

Brisbane. *Clean, Green, Sustainable*

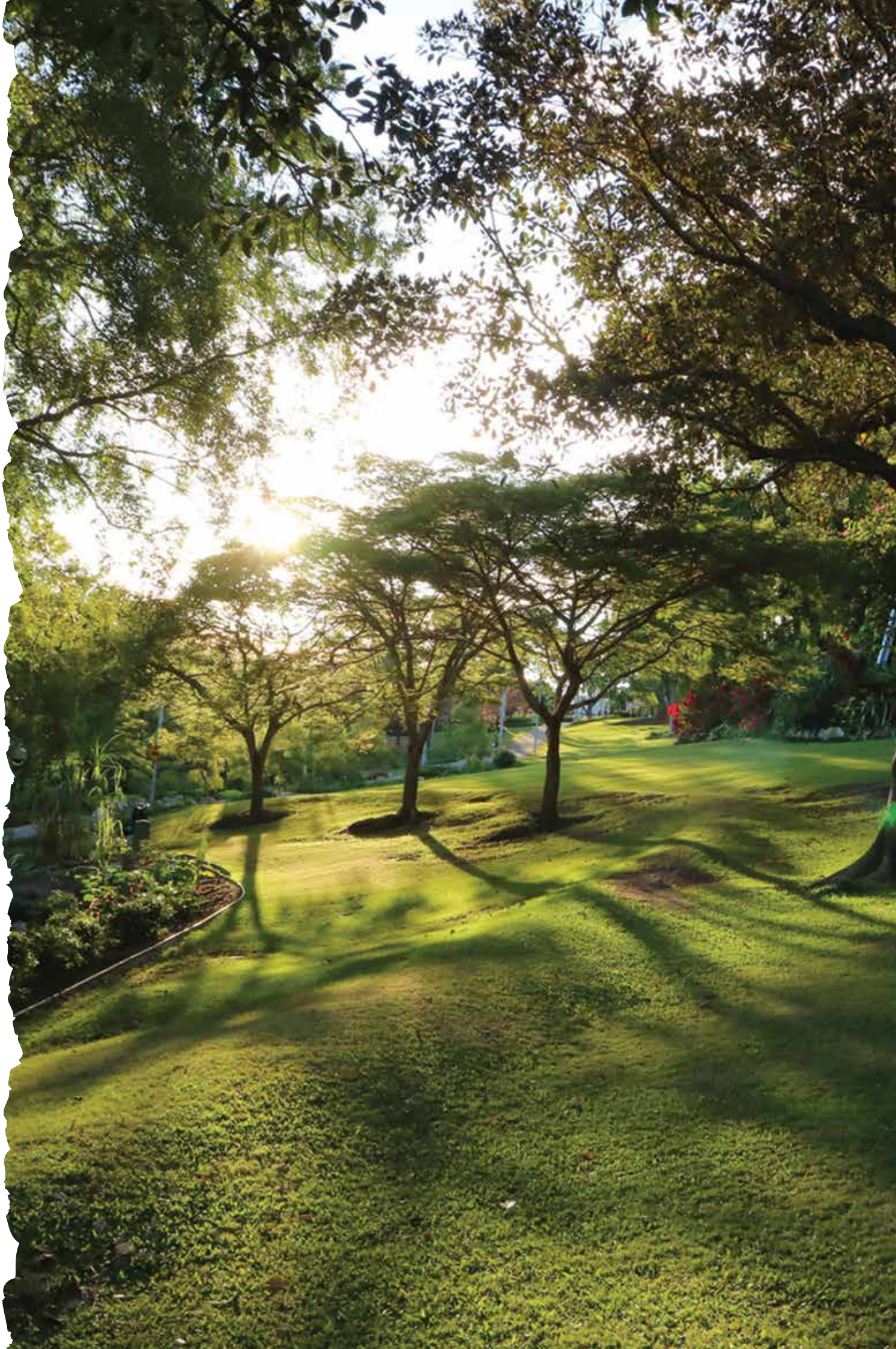
2017-2031



That's why we're growing
a sustainable city together



Dedicated to a better Brisbane



Message from the Lord Mayor

As Lord Mayor of this unique city, I am dedicated to making Brisbane the cleanest, greenest, most sustainable city in Australia.

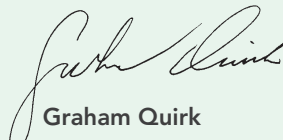
Our vision is of Brisbane being a top 10 lifestyle city globally, recognising that the liveability of our city is based around our natural environment and is vital for our ongoing economic prosperity. Above all things, keeping our city clean and green will ensure Brisbane remains a liveable city for our children, and for future generations.

We have a lot of which to be proud, with our clean air, the richest biodiversity of any city in Australia, 35% natural habitat cover – on track for our target of 40% by 2031, generous green spaces for our community to enjoy with almost 2100 parks across the city – with more created all the time, and a commitment to sustainability that has twice earned us the accolade of Australia's Most Sustainable City.

Demonstrating leadership in sustainability throughout our own operations, Council has achieved full carbon neutral status, making it Australia's largest 100% carbon neutral organisation. In 2012, Council completed Australia's largest tree planting project – planting two million trees across the city, and we now boast more than 9500 hectares of natural areas preserving our precious bushland.

Although we have celebrated many successes, there remain big challenges ahead as population growth brings new pressures. We will need to use land, energy and water resources more wisely and generate less waste. As our climate changes, Brisbane must remain prepared for natural threats including droughts, bushfires, storms and flooding. In spite of this we have an opportunity to commit to sustainability, drive innovation and build a green economy of education and jobs in energy and resource management.

I want to put environmental sustainability and climate resilience at the heart of all we do and I remain committed to rolling out the most ambitious environmental agenda in our city's history. Together we can work to make Brisbane the most liveable city in the world.



Graham Quirk
Lord Mayor



Acknowledgement of Traditional Owners



Council acknowledges the Traditional Custodians of the land and their unique relationship with their ancestral country. We pay respect to all Aboriginal and Torres Strait Islander Elders of Brisbane, and recognise their strength and wisdom.

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Chapter 1

Introduction

Brisbane is a New World City of light and subtropical colour. The natural world underpins the city's liveability and its reputation as one of the world's most clean, green and healthy cities.

We didn't get here by accident. Sustaining a healthy environment as the city has grown is the result of hard work, decades of commitment and daily choices by Brisbane City Council and the community.

Our residents are recycling more than ever before, buses are greener and creeks are healthier. But the true impact of decades of action supporting the liveability, environmental health and economic vitality of the city has in many ways gone unsung. This document brings together Brisbane's sustainability achievements to create a clearer understanding of our progress and our path forward together. The picture is compelling.



Mt Coot-tha Lookout

Celebrating a living city

Brisbane is on its way to becoming a world leader in sustainability.

Brisbane is a city that lives and breathes its dedication to a clean and green lifestyle. Active and engaged community groups supported by an army of volunteers are working with Council to restore waterways, revegetate green spaces, eradicate weeds and pests, reuse waste and buy back bushland. Environmental sustainability is being explored and celebrated through art and creativity, learning centres, education programs, community events and festivals. Council recently completed the two million tree-planting program and has Australia's longest-running free plants program.

Brisbane's desired future *CityShape 2026*, developed in consultation with the Brisbane community and reflected in our *Brisbane City Plan 2014* (City Plan), continues to materialise, keeping pace with population growth and delivering new and renewed built forms for housing and employment. Community members contribute to guiding the refinement of the CityShape through neighbourhood plans. New development is being concentrated into areas where it makes sense to grow, such as the inner city and around bus and train stations in order to preserve our green spaces, quiet suburbs and the city's important historic 'timber and tin' homes.

More CBD buildings are getting sustainable Green Star sustainability ratings, lush streetscaping is turning busy city streets into shady subtropical boulevards and parkland is being connected via a web of green links. Council is making public infrastructure more water-smart, flood-resilient and adaptable to a changing climate. The city has Australia's most modern bus fleet and bus trips are increasing at about four times the rate of population growth.

Council is demonstrating leadership in sustainability throughout its own operations. It has achieved full carbon neutral status, making it Australia's largest carbon neutral organisation. It has been one of the nation's largest purchasers of green power since 2010, and solar power and energy created from landfill gas now provide part of Council's energy requirements. It trials and implements innovations in sustainability, solutions to allow wildlife to move safely around busy roads, to low-emission buses, and actively promotes them to business and industry. Recycling is a matter of course from plastic corflute signs and office paper to old bus tyres and grass clippings. Even stormwater is recycled for irrigating street trees, parks and sports fields.



City Botanic Gardens

Bringing green into focus

Council's decades-long commitment to sustainability has remained constant across successive administrations. Plans and strategies of today build on the actions of yesterday and the aspirations of tomorrow as expressed in Council's long-term community plan for the city, *Brisbane Vision 2031*.

Recent Council strategic plans such as the *Brisbane 2022 New World City Action Plan (Brisbane 2022)*, *Creative Brisbane Creative Economy*, *City Centre Master Plan* and *Brisbane Access and Inclusion Plan 2012-2017* all include ambitious sustainability goals. This document takes Council's sustainability commitment a step further. It draws together the many sustainability strategies embedded in multiple plans, programs, divisions and work areas, updates Council's sustainability commitments and details practical actions to reach our goals under nine themes:

- o Low Carbon
- o Clean Air
- o Green Transport
- o Waste and Resource Recovery
- o WaterSmart City
- o Sustainable CityShape
- o Urban Forest
- o Parks
- o Biodiversity.

Measurable targets will keep Council on course and enable tracking of progress, with a refresh date to align with Council's corporate planning processes.

As the largest local government authority in Australia, Council is in a unique position to influence sustainability outcomes not only in Brisbane but in the region, the State and the nation. Council undertakes many functions that are conventionally the responsibility of other tiers of government, while still working at grassroots level. From planting trees to advocating for national legislative reform, Council has the power to effect change.

Council's strong relationships with industry and government also affords it the opportunity to drive technology improvements, shape legislation, push for cleaner standards and encourage greater support for green business. These efforts can shape national agendas and outcomes.



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City Botanic Gardens

Working for the greener good

Sustainability is critical to a growing New World City. It is about ensuring the liveability of our city, now and into the future. Liveability has an economic value. It is pivotal to our ability to compete in a global market and it gives us an important edge in attracting new businesses and the talented people we need to contribute their skills and expertise to help the city grow.

Sustainability is also a key economic driver of business, with sustainable business practices now regarded as a necessity. The pressures of population growth and consumption of resources mean there is a need to do more with less. Around the world, the cities and businesses that adopt sustainable practices will be those that flourish in the future.

Brisbane is the capital city of Australia's fastest growing region. Continuing population growth means we need to be smarter about how we manage finite resources, our space and waste. We must also look to sustainable systems to help us stay resilient and adaptable when faced with the sudden shocks of adverse natural events – the heat, floods and drought that weather can bring.

Brisbane's unique position as Australia's most biodiverse city cannot be underestimated. It carries significant responsibilities. Brisbane residents are passionate about the environment and they expect Council to take the lead. Council recognises the combined contribution of many individuals and groups who work in partnership with us, helping to protect, restore and enhance our local natural environment.

Being Australia's most sustainable city requires commitment and investment. We can be proud of what has been achieved but a significant amount of work lies ahead. We are ambitious in our resolve to stay at the leading edge of city sustainability and recognise that this is a hallmark of a New World City. The ways in which we take advantage of emerging trends and manage an increasing urban population will be our opportunity to remain and be recognised as Australia's most sustainable city.



New Farm Park



Thriving as a resilient city

To thrive as a New World City, it is important that Brisbane is able to plan and prepare for, respond to and recover from future events. This ability to be resilient is now seen as one of the key attributes of a sustainable city – economically, environmentally, socially and institutionally.

Like other cities, Brisbane is vulnerable to a variety of adverse events. We have seen Brisbane's ability to manage and recover from droughts and floods and the strong community spirit of our residents. For example, our residents responded to drought by dramatically reducing water consumption – a reduction in use that continued after the end of the drought. We will continue to plan for future challenges by implementing strategies that support our resilience outcomes.

Brisbane. Clean, Green, Sustainable will help ensure the resilience of the community, built form and infrastructure, and environment.

An adaptive management approach will be implemented by:

- understanding our risk to future events
- establishing good leadership and strong governance around resilience
- undertaking resilience planning to prepare, respond and recover
- coordinating implementation across all government levels and with the community
- benchmarking system performance and continually reviewing and adjusting for improvements.



Brisbane River from South Bank

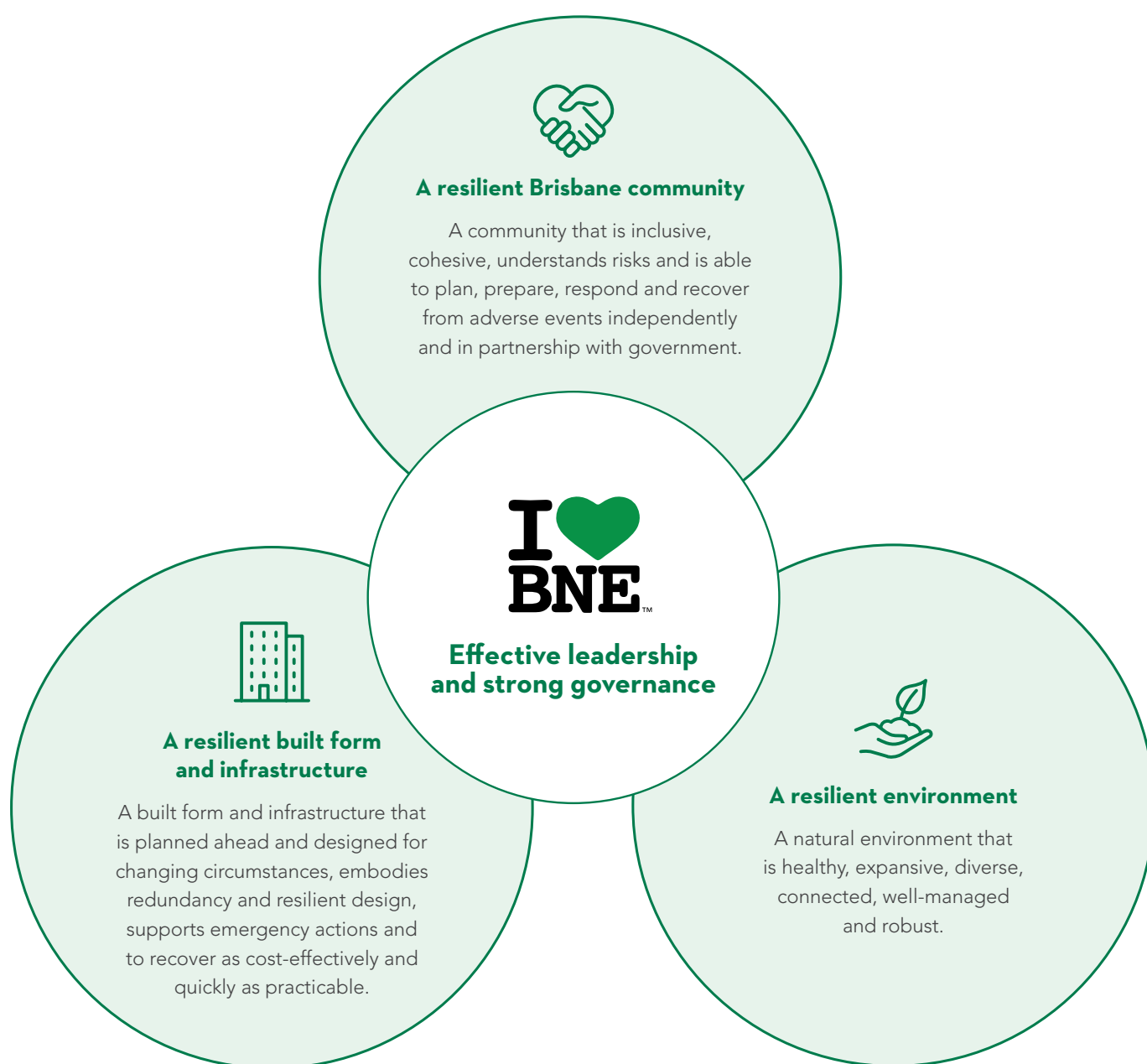


Figure 1: Brisbane's resilience outcomes



Green Heart Fair, Chermside

Our green heart community

The community is at the heart of Brisbane's efforts to be a clean, green and sustainable city.

Everyday decisions by households are having a big impact on the city's sustainability. Residents are living smarter, using energy wisely, littering less and reducing their carbon footprint by swapping the car for public transport, cycling and walking.

Following the Millennium Drought in 2009 Brisbane residents have become enduring water savers, keeping daily water use to just 169 litres – the lowest level of any Australian capital city.

Household recycling is growing and landfill waste from homes is diminishing. More and more green waste is being turned into mulch and compost. Waste is taking its place as a valuable, recoverable resource. Environmental sustainability is also being explored and celebrated through art and creativity, learning centres, education programs, community events and festivals.

Under the recognisable 'I GREEN HEART BNE' umbrella – Council's symbol of a sustainable Brisbane – Council reaches out to build partnerships with all sectors of the community, in all aspects of city life. Council's aim is to inspire the community to value and appreciate the environment, foster an understanding of each person's responsibilities, and support the community in being stewards of our environment.



A smart approach to sustainability

Demonstrating its commitment to achieving a clean, green Brisbane, Council established its own sustainability agency – CitySmart – in 2009. Since its formation, CitySmart has delivered many programs which engage the community in practical and affordable actions that help reduce the city's environmental impacts as well as driving citywide projects such as the District Cooling System, due to be launched in 2017.

CitySmart delivers annual Green Heart events to inspire sustainable living and showcase new technologies in a spirit of fun and enjoyment. Since the Green Heart events started in 2009, hundreds of thousands of people have attended to learn about sustainable living in Brisbane.

Other successful sustainability initiatives from CitySmart include:

- Reduce Your Juice Energy Efficiency program – an innovative approach to improve low-income young adults' energy efficiency using online games and digital messaging to encourage the uptake of energy efficient behaviours.
- Live for Less program – digital program engaging Brisbane residents, in ways to live more sustainably and reduce their cost of living.
- Watt Savers – helping over 300 small businesses save 10% on their energy bills through a series of workshops, training and online tools.



Enoggera Creek

Community stories

Green Heart Schools

Council's Green Heart Schools program, running since 2008, engages with school students by fostering their understanding of the world around them and raising awareness of their responsibilities in caring for our environment. The program works with students from prep to year 12, delivering a range of initiatives that inspire and engage students around a broad range of themes from waste minimisation and active travel options, to caring for their local creeks and bushland and becoming leaders of change in their own communities. Initiatives such as the Student Environmental Leadership Network, an environment-specific leadership program for year 10 students, provides students with knowledge and skills to develop and lead behaviour change projects in their school communities. Challenging young people to be part of the solution, the Green Heart Schools 'Future BNE Challenge', delivered as part of the international World Science Festival Brisbane, inspires hundreds of year seven students to design innovative solutions to Brisbane's future water security, demonstrating that a healthy environment is the responsibility of the whole community.

Community carers protecting our environment

Brisbane has a long history of community groups and individuals helping to protect and preserve our natural environment.

Over 5000 members of the Community Conservation Partnerships Program (CCPP) have worked hard across the city restoring natural habitats in parks, remnant bushland, wetlands and along waterways both on public and private lands. CCPP is an integral part of Council's strategy to achieve social and environmental goals, achieving significant environmental outcomes, including weed removal, revegetation, creek bank stabilisation and rubbish removal.

Each Habitat Brisbane, Creek Catchment group and Wildlife Conservation Partnership partner within CCPP is assigned a

designated Council officer who is committed to supporting their needs. Officers ensure members are equipped with the relevant skills and materials to support workable solutions to the environmental restoration challenges they face.

Long-term friendships are forged, strengthening local communities and allowing these members to tackle issues that were historically overwhelming.

Council offers a range of support to help the community in their sustainability endeavours.

These programs include:

- Lord Mayor's Community Sustainability and Environmental Grants are structured to support community with grant funding provided for Native Wildlife Carers, Cultivating Community Gardens, Environmental Grants and Sustainability Grants. Since 2010, community groups and individuals have received \$1.5 million to support sustainability and environmental projects.
- Community gardens – Council supports community gardens and city farms citywide, by providing land, supplying information, support and providing grants.
- Community Conservation Assistance (CCA) provides assistance to CCPP participants for on-ground bushland restoration projects. Since the program's inception in 2012, CCA has supported more than 300 projects with \$2.8 million worth of assistance towards projects that are strategically placed to maximise benefit to our natural environment's connectivity and resilience towards environmental weeds.
- Brisbane Greeters – a community-based ambassador program coordinated by Brisbane Marketing which enables local residents who are passionate and knowledgeable about Brisbane to connect with visitors from all over the world. Brisbane's clean, green, WaterSmart stories are now being shared with visitors from around the world to help them understand Brisbane's sustainability story and share in the care of our city.



Brisbane Botanic Gardens Mt Coot-tha

Realising Brisbane's vision

This plan will help Council to achieve its long-term community plan for the city, *Brisbane Vision 2031*.

This plan, along with the Brisbane 2022 and City Plan define ways to work towards the achievement of Brisbane Vision targets and aspirations.

Seven drivers derived from the Brisbane Vision informed the development of this document.

These reflect key features of Brisbane, specifically its:

1. prosperous economy and emergence as a New World City
2. growing population and desirable quality of life
3. strong sense of community and inclusiveness
4. appreciation of the natural environment
5. desire to adapt and respond to a changing climate
6. ability to embrace new technology and innovation
7. consistent and stable citywide governance structure.

Sustainability principles

Six guiding principles from Council's current corporate Sustainability Policy also underpin this plan.

1. Promote economic, environmental and community integration over the long and short term.
2. Provide for equity within and between generations.
3. Enhance and maintain biodiversity and natural environmental systems.
4. Act cautiously when there is a risk of serious or irreversible impacts.
5. Think globally, act locally.
6. Provide broad public involvement on community issues.



South Bank Parklands



Chapter 2

Low Carbon



Successfully reaching global emission reduction goals can enhance local, economic and social outcomes.

GOAL Council is recognised as a leader in reducing carbon

Target: Remain a carbon neutral Council

Indicator: Council's operations have a net zero carbon footprint

Actual: Brisbane City Council achieved carbon neutral status in line with the Australian Government's National Carbon Offset Standard (NCOS) in 2016-17

Target: By 2031 the average household's carbon emissions from energy, waste and transport will be six tonnes of carbon dioxide equivalent per year

Indicator: Tonnes of CO₂e produced per household from energy, waste and transport each year

Actual: 11.4 tonnes CO₂e (2012)

Around the world, nations are working together to reduce carbon emissions in line with the 2015 Paris Agreement on climate change. This requires countries to limit their greenhouse gas emissions to levels consistent with keeping the increase in global average temperature below 2°C over pre-industrial levels.

The landmark agreement was negotiated by 195 nations, including Australia, at the 21st Conference of Parties to the United Nations Framework Convention on Climate Change, held in Paris. The agreement, which will replace the Kyoto Protocol, further acknowledged that global average temperature rise may need to be held below 1.5°C to avoid the worst impacts of climate change. It includes regular reviews to ensure national commitments are strengthened in line with emerging scientific evidence. Under the Paris Agreement, the Australian Government has committed to reduce national emissions by 26 to 28% under 2005 levels by 2030.

Cities are home to 80% of Australia's population and produce the vast majority of national economic output. Being at the heart of economic activity, cities are large users of energy and producers of greenhouse gas emissions and will play a critical role in the transition to a more sustainable, low carbon society.

Council recognises that concerted efforts are needed at all levels of government to reduce greenhouse gas emissions. Taking action to reduce emissions sooner rather than later will enable a well-planned transition to a low carbon future that meets national and local needs while managing costs and risks. In many cases, investing in low carbon infrastructure and services has low incremental costs and provides valuable side benefits, such as improved energy productivity and security, creation of new industries and jobs, and cleaner air and water.

Scaling up and replicating these solutions across urban centres, where transport can account for a large portion of the local carbon footprint, offers significant potential to reduce emissions.

As the largest local government, Council is in a unique position to influence Australia's emissions trajectory. Council decisions on land-use planning, waste management, transport services, infrastructure and many other issues directly impact local emissions. Council also has contact with local businesses, producers and consumers and can facilitate practical measures to reduce emissions. Local successes can be scaled up to state or national levels.



'A walk in the park', Anna Mulingbayan, Green Heart Photography Competition 2016

Achievements

Council focuses on reducing its own carbon footprint to inspire others. Key tenancies such as the inner city offices of Brisbane Square and Green Square as well as the Sherwood Bus Depot have received high performance and energy ratings ensuring that the buildings have a low carbon footprint. The Brisbane City Hall restoration was also the first heritage-listed building assessed through the Green Star Public Building pilot.

Installing almost 245 kilowatts (kW) of on-site solar power systems at Council buildings and facilities has generated a reliable source of greenhouse gas emissions-free electricity, with an estimated 375 megawatt-hours (MWh) produced every year. Energy-efficient lamps have been installed in 25,000 street lights, reducing energy use and carbon emissions by around 2600 MWh and 2100 tonnes of CO₂e a year, equivalent to taking 550 cars off the road.

Council supported the development of the Australian renewable energy industry by purchasing more than 860,000 MWh of electricity from renewable sources over 13 years, enough to power 159,000 households for a year.

Approximately 46,000 MWh of electricity is now generated each year from gas produced and captured at Brisbane landfills, enough to power more than 8500 homes every year. Electricity generation and flaring at landfills has reduced greenhouse gas emissions by more than 250,000 tonnes of CO₂e a year. Landfill methane has been reduced by introducing the optional green bin for residents, which cut green waste collected in general bins by 40%.

Council is also trialling systems to assist in optimising fuel economy and is introducing high-frequency bus services and express ferry services to encourage greater uptake of public transport.

Compact urban development underpinned by a well-designed and responsive built environment can greatly reduce carbon emissions while improving the productivity, sustainability and resilience of communities. Brisbane's main planning scheme, City Plan, now promotes resilience and adaptation to extreme weather events in land-use planning, and in the location and design of buildings. Newly developed tools such as the *New World City Design Guide – Buildings that Breathe* will support its practical implementation.

Council continues to encourage residents, schools and organisations to live a low carbon lifestyle through programs such as Green Heart Schools, Active School Travel and Cycling Brisbane, events such as Green Heart Fairs and the Revive pop-up market, and education programs delivered through schools and environmental centres. The Lord Mayor's Sustainability Grants provide assistance to non-profit organisations to undertake actions to support the reduction of energy consumption and greenhouse gas emissions of their facilities.

CitySmart, Council's sustainability agency, is now delivering \$25 million of projects, with \$290 million more in development. Some target businesses while others help individuals. Live For Less, for example, empowers residents to live better for less through smarter, sustainable practices while Watt Savers gives small to medium-sized enterprises tools to reduce energy consumption and carbon emissions.



Green Bridge Busway, Dutton Park

Priority actions

1. Support individual action to create low carbon communities.

- Continue to demonstrate leadership by implementing emissions reduction projects and trialling innovative approaches to reducing emissions across Council operations.
- Continue to encourage and assist residents and businesses to reduce energy use and emissions via information campaigns, grants and incentives, partnering and capacity building.
- Partner with local governments and participate in national and international networks formed to facilitate community-level emissions reductions.
- Advocate for policy and legislative frameworks that support the development of low carbon communities through engagement with the Queensland and Australian governments.
- Investigate infrastructure solutions to free-up congested inner city sections of Brisbane's busway network and move bus patrons quickly into and out of the CBD. A business case is currently being prepared for the Brisbane Metro. Continue to upgrade buses, ferries, bus stops and ferry terminals for comfort and accessibility.
- Continue Council's programs that support changed travel behaviours such as Cycling Brisbane and Active School Travel.

2. Improve Brisbane's energy efficiency and the uptake of clean energy technology.

- Implement a continuous improvement program to manage the use of electricity and carbon-intensive fuels within Council operations and share the lessons learned.

- Continue to increase on-site generation of electricity from renewable energy at Council facilities.
- Explore opportunities to facilitate knowledge sharing and strategic partnerships in key sectors with high potential for improved energy efficiency and technology innovation.
- Trial and, where viable, roll out energy efficient technologies for public lighting, including street lights.
- Continue to explore and trial innovative, low-emission vehicles in Council fleets.
- Deliver Australia's first district cooling system to provide cheaper and more energy efficient air-conditioning for CBD buildings through CitySmart.
- Explore opportunities to support greater action towards the delivery of the National Energy Productivity Plan.

3. Reduce the carbon intensity of the built environment.

- Promote development that adopts climate-responsive design, incorporates clean energy technologies and achieves high-performance and energy ratings.
- Invest in urban renewal and revitalisation to create highly liveable and functional inner city residential precincts with good access to employment, services and public spaces.
- Promote the modernisation of old building stock in the city centre to improve energy efficiency through refurbishing of existing buildings.
- Continue to demonstrate leadership in and commitment to sustainable design and energy efficiency in major infrastructure works such as during road upgrades.

- o Advocate for revisions to the *City of Brisbane Act 2010* and *Local Government Act 2009* to provide local authorities throughout Queensland with the option to implement Environmental Upgrade Agreements.
 - o Support and advocate for the development of a National Built Environment Rating System tool for units, enabling local government authorities to encourage residential development to achieve sustainable building ratings in the same manner as commercial development.
- 4. Actively manage emissions from waste disposal.**
- o Continue to maximise the capture of gas at city landfills for combustion via flaring or electricity generation.
 - o Continue to explore opportunities to expand green waste services and introduce innovative options for the separation and diversion of food waste.
 - o Trial alternative waste treatment technologies at Council landfills and transfer stations that have co-benefits of reducing greenhouse gas emissions, air quality impacts and volume of waste.
 - o Continue to explore opportunities for policy and legislative changes to support the adoption of alternative, low carbon waste treatment methods, including the production of energy from waste.



Advocacy

Council participates in state and national policy discussions and actively identifies opportunities for policy and regulatory frameworks to better support climate-responsive action.

Streets Beach, South Bank



Brisbane Powerhouse, New Farm

Walking the talk – Council in action

Brisbane Powerhouse Solar Power System

In a powerful statement of how our city is constantly adapting to modern times, in 2015 Council commissioned a 100 kW solar photovoltaic system on top of the city's former coal-fired electricity plant. The Brisbane Powerhouse, now a hub for Queensland's theatre and arts scene, benefits from on-site electricity generation and reduced electricity bills. The system produces approximately 140,000 kW of electricity for consumption on-site per year with an emissions saving of 110 tonnes of CO₂e per annum.

The installation is the largest solar system Council has installed on one of its assets, with a further 145 kW of small-scale systems in place at libraries, ferry terminals, waste transfer stations and the Eleanor Schonell Bridge.

Landmark project – Carbon neutral Council

In addition to taking internal action to reduce energy consumption and greenhouse gas emissions, Council has demonstrated leadership through its commitments to buy renewable energy and accredited carbon offsets. Council has bought more than 860,000 MWh of electricity from renewable energy sources over the past 13 years, gradually increasing the proportion purchased to achieve 100% from 2010 to 2016. Since 2007, Council has bought about one million tonnes of accredited carbon offsets to negate the greenhouse gas emissions from bus, ferry and fleet vehicles, stationary gas use and air travel.

In 2016-17, Council achieved full carbon neutral status for its operations. This makes Council the largest carbon neutral organisation in Australia.

Council now:

- produces a rigorous annual carbon emissions inventory by collecting data and calculating the greenhouse gas emissions resulting from all Council business operations
- continues to identify and implement cost-effective opportunities to reduce emissions associated with council operations
- buys accredited carbon offsets to negate residual emissions so that net emissions are zero
- has the carbon inventory independently audited by specialist greenhouse and energy auditors every two years
- publicly reports greenhouse gas emissions results each year.



Conclusion

As a large and growing city, Brisbane must demonstrate leadership by making a constructive contribution towards the national and global response to carbon neutrality and climate resilience. Reducing Council's own greenhouse gas emissions will inspire organisations and individuals to strive for the same goal. Championing behaviour change, technical innovation and built environment outcomes are cornerstones of Council's strategy. Acting now to avoid the worst impacts of potential severe weather events and changing environmental conditions is the best way to keep our living standards high and achieve the Brisbane Vision for a strong and productive local economy and liveable city.



Community stories

Energy tips for the ages

When it comes to helping Brisbane residents be kind to the environment while saving money on their power bills, it's on for young and old.

CitySmart is Brisbane's sustainability agency that was created by Council to help make Brisbane the nation's most sustainable city. Through CitySmart, energy efficiency education programs have been tailored to specific age groups.

The Green Heart Wisdom project helped 2000 Brisbane residents to improve their energy efficiency and reduce their energy bills. Through a combination of workshops and home visits, assistance was provided to help effectively manage their energy use. Some participants were also eligible to receive a range of energy saving modifications at their home.

At the other end of the spectrum, CitySmart's Reduce Your Juice energy efficiency program was initially designed to assist Brisbane's low income young adults to reduce energy consumption. Reduce Your Juice uses a combination of games, digital messages and activities and is delivered via a smartphone app, email, social media and SMS. The success of the program has resulted in its extension to target a wider audience of all age groups.

Building owners warm to cheap chills

Building owners are set to reap huge savings from a Council initiative all agree is cool. Contractors Engie and Ventia have partnered with CitySmart to roll out the Brisbane District Cooling Project, which will see water chilled during off-peak periods and then supplied to CBD buildings for use in air-conditioning systems during the day.

The system replaces air-conditioning chillers and cooling towers in individual buildings with a centralised plant room that supplies water through underground pipes, enabling energy savings of 10-30% per building and reducing carbon emissions by up to 24,000 tonnes CO₂e a year.

Brisbane will be the first Australian city to implement the technology on such a broad scale in its CBD. Initial studies show that a CBD-wide project of this type could create more than 500 construction jobs and pump \$530 million into the economy.



Chapter 3

Clean Air

Brisbane committed to clean air management more than two decades ago. We've maintained that dedication since.

GOAL *Brisbane will consistently have clean, healthy air*

Target: Brisbane's air quality meets the Australian guidelines for particle concentrations, except during natural events, such as bushfire

Indicator: Number of days per year (not attributable to a natural event, such as bushfire) the Australian air quality guideline is exceeded for PM_{2.5} and PM₁₀ at any of the Brisbane air quality monitoring stations

Actual: Particles: PM_{2.5} 1 day; PM₁₀ 5 days (2015)

In 1996, Council released Australia's first local government air quality strategy. It followed this with sustained regional leadership, directly contributing to research, innovation, testing and joint projects with local, state and Australian governments, universities and industry groups. Brisbane's long-term commitment was recognised with the Clean Air Achievement Award for 2016 from the Clean Air Society of Australia and New Zealand (Queensland).

Brisbane enjoys relatively clean air given its size but faces more challenges than most other Australian cities. Surrounding mountain ranges and islands trap pollutants within the South East Queensland airshed until cleared by rain or strong wind. Our subtropical climate also favours smog formation – hotter temperatures increase emissions of volatile compounds that react to form smog, and our high UV levels speed up those chemical reactions.

The past 20 years have seen a steady decline in air pollutants such as carbon monoxide, lead and nitrogen dioxide thanks to improved fuel and motor vehicle standards and Council's clean air actions. Council's support for new fuels and the early adoption of cleaner vehicle technologies have played an important role in improving the city's air quality.

Council partnered with industry to broker the early introduction of ultra-low sulphur diesel in South East Queensland, which helped reduce particle pollutant levels. It also introduced the State's first publicly accessible vehicle emissions testing facility.

Target: Brisbane's air quality meets the Australian guidelines for ozone and nitrogen dioxide

Indicator: Number of days per year the Australian air quality guideline is exceeded for ozone and nitrogen dioxide at any of the Brisbane air quality monitoring stations

Actual: ozone 1 day; nitrogen dioxide: zero days (2015)

More people are taking advantage of Brisbane's extensive multi-modal public transport network and swapping their cars for the bus, train or ferry which is benefitting Brisbane's air quality. However, keeping our city's air clean as it grows still requires work.

As population increases, so too do vehicle trips. Supporting the greater use of sustainable transport, especially for local trips, will remain a critical strategy to avoid increasing vehicle pollution. Good urban design and planning solutions, as implemented through City Plan, can reduce exposure of communities to pollution along busy transport corridors.

Council works hard to keep Brisbane's air clean but some factors cannot be controlled. Bushfires and planned burns are Brisbane's largest sources of particle pollution and pose a health risk for residents and visitors. Bushfire smoke and dust storms can also be carried into the city from other parts of the region by the prevailing winds. The topographical profile and the weather conditions of Queensland's south-east can cause air pollution to recirculate throughout the regional airshed for a number of days before being dispersed by winds.



Spring Hill

Achievements

Brisbane consistently achieves a higher standard than the Australian air quality guidelines for ozone and nitrogen dioxide.

Council's greatest impact on air quality has come through continued investment in public and active transport networks and programs that help people change travel behaviour. Council consistently adopts new vehicle standards before they become mandatory and actively invests in clean technology for vehicles. Bus drivers are being skilled in fuel-efficient eco-driving. Since 2000, the air emissions from the average Council bus have improved by more than 85% for particle pollution through the early adoption of stricter standards.

Good planning policies ensure new industries are bound by strict regulations to control airborne pollutants. Council's City Plan includes measures to identify potentially polluting industries and separate these from residential areas through strong, scientifically sound planning. It also includes solutions to manage suburbs with a mix of homes and industry, for example, by encouraging clean industries to establish on the fringes of industrial precincts. Sensitive uses such as residential development close to major roads must also consider pollution impacts through streetscaping and mechanical ventilation.

Council has licensed environmentally relevant activities since 1995 to proactively manage air emissions from industry. A suite of environmental guides is being developed to aid Council-licensed businesses involved in activities including smash repairs, concrete batching and fuel storage to meet planning regulations and control emissions.

Council's bushfire risk management planning includes planned burns to reduce the incidence and severity of bushfires. Planned burns on Council land are used to maintain healthy fire adapted forests and lessen the impact of wildfires by reducing forest fuel levels.

These are carried out during the cooler wetter months of the year to reduce fire and smoke intensity. Council works in partnership with neighbouring councils to manage the regional impacts of bushfire smoke.

Since 2000, the air emissions of the average Council bus have improved by more than 85%.





Priority actions

1. Integrate cross-Council actions to reduce transport emissions.

Actions to reduce transport emissions can improve air quality, reduce our carbon footprint, cut congestion and promote more active lifestyles. Integrating Council's actions to promote and facilitate greater public and active transport use has the potential to greatly boost organisational outcomes.

Focus areas for collaboration include:

- increasing public transport patronage
- modelling the air quality impacts of future large transport projects
- increasing cycling and walking undertaking workplace and high-density living travel planning
- advocating for cleaner commercial vehicles
- prioritising cleaner vehicles in Council purchasing strategies and contract specifications
- facilitating electric vehicle infrastructure.

2. Measure our own performance.

Understanding the source and quantity of air emissions produced by Council activities can help determine the most cost-effective way of managing and reducing corporate air emissions. This action underpins the air quality strategy, complements the corporate greenhouse inventory and shows leadership in sustainable business practice.

3. Promote the benefits of eco-driving to the community and industry.

Eco-driving techniques can reduce tailpipe emissions by up to 30%. Widespread uptake of these simple driver behaviours could substantially improve general traffic emissions and road safety. Council can leverage existing industry programs and its own CitySmart and Green Community initiatives to influence community behaviours.

4. Assist the community to become smoke-ready during bushfire season.

While bushfire and planned burning occur in Brisbane, there are ways people can protect themselves from smoke. Council will complement the existing bushfire readiness program with tailored information for people at risk from smoke impacts.

5. Keep Brisbane City Plan contemporary and relevant.

City Plan is one of Council's most effective tools to minimise residents' exposure to harmful air pollutants. Keeping City Plan up-to-date with the latest air quality standards and practices is a vital, ongoing part of providing clean air for all Brisbane residents.



Brisbane City

Advocacy

Council has been instrumental in the development of key regional tools such as the *South East Queensland Regional Air Quality Strategy* and *South East Queensland Air Emissions Inventory*. This regional leadership will continue. Air quality standards are set by the Australian Government, and the Queensland Government implements policies to ensure they are achieved.

Council will continue to advocate strongly at national and state levels for:

- the adoption of ambient air quality guidelines that reflect the latest science in health risk assessment
- continual improvement in vehicle emission and fuel standards
- incentives for multiple-car occupancy and cleaner vehicles
- better integrated regional transport planning, including freight strategies
- improved industrial technologies and practices for clean air.

Walking the talk - Council in action

Council leads the way in minimising air emissions and using best practice from its corporate activities by:

- operating a clean fleet with hybrid or electric vehicles - more than 25% of the corporate car pool
- consistently adopting new standards before they become mandatory, with almost 80% of the bus fleet comprising the latest low-emission vehicles
- operating Queensland's only publicly available vehicle emissions testing service and testing buses to check their performance
- regularly trialling new fuels and technologies, for example, biofuels or low rolling-resistance tyres
- providing free electric vehicle recharge facilities at King George Square car park
- implementing a new strategy to manage bushfire risk, which includes actions to manage smoke.

Council leads the way with almost 80% of the bus fleet comprising the latest low-emission vehicles.





Landmark project - electric vehicles

Running electric cars will get even easier in Brisbane, with more recharging stations on the way. Council helped deliver Brisbane's first recharging station at King George Square car park in 2012 and is now paving the way for more electric vehicles by working with industry and embedding provisions in the City Plan.

Electric vehicles are expected to make up about 16% of the Australian car market share by 2030. These new cars will need convenient, cost-effective facilities to recharge or exchange batteries.

Electric vehicles create no tailpipe emissions, which means improved urban air quality. Efforts to promote the use of renewable sources for the electricity supply will also help achieve greenhouse gas targets.

Conclusion

Clean air is easy to take for granted yet it's the foundation of our city's renowned liveability. Council will continue to regulate and advise industry on best-practice air quality management and support the sector's drive for innovation in clean technology. Council's corporate leadership will inspire business to strive for cleaner practices, and residents to make their own contribution to keeping Brisbane's air clean.



Mark Campbell, Bus Operator

I'm a Bus Operator at the Toowong depot (15 years in total) and Bus Operator Trainer for Transport for Brisbane at the Willawong Training Centre. I was one of the driver/trainers involved in test driving the bus used to set the parameters for the Eco Drive "I" Coach on-board monitoring system.

During the trial drives, we initially aimed to reduce bus emissions, but soon discovered we could also drive in a manner which enhanced passenger comfort. The three main areas we focused on was smooth braking, smooth cornering and reducing idling times.

It is good for our future to encourage more people to use public transport. If we can keep the public transport clean and sustainable, then I am in the right job for a long time.

Community stories

Catch the clean air bus

Buses have played a crucial role in keeping residents out of cars in Brisbane since the 1960s and their popularity is set to continue.

Brisbane introduced its first express rocket service in the 1970s, built the first underground bus station in the 1980s, started construction on its first busway in the 1990s and introduced the first high-frequency Bus Upgrade Zone (BUZ) services in the early 2000s. In 2015-16, a fleet of approximately 1200 buses carried 76 million passenger journeys.

Bus patronage in recent years has skyrocketed with the introduction of integrated ticketing, modernisation of the fleet, expansion of BUZ and CityGlider services and growth of the busway network. Brisbane's busways are incredibly successful and globally admired. The network carries more passengers annually than all of the city's motorways combined, helping to keep the air clean.

Smart servos clear the air

Recent service station upgrades in Brisbane are a fine example of businesses voluntarily adopting best practice before any mandatory requirement. These servos have installed vapour recovery systems at the bowsers, capturing toxic emissions previously released when vehicles are refuelled. Fuel-laden vapours are captured by the nozzle instead of being released into the breathing zone of the person at the pump.

This represents a significant benefit to the health and wellbeing of customers and neighbouring residents. It also demonstrates good corporate citizenship and leadership in the business community.



car trips

1463

1000th bus

carbon emissions per year

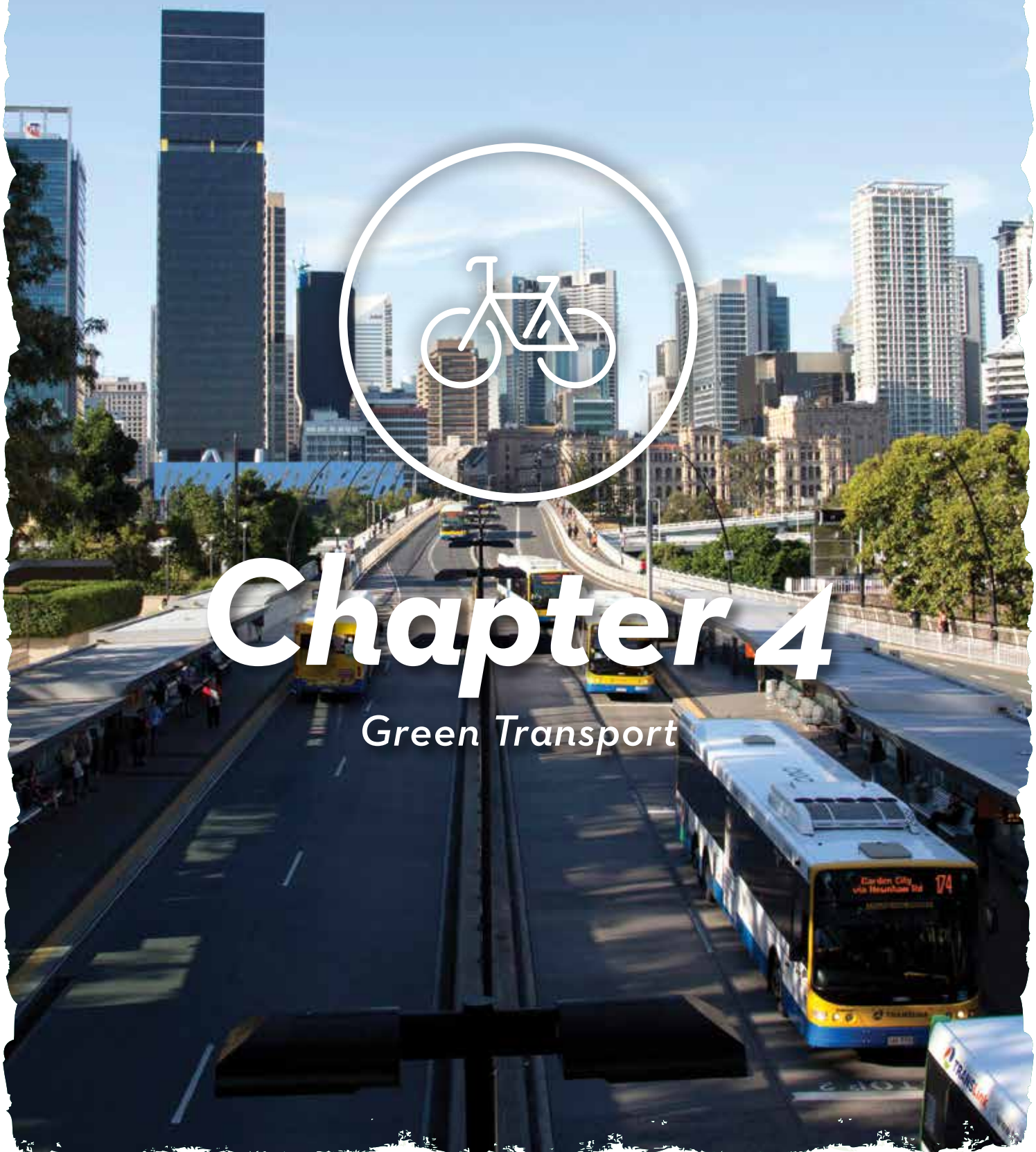
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Chapter 4

Green Transport





Going green to get around is the single, most effective way we can help transform Brisbane into a sustainable city.

GOAL *More trips will be made by public and active transport, helping to reduce congestion, fossil fuel consumption and emissions*

Target: Bus patronage to reach 120 million annually by 2031. Increase bus patronage by 265% from 2001-02 levels

Indicator: Number of bus patrons each year

Baseline: 44,996,031 (2001-02)

Actual: 76,024,102 (2015-16)

Target: Ferry patronage to reach seven million annually by 2031. Increase ferry patronage by 202% from 2001-02 levels

Indicator: Number of ferry and CityCat patrons each year

Baseline: 3,459,916 million (2001-02)

Actual: 5,480,317 million (2015-16)

Target: Increase cycling by 200% from 2004 levels

Indicator: Number of cyclists at ten select sites across the city (daily average)

Baseline: 8,123 (daily average 2004)

Actual: 15,305 (daily average 2016)

Choosing a bike, bus, ferry, train or a brisk walk over driving has multiple benefits, from reducing congestion and making the city more liveable to improving health and wellbeing. It makes city roads safer, helps turn busy streets into boulevards and gives public spaces back to people and nature. More people are embracing the shift to sustainable transport as awareness of the benefits grows.

According to Australian Government estimates, the transport sector accounts for 16% of the nation's greenhouse gas emissions, with light vehicles producing the lion's share. Most urban air pollution comes from motor vehicles in the form of carbon monoxide, nitrogen oxides, volatile organic compounds, sulphur dioxide and particulates.

Most people driving to work are in cars carrying just one person, but a standard Council bus can take more than 60 passengers and a CityCat has room for up to 165.

To effectively compete with cars, walking or catching public transport around Brisbane must be safe, convenient, affordable and enjoyable. Trips should be fast, frequent and reliable, getting people where they need to go on time. All three levels of government are committed to this goal.

In Brisbane, the Queensland Government holds overall responsibility for funding and providing public transport in the city. But Council is also an active partner, playing a larger role than any other local government in Australia.

Council operates a modern bus fleet and iconic ferry service, and owns and maintains core infrastructure such as bus stops and ferry terminals. Council is also responsible for much of the city's walking and cycling network and motivates people and organisations to change their travel behaviour through programs such as Cycling Brisbane and Active School Travel.



Achievements

Council is continually expanding its bus and ferry fleet and improving services. Older buses are gradually being replaced by low-emission models with 60 low-floor, low-emission, air-conditioned buses and one diesel-electric hybrid added to the fleet in 2015-16 alone. New ferry terminals have been added at Northshore Hamilton, Teneriffe and Milton, bringing the total to 25.

Council is also trialling systems to assist in optimising fuel economy and is introducing high-frequency bus services and express ferry services to reduce peak-hour travel times.

Council recently modified the entire bus and ferry fleet, as well as bus stops and ferry terminals, so everyone can use them. All buses are now 100% disability compliant and most ferry terminals are accessible for passengers in wheelchairs. Some are also equipped with audio-tactile devices for people with a visual impairment. Hearing augmentation is available on CityCats.

Council's planning schemes are paving the way for a cleaner, more pedestrian-friendly city heart. Plans, such as the *Brisbane City Centre Master Plan 2014*, now prioritise the safe, comfortable movement of pedestrians and cyclists and incorporate strategies to restrict vehicle access, shift buses underground and green the CBD through rooftop gardens, subtropical boulevards and a network of shady parks.

Council is also planning to invest in infrastructure to better move bus patrons through the congested centre of the bus network.

Council invested \$220 million from 2008 to 2016 to upgrade and expand the city's bikeways and associated infrastructure through the Better Bikeways for Brisbane (BB4B) program. BB4B delivered new pathways and bridges, upgrades, links and connections, bike racks, lighting and signage at locations across the city, with a focus on commuter bikeways and links to shopping strips, schools and public transport hubs.

Cycling Brisbane has more than 13,000 members and 50 sponsoring businesses, and delivers services from practical tips to free skills sessions, guided rides and route planning tools. Council's other primary support program, Active School Travel, encourages primary students to adopt sustainable travel and has reached more than 93,000 youngsters from 149 schools.

CityCycle, Brisbane's public bike-share scheme for the inner city, also continues to grow in popularity, with more than 1.8 million trips made since the program launched in October 2010.

New ferry terminals have been added, bringing the total to 25.





Kelvin Grove busway station

Priority actions

1. Invest in new and upgraded public transport infrastructure.

- Investigate infrastructure solutions to free-up congested inner city sections of Brisbane's busway network and move patrons quickly into and out of the CBD. A business case is currently being prepared for the Brisbane Metro.
- Progress the roll out of accessible bus stops and an accessible ferry network.

2. Make the public transport fleet cleaner, more energy efficient and attractive to patrons.

- Continue to explore and trial innovative, low-emission vehicles in Council fleets.

3. Expand the city's active transport networks.

- Commence a new \$100 million bikeway infrastructure program to create connections in Brisbane's top employment areas and improve bikeway links across Woolloongabba, Toowong, Kangaroo Point and Indooroopilly.

- Integrating cycling opportunities into major road projects such as the Kingsford Smith Drive upgrade.
- Continue to convert key suburban streets linking homes to shops, schools, parks and other important places to 'shadeways' with more large street trees and better footpaths.
- Transform major arterial roads and key streets in the city core into shady, people-focused subtropical boulevards.
- Use new development to expand and fill in missing gaps in walking and cycling networks across the city.

4. Support the community to make more sustainable transport choices.

- Continue to support programs such as Cycling Brisbane and Active School Travel.
- Continue to support the growth of CityCycle use.



Advocacy

Council has long recognised the benefits of increasing public transport use and providing quality, affordable services. Council continues to advocate for greater investment in public transport services and infrastructure by the Queensland and Australian governments, and often prepares submissions and motions for the Local Government Association of Queensland and the Australian Local Government Association. Council will also remain a strong advocate for greater investment in active transport so it becomes the preferred mode of travel for local trips.

As part of its input into the Queensland Government's Independent Fare Review, Council successfully advocated for more affordable fares, improved ticketing products, and a simplified zone system to help encourage public transport use.

Walking the talk - Council in action

Riding a bike to meetings is now easier for Council employees with free memberships to the CityCycle hire scheme. Employees already have access to end-of-trip facilities at Council's main CBD office, Brisbane Square and its Fortitude Valley office, Green Square, but access to the hire scheme will encourage greater use of bikes in and outside work hours. When traveling for work, Council provides go cards for employees so they can take a bus, train or ferry to their destination rather than a corporate car.



CityCat on the Brisbane River

Landmark project – Brisbane Innovate

Council taps into the collective wisdom of individuals, businesses, entrepreneurs, students, academics and government representatives to solve problems through its Innovative Proposals Process. Council sets challenges on particular issues and shortlists the best entries to further explore the development of the concept.

Council is currently seeking a solution that delivers a predictive, personalised, multi-modal and integrated journey planning experience to help visitors to Brisbane. The solution must be aware of the user's travel preferences, desired times, start and finish locations and may also be designed to incorporate access to Brisbane events and attractions.

Council believes new technology holds significant potential to enable people to choose sustainable travel and reduce congestion.

Conclusion

Public and active transport are growing in popularity. Council will build upon the city's successes by continuing to invest in green transport infrastructure and sustain its focus on providing high-quality public transport services.

Council will work with individuals, businesses and community groups to encourage even greater behavioural change, making walking and cycling the first choice for local travel for more residents, workers and visitors.



Tamiko Lee, Cycling Brisbane Officer

I work with Council's Cycling Brisbane program which encourages residents and visitors of all ages and abilities to get out on their bikes more often, as part of an active and healthy lifestyle.

The program helps contribute towards a clean and green Brisbane by encouraging residents and visitors to ride more often. We provide an annual calendar of over 90 free bike skills sessions and guided rides, exclusive members-only discounts from a network of more than 50 supporting organisations, as well as suggested rides to try, a route planner and an online hub for all things cycling related in Brisbane.

I am so lucky to call Brisbane home – it's such a great place to live, work and play. The health of our environment directly relates to the health and wellbeing of the city's residents and visitors, and is something which I enjoy making a positive contribution towards.





Community stories

Active streets a lesson for us all

More Brisbane residents of all ages are embracing green travel to keep the air clean. In 2016, 18 schools joined Council's Active School Travel program, bringing the total to 45. Since its inception in 2004, Active School Travel has worked with 149 schools and more than 93,000 students across Brisbane.

The three-year behavioural change program encourages primary school students, parents and teachers to walk, cycle, scooter or take public transport to school.

While the program aims to reduce car trips by 10%, some schools have achieved a 35% reduction, significantly improving local congestion and reducing air emissions in their local environment. Getting kids walking and cycling to school improves their health and builds road safety skills while bringing communities closer.

End result is better facilities

The needs of walkers and cyclists are being addressed, with more building owners investing in purpose-built end-of-trip facilities in response to increasing demand.

End-of-trip facilities have been compulsory for major new developments such as commercial office buildings, shopping centres, universities and hospitals since 2010, but many organisations are voluntarily giving their buildings a bike-friendly makeover. Some storage areas and basement carparks in high-rise office blocks are being converted into cycle centres.

While most cycle centres feature secure parking, lockers and change rooms, others come loaded with extras such as repair stations, shower cubicles and grooming stations with hair straighteners and dryers, ironing boards and shoe cleaners. Cycle2City in King George Square even has an on-site mechanic. Co-funded by Council, Cycle2City was Australia's first major end-of-trip facility for cyclists and pedestrians.



Chapter 5

Waste and Resource Recovery

We want to inspire Brisbane residents, businesses and industry to play a role in finding solutions to reduce our city's waste.

GOAL *Brisbane will reduce, reuse and recycle waste*

Target: Reduce domestic solid waste disposed to landfill to 250 kg per person each year

Indicator: Weight of solid waste (domestic) disposed per person each year

Baseline: 361.3 kg (2008-09)

Actual: 313.7 kg (2015-16)

Waste contains valuable, recoverable resources. Cooking oil can become biodiesel, restaurant scraps can feed worm farms, offcuts of metals can inspire new sculptures and pre-loved clothes can be worn again or turned into insulation.

The more materials we recycle from the waste stream, the better the outcome for the environment and our communities.

Technology could make zero waste possible – and combined with continuing education and sustainable practices, we can make a positive difference.

Everyone has a role to play. We can shop smarter, use reusable shopping bags or buy in bulk, reuse and recycle what we have and others don't want and only use landfill as a last resort.

We must act now. We want to inspire Brisbane residents, businesses and industry to play a role in finding solutions to reduce our city's waste by continuing and extending recycling. No longer can we automatically throw objects into the waste destined for landfills. Even if products are not reusable, their components can begin a new life as a secondary resource. Turning the traditionally linear production process into a renewable cycle not only keeps material out of landfills but opens up job opportunities, contributes to Brisbane's economy, enhances our resource base and contributes to the transition to a low carbon city.

As a city, we're already moving closer to producing zero waste. Since 2008, the amount of domestic waste disposed to landfill per person has decreased, with a corresponding increase in recycling. About 100,000 tonnes of material is now recycled each year.

Recyclables misplaced into the general red-lidded waste bin halved from 89 kg to 43 kg per person each year over the same period. Green waste disposed to the red-lidded bin has also rapidly reduced from 85 kg to 49 kg since green waste kerbside recycling was introduced. About 80,000 households now use the service.

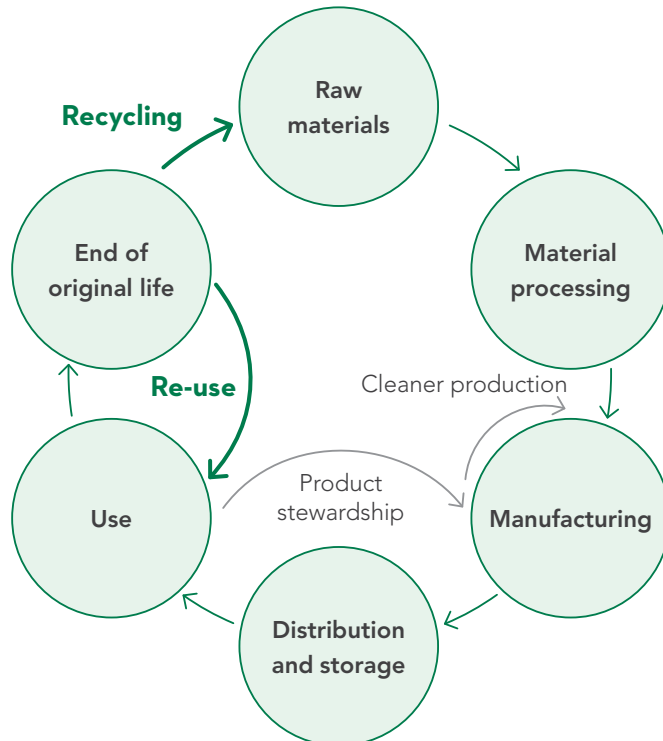


Figure 2: Cyclic production process



Achievements

Council is dedicated to cleaning up the litter in our streets, public spaces and waterways. Litter counts show a 50% reduction in rubbish on the city's busiest streets since 2009. Brisbane's efforts were recognised with the prestigious Keep Australia Beautiful national awards for litter prevention in 2014 and 2015. These awards contributed to Brisbane being awarded the Australia's Most Sustainable City title in 2014 and 2016.

Brisbane residents have been keen to embrace recycling, with about 80,000 households now diverting 20,000 tonnes of green waste from landfill each year through Council's kerbside service, which converts it to mulch, compost and soil. Each year, Council workshops teach hundreds of residents how to compost their garden and food waste and set up thriving worm farms. Council's public place recycling bins divert 270 tonnes of recycling from landfill each year and 800 tonnes of e-waste is recycled through Council's Resource Recovery Centres. All four centres were recently remodelled and expanded. Council's two Tip Shops are visited by around 50,000 bargain-hunters each year.

Council landfill operations exceed legislative requirements for environmental performance. Significant carbon emission reductions have been achieved through innovations such as flaring landfill gas, recovering gas for electricity generation and modifying buildings at waste facilities to produce solar power. These installations generate around 46,000 MWh of renewable energy each year, enough to power 8500 homes.

Council has made recycling easier for households that find themselves with a full recycling bin by having a larger 340 litre recycling bin available. Residents can use the 340 litre recycling bin to replace their standard 240 litre recycling bin, or they can choose to have a combination of two recycling bins.

Over the last two years Council has built resource recovery centres at Ferny Grove, Chandler, Willawong and Nudgee. These centres help residents recycle more for free, so we can reduce waste to landfill. The changes make recycling easier and faster by reducing queues, increasing access to facilities, removing recycling costs and reducing processing times.

Council also spreads the recycling message by providing waste education to thousands of students and residents each year. Schools and community groups can visit the Towards Zero Waste Education Centre for a guided tour of the Rochedale landfill to learn about waste minimisation.

Brisbane was named Australia's Most Sustainable City in 2014 and 2016.





Jamboree Residents Association, Mt Ommaney Creek

Priority actions

1. Increase the diversion of organics from landfill.

Work with partners and stakeholders to divert organic waste, such as food scraps from landfill. This has the power to significantly reduce carbon emissions and aid the transition to a low carbon city.

2. Support the community to adopt waste-avoidance behaviour.

Council will implement initiatives to help residents, business and industry change their behaviour to minimise waste generation and better control the waste they do produce.

3. Investigate innovative waste recovery programs.

Council will investigate and trial recovery programs for priority wastes. This will provide baseline data on the amount of waste produced across waste streams, identify recovery systems and service providers to recycle materials, and determine the financial viability of this process.

4. Prevent litter by working as a team.

Council will continue to inspire all sectors of the community to become part of the litter prevention team. It will explore partnerships with business, community groups and residents to support litter retrieval and stop rubbish from reaching waterways and wildlife.

5. Continue to improve and build understanding of Council's corporate performance.

Accurate monitoring of the waste Council produces and its source can help identify opportunities for new processes and technologies. Council will continue to install public-place bins in key locations so visitors, workers and residents can 'do the right thing'. Continually improving Council's performance gives it credibility when talking with the community about litter reduction and will help inspire larger organisations.



Advocacy

Many factors affecting commercial use of resources recovered from waste are determined by the Australian and Queensland governments. Council's strong relationships with industry and government agencies afford it the opportunity to provide input into proposed policies, development of legislation, compliance standards and technology improvements. For example, Council has advocated on the Queensland Government's waste strategy, and alternative waste technology guidelines. These issues directly impact Council's services and the Brisbane waste sector. Council also works with organisations such as Clean Up Australia to promote litter prevention.

Walking the talk – Council in action

Council recycles everything from plastic signs to broken glass, old bus tyres, green mulch from parks, asphalt from roadworks and paper, cardboard, plastic and computers from its offices. Food scraps feed worm farms in Brisbane parks, surplus Council furniture is sold in Tip Shops and reclaimed timber from bridges and landfill is reimaged into tables, seats and garden boxes for public spaces around Council buildings.

Council tracks the waste it produces and has a formal internal minimisation program to:

- o educate employees about waste avoidance and minimisation
- o reduce the volume of waste that makes it to landfill
- o provide waste and recycling infrastructure and services for sites and buildings
- o maximise the recovery, restoration and reuse of waste from Council activities.



Landmark project – Resource recovery and renewable energy precinct

Council plans to investigate a resource recovery and renewable energy precinct project. The goal of the precinct project is to better understand how to increase resource recovery and generate clean, green and sustainable energy from waste, supporting the transition to a low carbon city by reducing the city's carbon footprint.

This concept would be a significant project showcasing a range of complementary recycling and energy technologies along with suitable energy and resource users, to create a symbiotic local network. Common technologies deployed in the resource recovery and renewable energy precincts may include electricity generation from a solar array, various forms of landfill gas energy production and dry anaerobic digestion to produce biogas from food and green waste. Ideally, complementary resource recovery and renewable energy technologies would be co-located with land uses that could directly and locally use the energy and material outputs of the resource recovery processes.

The precinct concept would:

- provide an opportunity for co-location of activities and technologies to recover resources and generate renewable energy from Brisbane's waste, in Brisbane – where our waste is produced – striving for a local closed loop system
- reduce transport, energy transfer losses and enable the recovery waste heat as inputs if co-located
- provide business opportunities and local jobs.



Jean Delzoppo, Waste Education Officer

I love 'talking rubbish' to raise awareness about the importance of waste minimisation and resource recovery, in my job as a waste education officer.

It involves delivering Rethink Your Rubbish presentations to schools and community groups, running compost workshops, helping schools to set up recycling and composting systems, taking groups on landfill tours and working at events. It involves anything that will encourage people to send less waste to landfill and help make Brisbane a cleaner, greener city.



Conclusion

Council will continue to provide a range of efficient services to residents, business and industry as part of a comprehensive waste and resource recovery management system for the city. Helping residents and businesses to avoid generating waste will remain a priority. Council will support business to adopt innovative production and distribution systems that minimise waste and build strong markets to repurpose waste into usable products. "Waste" will be seen as a misplaced resource!



'Pegasus', Robert Hains, Recycling Art Competition 2016

Community stories

Salvage Art - inspiring creativity through rethinking rubbish

To most of us it would have been just another jumble of junk thrown onto the scrapheap – a bookcase, school desk, chair and lectern. But in the imagination of Robert Hains, this hodge-podge of office furniture was set to soar.

Robert's magnificent sculpture 'Pegasus' was the 2016 winner of Council's Recycling Art Competition, designed to raise awareness of the Acacia Ridge and Geebung shops and challenge people to rethink their rubbish. The annual competition, which started in 2012, explores the creative potential of reusing household items to inspire others to see possibilities in things that otherwise may have been thrown away.

Robert works with bronze, metal, fabric and wood. When the former accountant retired in 2000, he took the opportunity to explore all avenues of art, in particular ornamental wood-turning, before venturing into kinetic sculptures like 'Pegasus', which is powered by a small motor and a pulley system that moves its wings, limbs, tail and head. Robert works with products from tip shops, op shops and other recycling outlets.

Fashion revival

Wearing second-hand fashion not only adds to the recycling effort but you'll look so good, your friends will be green with envy.

Revive is a pop-up market designed to inspire young people to restock their wardrobes in a more financially savvy, fashionably unique and environmentally sustainable way, with the help of local businesses. The celebration of second-hand fashion showcases the wares of retailers who specialise in trends as unique as Japanese evening wear through to the classic vintage and designer outfits. It features stalls from high-profile charitable organisations such as the Endeavour Foundation and Salvos, along with many smaller, funkier vendors.

Revive targets the 15 to 25 age bracket and aims to show a better alternative to the throw-away culture of modern fashion, where cheaply produced items are quickly discarded. It includes a community sewing space, where budding fashionistas can learn the basic skills required for hemming and reattaching buttons so they can alter second-hand clothes and prolong the life of items already in use.

By encouraging the creative reuse of clothing, showcasing high-quality upcycled items and presenting parades of ready-to-wear ensembles, Council hopes to inspire the community to keep textiles out of landfill.



"Pegasus is surrounded by legends and stories of this beautiful mythical creature. To the Romans, Pegasus was a symbol of immortality. What better subject than to create a wooden kinetic sculpture of a handsome, spirited horse with wings to lift it to heaven."
Robert Hains



Chapter 6

WaterSmart City



Water is Brisbane's most precious natural resource and central to the city's identity and liveability.

GOAL *Brisbane is a resilient, water smart city that uses water sustainably and protects its waterways*

Target: 87% of residents engage in water smart behaviour

Indicator: Community surveys

Actual: 98% (2016)

Target: In partnership with our neighbours and the Queensland Government, waterway health will improve for the lower Brisbane River catchment and Moreton Bay

Indicator: Healthy Land and Water Report Card for lower Brisbane catchment, eastern, central and western Moreton Bay.

Actual: Lower Brisbane Catchment: C-; Eastern Bay: A-; Central Bay: B+; Western Bay: B (2016)

Target: 72% of residents actively prepare for flooding

Indicator: Community surveys

Actual: 77% (2016)

Target: Brisbane's waterways will have improved native aquatic biodiversity

Indicator: Native fish species richness in high biodiversity value waterways

Actual: eight native species (2016)

Our relationship with water is complex. Water sustains life, underpins the economy and is integral to our enjoyment of the outdoors. It's a core element of the city's liveability.

As a coastal, subtropical city, Brisbane is defined by its river and Moreton Bay. The Brisbane River's serpentine loops dictate the city's form and its broad reaches bring the natural world right into the very heart of the CBD. The river's banks and bay's foreshores are our gathering places, the water our playground. This is the setting we choose when we meet, play and celebrate our festivals.

The river has become one of the city's most important travel corridors and, together with Moreton Bay and the extensive network of creeks, gullies and wetlands, is used for social and recreational needs. As tourism and economic assets, the bay, river and local waterways inject over \$2.5 billion into the local economy each year.

We take water from the environment for our use but we must also leave sufficient water for nature. Waterways and the bay are critical components of local, regional and even global ecosystems, their aquatic environments and fertile edges teeming with life. Their restoration benefits humans just as much as wildlife, helping us to rebuild a relationship with the rest of the natural world and remind ourselves that we live as part of a greater network, one that is interconnected and interactive.

Residents of Brisbane have been working for decades to green, rejuvenate and restore local waterways, individually or as part of Creek Catchment groups. Their work is vital and award-winning.

Council is now harnessing this passion to master plan and deliver the rejuvenation of an entire catchment – Norman Creek Catchment and is embarking on the 20 year transformation of Oxley Creek.

Led by the South East Queensland Council of Mayors, Council is also taking a whole-of-catchment approach to waterway management that transcends local government boundaries, through the Resilient Rivers program. This cross-government program is addressing water quality in the Brisbane River and Moreton Bay through initiatives in other local government areas. The program was initiated after upstream sediment threatened Brisbane's water supply during the 2011 flood and following continued erosion of crucial farming land in the Lockyer Valley.

Floods and droughts have reshaped our relationship with water. During the Millennium Drought residents became enduring water savers. Following the 2011 flood, we made public infrastructure more flood-resilient and embraced flood-smart design in development. We grew more sensitive to nature's rhythms and now strive to make way for and celebrate water, replicate natural systems and support urban greening through practices such as water sensitive urban design. Brisbane is built on a floodplain but we know that good planning, clever construction and an engaged community can embed greater resilience into the city.

As Brisbane grows, we will continue to adapt to the movement of water and harness technology so the city is prepared for the subtropical challenges of flood, drought, storms and a changing climate.



The Lake Parklands, Forest Lake

Achievements

Recognising that water is a cross-boundary, regional consideration, Council operates under a long-established partnership approach to water management. Council was a founding member of Healthy Waterways (now called Healthy Land and Water), which has promoted a consistent, evidence-based approach to waterway management in South East Queensland for 20 years.

Council also helped establish the International River Foundation that delivers the annual International Riversymposium and International RiverPrize to promote best practice river management globally and the popular RiverFestival which has become Brisbane Festival.

Council's evidence-based approach to spending public funds on the most effective, value-for-money solutions enabled it to secure co-investment towards a world-class upgrade of Brisbane's sewage treatment plants. The \$700 million upgrade significantly improved the water quality and health of Moreton Bay that today returns over \$5 billion worth of economic benefits to the region annually.

Council has been a leader in research and development since the late 1990s. Its investment in national cooperative research with universities has seen the development of a state-of-the-art stormwater quality treatment model, "MUSIC", construction of Australia's first bioretention system for stormwater treatment and other novel urban water initiatives.

Council produced its first integrated water strategy in 2004 and has maintained its commitment to sustainable water practices since, releasing a WaterSmart Strategy in 2010 and Total Water Cycle Management Plan in 2013.

Brisbane's community is considered the most water-literate of Australia's capital cities. The millennium drought changed attitudes to water conservation and inspired lasting changes to household water use through a program of incentives to install water-saving devices. Responding to record lows in dams at the height of the drought, residents slashed their daily water use from 300 litres to 124 litres and have maintained levels at 169 litres since the drought broke in 2009. Today, WaterSmart is ingrained in the minds and behaviours of residents.

Council significantly increased its investment in flood and drainage infrastructure after the 2011 flood. Following a global competition, Council commissioned designs for flood-resilient ferry terminals and new terminals featuring the innovative design are now in action. Each terminal has a boat-hull shaped pontoon to reduce drag and a gangway that automatically detaches from the shore during floods, swinging behind the pontoon and out of the path of debris.



Council extended its voluntary buy-back of homes at risk of frequent creek or local flooding following the flood. Backflow devices to stop floodwater backing up through drainage networks and into streets were installed in worst-hit parts of the city. New flood-risk management approaches were also introduced into City Plan.

To better prepare Brisbane for flooding, Council developed a Flood Action Plan and a new, integrated approach to flood-risk management based on international best practice, *Brisbane's FloodSmart Future Strategy 2012-2021*. Council has updated flood information for all high-priority creek catchments and online flood tools to show flood risk and levels. Residents and business owners can now access Council's Flood Awareness Maps and FloodWise Property Reports to find out the risk and type of flooding at a particular property.

Council is renewing and re-establishing natural waterway systems by constructing wetlands and creek filtration systems, daylighting creeks and revegetating waterway banks and corridors. Its rolling rehabilitation and stabilisation program prioritises high-value waterways and creeks. The Norman Creek Master Plan and Oxley Creek revitalisation initiatives demonstrate Council's commitment to leading edge, whole-of-catchment planning and City Plan helps protect about 4,000 km of waterway corridors.

Council continues to support Creek Catchment groups to lead local waterway rehabilitation activities and works with industry to reduce sediment entering creeks from building sites. Water quality is monitored at priority recreational access points across the city and residents can view the results online to guide their recreation choices.

Brisbane's growth presents opportunities to improve access and activity along inner city reaches of the river. Council's *River Edge Strategy* now guides activities to animate the river's edge and provides a framework for planning and decision-making.

Access to select waterways has been improved through the construction of pontoons, boat ramps and adjacent bikeways while Council recently completed the reconstruction of the iconic Shorncliffe Pier.



"The Creek Catchments Program has been very helpful in assisting our group in a number of ways, including providing advice on funding and program management, linking us with contacts in our catchment, in Council and beyond, as well as organising equipment and materials for activities."

Kedron Brook Catchment Branch

Priority actions

1. Adopt WaterSmart practices that contribute to a liveable, resilient city.

Becoming WaterSmart will enable Brisbane's residents, businesses, environment, infrastructure and services to be prepared, adaptable and resilient to flood, drought and a changing climate.

- Locate, design and manage new and existing development, infrastructure and services to be resilient and adaptable to flood, drought and extreme weather events.
- Ensure our waterways, catchments and marine and aquatic species are healthy, robust and able to adapt to change.
- Plan for rising sea levels and increased intensity of rainfall and take a risk based approach to flood and coastal management.
- Continue to develop water-sensitive city measures suited to Brisbane's infill development pattern in accordance with City Plan.
- Provide up-to-date, easy-to-understand, comprehensive information on drought and floods to community members.
- Provide tools and support to enable community members and the business sector to proactively minimise the impact of floods and droughts on property and people.
- Continue to explore innovative ways to reduce the impact of flood on people and property.
- Benchmark and measure Brisbane's resilience and adaptability against other cities that are global leaders in sustainability and integrated water management.

- Promote a diverse mix of fit-for-purpose water sources such as stormwater harvesting, grey water and rainwater tanks to improve the resilience of water supply systems to drought.
- Improve the city's ability to recover from adverse events and severe weather events.
- Continue to implement, review, measure adapt and update Council's integrated water cycle management planning framework (including documents such as the Total Water Cycle Management Plan and FloodSmart Future Strategy) to reflect need, currency and continual improvement.

2. Focus on ensuring our waterways, river and bay are healthy, safe and accessible.

Brisbane is a city of waterways, located on a major river system fed by a catchment of 13,500 square kilometres that stretches beyond the city's boundaries. More than 4000 km of waterways support our year-round, outdoor lifestyle and biodiversity, with Moreton Bay an internationally recognised wetland and marine park.

- Continue to adopt a catchment-based approach to waterway management.
- Ensure investments in waterways and WaterSmart assets are evidence-based and strategically distributed across the city. Council will use strategic science to identify priority catchments and locations to revitalise creek systems and groundwater aquifers, enhance urban green spaces, strategically manage sediment and improve connectivity.
- Protect and enhance waterway corridors so they continue to connect the city centre and neighbourhoods to open spaces, parks and urban forest areas.



- Ensure major waterways and the bays are publicly accessible and improve access for water-based recreation activities to promote an active and healthy lifestyle.
 - Continue to undertake waterway and WaterSmart asset maintenance, rehabilitation and enhancement works, with a focus on priority catchments.
 - Investigate poor water quality results that may impact on public health and health and usability of waterways and work with partners to manage failures in regulation and management of pollutants, trade waste and sewage treatment systems.
 - Monitor and evaluate waterway pollutants of concern for human health and aquatic biodiversity.
 - Continue to implement, evaluate and regulate best practice erosion and sediment control.
 - Apply best practice asset management principles and policies to waterways and WaterSmart assets.
 - Continue to implement the whole-of-catchment Norman Creek Master Plan and the Oxley Creek transformation project.
 - Promote Brisbane as a water-smart, New World City and a leader in sustainable urban waterway management.
- ### 3. Design with water in mind.
- By designing the built environment with water in mind, Brisbane can become an even more attractive, liveable and resilient city.
- Provide space for water to flow and to be retained in the landscape, reducing and slowing stormwater run-off.
 - Use stormwater to green and cool the city, mitigating urban heat island impacts.
- Ensure waterways are a key element of the city form:
 - view waterways as essential green infrastructure and key elements of the open space network, with local waterways functioning as 'stepping stone' corridors
 - ensure new development embraces nearby waterways in its design and supports community access to, and use of, waterways and adjacent parks.
 - Continue to develop education tools and incentives for businesses and industry to adopt WaterSmart elements in design and construction.
 - Give water providers clear direction on the city's future growth pattern so they can plan and optimise water and sewerage infrastructure.
 - Work with partners and industry bodies to develop and implement tools that deliver WaterSmart outcomes and embed these within Council's policy and planning frameworks.
 - Develop and champion innovative water sensitive stormwater infrastructure planning and design to drive sustainable water outcomes at the street, neighbourhood and district scales.
 - Continue to investigate how to reduce the adverse impact of developed land uses on waterways, groundwater and potential water sources.
 - Implement projects demonstrating how the multiple values of waterways contribute to urban liveability such as the Norman Creek Master Plan, Coorparoo Creek Park and Oxley Creek transformation project.

4. Work with partners to sustainably manage Brisbane's water resources for existing and future generations.

Council plans and manages the stormwater and drainage network in Brisbane. Council does not directly provide water supply and sewerage services, but works with government departments and agencies to ensure these services are effectively and affordably provided within a total water management framework.

- Continue to work with regional and national partners and community groups to improve waterway health and deliver sustainable catchment management outcomes. This includes supporting the South East Queensland Council of Mayors' Resilient Rivers initiative, remaining part of Healthy Land and Water and examining investment funding models and options to support the business case for investing in regional waterway outcomes.
- Review governance arrangements with regional partners to more effectively deliver total water cycle management outcomes, including working relationships, funding and regulations.
- Work with partners and all levels of government to provide safe, secure, resilient and affordable water, sewerage services and trade waste in a timely, cost-effective manner to support Brisbane's growth, including *Water NetServ Plan* (Queensland Urban Utilities) and *Water for life* (SEQwater).
- Partner with industry, Healthy Land and Water, Queensland Urban Utilities and other peak bodies to generate greater community awareness of the impact of individual actions on waterway health.

5. Empower community members to deliver sustainable water outcomes.

Sustainably managing water and waterway catchments is a team effort. Partnerships with residents, Creek Catchment groups, businesses, industry and government are critical.

- Support community festivals, events and activities that celebrate and inform the community about water and waterways.

- Involve residents in citizen-science programs to better understand and sustainably manage Brisbane's waterways, river and bay.
- Encourage and help community members design their home and garden with water and the natural environment in mind.
- Provide appropriate tools, services, incentives and products to encourage and support WaterSmart actions by residents, community groups and businesses.
- Work with local community groups and other relevant stakeholders to support WaterSmart action such as enhancing riparian cover and in-stream habitat diversity.
- Respect and build awareness of the cultural values of the city's waterways and bay.

6. Continue to be a water leader through knowledge and innovation.

Council can capitalise on the knowledge and experience of leading South East Queensland-based research and education institutions to remain at the forefront of sustainable water management.

- Continue to partner with research bodies to advance knowledge and techniques for total water cycle management, for example, on catchment planning, sustainable use of water, waterway health and flood and drought response best practice. These groups include the Cooperative Research Centre for Water Sensitive Cities, CSIRO, Healthy Land and Water, universities and the International Water Centre.
- Use innovative valuation of natural assets – recognised as best practice in accounting and budgeting – to demonstrate their value to liveability.
- Work with Brisbane's research and business communities to foster innovation and develop new technologies for sustainable water management.
- Lead by example and embed WaterSmart principles and an understanding of waterways into all Council projects.
- Embrace emerging knowledge, technologies and tools that enable better decision-making.

"The Habitat Brisbane Program is an absolute indication that our Council is genuinely interested in communities, but more importantly, is serious about restoring and preserving Brisbane's natural resources."

Upper Brookfield Bush Regeneration Group





'Brisbane's Waterways', Benjamin Fegus, Lord Mayor's Young Environmental Photographer of the Year Awards 2016

Advocacy

Waterway health, water supply and flood risk management and resilience have a significant regional dimension that requires Council to partner with other government agencies.

Council advocates strongly at national, state and local levels for:

- o a collaborative regional approach to total water cycle management
- o integrated outcomes with local water service providers
- o continued focus on sustainable water use, subtropical design and flood and coastal management and resilience in Queensland's planning and building frameworks
- o recognition of the importance of community stewardship of creek catchments.

Council will continue to partner for joint action and collaborative research through groups such as Healthy Land and Water and the Cooperative Research Centre for Water Sensitive Cities, and promote initiatives such as the South East Queensland Council of Mayors' Resilient Rivers initiative.

Walking the talk - Council in action

Council actively seeks opportunities to make public infrastructure more WaterSmart and flood-resilient. Sea and river walls are being rehabilitated, ferry terminals are being replaced and key roads are being flood-proofed.

Water sensitive urban design principles guide the design and upgrade of roads, parks and public spaces and Council supports its engineers and designers with practical WaterSmart guidelines. Council is constantly trialling new innovations, such as street tree garden beds that better capture stormwater from roads and footpaths, with a view to rolling them out across the city.

Council received Australian Government funding towards a \$10.8 million stormwater harvesting project and seven schemes are now in place. The harvesting sites provide up to 400 megalitres of storage space for stormwater to irrigate sports fields and feature natural systems such as wetlands and lagoons that embed drought tolerance into sport parks.

Council also makes its flood information publicly available and provides tailored products to residents, business and government so each sector has access to the latest and most robust information for decision-making.



Landmark project – Oxley Creek transformation

Planning is underway to revitalise the Oxley Creek catchment. Due to historical sand mining, land clearing and industrial uses on surrounding land, Oxley Creek faces significant environmental challenges. Over 20 years, Council will transform a 15 km stretch of the catchment, from the Brisbane River to Larapinta, into a world-class green corridor and leisure landmark. A major recreational space will be established offering new lifestyle and leisure opportunities for the community and visitors.

A long-term vision will be established for the master-planned lifestyle precinct, with improved recreation opportunities planned such as kayaking and canoeing, trails and walkways, public aviaries, 'eat street' style markets, urban farms, sports facilities and economic hubs.

The Oxley Creek transformation project will be delivered through public and private partnerships. It will build on the key objectives of the Lord Mayor's Oxley Creek Catchment Taskforce, which was established in 2006 to rehabilitate Oxley Creek and invigorate the surrounding catchment.

Conclusion

Collaboration is crucial to waterway health and restoration, security of water supply and the city's resilience to floods, drought and a changing climate. Council will continue to forge strong partnerships with residents, business owners, community groups, non-profit organisations and governments at all levels to ensure a shared vision and promote integrated action. As the city grows, Council will harness infill development opportunities to improve waterway health, enhance water quality and re-establish vital wildlife corridors. Together with innovation and new WaterSmart technologies, this will enhance the city's liveability and economic vitality.



Anna Bourke, Creek Catchment Officer

I work as a Creek Catchment Officer at Council supporting catchment groups in North Brisbane and the Inner West. My role helps build the capacity of Creek Catchment groups to deliver on ground projects that improve and enhance waterway health in Brisbane. I help them with training, provide technical advice, and assist with access to funding opportunities and delivering ecological restoration projects.

Water is an ever present and connecting element in Brisbane with most residents being in close proximity to a waterway. The natural values of Brisbane really are one of its main drawcards.



The Esplanade Park, St Lucia

Community stories

Restoring the Bulimba Creek Oxbow

A 30 ha industrial wasteland in Murarrie has been transformed into a thriving wetland, sustaining more than 60 bird and 35 fish and crustacean species thanks to a unique government, business and community alliance.

Tucked into a once isolated loop of Bulimba Creek, the previously degraded wetland was threatened with further destruction in 2002 when construction began on the Port of Brisbane Motorway.

Community members joined with the Department of Transport and Main Roads, Powerlink, Motorway Alliance and the Bulimba Creek Catchment Coordinating Committee to rehabilitate the site while the motorway was built.

Extensive eco-hydrology works were undertaken while contractors hauled away rusting car bodies and volunteers weeded, removed rubbish, replanted mangroves and restored wetland vegetation. Council promoted planting days and boosted on-site works through its employee volunteer program. After a decade of hard work, the functioning salt marsh brims with life. Red-rumped parrots and masked lapwings are among the native birds now spotted on-site.

Reconnecting the Oxbow to Bulimba Creek has dramatically improved water quality and fish species including yellow-fin perchlet, southern herring and tiger mullet have all made their way back into the wetland. Studies show the wetland has even become a fish and prawn nursery while wallaby paw prints suggest the local fauna know about it too.

Shaping the global water agenda

Brisbane has become one of the top places to study water thanks to the growing reputation of the International Water Centre (IWC). IWC offers advanced education, training and applied research in integrated water management, and its masters course is acknowledged as one of the world's best post-graduate offerings. IWC's alumni network spans more than 75 countries.

Initially a partnership between the Queensland Government and four of Australia's leading universities, IWC is now jointly owned by two Brisbane-based universities, notably the University of Queensland and Griffith University.

IWC believes solving water-related problems requires technical and scientific expertise and a strong understanding of the interplay of environmental, social and political factors. IWC delivers customised training courses to develop leadership and multidisciplinary skills to help individuals and organisations find local solutions to global problems.

"We greatly value the support and guidance of our Land for Wildlife officer. His enthusiasm and deep knowledge of all things native has been the driving force behind our Landcare project. I can see a real difference in not just our block, but the local waterways as well."

Annette Gunn, Land for Wildlife member





Chapter 7

Sustainable CityShape



Council is planning for, and enabling, sustainable growth that is well-serviced by public transport and community infrastructure.

GOAL Brisbane embraces development that enhances our sub-tropical lifestyle

Target: Growing number of development applications responding to the *New World City Design Guide: Buildings that Breathe*

Indicator: Number of development applications assessed through DesignSMART annually or providing Urban Context Reports

Baseline: 0 (project launched in January 2017)

Actual: 4 applications to date (as of April 2017)

To preserve Brisbane's leafy suburbs, green spaces and historic neighbourhoods, development is being concentrated into the inner city, around shopping centres, along railway lines, busways and busy main roads and into the city's few remaining identified development areas.

Community members first selected this growth pattern – known as Brisbane's CityShape – more than a decade ago through an extensive citywide planning initiative. CityShape now guides land use and development across the city as part of the Strategic Framework in City Plan.

Council's neighbourhood planning program builds on a long strong history of community and industry engagement in planning. Industry and community advisory boards offer Council real-world insight and advice on planning for a sustainable Brisbane.

Since 2006, Council has led a progressive neighbourhood planning program to translate the CityShape vision into tailored plans for local neighbourhoods. More than 400,000 people have participated through about 400 activities, workshops and other events. Plans respond to growth targets set by the Queensland Government while protecting suburban amenity, heritage and character and the natural environment.

Brisbane's urban form is now changing, with more higher-density 'urban villages' going up around public transport stations and centres of business activity. This ensures new housing is located closer to where people work and the services they need, infrastructure is used efficiently and car travel is reduced. Other measures to improve neighbourhoods such as more street trees are also identified through the planning process.

Target: Continued updating of Neighbourhood plans

Indicator: Additional neighbourhood plans updated or introduced each year

Baseline: 76 neighbourhood plans in City Plan (as of April 2017)

Actual: 2 new neighbourhood plans delivered in 2016-17

This is renewing and sustaining Brisbane's economic development and producing positive environmental outcomes.

Consultation shows growing community desire for sustainable development that responds to our subtropical climate, contributes to neighbourhood character, provides sustainable buildings and contributes to sustainable infrastructure. Buildings featuring high-quality climate-responsive design can contribute to an enviable urban environment that attracts investment and tourism, celebrates our lifestyle and stimulates economic activity. Responsible material selection also protects environmental biodiversity, ensures the health of occupants and minimises environmental impacts.

Council demonstrates leadership through its approach to the delivery of community assets and infrastructure, facilities management and tenancy choices. Best environmental practice is embodied in Council's business operations, and procurement practices. Principles of sustainable water design, energy efficiency and waste minimisation are integral to Council's infrastructure planning and delivery and are reflected in our occupation of best practice tenancies. This continued leadership provides exemplars to the wider development industry, in addition to the direct environmental benefits that result from these projects.

Brisbane leads all Australian cities in Green Star ratings. Thirty per cent of Brisbane's CBD office space is Green Star certified, compared to a 20% national average. Council has enabled this trend by establishing standards and regulations that support reduced energy and water consumption in multiple dwellings such as units and townhouses and commercial developments. Encouraging exemplary buildings that embrace the climate and showcase our city's outdoor lifestyle will remain a key focus in coming years.



South Bank Parklands

Achievements

Neighbourhood plans are shaping the development of local areas, with 76 plans now complete. The *Eastern Corridor neighbourhood plan*, for example, which focuses growth along the Eastern Busway corridor into six mixed-use precincts, has sparked the renewal of this popular inner city area.

Council is demonstrating leadership in its facilities and tenancy choices. Environmental sustainability has been a key criterion for Council, resulting in the selection of award-winning, energy-efficient buildings such as Brisbane Square and Green Square for the occupation of Council services.

Council's facilities management practices are setting benchmarks for other commercial buildings, with Green Square achieving the highest possible National Australian Built Environment Rating System (NABERS) rating of 6 Stars.

Achieving high-level green ratings in the construction and refurbishment of Council-owned facilities is a guiding corporate principle, evidenced in the Brisbane City Hall restoration and new bus depots at Willawong, Sherwood and Eagle Farm.

Council recently released the *New World City Design Guide: Buildings that Breathe* to help shape the future of green building design in Brisbane. In partnership with the introduction of the guide, Development Services has commenced a new pre-lodgement service called DesignSMART.

These initiatives provide subtropical design guidelines and incentives to encourage developers to collaborate with Council to improve design. They provide an inspirational benchmark for architects, planners, developers, property professionals and the broader community by illustrating best-practice examples and easy-to-understand design elements.

Council is also exploring 'Smart City' applications to allow digital technology and real-time data to improve community connectivity and access to information. There is potential for this technology to help people to reduce energy and water usage, use infrastructure more efficiently and enable the sharing economy. Council is at the beginning of exploring these opportunities as technology rapidly evolves and partnerships develop.



'Getting in the last game of croquet', Billy Grantley, Green Heart Photography Competition 2015

Priority actions

1. Manage and accommodate change while protecting the natural environment and community values through neighbourhood planning.

Partner with local communities to produce neighbourhood plans that:

- align with the Brisbane CityShape growth model
- support the renewal and revitalisation of local areas
- ensure a viable mix of employment and residential opportunities
- protect and enhance the local character and natural environment
- improve the public realm and urban design outcomes
- integrate land-use and infrastructure planning balancing local and citywide needs.

2. Use City Plan to support development in embracing high-quality, subtropical design across Brisbane.

- Review City Plan provisions, outcomes and best-practice examples to inform approaches to achieve sustainable and subtropical design in multiple dwellings.
- Review existing provisions in response to new evidence and community and industry feedback to ensure Brisbane's building stock meets the needs of residents and businesses in the future.
- Investigate environmental upgrade agreements to improve the environmental performance of existing building stock.

- Introduce a five per cent density bonus for five and six star Green Star rated buildings in high density areas.
- Promote and support the use of the DesignSMART pre-lodgement service for development applications to encourage well-designed new development.
- Support Council's Independent Design Advisory Panel, which provides Council with independent advice on the design, quality, sustainability and appropriateness of development strategies and projects and advocates for:
 - high-quality urban design outcomes for the public realm
 - design excellence in large-scale developments and infrastructure projects
 - research for exemplary design.

3. Integrate and utilise commercial and residential development and urban renewal projects to deliver high-quality places that contribute to Brisbane's reputation as a New World City where people want to visit, live, work and invest.

- Undertake a study to identify and promote emerging global and productive precincts in Brisbane.
- Promote Edward Street (from Turbot Street to Alice Street) as the city's key retail boulevard to complement Council's \$11.5 million streetscaping investment in the street between Queen and Charlotte Streets, the city's luxury retail precinct.



Spring Hill

- Continue to invest in the Vibrant Laneways program to rejuvenate and reintroduce forgotten spaces as places where people can meet, relax, shop, dine and celebrate.
- Continue to deliver civic improvement projects, promote design excellence, beautify the urban environment and stimulate economic activity at suburban shopping precincts through Suburban Centre Improvement Projects.

4. Explore partnerships to develop and deliver new technologies that enable communities to engage in city systems and assist Council to manage existing assets more efficiently.

- Deliver the Strategic Research Dashboard and Database Project to give community members easy access to

development activity and land-use data and enable interpretation and analysis.

- Expand Council's free Wi-Fi service to suburban centres and popular destinations to support business and draw residents and visitors into the outdoors.
- Promote the use of open data by continuing to make Council datasets freely available through its open data portal.

Advocacy

Council contributes and responds to planning policies and frameworks set by the Queensland and Australian Governments.

As an example of advocacy at the state level, Council is pushing for new internal processes and legislation to make existing buildings more environmentally friendly through the proposed Environmental Upgrade Agreements (EUAs). EUAs enable subsidised loans to building owners to invest in energy, water and waste efficiency measures. These loans are then re-paid via the rates system.

As a leader in the South East Queensland region, Council has worked with the Queensland Government to represent the interests of the community in a range of Queensland Government and regional planning projects.

Council also facilitates and builds the capacity of communities and industry sectors to participate in government planning processes through the neighbourhood planning program, Urban Futures Board and its portfolios, and the South East Queensland Council of Mayors.



Mt Coot-tha Lookout

Walking the talk – Council in action

Council leads by example in sustainable facilities development and tenancy management, setting the standard in design and environmental performance.

At the time of construction, Brisbane Square, Council's main city office, was the nation's largest high-rise building to be granted a 5 Star Green Star rating from the Green Building Council of Australia. Brisbane Square achieved the 5 Star rating through features such as an air-filtration system that reduces pollutants to the office tower and by using recycled material such as goat hair, wool, cotton and hemp in its construction. The building's potable water consumption is reduced by 75-85% by using river water to cool the air-conditioning system. Other water-saving features include on-site rainwater tanks and a sewerage treatment plant that recycles, treats and sterilises wastewater. Brisbane Square also has energy-efficient lights, rainwater tanks, water-efficient taps and recycling facilities and very popular 'bike room' facilities such as showers and lockers to support hundreds of staff in active travel choices everyday.

Council achieved a 4 Star Green Star rating for its restoration of Brisbane City Hall through the Green Star Public Building Pilot. Sustainability features incorporated into Brisbane City Hall include an 80,000-litre underground water tank for toilet flushing and irrigation, low-energy light bulbs and occupancy sensors on light switches, energy-efficient air-conditioning, solar panels on the roof and materials that emit only low levels of volatile organic compounds such as insulation, carpet, adhesives, sealants and paints. Heritage light fittings were rewired to reduce energy consumption and windows were resealed to better control building temperatures.

The Sherwood and Eagle Farm bus depots have also been awarded 5 Star Green Star ratings for their environmentally friendly sustainable design. Green features of the depots include solar panels and passive solar design, mixed-mode air-conditioning, rainwater storage tanks, a bio-retention basin and a design that enhances safe depot operations. Sherwood bus depot became the first industrial building in Australia to achieve a 5 Green Star award for Australian Best Practice Design.

Willawong bus depot was built on a former waste disposal site. Clever landscaping and design help reduce the depot's heat island effect and use of potable water. Stormwater harvested from the roof and grounds and collected through wetlands, ponds and other bio-retention systems have reduced demand for potable water by 92% compared to a depot with a traditional design.



Boondall Wetland

Landmark project – Memorial Ring of Green

A ring of subtropical boulevards of stately trees will be planted over time around the inner city to establish Brisbane’s Memorial Ring of Green. Community involvement will help develop a love of Brisbane trees and the individuals and stories they will commemorate.

The Memorial Ring of Green initiative will see landmark and shade trees characteristic of Brisbane such as hoop pines and figs planted in footpath verges and open spaces of key streets within the inner city, transforming them into subtropical boulevards.

The Memorial Ring will connect Woolloongabba, South Brisbane and Spring Hill, building upon the existing Main Street and Grey Street boulevards, and link with open spaces and destinations such as Captain Burke Park, South Bank and Roma Street Parkland. The ring will celebrate Brisbane’s local environment and reflect the avenues of many great cities of the world.

Conclusion

Brisbane’s evolution into a well-designed, subtropical outdoor living city that maximises the region’s climate and lifestyle attributes will continue. Brisbane’s CityShape will protect the natural environment, so important for quality of life, tourism, recreation and ecosystem services, and enable better, more affordable infrastructure provision. Attracting growth and investment into well-serviced transport corridors supported by world-class clean and green infrastructure will be important to realising the CityShape vision on the ground.

Council will continue to show leadership in sustainable facilities management and infrastructure development and push for innovations in energy, water and waste efficiency. Council’s efforts will become exemplars to the wider development industry, as well as directly benefitting the natural environment.



'We are so lucky to have beautiful New Farm Park', Nino Lo Giudice, Green Heart Photography Competition 2015

Community story

New lessons in green design

A research leader in global change is shifting mindsets through building design.

With a 6 Star Green Star rating, the Global Change Institute's (GCI) Living Building is ranked 34th in the world's 50 most impressive environmentally friendly university buildings and showcases innovative technologies and sustainable design.

GCI generates more energy than it consumes. The building is naturally ventilated with a shading system that tracks the sun, captures its own power through solar panels and stores up to 60,000 litres of rainwater. It is constructed from recycled and recyclable materials and is piloting the structural use of low carbon concrete.

Located at The University of Queensland's St Lucia campus, GCI demonstrates how innovative technologies and sustainable design can positively impact the environment and change development focus from consumption to contribution.

One One One Eagle Street takes innovation to new heights

One One One Eagle Street is a world-class model for sustainable high-rise office design.

Located in Brisbane's riverside financial precinct, the building has taken out multiple design and architectural awards and has a 6 Star Green Star rating, a 5.5 Star National Australian Built Environment Rating System Energy rating and 4.5 Star NABERS Water rating.

The building's vine-like design facilitates natural light permeability across all 44 levels of office space to greatly reduce energy requirements for artificial lighting. Tri-generation technology captures exhaust heat from the gas-fired electricity generator for air-conditioning and heating, reducing greenhouse gas emissions and peak-energy demand. The building stores and recycles rainwater and features high-efficiency air-conditioning, high-performance window glazing, automated glare control, high-efficiency zoned lighting and smart elevators.



Queensland University of Technology's Science and Technology Precinct building at the Gardens Point Campus, housing 'The Cube' - one of the world's largest digital interactive learning and display spaces for teaching and research in science, technology, engineering and mathematics - is 5 Star Green Star, Education Design v1 certified.



Chapter 8

Urban Forest



Trees are integral to the identity of Brisbane.

GOAL *Brisbane will value, nurture and protect its urban forest*

Target: 50% shade for footpaths and bikeways in residential areas by 2031

Indicator: Percentage tree cover on footpaths and bikeways in residential areas

Actual: 35% (2010)

Viewed from the air, Brisbane is a patchwork of green. Our urban forest is a mosaic of bushlands, wetlands and parks. Trees line our streets, riparian vegetation follows water courses, backyard gardens are filled with native and exotic plants. And under the subtropical sun even our balconies and rooftops are softened by green.

Brisbane abounds with iconic trees that contribute to a sense of time and place. Living memorials to times past, some of the oldest have survived the city's growth from colony to metropolis. Our city and suburban streets are dotted with remnant eucalypts, poincianas, jacarandas, pink-flowering trumpet trees, white and yellow-tinged frangipani blossoms, mango trees, hoop pines and our signature Moreton Bay figs.

The urban forest is not only integral to Brisbane's identity as a subtropical city and an essential habitat for wildlife but it underpins the city's liveability. Brisbane's enviable quality of life carries an economic value that must be maintained if it is to continue to attract businesses, workers and residents and sustain its reputation as a visitor destination.

Target: Increased customer satisfaction with shade cover on footpaths in their suburb

Indicator: Community survey

Baseline: 36% (2015)

Actual: 46% (2016)

Trees have a significant role in mitigating the urban heat island effect by reducing temperatures through shading and minimising stored heat. Brisbane's urban forest also significantly contributes to mitigating greenhouse gas emissions through the removal of carbon dioxide from the atmosphere during the day and providing a sink of carbon, storing an estimated 1.9 million tonnes of carbon annually.

We need to maintain the canopy across Brisbane as well as consider the rising cost of establishing and maintaining trees and the community's perceptions about the risks associated with urban trees during storms.

Trees in the urban environment require special care in every stage of their life. Simply planting trees is not enough. Managing a diverse range of species requires significant investment to ensure longevity, reduce risks and optimise benefits of the urban forest to the city. Council will continue to work with the community to ensure a shared vision on street tree maintenance, species selection and shade cover on footpaths and bikeways.

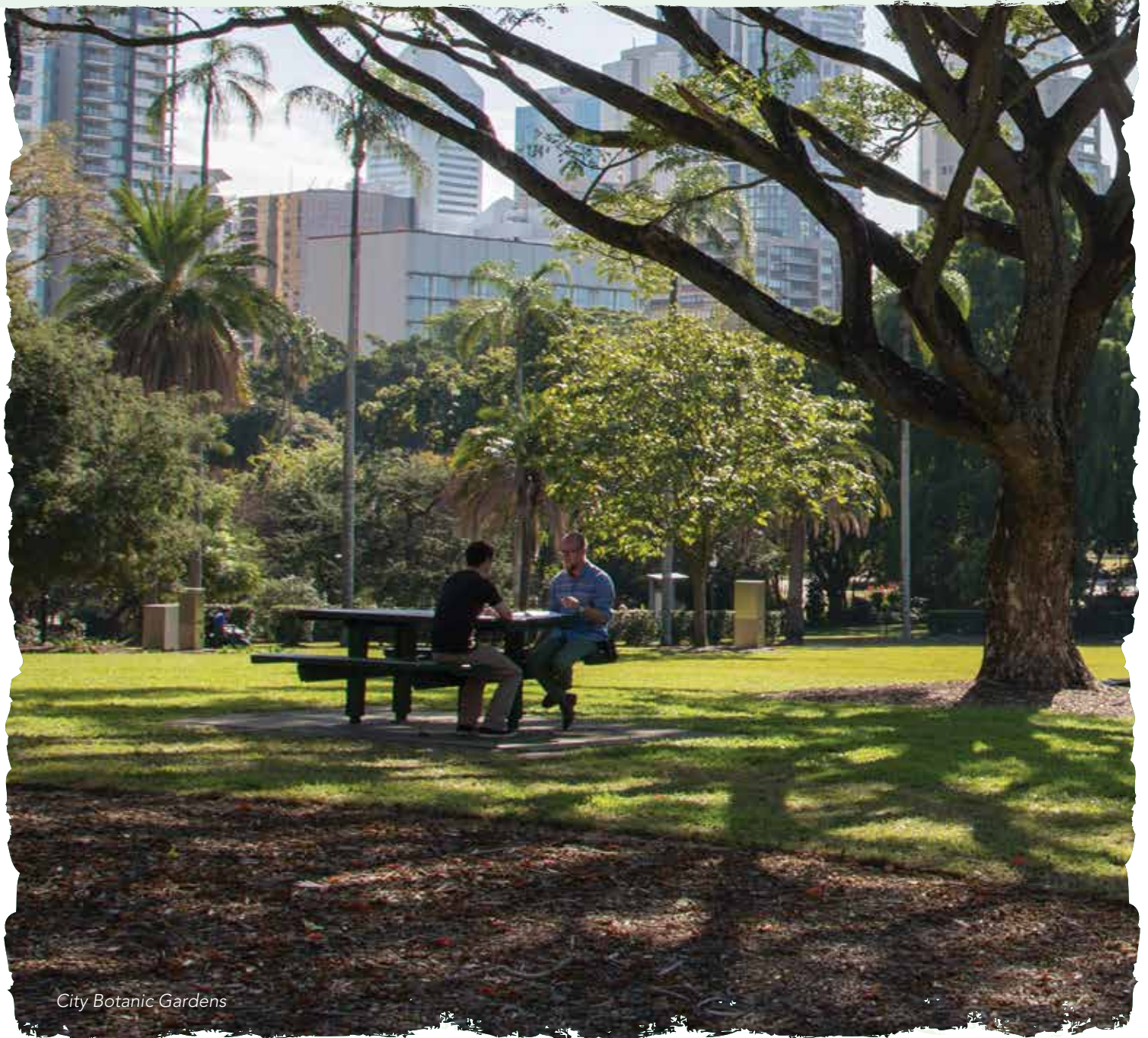
Cooling our growing city

Brisbane, and many other cities in Australia, are experiencing increasing mean temperatures and prolonged periods of hot weather. Based on current trends, heat-related deaths in Australia are predicted to increase. Heatwaves that place the most vulnerable people, particularly the very young and the elderly, at high risk will increase in frequency, range and duration.

People in cities are more susceptible due to the prevalence of materials that trap heat such as pavements, roofs and concrete, and a lack of shade and green space in dense urban environments. This is known as the urban heat island effect. Vegetation cools urban areas increasing liveability and reducing energy usage.

On a summer day, surface temperatures of tree-shaded pathways can be up to seven degrees cooler than unshaded pathways. One of the most efficient and cost effective adaptation strategies is to increase the amount of vegetation in the built environment. *Source: State of Australian Cities 2013.*

Council is committed to identifying suburbs which have low percentage tree cover so we can target plantings and increase the amount of shade and cooling our street trees can provide to our subtropical city.





City Botanic Gardens

Achievements

Council maintains about 575,000 street trees, comprising more than 200 species. We also plant an average of 9250 street trees along footpaths and bikeways each year. Council completed the world's largest local government tree-planting project in 2012, the 2 Million Trees project.

Council values street trees and has invested in techniques and partnerships to protect and enhance them. Council transplants some trees when roads are widened or if certain trees have historical value. Council has a 95% success rate with the practice of tree transplants. Council has held a Memorandum of Understanding with one of our local energy retailers, Energex, for more than 10 years to reduce canopy loss of street trees through re-engineering wires, new pruning profiles and improved communication.

City Plan sets the framework for greening major arterial roads through establishing subtropical boulevards. Key suburban streets linking homes to shops, schools, parks and other important places are becoming 'shadeways', with more large street trees and better footpaths.

City Plan also requires new development to leave space for large subtropical trees to be planted in natural ground and set back from footpaths to compliment our street trees.

Brisbane's free plants program, started 40 years ago, is Australia's longest-running and has provided more than 600,000 plants to residents, schools and community groups over the last 10 years. Council also encourages the community to adopt sustainable gardening practices through Green Heart Fairs, presentations at libraries and the publication of its Green Gardening Guide. The guide is now in its sixth edition and remains a popular booklet among Brisbane's green thumbs.

Many large, significant trees in urban areas are protected under Council's *Natural Assets Local Law 2003* (NALL) and more vegetation protection orders are added each year. Community members can now nominate trees or bushland areas for protection online. Since 2006, additional significant landscape trees are identified and protected through the Neighbourhood Planning process, which enables community members to contribute to planning their local area.

As part of Avenues of Honour, a national initiative honouring the memory of servicemen and women through living memorials, Council has documented 24 memorial and commemorative plantings and restored, re-dedicated or established eight Avenues of Honour sites.



"Through participating in Council's Habitat Brisbane Program, the volunteers feel that our work is making a contribution to the local community. The program also provides an opportunity to socialise with residents living in the local area."
Mossvale on Manly Bushcare Group



Priority actions

1. Protect our urban forest and manage threatening processes.

- Continually improve Council's policies (including City Plan), procedures, guidelines, asset management plans, infrastructure design standards and other statutory tools to manage and protect Brisbane's urban forest.
- Work with electricity and telecommunication providers to reduce, re-engineer or move powerlines underground to protect the structural integrity and canopy of existing trees and make space for new street trees. This is particularly important where growth is planned (e.g. in shopping centres and along transport corridors).
- Ensure appropriate heritage status is assigned to significant Council plantings (e.g. Avenues of Honour sites and memorial trees), with assessments by arborists and ongoing maintenance.
- Continue the strategic protection of significant vegetation.
- Investigate the establishment of incentives and online tools that encourage community participation in the conservation of our urban forest.

2. Grow our urban forest.

- Increase canopy coverage to achieve 50% shade for footpaths and bikeways, targeting centres and growth nodes along selected transport corridors and residential areas identified with less than 30% tree cover by suburb.
- Identify and develop highly shaded, green routes along major roads and 'shade-hungry' walk or cycle routes, and subtropical boulevards in strategic locations.
- Promote subtropical urban design and subtropical plantings in new developments.
- Invest in projects that support self-sustaining tree growth and health.
- Promote the installation of green walls and roofs across the city.



3. Involve the community in our urban forest journey.

- Investigate opportunities to engage residents and businesses to protect, grow and care for our urban forest.
- Promote the benefits of vegetation and celebrate Brisbane's urban forest through relevant events and activities.
- Explore online tools to promote the City Centre Tree Trail guided walk program.
- Continue to provide information on urban tree care and locally specific information on how the community can care for trees.
- Continually improve the variety of plant stock provided through the Free Plants program to include species suitable for balconies, roof tops and small gardens.

4. Improve Council's knowledge and expertise in urban forest management.

- Join key urban forest partnerships.
- Determine the economic value of urban trees in Brisbane.
- Improve techniques for collecting baseline information and monitoring data to efficiently manage our urban forest.
- Undertake tree research in collaboration with universities to better understand our urban forest.
- Review the existing palette of street tree species to ensure a diversity of species with specific benefits.
- Embed water-smart planting techniques as 'business as usual' for street trees.
- Make information about the city's urban forest accessible through open data.
- Monitor community expectations, perceptions and motivations.



"Sustainable urban forests are not born, they are made."

'A model of urban forest sustainability'. Journal of Arboriculture 23(1): January 1997. By James Clark, Nelda Matheny, Genni Cross and Victoria Wake Page 28.



Advocacy

Council's achievements in protecting and growing the urban forest in public ownership have encouraged many private owners to do the same. And with 43% of tree cover on private land, partnering with the community, industry and business will continue to be critical.

Walking the talk - Council in action

Shading and beautifying local streets to get people out of cars and on to footpaths is one of Council's top priorities. In addition to Council's street tree planting program, in 2016 Council developed verge garden guidelines to encourage residents to plant on footpath verges.

Council is also moving towards more water-smart practices. Residents are encouraged to use native or water-wise plants on verges and all street tree plantings are established using non-potable water. Under the WaterSmart Street Trees initiative, more than 100 trees are being planted with design elements such as tree pits to capture, cleanse and reuse stormwater. Research shows that bioretention systems such as tree pits not only help manage stormwater but increase tree survival, promote quicker growth and reduce maintenance costs.



Sitara Gare, Senior Arborist

My role involves managing the aging population of our most significant heritage and veteran trees and working on projects to increase the canopy cover over the streets for pedestrians and cyclists.

I love Brisbane and a part of that is because of how interconnected the city and suburbs are to the natural environment. Trees are integral to this. I love that wildlife is a part of our suburbs and not something we just experience at a zoo.



Landmark project – urban cooling

Economically, cities are now the most productive places in the world. For the first time in history, the population within cities outnumbers those living in rural areas. These global shifts coupled with the trend towards a more variable climate demand that city builders and policy makers consider the future health needs of city dwellers, particularly how to keep cities cool.

Brisbane is a fast-growing subtropical city that prides itself on its outdoor lifestyle. As it grows and densifies, urban heat will become more of a problem. Brisbane must plan and act now before heat impacts the city's liveability and its lifestyle image. Council already has initiatives to reduce the urban heat island effect. Enhancing, strengthening and developing new tools will enable the city to adapt and prepare for a changing climate and community expectations.

Brisbane's remarkable and diverse urban forest offers great potential to turn the dial back to cooler temperatures. This would enhance liveability, activate business and public places plus improve active and healthy opportunities. Bringing together proven Council programs with new on-ground initiatives such as rooftop gardens, living walls, subtropical boulevards and better design requirements to allow buildings to breathe would enable unique opportunities for communities and businesses to partner with Council for healthier living outcomes.



Brisbane is a fast-growing subtropical city that prides itself on its outdoor lifestyle.



Conclusion

The value of trees to Brisbane's liveability and its economy cannot be overstated. A diverse and resilient urban forest will be increasingly vital as the city grows. Trees will become of even greater value to residents and must be considered essential green assets. Council will continue to balance community expectations for trees in local areas with the critical need to ensure the survival of our urban forest. Working together, communities and Council can ensure our urban forest remains healthy, safe, attractive and beneficial for generations to come.



Community stories

From little things, big things grow

Brisbane has a long and proud history of helping nature to nurture our urban forest. Tree giveaways, such as at Council's popular Neighbourhood Shadeways, are far from a modern initiative. Our first Arbor Day, now celebrated on the second Tuesday in October, was held on 1 August 1890. It was organised by City Botanic Gardens curator Philip MacMahon, who distributed 2496 trees from the gardens' nursery to Queensland schools. Brisbane's primary and secondary schools are still eligible for free plants and each year are invited to hold planting events. Many of the large figs in Brisbane are living relics that were planted by children on Arbor Day over a century ago.

Since 2006, Council has been holding street tree planting events through the Neighbourhood Shadeways program. These are fun and informative days where residents plant shade street trees with their neighbours before enjoying a barbecue and a cold drink. Participants also receive a free native plant. These events target the most shade-hungry residential footpaths across Brisbane and more than 50,000 trees have been planted since the program's inception. Neighbourhood Shadeways aims to inspire school children and the community to plant, nurture and celebrate shade trees.

Brisbane's living greenery

Vegetation is climbing the walls and gardens are reaching for the sky in Brisbane as more local developers embrace living greenery.

More buildings are incorporating vertical gardens and green roofs as an integral part of their design and setting new standards of their own. 480 Queen Street features Australia's first elevated public park within an office building while the award-winning Lady Cilento Children's Hospital incorporates eleven rooftop gardens for recreation, rehabilitation and therapy, a green sloping roof of 23,000 plants and a community plaza with six 30-year-old transplanted fig trees.

Urban greenery shades, cools and filters the air. It also beautifies the city and offers visual respite from hard urban surfaces. Council's *New World City Design Guide: Buildings that Breathe* offers designers, architects and planners practical assistance to incorporate more living greenery into developments and enrich our urban experience.



"The Habitat Brisbane Program provides an opportunity for the community to engage with one another, in a healthy space, whilst being able to support our native wildlife and also create a pleasant natural area for people to use."

Mt Gravatt Environment Group - Gertrude Petty Place Group



Chapter 9

Parks

Brisbane loves its parks and gardens.

GOAL *Brisbane parks are diverse and accessible*

Target: Maintain community satisfaction with all parks above 85%

Indicator: Community survey - community satisfaction rating for Council parks, including playgrounds

Actual: 87% (2016)

The boundaries were drawn for Brisbane's first park, the City Botanic Gardens, in 1828 when it was a newly-fledged penal colony. Over the following decades, parks became the focal point of the maturing city's social life. Today, with increasing urban density and the renewal of the inner city, the positive role parks and the Brisbane River play in Brisbane's health is more important than ever. As Brisbane grows the park network will continue to underpin Brisbane's subtropical outdoor lifestyle, open space values, economic prosperity and emergence as a New World City.

Ample evidence shows that green spaces deliver substantial benefits to public health. The natural landscape helps keep temperatures down, reducing the urban heat island effect. Hard urban surfaces are significantly warmer than their surroundings and green corridors bring in cooler air to ventilate more densely built areas. Vegetation also absorbs pollutants and helps improve water and air quality. Green spaces provide natural drainage, water filtration and storage that mitigates flooding – something of particular importance to Brisbane.

The city's 2050 parks contribute 15,000 hectares to Brisbane's open space and help shape its unique subtropical identity and liveability. They strengthen our city's visual appeal and contribute to Brisbane's capacity to attract visitors and new business. The inner city parks of South Bank, Roma Street Parkland and Kangaroo Point Cliffs have become key destinations as have water-based parks at Sandgate, Wynnum and Seventeen Mile Rocks.

Target: 50% of Brisbane's district-level parks meet accessibility and inclusion standards

Indicator: Percentage number of standard embellishments in district recreation parks that meet access and inclusion standards

Baseline: 30% (2016-17)

Actual: New measure (2017-18)

Parks also help create a cultural and spiritual sense of place and promote community cohesion by providing venues for sport and celebration, for family gatherings and kids' birthday parties, or for quiet contemplation and reconnection with nature.

Brisbane's parks bring the natural world into the very heart of the city and provide essential wildlife corridors and habitat. They are vital components of a unique ecosystem of bushlands, wetlands and waterways. Around 9500 hectares are natural area parks, and 20% are within waterway corridors. Natural area parks boast hundreds of kilometres of well-maintained trails for bushwalking and exercising, bike and horse riding.

These areas are continually restored and managed not only to meet Council's goals in nature conservation and protection of biodiversity but to guarantee sustainable outdoor recreation for residents and visitors.

Brisbane's parks are ever-evolving in response to changes in the way we live. As the city continues to grow, enhancing existing assets and ensuring no net loss of public open spaces will be crucial in maintaining liveability. Brisbane's renewing neighbourhoods and growth nodes along transport corridors open up opportunities to pilot innovative designs that will transform parks into multipurpose venues, accessible day and night throughout the seasons, with features that cope with floods or drought.



New Farm Park

Achievements

Council continually expands this green network by buying land for parks and building sporting fields and playgrounds. Agreements are routinely negotiated with developers to play their part. Historically, new development contributed 10% of greenfield subdivisions for parks but with the shift to infill development in areas where opportunities are limited, developers contribute to improvements and upgrades to existing and new parks nearby to their development.

Council is also making parks more attractive through additional shelters, seating, barbecues and playgrounds. Usage is encouraged by providing new facilities and activities tailored to community demand. There are now more than 100 fitness equipment gyms and 130 off-leash dog areas in Brisbane parks. Food vans are becoming increasingly popular and free Wi-Fi is available in many key parks.

Through a greater focus on universal access, more than 40 playgrounds now have all-abilities equipment. Council is also refurbishing paths, tracks, facilities and furniture such as picnic tables to make parks more accessible for people of all ages and abilities.

Notable among Council's many new projects is the multiple award-winning Frew Park in Milton, which includes a unique playground aimed at teenagers and acclaimed integrated stormwater management system that features an innovative passive tree watering system. Innovative playgrounds also have been developed at Calamvale, Whites Hill and the City Botanic Gardens.

Council is restoring heritage parks, including the City Botanic Gardens and New Farm Park, that showcase the region's significant subtropical urban trees such as varieties of eucalyptus and figs, and bunya and hoop pines.

Since 1990, residents and businesses have contributed to protecting Brisbane's most significant natural assets through the Bushland Preservation Levy. These funds have bought and maintained more than 3600 hectares, preserving and sustaining significant ecosystems such as Karawatha Forest and Brisbane Koala Bushlands.

Council has also committed \$100 million over the next 20 years to revitalise the run-down Oxley Creek catchment into a series of parks, sporting fields, recreation precincts and economic hubs linked by bikeways and trails.



Priority actions

1. Enhance the park network to respond to a growing and changing Brisbane.

- Incorporate a planned, integrated park network within City Plan to ensure open space will expand as the city grows, with no net loss.
- Use integrated strategic asset management practices to proactively manage the park network and assets.
- Develop new recreation parks and facilities as focal points for the community such as the Mt Coot-tha precinct, Indooroopilly (Witton Barracks), and a new, upgraded wetland environment centre at Boondall.
- Upgrade parks and renew facilities at the City Botanic Gardens, Kangaroo Point Cliffs, New Farm Park, Cathedral Square, Wickham Park and as part of transport corridor and centre renewal projects.
- Upgrade major playgrounds with focus on improved accessibility and technology at key district-level parks.
- Expand popular fitness equipment gyms.
- Provide new sport parks and better partnerships for high-quality synthetic surfaces used in competition-grade sports.
- Provide new BMX sporting facilities.
- Continually expand the natural area park network through the Bushland Acquisition Program, including acquiring an additional 750 hectares by 2021.
- Expand sustainable outdoor recreation opportunities in natural area parks, including new activities in acquired bushland.

- Develop a range of interpretative signage for environmental education in natural area parks.
- Improve the management of parks to build their resilience and response to changing climate.
- Develop more water-based recreation facilities as part of the restored Oxley Creek transformation project and along the Brisbane River and Moreton Bay foreshores.
- Embrace partnerships to deliver parks in conjunction with major transport and other infrastructure upgrades.
- Continue to identify opportunities to enhance and incorporate Brisbane's active transport network into the city's open space network.

2. Adopt world's best practice in technology and design at Brisbane parks.

- Expand free Wi-Fi and new technology in key parks.
- Increase social media presence to educate and attract potential visitors.
- Support innovative recreation by providing suitable locations for emerging activities.
- Conduct research to inform innovative design and maintenance.



Council has plans to develop a range of interpretative signage for environmental education in natural area parks.

- Better use technology to:
 - enhance monitoring, management and planning
 - engage with the community about sustainable use
 - improve environment centres such as the Boondall Wetlands facility
 - provide accessible nature-based experiences in natural area parks such as virtual bushwalking and bird cams
 - develop parks that embrace e-innovation practices.

3. Promote Brisbane worldwide as a city with an enviable year round, vibrant, outdoor lifestyle.

- Promote the culture of Brisbane’s dynamic and diverse parks as places where something is happening day and night.
- Deliver new or upgraded grassed event spaces suitable for festivals and large community gatherings.
- Tailor programs, events and pop-up activities such as the moveable furniture Chairs2Share program and promote them widely through social media and community networks.
- Promote the breadth of sustainable recreation possible in natural area parks, both in peaceful spaces or active, social areas.
- Review community leases to maximise multi-purpose use.
- Review and broaden access and inclusion and respond quickly to community expectations.

4. Encourage communities to embrace Brisbane’s parks and public spaces.

- Broaden partnering to provide stewardship, alternative funding and other mechanisms to enhance the park network.

- Partner with ‘friends of’ groups and encourage them to use Council grants to improve facilities and activities.
- Support citizen-science programs that document the location of wildlife in parks to inform planning and conservation.
- Continue to develop the successful Community Conservation Partnerships Program.
- Continue to work with other levels of government to ensure sound management of reserves and trust land and for negotiated use rights.
- Partner with advisory groups such as the Parks and Botanic Gardens Advisory Committee, peak bodies, industry groups and universities.

Advocacy

Council works with parks and play associations, peak bodies for sport and recreation, universities and industry bodies to respond to trends in outdoor recreation and collaborate on the latest ideas.

One such group, Nature Play Queensland, aims to increase the time kids spend in unstructured play outdoors. Most children now spend much of their time indoors, in a technologically immersed, structured and risk-averse play space. Council planners regularly meet with Nature Play to exchange ideas and tailor park and playground designs and programs to support nature-based play, right across the network.

Council has plans to deliver new or upgraded grassed event spaces suitable for festivals and large community gatherings.





Tropical Display Dome, Mt Coot-tha

Walking the talk – Council in action

Council uses sustainable land management practices across the network and requires all significant new parks to achieve leading best-practice sustainability ratings. The network is planned to place parks where they are needed most and to reduce car use. More than 90 hectares of land for sport fields, hard courts, skate parks and local parks have been delivered close to where people live, over the past decade. Inner city park upgrades include provision for quicker, lighter, affordable initiatives that draw in crowds, such as moveable chairs, and mobile food and drink vans.

Council also seeks out, trials and delivers innovations:

- Stormwater harvesting systems have been being installed to irrigate parks and sporting fields through a \$10.8 million project, with the support of Australian Government funding.

- Commercial food waste from nearby businesses are being turned into compost for garden beds at South Bank and Roma Street Parkland.
- A vegetation condition assessment program allows Council to identify when and where action is required.

Through strategic parks planning Council is providing a diverse range of parks of various sizes and function across the city. This enables all communities to have access to a variety of parks, park infrastructure and park activities within easy travel distance from their homes.



Dale Arvidsson, Curator Botanic Gardens and Sherwood Arboretum

I feel honoured to be custodian of a living collection that is loved by residents and visitors alike with 700,000 visitors to the Brisbane Botanic Gardens at Mt Coot-tha each year discovering plants from all over the globe.

Brisbane Botanic Gardens Mt Coot-tha is an amazing green space - growing over 200,000 plants of almost 5000 species. The City Botanic Gardens and Sherwood Arboretum hold some of the most historic and significant trees in Brisbane, as well as providing peace and tranquillity in rare open sites along the Brisbane River. The modern role of botanic gardens is to be a living repository of our threatened plants with several from the greater Brisbane area held in the Botanic Garden's living collections for both conservation and education.

Brisbane is unique as a subtropical city full of life and activity, combined with Ramsar and World Heritage sites on our doorstep. It's these contrasts that allow us to appreciate places like our three 'botanic treasures' to help us learn more about our environment and the roles plants play in our everyday lives.

Landmark project - Mt Coot-tha Precinct

Mt Coot-tha is a retreat from the hustle and bustle, right on the city's doorstep. It's also one of Brisbane's green jewels, supporting a myriad of flora and fauna species.

Just 15 minutes from the CBD, Mt Coot-tha's unique location and cultural significance make it one of Brisbane's most valued icons. The Mt Coot-tha precinct includes the Brisbane Botanic Gardens and Herbarium, forest reserve, bushwalking, mountain bike trails, picnic areas, a library, cemetery, planetarium, television stations and towers, quarry, lookouts, cafes and restaurants.

Mt Coot-tha faces growing pressures as the population increases and more people discover its special qualities. Council has crafted a 20-year vision in partnership with the community to protect the area's unique stories, spaces and destinations for generations to come.

This vision celebrates Mt Coot-tha as:

- a Brisbane icon
- a sustainable retreat for people and refuge for wildlife
- a learning environment
- a place for recreation
- a place that is connected and accessible.

Enhancements planned for the Mt Coot-tha precinct include:

- a new master plan for the Brisbane Botanic Gardens at Mt Coot-tha
- a new visitor information centre
- a zipline attraction
- upgrading the JC Slaughter Falls and Simpson Falls picnic areas and building a new trail to connect them
- upgrades and improvements to existing facilities and creation of new trails.

"Mt Coot-tha will be valued for its unique environmental, cultural and historical qualities, and be celebrated for its biodiversity, diverse learning and recreational experiences and opportunities."





Roma Street Parklands

Conclusion

Parks are vital to the healthy outdoor lifestyle that is a major driver of Brisbane's economic prosperity. As Brisbane grows and evolves, its park network will respond to community trends in sport and recreation, technology and the community's desire for greater stewardship. Implementing priority actions tracked against key indicators measured by community satisfaction surveys and ratings against accessibility standards will help Council achieve this goal.

Community stories

Neighbours become good friends

More people are joining friends of parks groups to share their passion for Brisbane's green spaces.

Friends of the Brisbane Botanic Gardens and Sherwood Arboretum is one group already working hard to celebrate and promote three botanical treasures – City Botanic Gardens, Sherwood Arboretum and Brisbane Botanic Gardens – from Instagramming trees in flower to hosting talks from tree doctors and representing the parks at garden shows.

Like creek catchment community groups, park friends can access grants to support their work. Funding is available for local non-profit community groups and organisations to undertake environmental initiatives, reduce energy consumption, care for wildlife and set up community gardens through the Lord Mayor's Community Sustainability and Environmental Grants Program.

Healthy and Physical Activity Grants fund projects that encourage people to get involved in sport, recreation and physical activity. Free and low-cost activities are growing in popularity and number, with Council's Active Parks Program alone offering activities at more than 50 local parks.

Sit back and relax

Local businesses are supporting Brisbane's parks by helping Council deliver the popular Chairs2Share program. Introduced in 2013, Chairs2Share makes deckchairs available for free to visitors, residents and workers at select inner city parks including Post Office Square, Roma Street Parkland and City Botanic Gardens. Users can sit back, enjoy the sunshine and, often, make use of free Wi-Fi. Council receives no revenue from the scheme and local business owners help set out the chairs each day and store them in the evenings.



"We volunteer in Council's Habitat Brisbane Program, not only because it promotes caring and learning about the environment, both locally and sometimes globally, but it also connects like-minded people in the community by encouraging the idea that it's great to be green."
Myuna Park Bushcare Group



Chapter 10

Biodiversity



Brisbane is privileged to be Australia's most biodiverse capital city.

GOAL *Brisbane will grow and connect its natural areas to protect its rich biodiversity*

Target: 40% natural habitat cover on mainland Brisbane by 2031

Indicator: Remnant and non-remnant vegetation within the Habitat Area Ecological Corridor map. The percentage is determined by comparing current hectares to the pre-clearing extent of natural habitat cover

Baseline: 34.5% (2009)

Actual: 35.4% (2013)

South East Queensland's location on the Macleay-McPherson Overlap, a mixing zone between western, temperate and subtropical ecosystems, makes it one of the most biodiverse regions in the world. Brisbane has 81 separate ecosystems encompassing open forest, freshwater and estuarine wetlands, mudflats and mangrove communities. They support more than 2500 species of unique native wildlife, including iconic animals such as koalas and kangaroos. Some species migrate remarkably long distances to the region. Brisbane wetlands are host to migratory birds from as far away as China, Russia, Alaska, Korea and Japan. The endangered Swift Parrot migrates to Brisbane from interstate. The Collared Delma has a limited distribution and only occurs in South East Queensland. Butterflies breeze in from west of the Dividing Range. Whales, dugongs and sharks swim tremendous distances to Moreton Bay.

As one of the largest estuarine bays in Australia, Moreton Bay is internationally recognised as a Significant Wetland. It has a rich diversity of terrestrial and marine habitats, supporting more than 1000 fish species and six of the world's seven species of marine turtles. The bay's wildlife includes threatened marine animals such as the grey nurse shark, manta ray, dugong and Indo-Pacific humpback dolphin.

The biodiverse natural environment is an integral component of the lifestyle Brisbane residents enjoy. It also makes a significant contribution to the economy through activities such as tourism and recreation. A resilient biodiversity network also improves the city's ability to respond to future threats such as changing climate and floods.

Target: 75% of Brisbane's natural habitat cover is connected and healthy

Indicator: Vegetation and waterway condition rating as per the rapid condition assessment methodology, documented in the Natural Vegetation Asset Management Plan

Baseline: 69% (2003)

Actual: New measure (2017-18)

Healthy and well-connected ecosystems are essential in maintaining a diversity of plants and animals. Threats to ecosystem health such as invasive species, habitat clearing and fragmentation, decline in water quality and changes to water flow must be closely managed by governments in partnership with communities.

Brisbane is fortunate that community commitment to protecting the natural environment continues to rise, with many thousands of volunteers and hundreds of private landholders involved in biodiversity conservation. Council's enduring Community Conservation Partnerships Program brings together three community-based environmental programs – Habitat Brisbane, Creek Catchment and the Wildlife Conservation Partnerships. These represent a network of 5000 like-minded volunteers working to improve the city's biodiversity and waterway health across land tenures covering 870 sites that span almost 3000 hectares.

Recognition of the physical, psychological and social benefits of human connection with the natural world is growing. People of all ages are now participating in citizen-science programs, using new technologies to broaden the city's understanding of its ecosystems and how best to protect biodiversity. Council's environmental centres at Boondall Wetlands, Karawatha Forest, Botanic Gardens Mt Coot-tha and Downfall Creek have become popular destinations to learn about the natural environment and sustainability actions. Their school programs are educating new generations about the importance of conservation.



Wildlife Movement Solution, Compton Road, Kuraby

Achievements

In the early 1990s, Council was one of the nation's first local governments to introduce laws to protect significant vegetation. This dramatically reduced broad scale pre-emptive clearing and raised public awareness of biodiversity conservation.

The Biodiversity Areas Overlay in City Plan and NALL protect significant vegetation with a variety of values. All vegetation on Council land – more than 7000 properties and all streets – is now protected under NALL. This is complemented by approximately 60,000 private properties across Brisbane that have vegetation recognised under one or more categories of NALL. Council is also counterbalancing the unavoidable impacts of works on significant habitat and vegetation through the implementation of a vegetation offsets program.

Residents have funded bushland purchases through their rates bill for more than 26 years which has protected over 3600 hectares of highly significant bushland across the city. Council works with more than 600 landholders through the Wildlife Conservation Partnership Program to preserve natural bushland over 2000 hectares of private land. Fifty-four Voluntary Conservation Agreements with private landholders have been negotiated and now protect 318 hectares of vegetation.

Council recently revised its mapping of the city's significant habitat areas and ecological corridors as a result of new vegetation data. This mapping was converted into the Biodiversity Areas Overlay within City Plan so critical biodiversity areas can be protected as the city grows.

In 2004, Council was Australia's first local government to build a wildlife bridge across a major road. The Compton Road Wildlife Bridge was built by Council to link Karawatha Forest and Kuraby Bushlands. Infra-red cameras show hundreds of animals continue to use the land-bridge, ropes, climbing poles and culverts to move across the Compton Road Wildlife Crossing each week.

Many more wildlife-friendly crossing structures are now in place across the city where roads intersect wildlife corridors, and 20 constructed 'fishways' or rock ramps enable the safe passage of aquatic life through waterways.

Wildlife is sometimes seen as a nuisance in the urban environment due to their breeding behaviour, migration and social interactions. Some species are perceived to threaten human health, damage property and compete with people for food. Council has recently established the Living with Wildlife program which assists the community to minimise potential conflicts in simple, effective ways, encouraging safe practices to encourage co-existence.

The *Brisbane Invasive Species Management Plan 2013-2017* (to be updated in 2017 as a broader Biosecurity Plan) was drafted in consultation with the community and now guides highly effective weed management programs. About 4400 hectares of conservation reserves have been actively managed over five years through the Wipe Out Weeds program.

Being an 'early adopter', Council has adopted new technologies in the monitoring of wildlife. Council has also trialled the use of cane toad and koala detection dogs that sniff out either cane toads or koala droppings to track local populations.



Priority actions

1. Increase and protect habitat areas and ecological corridors.

- Strategically identify a biodiversity network of habitat areas and ecological corridors for conservation, including large-scale altitudinal and regional ecological corridors, to improve the resilience of ecosystems to threats such as changing climate and protection of iconic species such as koalas.
- Implement a prioritised citywide ecosystem protection plan, which will involve the creation of a well-connected Protected Area Estate within the biodiversity network.
- Ensure protection and management of areas outside of the Protected Area Estate through a combination of integrated planning, legislation and policy, and philanthropy and market-based programs.
- Continue to monitor and evaluate the Bushland Acquisition Program and the application of Bushland Preservation Levy funding.
- Identify and address barriers impeding involvement by local government and private landholders in biodiversity conservation.
- Review and continually improve the waterway and biodiversity provisions in City Plan, as well as local laws, statutory and non-statutory policies, operational procedures and their implementation, and compliance processes.
- Investigate the use of an index that measures the benefits of open space and biodiversity in Brisbane.
- Maintain or re-establish international, national and regional partnerships to ensure consistency and enable cross-government collaboration at all levels.

2. Increase and restore the resilience of Brisbane's ecosystems.

- Implement a prioritised citywide Ecosystem Restoration Plan that identifies and coordinates ecosystem restoration priorities between Council, industry and community using funds from Vegetation Offsets Programs. This will involve the use of trial technologies that can be used in habitat restoration.
- Continually improve integration of inter-governmental and Council planning and operational processes to maximise opportunities for restoration.
- Support and engage in regional partnerships, approaches and targets for the betterment of the region as well as Brisbane.
- Develop systems and procedures, and update current policy to mitigate and manage the impact of natural disasters.
- Develop Brisbane's first Biosecurity Plan which prioritises invasive species threats in Brisbane.
- Continue to support the city's wildlife carers and environmental groups through existing and new programs.

3. Protect Brisbane's diverse wildlife by maintaining the diversity of native plants and animals that live here or visit on their annual migration.

- Continually improve the City Plan integration of inter-governmental and Council planning and operational processes.
- Investigate activities to educate and support the community to protect native wildlife within urban areas.
- Install a range of innovative wildlife movement solutions to address threats posed by roads and other infrastructure.
- Review existing programs which provide incentives for biodiversity conservation.
- Establish a priority list of plants and animals to focus Council's conservation efforts.
- Maintain or re-establish international, national and regional partnerships to ensure consistency and facilitate cross-government collaboration and cost-efficiencies.
- Maintain and enhance the relationship between Brisbane, Narashino and other international stakeholders to foster the conservation of migratory shorebirds and wetlands.

4. Support and empower the community to be involved in biodiversity conservation on their own properties and within their neighbourhoods.

- Investigate activities that encourage stewardship of the city's natural environment by the community, industry and visitors.
- Create initiatives that stimulate community involvement in conservation.
- Provide facilities and opportunities at parks and waterways that increase appreciation of the city's biodiversity among residents and visitors.
- Continue to monitor community expectations, perceptions and motivations towards biodiversity conservation and promote how residents and visitors can experience and support Brisbane's unique ecosystems.
- Promote and celebrate the city's biodiversity by providing details about how and where residents and visitors can experience and explore it.

5. Capture information about the city's natural environment to inform and improve biodiversity conservation plans, policies and projects.

- Investigate initiatives that will provide Council and the community with rigorous data about Brisbane's biodiversity.
- Undertake a citywide koala survey to assess the population, movement, behaviour and health of koalas using a variety of methods and technologies, including the assistance of a detection dog.
- Investigate partnering with or supporting citizen science events or programs, including ecotourism opportunities, to capture specific data about Brisbane's wildlife.
- Continue the citywide Natural Vegetation Condition Audit Program commissioning benchmarks for habitat areas to inform the management and restoration of vegetation and habitats.
- Continually improve Council's IT platforms and open data to support operational conservation and restoration.

Advocacy

Council has been a driving force behind biodiversity conservation across the region and state for more than 25 years. Council was a founding member of the South East Queensland Healthy Waterways Partnership (now Healthy Land and Water), which works to protect our waterways, river and bay, and the South East Queensland Fire and Biodiversity Consortium, which advocates for best practice fire management.

Council has long supported landholders to become more involved in biodiversity conservation. It was a founding member of the South East Queensland Land for Wildlife Program and was pivotal in establishing the program across Queensland. Council was one of the state's first local governments to establish voluntary conservation agreements and successfully lobbied for changes to the *Land Act 1994* allowing for the establishment of voluntary statutory covenants across Queensland.



'Grasstree Walk', Ben Blanche, Green Heart Photography Competition 2016

Walking the talk – Council in action

Council is bound by its own policies and procedures to conserve biodiversity. Employees use a specially designed preliminary environmental assessment system to quickly identify areas with significant ecosystems or habitat and adopt the best management strategies.

More than \$5 million is spent each year to manage weeds on Council land, which has resulted in over 4000 hectares of natural habitat being actively managed. Council also monitors and manages pest animals in parkland.

Bushfire is an integral part of the city's vegetation management. Many ecosystems require fire to maintain health and some native plants require regular burns to reproduce. For the past eight years, Council has monitored the effects of burns on plant species throughout natural area parks.

Council's prescribed burn program protects wildlife by:

- using cooler, less intense and slower burns than uncontrolled bushfires
- excluding sensitive wildlife habitat from planned burn areas
- implementing burns in a mosaic pattern

- including protection for important habitat features before burns
- providing safe movement corridors for wildlife if they need to move out of the area temporarily
- assisting the community to become smoke ready during bushfire season.

Recent changes to Queensland legislation increased Council's obligations to provide offsets for certain essential activities with significant environmental impacts. Council embraced this change by applying offsets voluntarily before the new legislation was enforced.

The Legacy Way Vegetation Offsets Project provided replacement native vegetation and habitat restoration as an offset for 7.2 hectares of native vegetation cleared during the construction of the Legacy Way Tunnel, a major transport link connecting the western suburbs with the inner north suburbs of the city. The offsets were required in the conditions of permits to clear protected vegetation issued under Council's NALL.



"Without the help and assistance of the Land for Wildlife Program we would probably not have as actively carried out rehabilitation work on our property. We look at what we have achieved here in amazement – removal of extensive weed infestation and now over 300 native plants. Thanks to the Land for Wildlife Program there are now 300 new native plants on our land saving it from erosion and weed infestation. Thanks!"

Matthew Raad – Land for Wildlife member.

A photograph of a koala clinging to a tree branch. The koala is the central focus, with its grey, fluffy fur and large, dark eyes clearly visible. It is positioned on a thick, dark brown tree trunk, with its arms and legs wrapped around it. The background is a soft-focus green, suggesting a dense forest or sanctuary. The image has a slightly distressed, torn-edge effect.

Landmark project - Koala Research Centre

A world-class \$2 million scientific centre funded by Council will bring life-saving research on koalas under one roof. Researchers at the centre at Brisbane's iconic Lone Pine Sanctuary will focus on key threats facing koalas, such as loss of habitat, dog attacks, road deaths and disease. Visitors from around the world will be able to see ground-breaking research being conducted as part of a memorable experience that celebrates Australia's most iconic native animal. Council is also contributing \$1.3 million over four years towards research at the centre and is also establishing koala food tree farms. These projects aim to establish Brisbane as the 'koala capital' of Australia. Visitors will learn how they can contribute to koala conservation.



Karawatha Forest Discovery Centre

Conclusion

Brisbane's biodiversity is precious. We have an obligation to the global community to protect the natural environment that has been entrusted to our care. Council will continue to show leadership in biodiversity conservation through practical actions, financial commitment and targeted advocacy to reduce loss of ecosystems, restore damaged ecosystems and ensure their long-term protection. Positive partnerships with the community, business and industry will be the foundation upon which future successes are built.

Community stories

Caring for animals around the clock

Council supports the 24/7 Native Animal Ambulance Service delivered by the RSPCA using 1300 ANIMAL. The program provides all aspects of native animal rescue and transportation including specialist veterinary treatment. In 2015-16, the service attended 5288 call-outs with 6405 sick, injured and orphaned native animals returned to the RSPCA for treatment.

Council also funds rehabilitation initiatives through the Native Wildlife Carer Grants. Individual carers and non-profit organisations are supported with expenses for food, medications and enclosures to rehabilitate thousands of native animals. These include koalas, kangaroos, gliders, flying-foxes, pelicans, tawny frogmouths and various reptile species.

Environment centres

Council's environment centres play an important role in engaging the community, to motivate and empower people to take action to create a green, clean, active and sustainable city. Council's six main environment centres are located across Brisbane in different natural and urban settings. These centres and their surrounding natural areas provide diverse and accessible, educational and recreational opportunities for people of all ages, abilities and backgrounds. Residents and visitors are encouraged to appreciate, learn and connect with our environment through events, workshops, experiences and learning programs. A key function of the environment centre precincts is to provide information about the surrounding environment in which they are located and deliver hands-on experiences to inspire discovery and connection with nature.






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