuous stretch of open eucalypt bushland south of the Brisbane River in South East Queensland. This 60km corridor extends from Karawatha Forest in Brisbane's outer suburbs to south of Ipswich at Flinders Peak and on to the Wyaralong Dam near Boonah. (Ipswich Nature Conservation Strategy, 2015, p 80, 81).

Urban nodes are patches of remnant vegetation providing important wildlife habitat within the urban footprint. Urban biodiversity as a driver focuses on protecting, enhancing and connecting the current urban corridors, nodes and stepping stones in order to enhance resilient, robust biodiversity values.




*This illustration shows an urban biodiversity corridor including core habitat, nodes and stepping-stones.*

## 3.4 Greening as an Asset and Climate Change

In general, greening is a valued part of the urban environment, providing shade, visual amenity, health benefits and economic benefits such as increases to properties values. However, there is a perception that trees are dangerous and costly, having the potential to drop branches, damage adjacent infrastructure from root growth into underground services, and dropping seeds and leaf litter on to property such as cars, causing damage to paint work.

Council is committed to creating an awareness of the benefits and necessity of healthy urban greening which avoids impacts on people and infrastructure. Green assets provide value in relation to the changing climate, urban heat island effect, heat stress and flood mitigation.

The value of trees include environmental and economic benefits. Economic benefits are both direct and indirect. An example of direct benefit is an increase to property values that are in green, leafy suburbs. An indirect benefit is the shade from trees onto buildings which can cool, lowering the need and cost of air-conditioning.

To get the most out of trees and associated greening, regular maintenance is required. Understanding the costs associated with the procurement, installation and ongoing maintenance will inform budget and resource requirements needed to keep the asset healthy. Additionally, raising community awareness around the importance of trees as assets may reduce vandalism which also costs the city each year.

Furthermore, planting the correct species in the correct place will reduce budget outlay for replacement planting in cases where incorrect species are specified, planted incorrectly or not in the correct location. The cost of removing a tree can outweigh the cost of regular maintenance such as health checks, renewing mulch (which helps retain moisture, reduces weeds, slows rain run-off, insulates soil and adds nutrients) and pruning.

**Climate Change**

The Queensland Government has published Climate Change in Queensland, Version 1, which is a snapshot summarising key climate changes and projection for the state of Queensland in the future (Climate Change in Queensland, Version 1, Department of Environment and Science, 2019).

Climate changes predicted include:

- higher temperatures
- hotter and more frequent hot days
- harsher fire weather
- fewer frosts
- reduced rainfall in the south-east.
- more intense downpours

The ecosystems of Ipswich will continue to be impacted by a changing climate. These changes as described above are projected to intensify and are already causing a range of challenges including impacts on:

- environmental health
- public health and wellbeing
- flood emergencies and disaster recovery

Socially vulnerable communities will be impacted by climate change, especially through heat stress. This group, which includes the elderly, very young, people living with chronic illnesses and the homeless and are constrained in their physical and financial capacity to respond to the environmental extremes.

Urban greening has been proven to provide shade, cooling and visual amenity to streets. Therefore, the Plan will investigate the location of socially vulnerable communities and associated amenities to understand current levels of shade along active travel routes. This will reduce the impact of heat stress while providing health and well being opportunities.

Understanding how our climate is likely to change and the impacts we are likely to experience, will direct us towards how we plan and work towards implementing and maintaining a green environment suited to future conditions for the community and environment.

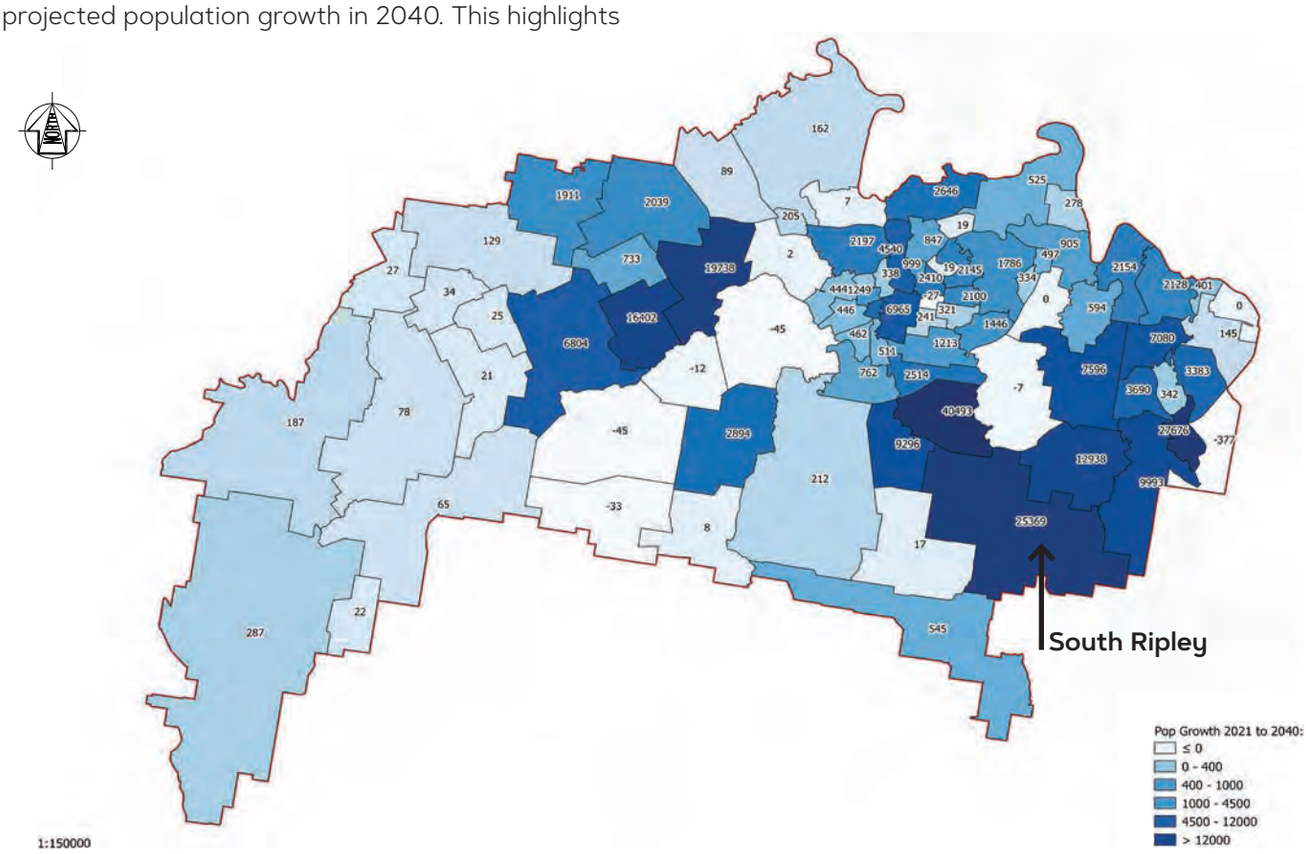
## 3.5 Urban Development

Ipswich is now the fastest growing city in Queensland and one of the top 10 nation wide. Today, the population of Ipswich has grown to over 231,000 and will more than double in the next two decades.(iFuture 2021–2026). Queensland State Government's Land Supply and Development Monitoring Report states that the capacity and realistic availability of planned dwelling supply in the Ipswich consolidation and expansion areas provide more than the minimum 15 years of supply sought by ShapingSEQ (South East Queensland Regional Plan).

Future development to accommodate the population expansion will require land to be cleared. This will remove areas of vegetation, loss of habitat and increase the urban heat island effect if not appropriately planned for and managed. Mitigation of the urban heat island effect and provision of open space within 400m of dwellings is outlined in the Planning (Walkable Neighbourhoods) Amendment Regulation 2020. This provides direction for street tree planting along footpaths. Also, parks and other areas of open space are to be within 400m of new housing blocks. This will provide some reduction of the heat island effect in time as the trees mature if planted and maintained correctly. The maps below and on the opposite page have been included in the Plan to draw attention to the 2019 canopy cover and the projected population growth in 2040. This highlights the importance of retaining as much vegetation as possible in order to mitigate climate change and urban heat island effect while retaining biodiversity value, habitat and connectivity.

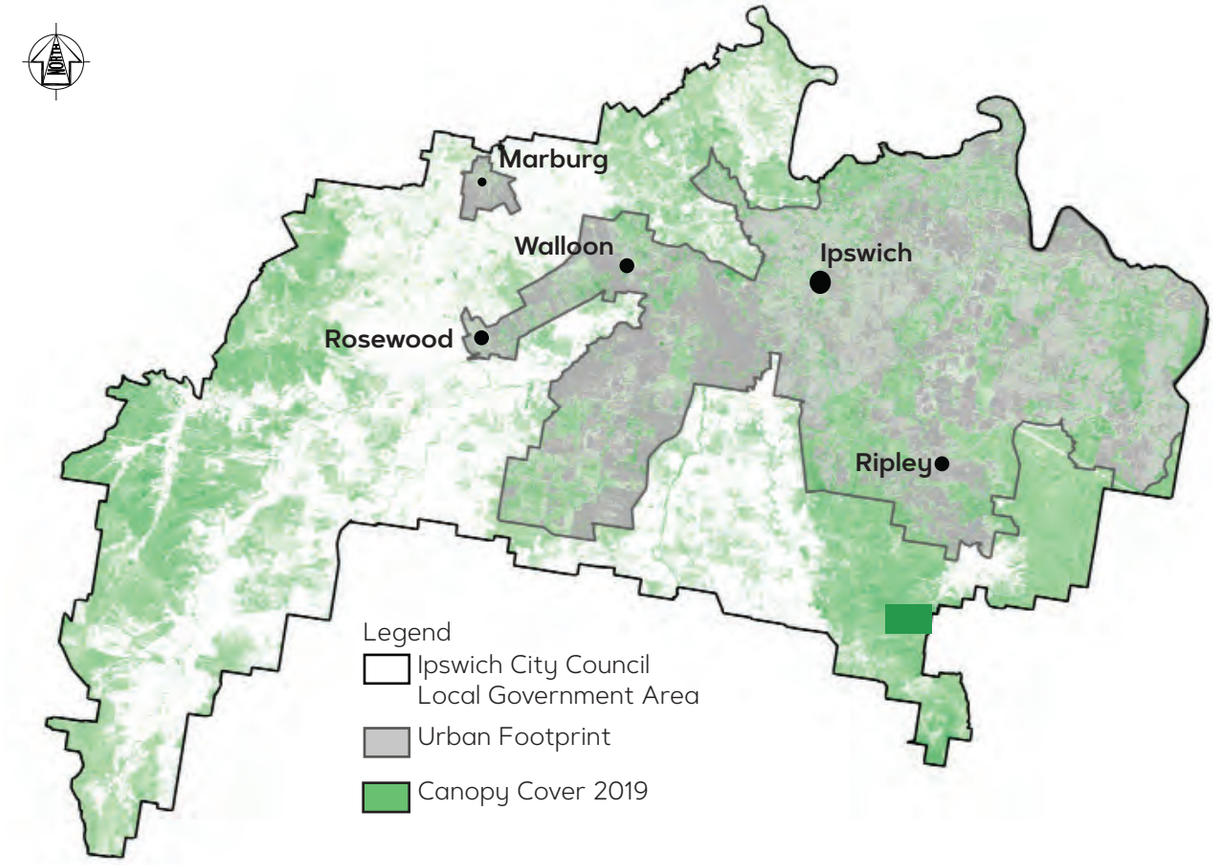
The map below illustrates the projected population growth for Ipswich 2021 to 2040 (taken from City of Ipswich, Recreational Cycling and Walking Action Plan, 2021). Areas such as South Ripley are estimated to have an increase of 25,369 residents. 3.6 map shows canopy cover from 2019 LiDAR information and 3.7 map shows the % canopy cover per suburb. As an example, South Ripley is shown as 24.9% canopy cover which will reduce when land is cleared to accommodate the estimated 25,369 new residents by 2040.

Through considered strategic planning and actioning of green infrastructure projects, vegetation should be retained, minimising the impacts of development on vegetation and wildlife. Additionally, this will reduce the impact of urban heat island effect. Furthermore, by retaining vegetation, many greening benefits are provided. as well as economic values such as increase to property values; encourage more dwell time in places which can result in greater support to local businesses.

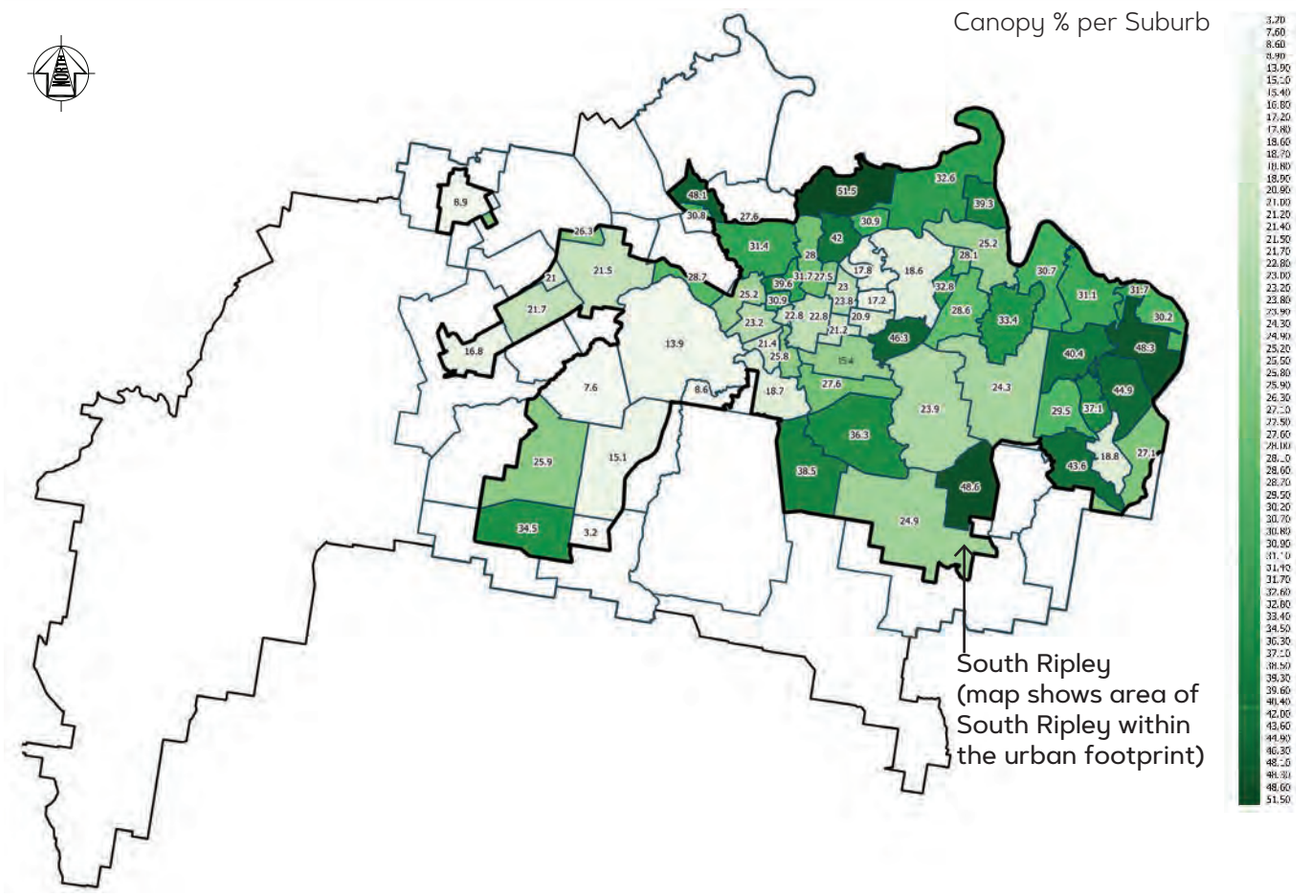



*Population growth 2021 to 2040. Taken from the Ipswich Recreation Cycling and Walking Action Plan, 2021*

## Canopy Cover from 2019 LiDAR




## Canopy Cover % per Suburb



## 3.6 Benefits of Urban Greening

The following section outlines the benefits of urban greening. Greening in urban landscapes is known to provide many benefits that include biophysical, economic and social attributes. Trees are one of the most cost effective mechanisms for reducing the urban heat island effect if maintained to a healthy standard.

Urban greening benefits include ecosystem services. These services provide benefits including air purification, water filtration and soil health including carbon sequestration. Other benefits include the provision of shade, habitat, oxygen, nutrient cycling, and cooling through transpiration.

Transpiration is the release of water as vapour through leaves and assist with cooling. For enough transpiration to provide cooling, the trees need to be healthy and receive adequate water to maintain health. This also applies to the health of the soil which provides evapotranspiration.

Water Sensitive Urban Design solutions, such as Water Smart Street Trees, can be irrigated through passive irrigation via directing stormwater run-off from roads into tree pits. There is specific soil medium which has little to no organic matter, increasing infiltration rates that allows the run-off to filter down to under drainage. The under drainage is connected to the storm water system. During the infiltration time, the tree is able to uptake water, nutrients and pollutants. This has multiple benefits including:

- irrigation to trees, shrubs, ground covers
- cooling through transpiration and evapotranspiration
- uptake of nutrients/pollutants present in the stormwater run-off
- reduction of nutrients/pollutants into receiving waterways
- trees can regulate stormwater. This reduces localised flooding and pressure on existing drainage systems
- reduction in erosion.

Images on page 17 illustrate the growth of a Water Smart Street Tree in Pine Mountain, from planting in 2021, to more recently in May 2022.

Additionally, trees and vegetation provide habitat for urban fauna. Identifying and enhancing existing corridors strengthens habitats, connectivity and movement for urban fauna.

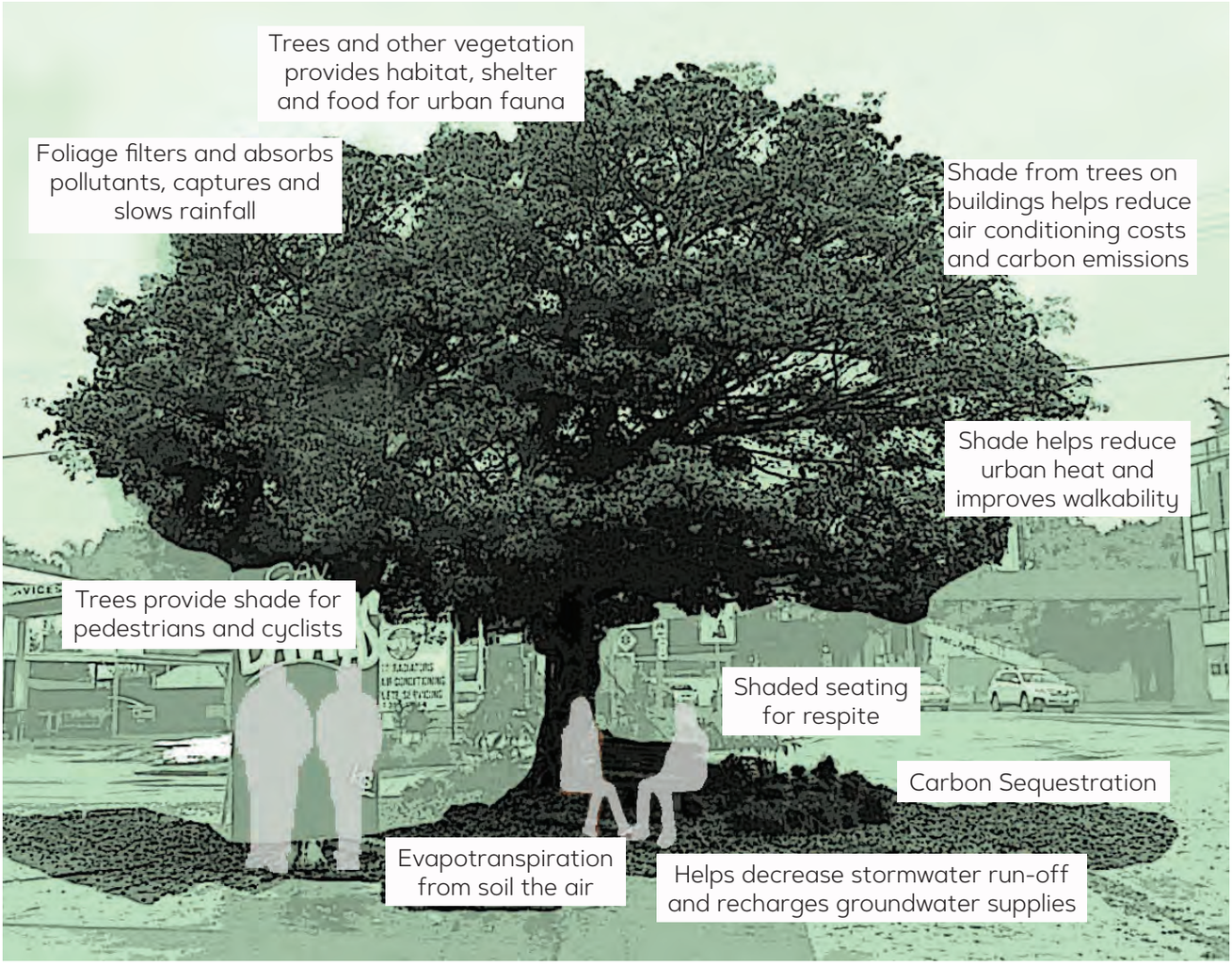
Urban greening also provides a connection to nature that is beneficial for mental and physical health. Ipswich has over 550 parks and reserves providing different recreational needs as well as walking paths and bikeways.

Furthermore, another benefit of urban greening is the sequestering of carbon in the plants and soil. The ecosystems act as a natural weapon against climate change by absorbing carbon from the atmosphere. (CSIRO).

Through the provision of natural shade, dense canopy trees can reduce the exposure to UV rays from the summer sun. Shading is also beneficial to improving the life span of council assets such as concrete footpaths and paint on buildings.

The above sketch illustrates a water smart street tree which utilises stormwater run-off from the road to irrigate the tree and ground cover planting.

Excess water filtrates into the under drainage which is connected to the stormwater system and flows into receiving waters.




*This illustration outlines the many benefits of greening.*

*Water Smart Street Tree and sedges Pine Mountain. Planted June 2021.*

*Same tree and sedges irrigated by stormwater run-off in May 2022.*

The images show alternative greening solutions such as green walls, trellis with climbers where space for tree canopy is limited. Additionally, planting to utilise areas beneath infrastructure such as elevated railway lines or roads provide benefits such as visual amenity, habitat value, shaded walk ways and evapotranpiration.

*Image: Landscaping to walkway underneath railway line at South Brisbane.*

*Image: Greening treatment to building wall in Townsville. Stainless steel trellis with climber.*

*Image: Green wall in Bell Street, Ipswich.*

*Image: Green wall to single story building in Townsville.*

*Image: Green wall , Redbank Library, Ipswich*

*Image: Hanging plants, Ipswich Central.*

# SCOPE, FOCUS AREAS, TARGETS AND ACTIONS

# 4. SCOPE

## 4.1 Scope

South East Queensland's natural environment sustains a diverse ecosystem, holds cultural value and performs a variety of functions unable to be replicated by humans. It provides habitat for fauna, and clean air and drinking water, as well as other social and economic benefits. The region's natural systems provide the foundation for SEQ's future sustainability, prosperity and liveability. (Source: Taken from ShapingSEQ, page 22).

The adjacent map illustrates the South East Queensland Local Government Areas and the location of Ipswich in relation to them. Ipswich Local Government Area (LGA) is bordered by Brisbane and Logan to the east with Somerset to the north. Lockyer Valley and Toowoomba are to the west of Ipswich with Scenic Rim adjoining the southern boarder.

The project extent for this plan is the urban footprint of Ipswich. The urban footprint is an area defined by the South East Queensland Regional Plan, as land within which the region's urban development needs to 2041, and can be accommodated in a way consistent with the goals, elements and strategies of ShapingSEQ.

ShapingSEQ relies on local government planning schemes to determine the most suitable zone for each land parcel within the urban footprint. The development assessment process determines the extent and suitability of development on each site. (Source: Taken from ShapingSEQ, page 101).

By increasing and maintaining healthy, diverse greening, Ipswich will also be contributing to the broader health of South East Queensland's (SEQ) natural systems and connecting corridors.

Ipswich City Council acknowledges the key role that urban greening plays in the regions overall resilience, liveability and wellbeing. The intended outcome of this plan is to immediately increase greening where possible and have an informed and considered approach in planning, maintaining and monitoring of medium and long term greening programs within the urban footprint. Additionally, this will establish an environment in support of inclusive liveability by providing green, shaded, walkable neighbourhoods.

This Plan will be undertaken in a staged approach to deliver immediate greening in identified vacant tree sites, as well as evidence-based planning for increasing greening to high, medium and low priority suburbs. Suburbs will be categorised in relation to % canopy cover from 2019 LiDAR information. Further investigation and analysis of data is required in order to prioritise suburbs.

Additionally, information gathering such as literature review, canopy cover and heat mapping data, biodiversity mapping, land use, land type, location of active transport and pedestrian will be used to inform the strategic prioritisation of greening projects.

*Map: South East Queensland Local Government Areas (Source: Taken from ShapingSEQ, p.19)*

## 4.2 Strategic Priorities

The Strategic Priorities for the Plan include:

- climate change adaptation (due to increase in storm events, fires, temperature change) and reduction of urban heat island effect
- increase shade and cooling to encourage comfortable outdoor experiences
- increase green infrastructure as a key approach to managing the interface between the built and natural environment within the scope of the Plan
- stormwater management in relation to passive irrigation and reduction of pollutants entering receiving waters
- ecosystem services such as soil and water health
- storing and sequestering carbon
- reduced sun exposure to the community and infrastructure
- physical and mental health benefits
- reconnecting people with nature
- increased shaded active transport routes
- habitat value maintaining and improving biodiversity and connectivity
- reduced energy costs and carbon emissions through shading to buildings
- increased property values
- increased visual amenity
- increased sense of local identity and stewardship.

The Guiding Principles, Objective, Challenges and Strategic Priorities will be addressed through Four Focus areas.

- **Focus Area 1** – Green the urban footprint of Ipswich
- **Focus Area 2** – Manage the interface between greening and infrastructure
- **Focus Area 3** – Enhance biodiversity and waterway health
- **Focus Area 4** – Strengthen community education, awareness and stewardship of urban greening

Analysis of canopy cover taken from 2019 LiDAR information will be undertaken in conjunction with heat mapping to understand the priority locations for greening. Four greening categories will be investigated further and in more detail:

- streetscape and road reserves
- urban corridors
- parks and open space (excluding conservation estates and bushland reserves)
- active transport routes.

As there is an immediate need to increase greening to the urban footprint due to the changing climate and urban heat island effect, on ground investigations are continuing. Greening sites have been identified and trees installed in these areas. This immediate greening is being delivered in parallel with the strategic development of this Plan as trees take time to reach maturity where multiple benefits are provided.

# 5. FOCUS AREAS, TARGETS AND ACTIONS

## 5.1 Focus Areas, Targets and Actions

The goal of the Urban Greening Plan is to focus, in parallel, on a strategic level and a delivery level to achieve increased greening across the urban footprint. It is intended that the Plan be a tool to deliver urban greening, outlined in council strategies programs and plans such as:

- Natural Environment Strategy
- Sustainability Strategy
- Active Ipswich Strategy
- iGO Transport Plan
- Active Transport Action Plan
- Recreational Cycling and Walking Action Plan
- Ipswich Central Revitalisation Plan
- Urban Greening Program
- Sustainable Transport sub Program
- Stormwater Quality Offsets Program
- Habitat Gardens Programs

In order to be prepared for the future challenges of a changing climate, council will plan and deliver realistic greening and canopy cover targets within the urban footprint. Additionally, it is intended that this will have a positive effect on community cohesion, strengthening the sense of place, environmental connectivity, and provide mental health and well being outcomes. Furthermore, the plan will have a positive influence on activation of outdoor spaces, active transport and exercise opportunity.

To achieve this, four focus areas have been developed from the Guiding Principles, Opportunities and Challenges and Strategic Priorities. Associated targets and actions have been set. This will ensure that a planned, evidence-based approach is able to be measured, evaluated and adjusted if needed, in order to realise the vision of the Plan.

Page 25 outlines the Plan, Vision, Focus Areas and associated Targets. Pages 24–31 outline the actions, and timing. It also includes how performance associated with the actions is measured and the reporting responsibility within council.

Prioritisation and timing of actions are indicative only. Further planning, budgeting and resourcing is required within the relevant council sections.

## 5.2 Monitoring, Evaluating and Reporting

The protection, enhancement and management of resilient and robust urban greening requires on-going monitoring, evaluation and reporting of its health, values and benefits (including economic benefits) to ensure the outcomes of the Plan are achieved.

Periodic monitoring and evaluation of net changes of urban greening will be undertaken within the urban footprint including canopy cover in public and private realms as LiDAR information becomes available. The results will be included in an annual environmental report and will inform further relevant council budgets and resourcing for future greening projects.

# THE URBAN GREENING PLAN

**VISION**
Our vision is to have a connected, resilient, and valued greening of Ipswich that is protected, enhanced, and managed to provide benefits to the community and environment.

**FOCUS AREA 1**
**Green the urban footprint of Ipswich**

**TARGET**
Increase canopy cover in high priority suburbs by a minimum of 10% by 2042.

**FOCUS AREA 2**
**Manage the interface between greening and infrastructure.**

**TARGET**
90% of urban greening planting are successful and reach healthy maturity.

**TARGET**
Minimum 50% of new landscape plantings to be local native species suited to local conditions.

**FOCUS AREA 3**
**Enhance biodiversity and waterway health**

**TARGET**
All greening projects to incorporate additional opportunities for habitat for feeding and nesting e.g. installation of nesting boxes; connections to existing habitat; structured vegetation planting.

**TARGET**
All projects to incorporate opportunities to improve waterway health e.g. vegetation management; integrated stormwater management; soil health and erosion and sediment control.

**FOCUS AREA 4**
**Strengthen community education, awareness and stewardship of urban greening.**

**TARGET**
Deliver minimum of 4 Planting Day activity's each year.

**TARGET**
Promote the Urban Greening Program including information and options for residents, at council events and through council web page.

| FOCUS AREA 1 AND TARGET | ACTIONS |
|---|---|
| **Focus Area 1:** Green the Urban Footprint of Ipswich.<br><br>**Target:** Increase canopy cover in high priority suburbs by a minimum of 10% by 2042. | **1a.** Identify and quantify current canopy cover in each greening category. Develop a multi criteria analysis to identify high, medium and low priority suburbs in relation to % canopy cover from 2019 LiDAR information. Prioritise projects within the greening categories according to the outcome of the multi criteria analysis.<br>Greening categories:<br>▪ Streetscape/road reserves<br>▪ Urban Corridors<br>▪ Riparian zones<br>▪ Open Space (excluding old landfill sites, sports fields)<br>▪ Active transport routes. |
| | **1b.** Develop and implement a project prioritisation framework to plan the order of implementing identified projects across the city. |
| | **1c.** Develop a process framework for measuring the increase to greening in each category. |
| | **1d.** Undertake thermal heat mapping of the urban footprint of Ipswich. Undertake analysis of thermal heat mapping data to assist with project identification and prioritisation. |
| | **1e.** Understand strategic transport planning in order to identify vegetation that may be removed as a result of future transport infrastructure including active transport routes. This would highlight areas not to plant out. |
| | **1f.** Develop a preferred species list suitable for urban greening. E.g. species that will provide shade, safety considerations and non invasive in relation to interface with infrastructure. (Updated Streetscape Design Guidelines). |
| | **1g.** Undertake historical vegetation cover analysis in relation to past developments to determine the change in canopy cover over time, and what impacts future developments will have on current vegetation and how these impacts can be mitigated. |
| | **1h.** Develop and implement a Succession Planting Strategy |
| | **1i.** Develop framework for appropriate resourcing for the establishment period and ongoing maintenance of all new trees planted within council land. Maintenance requirements to be achieved include: establishment of 3 month period; a twice yearly maintenance visitation up to and including 5 years. The tree at 5 year of age is passed onto the Arboriculture Team for ongoing maintenance. |
| | **1j.** Update current street tree layer in council's spatial system; Develop and implement a plan for regular ongoing monitoring of all street tree species. To include information on species type, age, size, health, the need to replace tree etc. |
| | **1k.** Update Urban Forest Policy, 2019, to Management of Trees on Council Land Procedure |
| | **1l.** Identify and promote benefits to protect, enhance and maintain greening to private land. Investigate mechanisms to incentivise private land holders for maintaining and protecting existing vegetation. |
| | **1m.** Develop and implement a pilot planting program to identify street tree species suitable for the changing climate. |

| IMPLEMENTING AND REPORTING RESPONSIBILITY | TIMING | PRIORITY | PERFORMANCE MEASURE |
|---|---|---|---|
| Strategic Catchment and Conservation Planning | 1–3 year | High | Installation of greening to suburbs across the city. |
| Strategic Catchment and Conservation Planning | 1–3 year | High | List of priority projects. |
| Strategic Catchment and Conservation Planning | 1–3 year | Medium | Framework delivered and measuring underway. |
| Strategic Catchment and Conservation Planning | 1–2 year | High | Analysis of thermal heat mapping. |
| Strategic Catchment and Conservation Planning | 1–2 year<br>Ongoing | High | Planning and implementation documents to note areas for future transport infrastructure |
| Infrastructure and Strategic Planning | 1–2 year | High | Urban Greening species list endorsed by Council and implemented in council projects. |
| Strategic Catchment and Conservation Planning | 1–3 year | Medium | Research used in suburb analysis. |
| Strategic Catchment and Conservation Planning | 1–3 year | High | Council endorsement of the Succession Planting Strategy |
| Strategic Catchment and Conservation Planning<br>Works and Field Services | 1–4 year | Medium | Framework delivered and measuring underway. |
| Strategic Catchment and Conservation Planning<br>Spatial, Asset Services | Ongoing | Medium | Information updated and available in council's spatial system. |
| Strategic Catchment and Conservation Planning | 1–3 year | Medium | Policy is endorsed by council |
| Environment and Sustainability Education and Awareness | Ongoing | Low | Increase to Habitat Gardens memberships.<br>Increase in canopy cover over time. |
| Fields Services and Strategic Catchment and Conservation Planning | 1–2 years | Medium | Program is delivered and implemented with trees in ground and monitoring program underway |

| FOCUS AREA 2 AND TARGET | ACTIONS | |
|---|---|---|
| **Focus Area 2:** Manage the interface between greening and infrastructure.<br><br>**Target:** 90% of new urban greening planting are successful and reach healthy maturity.<br><br>**Target:** Minimum 50% of new landscape plantings to be local native species suited to local conditions. | **2a.** Develop an Urban Greening Implementation Process fact sheet for internal use, that explains the process of including greening in the planning, delivery and maintenance phase of a project, and which internal stakeholders should be informed and at what stage. (E.g. Engage Arborist from the beginning of the project through to maintenance phase.) | |
| | **2b.** Deliver the Urban Greening Implementation Process fact sheet to relevant ICC teams and have regular meetings (minimum 1 every quarter) to keep updated. | |
| | **2c.** Update ICC standard drawings to include greening requirements such as adequate space for tree planting, soil volumes and soil health requirements. | |
| | **2d.** Develop and implement a procedure for project managers to include greening requirements in consultants and contractors briefs (reference council documents such as Planning Scheme, ICC Streetscape Design Guidelines). | |
| | **2e.** Investigate mechanism for including greening requirements into all relevant council policies, and in all planning, design, construction and maintenance phase of projects. | |
| | **2e.** Develop and implement test plots for green roofs and walls using native species. | |
| | **2g.** Develop internal procedure/strategy to ensure the correct species is planted in the correct place to mitigate potential conflict at interface of planting and infrastructure. This will reduce long term costs at replacing trees in the wrong place. | |
| | **2h.** Investigate use of alternative design solutions such as structural cells where space and soil are limited. (E.g. alongside footpaths and services) and trial in council projects. | |
| | **2i.** Protect and enhance existing vegetation in areas marked for future development ( E.g. Ripley). | |
| | **2j.** Investigate vacant tree sites on commercial and industrial land and develop a framework for working with the land owner to plant suitable shade trees to car parks and interface of public land and active transport routes, to reduce heat island effect and contribute shade to active transport routes. Investigate incentives. | |
| | **2k.** Develop framework for appropriate resourcing for the establishment period and then ongoing maintenance of all new trees planted within council land. | |

| IMPLEMENTING AND REPORTING RESPONSIBILITY | TIMING | PRIORITY | PERFORMANCE MEASURE |
|---|---|---|---|
| Strategic Catchment and Conservation Planning | 1–2 years | High | Implementation of greening to suburbs within each Division. |
| Strategic Catchment and Conservation Planning | 1–2 years | Medium | Urban greening included and delivered in council projects.<br>Minuted meetings. |
| Infrastructure Strategy and Planning | 1–2 years | High | Endorsed updated ICC standard drawings. |
| Strategic Catchment and Conservation Planning | 1–2 years | High | Briefing template including greening requirements.<br>Specification for tenders to include greening requirement. |
| Strategic Catchment and Conservation Planning | 1–2 years | High | Published outcome of greening requirements. |
| Strategic Catchment and Conservation Planning<br>Field Services | 1–2 years | Low | Published outcome of test plots. |
| Strategic Catchment and Conservation Planning<br>Field Services<br>Planning and Regulatory Services | 1–2 years | High | Reduction in costs outlaid for tree removal and replacement. |
| Relevant teams in Infrastructure and Environment | Ongoing | Medium | Completed projects that included alternative design solutions and published outcome. |
| Strategic Catchment and Conservation Planning<br>Planning and Regulatory Services | Ongoing | High | No net loss.<br>Maintained or increased canopy cover. |
| Strategic Catchment and Conservation Planning | 1–3 years | Medium | Published outcomes. |
| | | | |

| FOCUS AREA 3 AND TARGET | ACTIONS |
|---|---|
| **Focus Area 3:** Enhance Biodiversity and Waterway Health.<br><br>**Target:** All relevant council projects to incorporate additional opportunities for habitat for feeding and nesting e.g. installation of nesting boxes; connections to existing habitat; structured vegetation planting.<br><br>**Target:** All council projects to incorporate opportunities to improve waterway health e.g. vegetation management; integrated stormwater management; soil health and erosion and sediment control. | **3a.** Identify and prioritise projects that have connectivity opportunities within the urban corridor to provide movement for a range of fauna. Ensure connection is prioritised in project identification and planning phase. |
| | **3b.** Develop and promote procedure for installation of nesting boxes within ICC parks (where suitable). |
| | **3c.** Promote water sensitive urban design solutions for implementation in areas to be upgraded (E.g. kerb and drainage projects; footpath upgrades). |
| | **3d.** Promote water sensitive urban design solutions for implementation in new developments. |
| | **3e.** Protect existing vegetation in areas of increased development. |
| | **3f.** Identify and pursue opportunities to improve biodiversity, fauna habitat and wildlife corridors through civil and landscape design including species selection. |
| | **3g.** Promote the importance of biodiversity values and waterway health through council social media platforms. |
| | **3h.** Ensure water sensitive urban design solutions are maintained so that trees/vegetation reach maturity in order to deliver greening benefits. |

| IMPLEMENTING AND REPORTING RESPONSIBILITY | TIMING | PRIORITY | PERFORMANCE MEASURE |
|---|---|---|---|
| Strategic Catchment and Conservation Planning | Ongoing | High | Implementation of greening to suburbs within each Division. |
| Strategic Catchment and Conservation Planning | 1–2 Years | High | Delivered project that includes installed nesting boxes |
| Strategic Catchment and Conservation Planning and Infrastructure Strategy | Ongoing | High | Delivered projects that have water sensitive urban design solutions installed. |
| Strategic Catchment and Conservation Planning | 3 Years | Medium | Delivered projects that have water sensitive urban design solutions installed. |
| Strategic Planning, Infrastructure Planning and Environment and Sustainability | Ongoing | High | Comparison of LiDAR information to identify loss of vegetation. |
| Strategic Catchment and Conservation Planning | Ongoing | High | Evidence that civil and landscape projects have been delivered including measures to protect existing vegetation and evidence of measures that enhancing biodiversity, vegetation and wildlife corridors. |
| Strategic Catchment and Conservation Planning | Ongoing | Medium | Published project outcome on council social media platforms. |
| Strategic Catchment and Conservation Planning | Ongoing | Medium | Delivered project that includes water sensitive urban design sollutions. |

| FOCUS AREA 4 AND TARGET | ACTIONS |
|---|---|
| **Focus Area 4:** Strengthen education, awareness and stewardship of urban greening.<br><br>**Target:** Deliver 1 Planting Day activity in each Division each year.<br><br>**Target:** All Natural Environment and Land Management events to distribute information to promote the Urban Greening Program including information and options for residents. | **4a.** Develop and implement a Community Engagement Plan for urban greening.<br><br>This plan is to include the launch of the Urban Greening Plan. |
| | **4b.** Develop and implement an interactive web page that illustrates the city's street trees, significant trees, parks etc. Also include information on the life span of trees, importance of diversity and succession planting. |
| | **4c.** Promote information on social media platforms in relation to council's updated knowledge on native species suitable for residential lots; weed species and what native species can be used in it's place. |
| | **4d.** Plan and deliver community planting days in priority project areas. Provide information on tree care and benefits maintaining a healthy tree in relation to climate adaptation and heat island effect. |
| | **4e.** Develop and implement education program for schools on the benefits of urban greening. |
| | **4f.** Promote the value of shade from trees and trees as a valued asset. |
| | **4g.** Review current environmental education programs to include urban greening guiding principles. |
| | **4h.** Investigate mechanism for incentivising urban greening outcomes on private land. |
| | **4i.** Investigate mechanisms for incentivising private land holders to integrate greening with natural areas and riparian zones that adjoin their properties. |
| | **4j.** Develop and implement an online 'Greening Ipswich' web page where the community can drop a pin to identify locations for trees within the urban footprint. |

| IMPLEMENTING AND REPORTING RESPONSIBILITY | TIMING | PRIORITY | PERFORMANCE MEASURE |
|---|---|---|---|
| Strategic Catchment and Conservation Planning<br><br>Environment Sustainability Education and Awareness | 0–1 Year | High | Delivered community engagement event and implementation of greening to suburbs within each Division. |
| Strategic Catchment and Conservation Planning | 1–2 Years | Low | Delivery of endorsed live web page and is functional. |
| Strategic Catchment and Conservation<br><br>Planning Environment Sustainability Education and Awareness | Ongoing | Medium | Uploaded information on council's social media platforms. |
| Strategic Catchment and Conservation Planning<br><br>Environment Sustainability Education and Awareness | Ongoing | High | Approved program. |
| Environment Sustainability Education and Awareness | Ongoing | High | Approved program. |
| Strategic Catchment and Conservation Planning | Ongoing | High | Information uploaded to council web site; Internal communication. |
| Environment Sustainability Education and Awareness | Ongoing | High | Updated environmental education program including urban greening guiding principles. |
| Strategic Catchment and Conservation Planning<br><br>Environment Sustainability Education and Awareness | 0–1 Year | Medium | Document outlining investigated mechanisms and next steps. |
| Strategic Catchment and Conservation Planning | 2–3 Years | Medium | Document outlining investigated mechanisms and next steps. |
| Strategic Catchment and Conservation Planning | 2–3 Years | Low | Endorsed and functional web page on council's web site. |

*Small Creek Redevelopment, Raceview, Ipswich*

# CONTEXT AND SITE ANALYSIS

# 6. CONTEXT AND SITE ANALYSIS

The following section demonstrates the research undertaken to understand the extent of canopy cover within the land use zones and movement networks noted below. (Movement network includes fauna movement).

**Land Use Zones**

- Public Parks and Open Space
- Residential
- Industrial/Commercial
- Road Hierarchy

**Movement Networks**

- Active Transport
- Urban Corridors
- Streets and Road Reserves

In order to understand the current level of greening within Ipswich urban footprint, 2019 LiDAR information has been used to create various spatial canopy layers. The overall canopy layer shows vegetation height from a minimum 1m up to 60m (verification of this is required) over Ipswich LGA. From this, further information on canopy % per suburb has been developed and will be analysed further.

Spatial layers developed are:

- Canopy Cover
- Waterways and Wetlands
- Parks and Open Space
- Urban Corridors

A percentage of canopy cover has been applied to each suburb and suburbs with the least amount of canopy cover will be investigated as a priority for project identification. Other vegetated areas such as urban corridors, public open space, riparian and wetlands were identified and mapped in order to understand all vegetated areas within the urban footprint. Further investigation will be undertaken to identify possible linkages between corridors, nodes and stepping stones to strengthen corridors for fauna movement.

The proposed process for project identification is to investigate four greening categories within each suburb. The greening categories are:

- Street and road reserve
- Urban corridor
- Council parks and open space
- Active travel routes (Bikeways and walkways)

The total area of the urban footprint, taken from 2019 LiDAR information, is 40 962 HA, with the total canopy cover being 11 172 HA giving a percentage of 27.2% canopy cover for the urban footprint.

It is proposed that the Plan will work towards achieving a 10% increase to canopy cover within high priority suburbs on public land by 2042. This will be across the four greening categories. Further investigation and validation of achieving the increase is required.

Literature review of greening targets for other Australian cities found:

### Urban Forest Strategy, City of Melbourne

Increasing canopy cover from 22 per cent to 40 per cent by 2040. Increasing forest diversity with no more than five per cent of one tree species, no more than ten per cent of one genus and no more than 20 per cent of any one family, improving vegetation health.

### Greening Sydney Strategy, City of Sydney

Our target is to increase overall green cover to 40% across our area, including a minimum of 27% tree canopy by 2050.

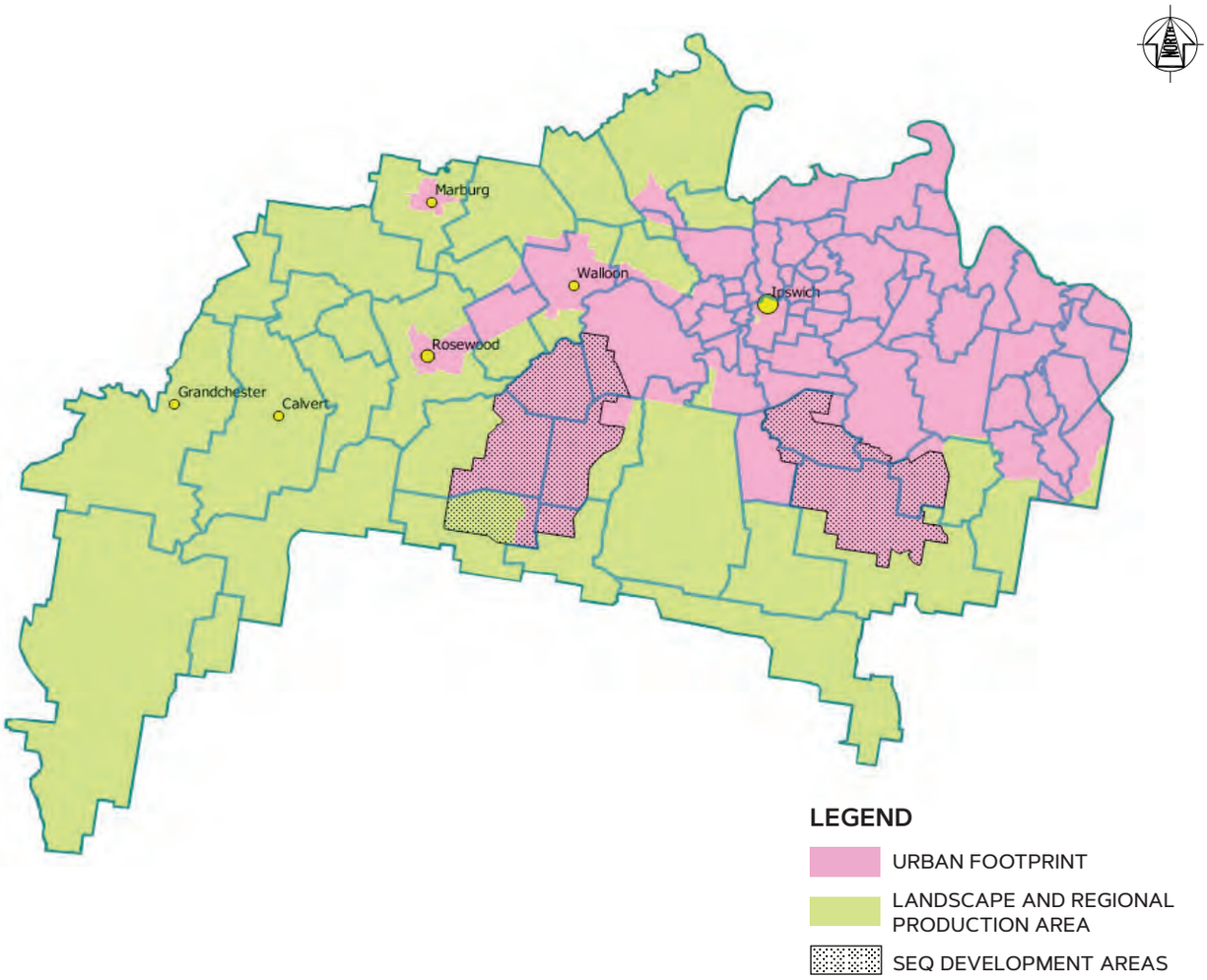
### Brisbane's Urban Forest – Brisbane City Council

Increase tree shade cover to 50% for footpaths and bikeways in residential areas by 2031

### Greening Our City – City of Gold Coast

We have an urban tree canopy cover target of 50% by 2031.

## 6.1 Ipswich Local Government Area




The map above shows the Ipswich Local Government Area which is made up of the Urban Footprint (Pink area) and Landscape and Regional Production Area (Green area). The hatched areas represent the South East Queensland Development Areas.

## 6.2 Spatial Layers

A number of council spatial layers will be used to provide base information in the identification of greening sites. The spatial layers include:

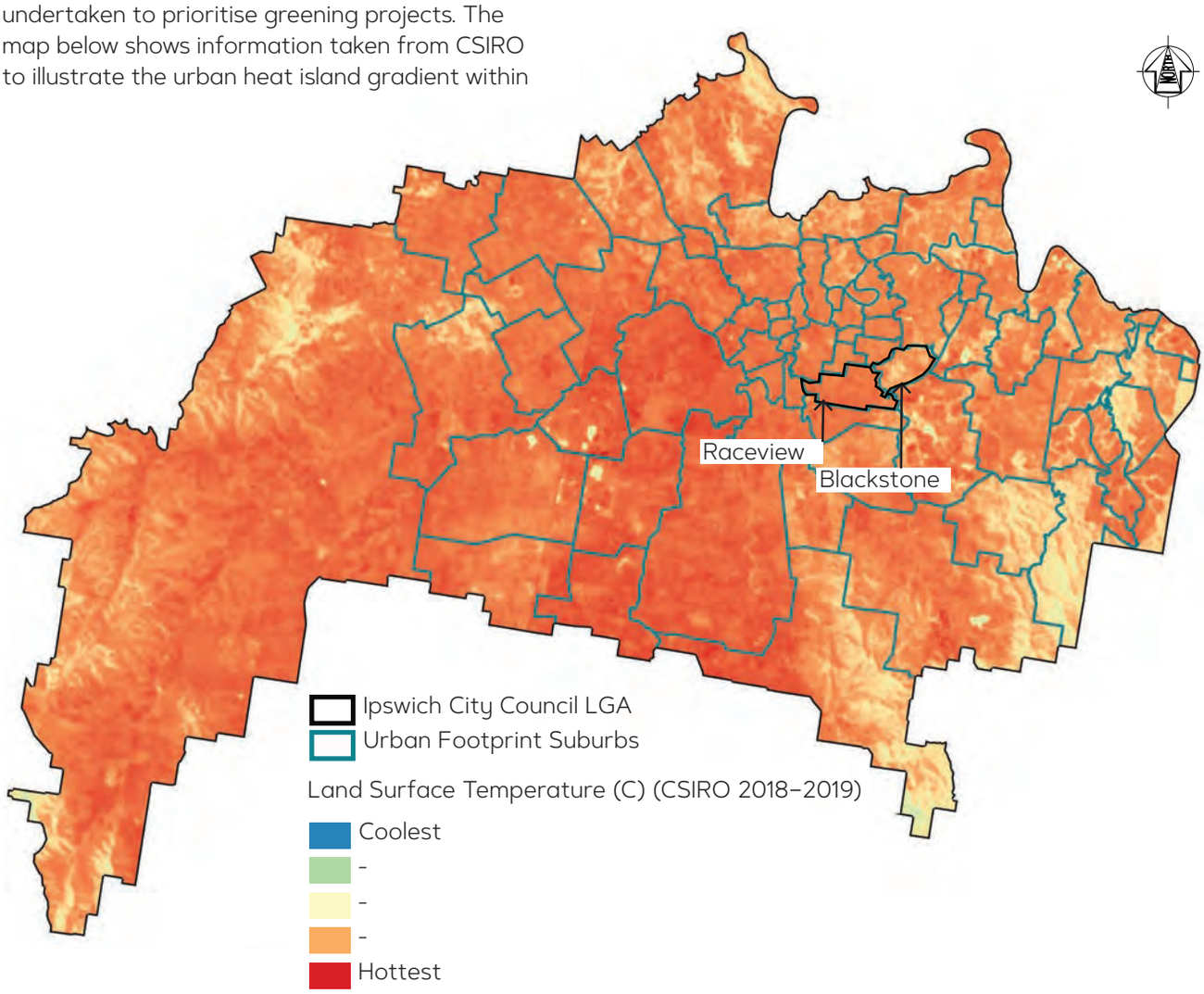
- Administrative boundaries
- Cadastral information
- Land use
- Topographic overlays
- Canopy Cover (from 2019 LiDAR information)
- Waterways and Wetlands (within the urban footprint)
- Parks and Open Space (within the urban footprint)
- Urban Corridors (within the urban footprint).

Additionally, heat mapping along with maps provided by the Australian Bureau of Statistics to show areas where socially vulnerable groups are located, will be included in the base information. The collation of this information will inform a multi criteria assessment undertaken to prioritise greening projects. The map below shows information taken from CSIRO to illustrate the urban heat island gradient within Ipswich LGA and more specifically, the urban footprint. This information is from 2018–2019 Land Surface Temperature.

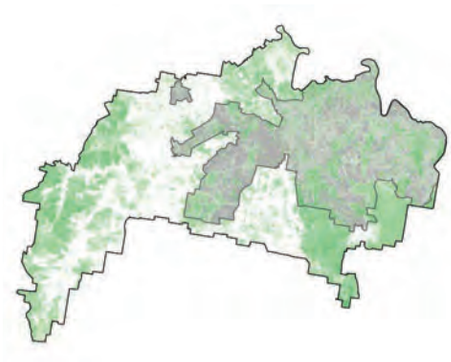
The suburbs of Raceview and Blackstone have been noted on the map below for comparison between highly urbanised areas (Raceview) and adjacent less urbanised area (Blackstone). The lighter coloured (vegetated) area within Blackstone is Castle Hill Blackstone Reserve. Development is not suitable in this area due to the history of underground mining.

To give a further comparison, the percentage of canopy cover over Raceview is 15.4% with a population of 15,581 (2016 ABS information) where as Blackstone has 46.3% canopy cover with a population of 1,024 (2016 ABS information).

Further investigation into land uses within the urban footprint will be undertaken to understand where the hotter areas are and why, and what mitigation measures, such as shade trees along active travel routes and connection of urban corridors etc can be implemented.

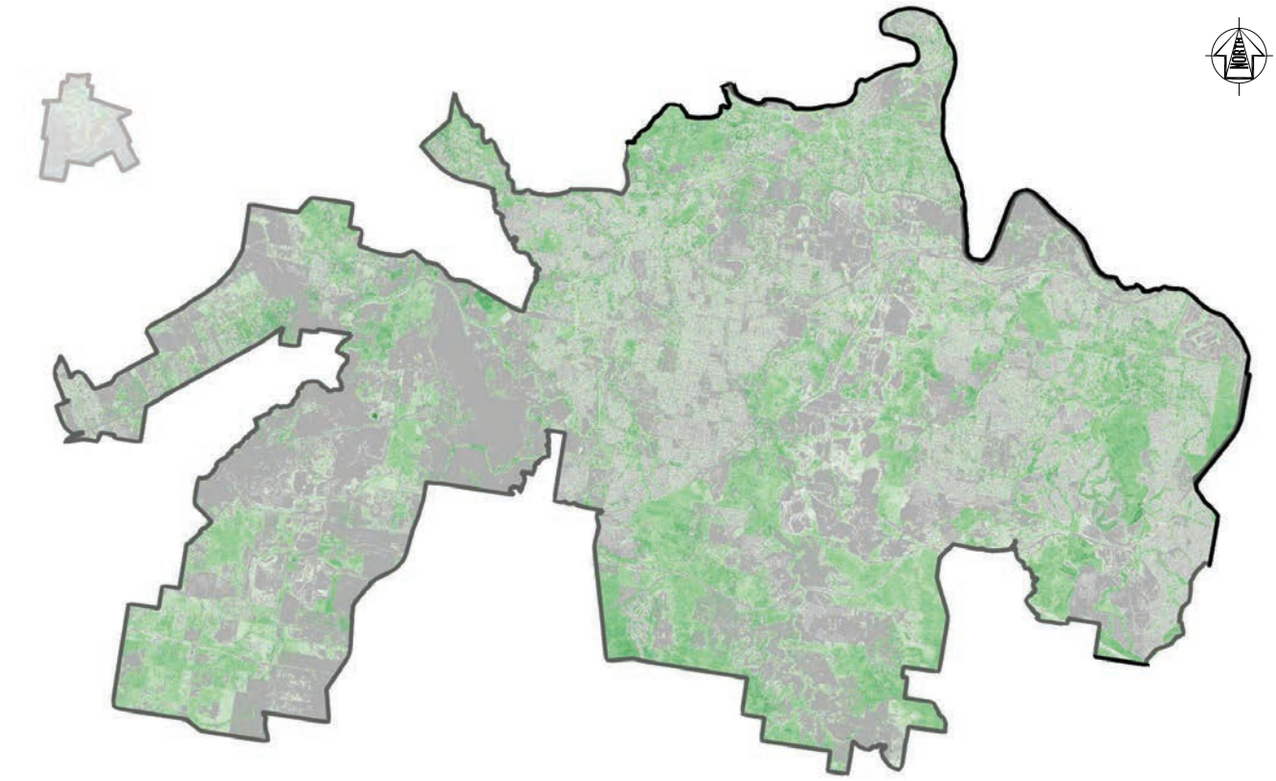


## 6.3 Ipswich Urban Footprint with Canopy Cover



The map below shows the urban footprint with canopy cover, taken from 2019 LiDAR information. This information will be used in conjunction with heat mapping, land use and land type, as well as ground truthing, to identify and prioritise opportunities for greening.

Also, further manipulation of this LiDAR, will be undertaken to provide a % canopy cover for the four greening categories, providing a baseline to work towards the greening targets.



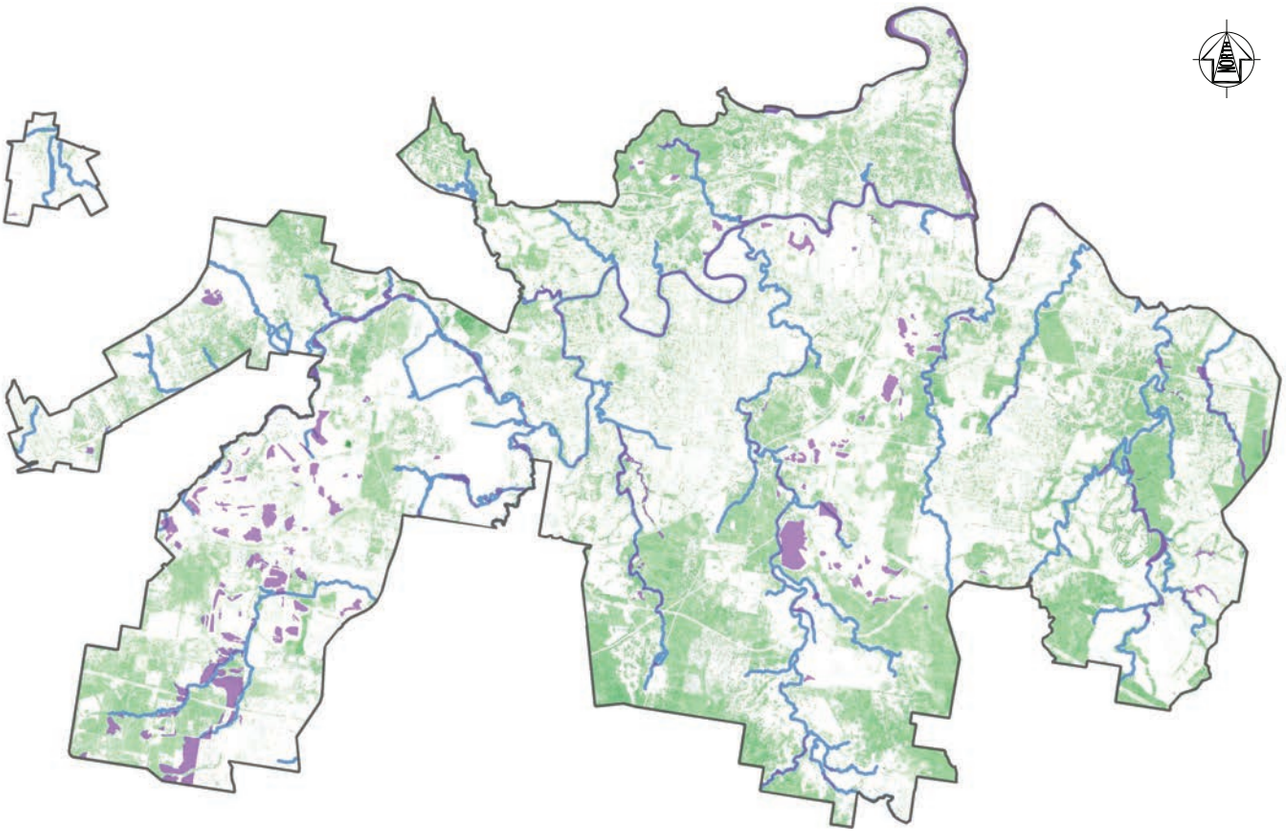
Canopy Cover 2019 (m)

| | |
|---|---|
| 1 | 20 |
| 2 | 30 |
| 4 | 40 |
| 6 | 50 |
| 8 | 60 |
| 10 | Ipswich City Council LGA |
| 15 | Urban Footprint |

## 6.4 Waterways and Wetlands

The map below shows the urban footprint with canopy cover taken from 2019 LiDAR information and the location of waterways and wetlands.

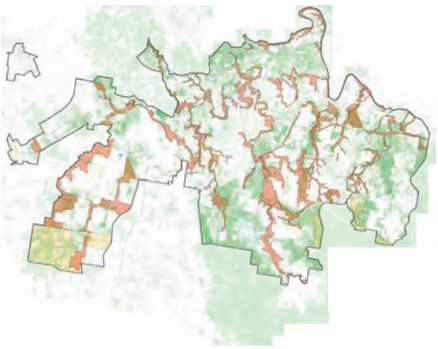
This will be used to in conjunction with heat mapping, land use and land type information to identify opportunities for increasing greening as well as improving the health of waterways and wetlands through implementation of green infrastructure such as water sensitive urban design solutions.



Canopy Cover 2019 (m)

- 1
- 2
- 4
- 6
- 8
- 10
- 15
- 20
- 30
- 40
- 50
- 60
- Ipswich City Council LGA
- Waterways
- Wetlands

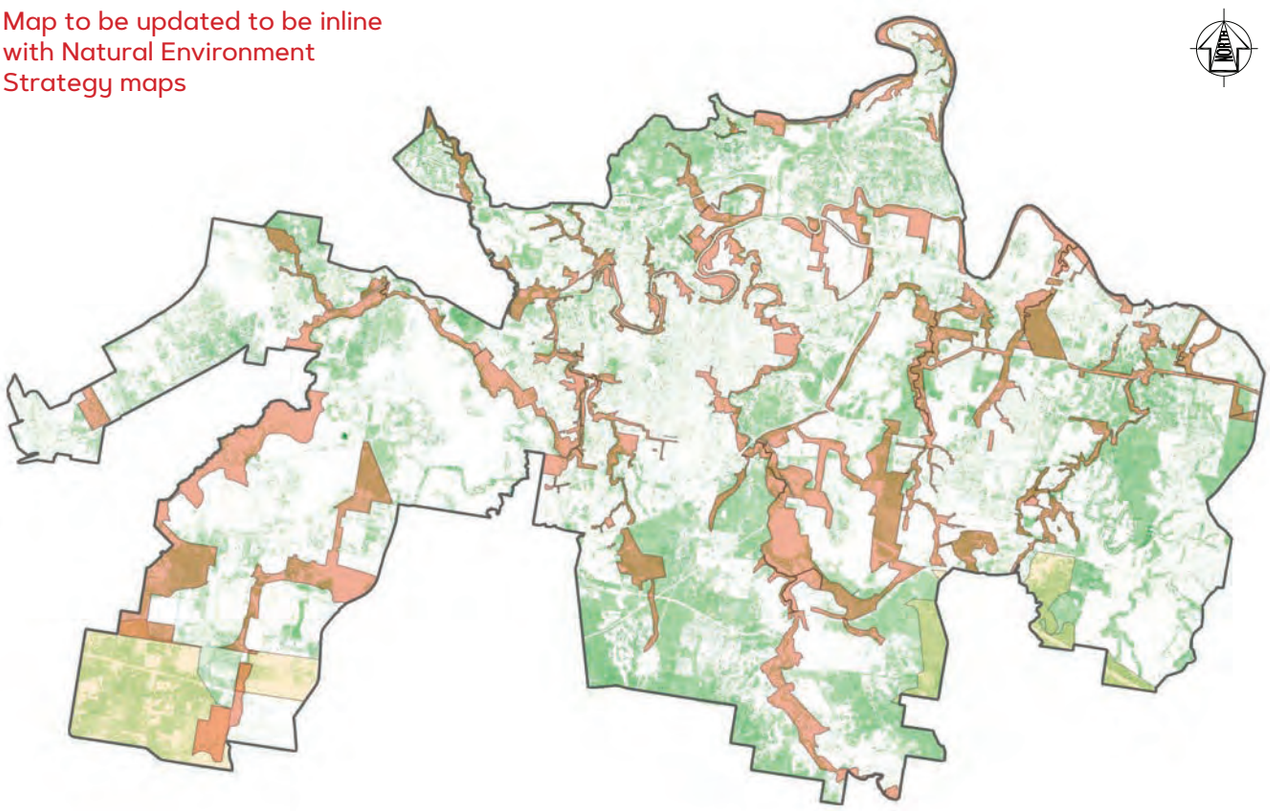
## 6.5 Urban Corridors



The map below shows the urban footprint with canopy cover taken from 2019 LiDAR information and the location of urban corridors.

This will be used in conjunction with heat mapping, land use and land type information to identify opportunities for increasing connectivity with the urban corridors to improve biodiversity and movement for fauna within the urban footprint.

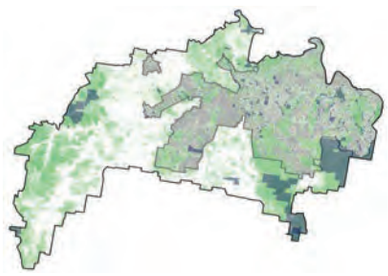
Map to be updated to be inline with Natural Environment Strategy maps



Canopy Cover 2019 (m)

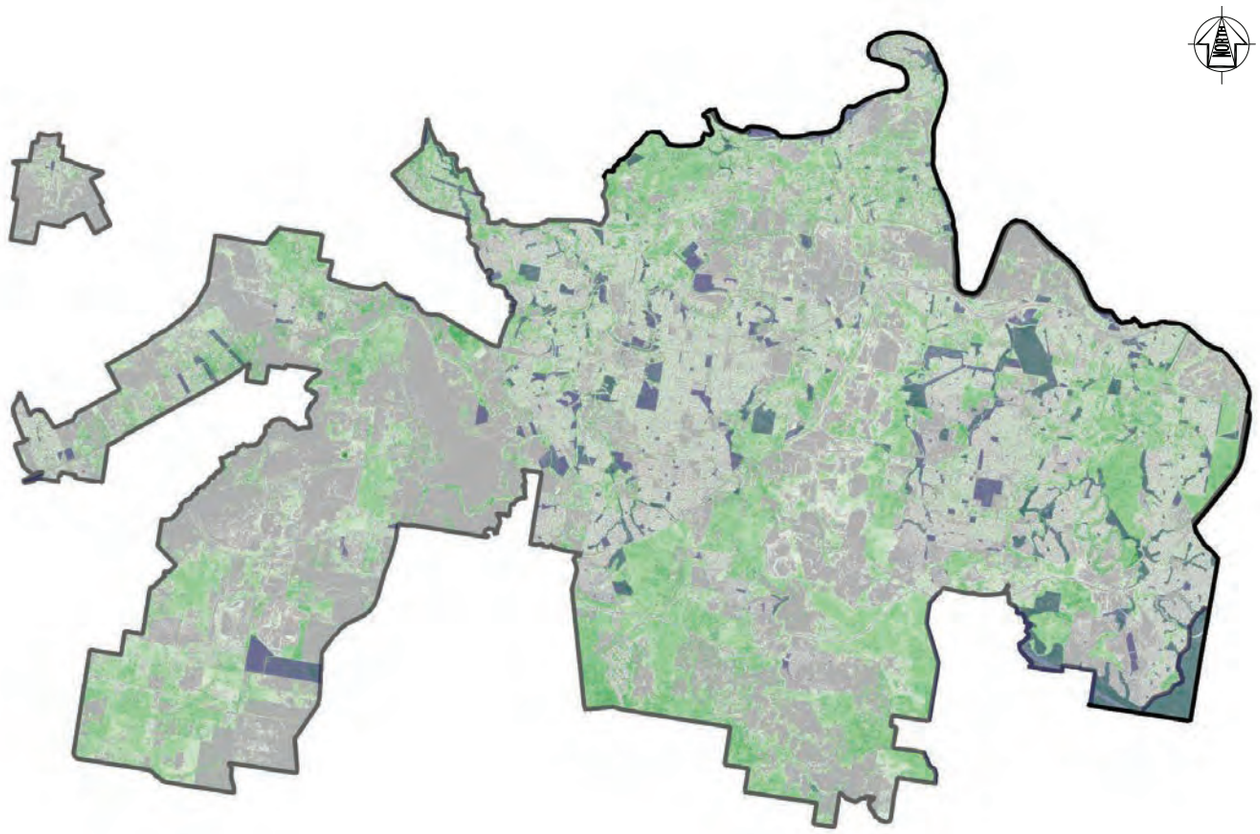
- 1
- 2
- 4
- 6
- 8
- 10
- 15
- 20
- 30
- 40
- 50
- 60
- Ipswich City Council LGA
- Urban Corridor (Nature Conservation Strategy 2015)

## 6.6 Parks and Open Space



The map below shows the urban footprint with canopy cover taken from 2019 LiDAR information and the location of parks and open space.

This information will be used in conjunction with heat mapping, land use and land type information to identify opportunities for increasing greening benefits such as shade, habitat and visual amenity, within parks and open space.



Canopy Cover 2019 (m)

- 1
- 2
- 4
- 6
- 8
- 10
- 15
- 20
- 30
- 40
- 50
- 60
- Ipswich City Council LGA
- Open Space

# RACEVIEW CASE STUDY AND NEXT STEPS

# 7. RACEVIEW CASE STUDY

This case study of Raceview is intended to give an overview of the information required to understand the current greening situation for each suburb within the urban footprint. Raceview has been selected for the case study as it has a canopy cover of 15.4%, one of the lowest within the urban footprint. Further investigation of greening sites will be undertaken.

Information reviewed will include:

- vegetation changes over time
- land use and land type
- canopy cover %
- parks and open space
- urban corridors
- waterways and wetlands
- biodiversity mapping

Heat mapping will be included once the data is available.

It is intended that this information will be analysed further to identify priority areas for greening.

## 7.1 Vegetation Changes Over Time

This section looks at the changes of vegetation cover over time within a section of Raceview.

The aerial imagery on pages 43 and 44, provide a tool to compare land uses and changes in vegetation over a 76 year period in Raceview. The aerial images are dated 1955, 1971, 2002 and 2022. Significant changes are illustrated in Small Creek and Deebing Creek, which are highlighted in each image to compare the changes over time.

- Image 1, taken in 1955, page 43, shows Small Creek and Deebing Creek as cleared within farming land
- Image 2, taken in 1971, page 43, shows Small Creek and Deebing Creek slightly more vegetated than shown in 1955. There is more development to the north of the creeks.
- Image 3, taken in 2002, page 44, shows Small Creek remaining as a realigned concrete channel as in 1971.Deebing Creek show a thickly vegetated along the creek line
- Image 4, taken in 2022, page 44, shows the efforts of council and community working together, towards the same goals to improve and enhance waterway health of Small Creek and the natural areas surrounding it. Deebing Creek is thickly vegetated.

Images on page 45 show Small Creek as a concrete channel and as it is today, a healthy, vegetated, naturalised waterway providing benefits to the community and environment.

*1955 Ipswich including Small Creek and part of Deebing Creek, Raceview. Cleared of vegetation for farming. (Source: QImagery)*

*Aerial view of part of Ipswich in 1971. This image shows Small Creek and part of Deebing Creek, Raceview. Increase in development to the north of Small Creek. (Source: QImagery)*

*Small Creek, Raceview in 2002. Concrete swale within mown grassed area. (Source: QImagery)*

*Small Creek, Raceview in 2022. Naturalised water way and shared pathway. (Source: Nearmap)*

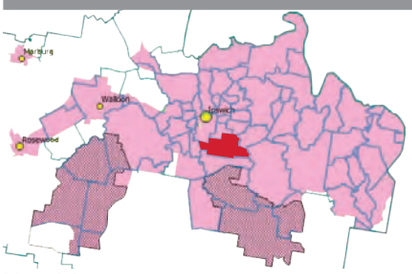
*Small Creek Pre 2016 – Concrete swale within a maintained grass drainage corridor. (Source: Ipswich City Council)*

*Small Creek Stage 3 – Shared Path from Briggs Road to Poplar Street, Raceview.*

*Small Creek Stage 3 – Naturalised creek 2022*

*Small Creek Stage 3 – Blue Gum contains hollows which provides shelter and nesting locations for local wildlife.*

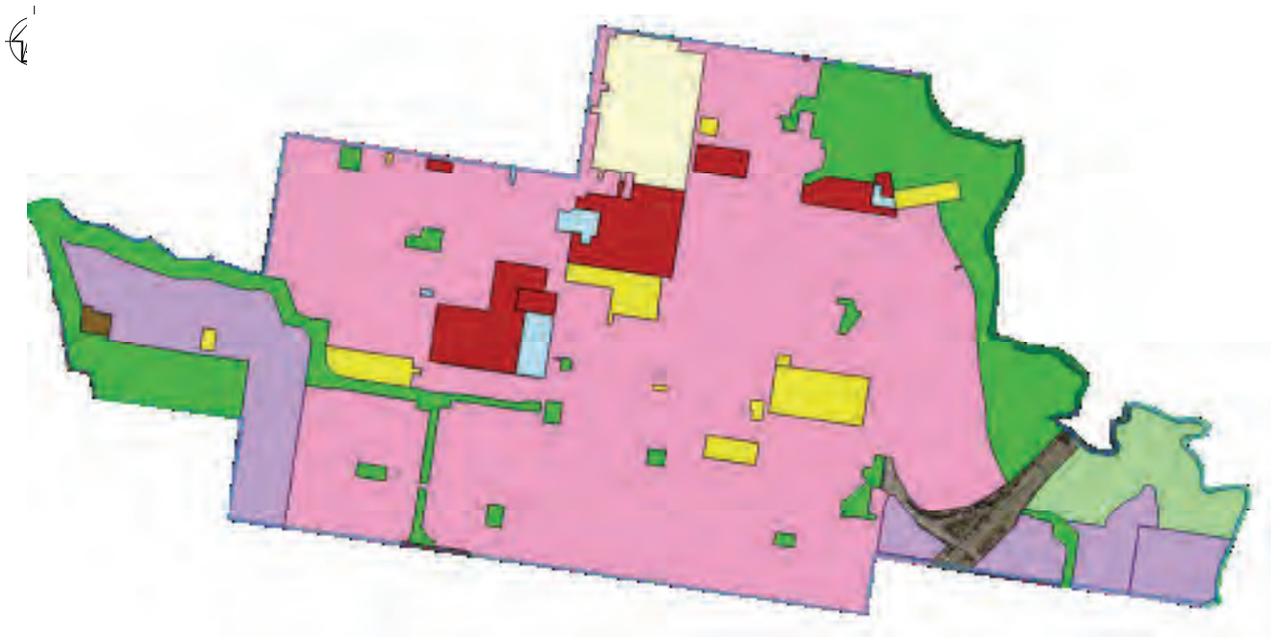
## 7.2 Raceview – Land Use



Key Map

The Raceview Land Use Map, below, shows Residential Low Density makes up the majority of land use. Raceview is bounded by Briggs Road, Cemetery Road, Raceview Street and Robertson Road in the north, Bundamba Creek in the east, the Cunningham Highway in the south, and Deebing Creek in the west. The 2021 Estimated Resident Population for Raceview is 16,013, with a population density of 1,748 persons per square km. (Source: **https://profile.id.com.au/ipswich/locality-snapshots?WebID=32405300**).

Raceview Land Use Map



Legend

- Residential Low Density
- Residential Medium Density
- Local Business and Industry
- Special Uses
- Local Retail and Commercial
- Recreation
- Conservation
- Local Business and Industry Buffer
- Special Opportunity
- Limited Development(Constrained)

## 7.3 Canopy Cover Overlay on Open Space, Waterways and Building Footprint

The canopy cover for Raceview has been reviewed in conjunction with the land use and transport networks to understand the location of current cover. This provides base information which will assist in identifying greening opportunities and working towards an increased canopy cover. Raceview canopy cover % taken from 2019 LiDAR information is 15.4%.

Additionally, the suburb boundaries to the east is Bundamba and to the west is Deebing Creeks, with small parks distributed throughout the Residential Low Density area. This provides opportunity to investigate the connection of greening to provide shaded active travel routes between parks.

### Raceview Canopy Cover and Land Use

**Building Footprint**

- Cascade Gardens
- Mulberry Tree Chile Care
- Raceview Congregational Kinder
- Raceview Pre School
- Raceview State School
- Raceview Tavern
- Thornton Court
- Bethany Lutheran Primary School
- Carinity Elim Estate Retirement Living
- Karen's Kindy
- Southern Cross Care – St Mary's
- Medical Services
- Translink Stops
- Road Network
- Criterion Track
- Bikeway
- Small Creek Bikeway
- Pedestrian Network
- Translink Routes
- Ipswich Railway
- Water Course
- Urban Suburb
- Parks and Reserves

**Canopy Cover Height 2019 (m)**

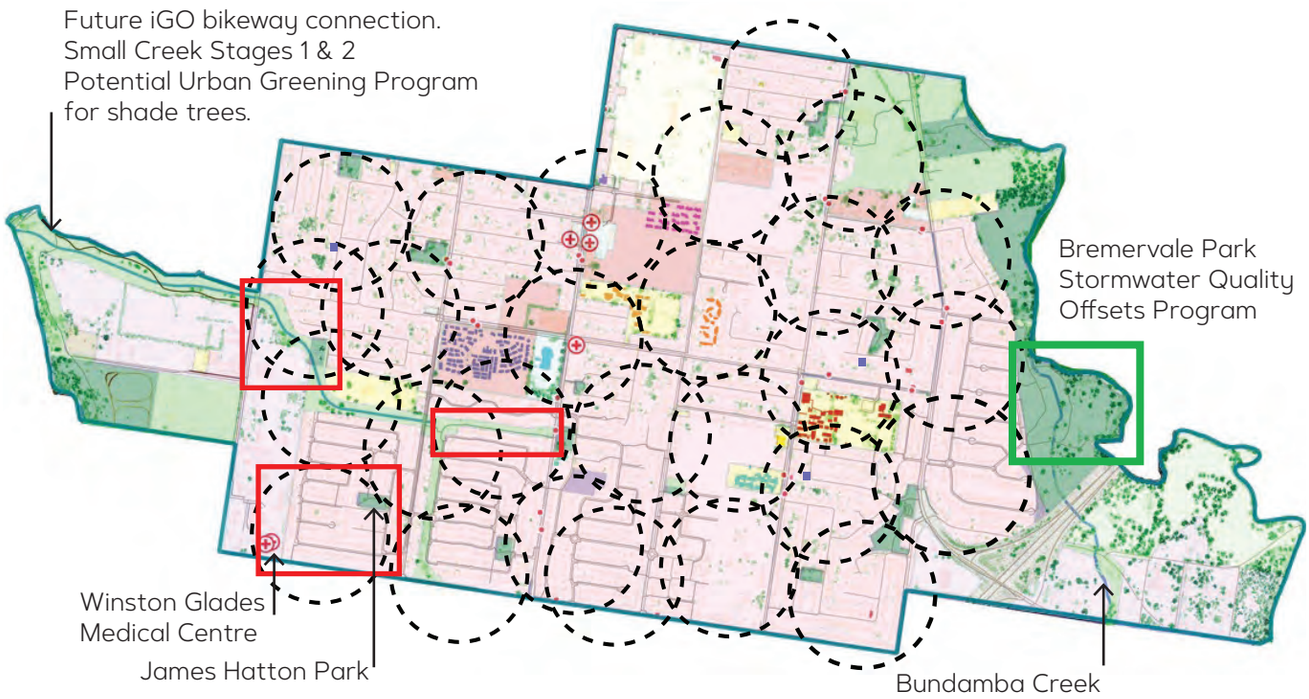
- 1
- 4.35
- 7.71
- 11.1
- 14.4
- 17.8
- 21.1
- 24.2
- 26.8

## 7.4 Raceview – Indicative Greening Investigation Areas

Greening project identification selection criteria includes:

- 400m walkability to medical, transport, schools, shops
- Identification of socially vulnerable areas within the 400m radius of utilities
- Availability of space for trees/greening
- Suitability and safety within road/speed environment

### Raceview Land Use Map with indicative 400m radius




### Legend

- Residential Low Density
- Residential Medium Density
- Local Business and Industry
- Special Uses
- Local Retail and Commercial
- Recreation
- Conservation
- Local Business and Industry Buffer
- Special Opportunity
- Limited Development (Constrained)

- Indicative 400m radius areas to be investigated for greening sites
- Current sites identified for greening
- Program within and adjacent to urban corridors
- Medical Centres
- Translink Bus Stops
- Indicative location of Habitat Gardens members
- Creek

## 7.5 Raceview – Indicative Investigation of 400m Radius from Winston Glades Medical Centre

This section of map illustrates Winston Glades Medical Centre within 400m walkable distance from James Hatton Park. The map also shows overlay of the canopy cover, taken from 2019 LiDAR information.

Street names have been added to correlate to the table below which has the % canopy cover for each street. The streets will be investigated further to identify vacant greening sites.

| STREET NAME (Within 400m walking distance to Winston Glades Medical Centre) | CURRENT % CANOPY COVER (Baseline survey taken from 2019 LIDAR information) |
|---|---|
| Aimie Place | 3.4% |
| Anna Drive | 3.2% |
| Brittany Crescent | 1.9% |
| Katie Way | 2.7% |
| Katrina Way | 4.8% |
| Kristie Court | 3.0% |
| Sarah Place | 2.6% |

## 7.6 Next Steps

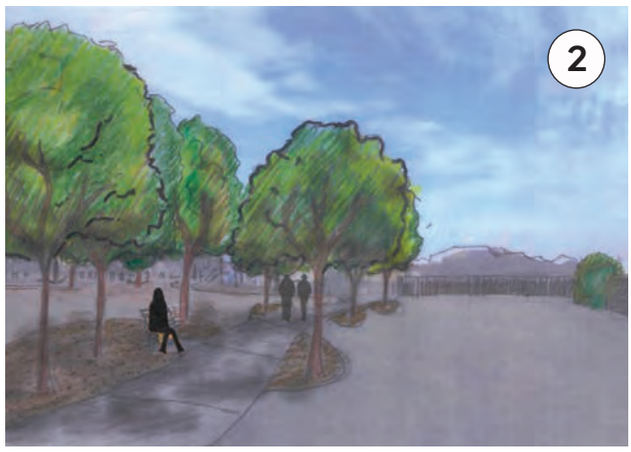
The next steps for the Urban Greening Plan will be to focus on analysing base information in the form of canopy % and thermal heat mapping, per greening category, to identify and high priority areas within the city's urban footprint. Additionally, on going site investigation, identification and planting of vacant tree site.

The below images are an example of the process undertaken. Image 1 below, show James Hatton Park in 2021, identified through local knowledge as a potential park pathway in need of shade. Image 2 shows an artists impression of how the seat and path would look with shade trees. The canopy of the trees provide shade, cooling, habitat, sequester carbon and visual amenity.

Image 3 shows a concept plan developed to provide shade to the park path as well as adjoining streets, Katie and Katrina Way. The trees on these streets will improve conditions for residents to walk comfortably to Winston Glades Medical Centre.

The shaded streets and path are an example of how the Urban Greening Plan vision will be realised, providing a connected, resilient, and valued green Ipswich.

*1. James Hatton Park, Raceview, 2021.*




*2. Artist impression of shaded seating and walkway in James Hatton Park.*

*3. Concept plan for shading to James Hatton Park walkway, Katie Way and Katrina Way. This contributes to increasing the % canopy cover within the 400m walkable neighbourhood to Winston Glades Medical Centre.*

# 8. GLOSSARY

| | |
|---|---|
| **Active Transport** | Physical activity undertaken as a means of transport, such as walking or cycling. |
| **Urban Biodiversity** | Refers to the diversity of plants and animals and their inter-relationships with the land, air, water, people and other infrastructure within an urban environment. |
| **Canopy Cover** | The above-ground portion of a vegetation type, formed by plant crowns. In a woodland or forest, the canopy is formed by the crowns of trees and sometimes large shrubs. The canopy can be further divided into upper, mid and lower canopy layers. The tallest plants of a vegetation type form the upper canopy layer. A measure of how much the plant canopy covers the ground. |
| **Carbon Sequestration** | A natural or artificial process by which carbon dioxide is removed from the atmosphere. |
| **Carbon Storage** | The amount of carbon held within a trees tissue, mainly the roots, stem and branches. |
| **Climate Adaptation** | The process of adjustment to actual or expected climate and its effects. |
| **Climate Change** | The observed increases in global temperatures due to human activities, such as the burning of fossil fuels (coal, oil and natural gas), agriculture and land clearing. Changes in the climate include increases in global average air and ocean temperature; widespread melting of snow and ice, and subsequent rising global sea level; and increases in concentration of atmospheric carbon dioxide causing ocean acidification (Australian Government Department of Environment and Energy). |
| **Core Habitat** | Core habitat areas are larger vegetated areas which provide habitat for a variety of the city's biodiversity and shelters the majority of matters of environmental significance. Due to their size and generally good condition, these areas assist in ensuring conservation of a diverse range of native species and ecosystems as well as providing a variety of functions resulting in the services fundamental for human well-being. These, therefore, provide the most critical areas for nature conservation measures across the local government area. |
| **Corridor** | Corridors are connections across the landscape that link up areas of habitat. They support natural processes that occur in a healthy environment, including the movement of species to find resources, such as food and water. |
| **Ecosystem** | A system formed by the interaction of a community of organisms with their environment. |
| **Ecosystem Services** | Ecosystem services refer to transformation of natural assets (soil, plants and animals, air and water) into things that we value through natural or enhanced ecological processes; i.e. those organisms and processes which clean our air and water, pollinate plants, filter and recycle nutrients, modify our climate, control floods and improve soil fertility, and enhance the aesthetic and cultural benefits that derive from nature. |
| **Evapotranspiration** | Evapotranspiration is the term used to describe the part of the water cycle which removes liquid water from an area with vegetation and into the atmosphere by the processes of both transpiration and evaporation. |

| | |
|---|---|
| **Green Infrastructure** | The network of natural landscape assets, which underpin and provide for the economic, socio-cultural and environmental functionality of our cities and towns. Examples of green infrastructure includes urban parks and reserves, wetlands and stream corridors, street trees and roadside verges, gardens and vegetable patches, bikeways and pedestrian trails, wall and rooftop gardens, orchards and farms, cemeteries and derelict land (CSIRO). |
| **LiDAR (Light detection and ranging)** | LiDAR is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the earth. |
| **Strategic Remnant** | Strategic remnants are patches of remnant vegetation or high-value regrowth strategically located within the habitat network to facilitate the movement of biodiversity across the landscape by providing stepping stones within identified wildlife movement corridors. These stepping stones are located close enough to each other for some species to be able to move from one patch to the next. They are mostly suitable for highly mobile animals. |
| **Stepping-stone** | Patches of smaller scale and isolated vegetation scattered through the landscape that provide habitat or refuge. |
| **Stepping-stone Corridor** | Patchwork or series of isolated vegetation providing some potential connection for the movement of wildlife species to larger nodes or core habitat areas i.e., birds. For the purpose of landscape planning, they are typically 100m wide. |
| **Urban Corridor** | Urban corridors are connections across the landscape that link up areas of habitat. They support natural processes that occur in a healthy environment, including the movement of species to find resources, such as food and water.<br><br>Corridors can contribute to the resilience of the landscape in a changing climate and help to reduce future greenhouse gas emissions by storing carbon in native vegetation. |
| **Urban Footprint** | The Urban Footprint identifies the extent of land needed to accommodate the region's urban growth to the projected year. (ShapingSEQ) |
| **Urban Greening** | The network of natural and semi-natural areas that deliver a range of environmental,economic and social values and benefits to urban places, including protection from flooding or excessive heat, or improving air and water quality, whilst also protecting biodiversity.<br><br>Examples of urban greening include urban tree canopies, parks and sport fields,nature reserves and wildlife corridors, waterways and wetlands, stormwater harvesting systems, green roofs and walls, and tree-lined streets and pathways. |
| **Urban Heat Island Effect** | Increased surface temperatures during summer months in urbanised areas resulting from paved surfaces such as asphalt and dark building surfaces which absorb and release more heat from the sun during the day and the night-time than the natural landscape, thereby increasing the ambient temperature and prolonging periods of higher air temperature. |
| **Water Sensitive Urban Design** | Water Sensitive Urban Design is a set of principles that can be applied to sustainably manage water, providing opportunities for the development industry, local government and their communities to achieve more liveable cities with vibrant and healthy waterways. |

# 9. REFERENCE


Brisbane's Urban Forest – Brisbane City Council
**Brisbane.qld.gov.au/clean-and-green/natural-environment-and-water/plants-trees-and-gardens/brisbanes-trees/brisbanes-urban-forest**

CIty of Ipswich, I Nature Conservation Strategy, 2015.
**Ipswich.qld.gov.au/__data/assets/pdf_file/0018/43083/ICC-Nature-Conservation-Strategy-2015.pdf**

City of Ipswich, Recreatioinal Cycling and Walking Action Plan, 2021, p.15.
**Hdp-au-prod-app-ipsw-shapeyouripswich-files.s3.ap-southeast-2.amazonaws.com/6816/4497/7435/Recreational_Cycle_Walk_Action_Plan.pdf**

City of Melbourne, Urban Forest Strategy, Making a great city greener, 2012–2032.
**Melbourne.vic.gov.au/SiteCollectionDocuments/urban-forest-strategy.pdf**

Climate Change In Queensland Version 1
**Qld.gov.au/__data/assets/pdf_file/0023/68126/queensland-climate-change-impact-summary.pdf**

CSIRO
**Research.csiro.au/climate/themes/biodiversity/**

Greening Sydney Strategy, City of Sydney
**Cityofsydney.nsw.gov.au/strategies-action-plans/greening-sydney-strategy**

ShapingSEQ, South East Queensland Regional Plan 2017
**Dilgpprd.blob.core.windows.net/general/shapingseq.pdfhttps://waterbydesign.com.au/wsud**

Urban Forest Strategy, City of Melbourne
**Melbourne.vic.gov.au/community/greening-the-city/urban-forest/Pages/urban-forest-strategy.aspx**

Urban Tree Canopy Study, 2020. Gity of Gold Coast.
**Goldcoast.qld.gov.au/files/sharedassets/public/pdfs/urban-design/urban-tree-canopy-study.pdf**

City of Ipswich

Ipswich City Council
PO Box 191, Ipswich QLD 4305, Australia

Phone (07) 3810 6666
council@ipswich.qld.gov.au
Ipswich.qld.gov.au


**Join us online:**

/IpswichCityCouncil
/ipswich-city-council
/IpswichCityCouncilTV