Attachment A

Draft Environmental Strategy 2021-2025



Environmental Strategy 2021 - 2025 (Draft)

May 2021

Green Global Connected

CITY OF SYDNEY

Contents

1	**Message from the Lord Mayor**	**5**
2	**Caring for Country**	**6**
3	**Executive summary**	**7**
4	**Our achievements since 2016**	**9**
5	**Our targets**	**11**
6	**Why we need to act**	**13**
	A heating planet	13
	The cost of inaction and climate risk	14
	Green recovery – the benefits of action	15
	The role of cities	16
	What we heard from the community	17
7	**Smart and resilient City operations**	**19**
	Reducing our footprint	20
	A net-zero organisation	20
	Water-sensitive operations	23
	Reducing operational waste	25
	Climate resilience and risk management	26
	Socially responsible investments	26
	Actions	27
8	**Efficient, future-proof buildings and transport powered by renewable energy**	**29**
	Working together	30
	Energy efficient buildings	30
	Reducing transport emissions	31
	Choosing renewable energy	31
	Green economy growth	34
	Partnering with our key sectors	35
	Environmental grants and sponsorship program	39
	Actions	41

Contents

9	**A regenerative and inclusive city**	**43**
	Identifying solutions	44
	A regenerative city	44
	Our city is on Gadigal land	46
	Inclusive environmental action	47
	Reducing embodied carbon	47
	Urban heat mitigation	48
	Monitoring air quality	48
	A water-sensitive city	49
	Managing waste and resources	51
	A circular economy	54
	Actions	55
10	**Strong foundations for delivery**	**57**
	Background	58
	Actions	58
11	**Implementing the Strategy**	**59**
12	**Strategy context**	**60**

Message from the Lord Mayor

In 2007 Sydney was the first Australian city to become carbon neutral and this year we met our 2008 goal of 70 per cent emissions reduction by 2030 – nine years early.

It's a great case of the City leading by example to take action on accelerating global warming.

In that time, we've worked to reduce the impact of our operations, buildings, people and transport on our local area and beyond. Organisationally, we're now proudly powered by 100 per cent renewable electricity, we've set up water reuse schemes in multiple parks, and increased recycling in our buildings by more than 40 per cent.

Similarly, we're working to improve the environmental performance of our local government area. We've planted more than 15,000 trees since 2005, given 11,000 households access to a food scraps collection service, and worked with the Better Buildings Partnership, City Switch and Sustainable Destinations Partnership. Across the local area, emissions have been reduced by 22 per cent.

But we know the world is not on track to meet the Paris Agreement targets and avert catastrophic climate change, and that we need to do more. We declared a climate emergency in 2019, together with 85 Australian councils representing 7.4 million people. As we plan the next four years of action, we need to collaborate more closely - with councils, all levels of government and business. We will increase our focus on addressing the impacts of climate change on vulnerable communities and collaborate with our First Nations' communities to care for Country.

The Covid and climate crises have affected our economies and communities. The actions we need to take to combat the former and to protect the latter are closely aligned. The pandemic has shown us that swift action is possible. It has also shown us that by aligning actions globally – underpinning global decision-making with the goal of protecting both people and planet – we create opportunities for a sustainable economic future.



Clover Moore
Lord Mayor



Caring for Country



For thousands of years, Aboriginal and Torres Strait Islander people lived sustainably on the land we now call Sydney. It was part of their Lore, the coming together of ecology and religion. It provided rules on how to interact with the land and community. Every generation had to understand how to maintain this.

However, since 1788, the landscape dramatically changed due to the built environment and expansive urban development. This resulted in the breakdown of the natural ecological systems and the loss of traditional and sustainable forms of land management.

Today, as we face the challenge of climate change and pandemics, there is the urgent need to review our relationship with the land and how we face those challenges.

Community consultation to inform The City of Sydney's Sustainable Sydney 2050 plan, shows overwhelmingly that the wider community wants a response to climate change and at the First Peoples of Australia Dialogue Forum in 2019, participants stated that 'Sustainability, carbon neutrality, water positive and global warming action' were priority aspirations for Sydney's future.

The City's Environmental Strategy 2021-2025 responds to those community concerns but we must make sure that this is a living document and that actions are implemented.

The priorities and concerns of the community are in sync with Aboriginal and Torres Strait Islander peoples' perspectives. 'Caring for Country' means to participate in activities on land and in water with the objective of sustaining ecological, spiritual and human health.

By drawing on Aboriginal and Torres Strait Islander peoples' experience and knowledge there is an opportunity for all of us in the community to integrate those perspectives in urban policies. Integration in policy areas of land use planning, design and natural resource management can encourage sustainable practices and reduce socio-spatial disadvantage which is primarily driven by the market and not just a result of government policies.

Sustainable land management is the use of land to meet changing human needs while ensuring long-term socioeconomic and ecological functions of the land.

Aboriginal and Torres Strait Islander people believe that there is a balance in everything and that is the challenge for every one of us to identify and understand. What does the balance actually look like and how do we achieve it?

The Environmental Strategy 2021 – 2025 is an opportunity for us as a community to rise to the challenges ahead of us and to reach a balance in the way we live.

Sydney is an amazing place to live, play and work. We want to make sure that future generations can enjoy it too.

Cathy Craigie

Writer, Gamilarray woman and
City of Sydney resident

Image: Bangala, a public artwork by Jonathan Jones and Aboriginal Elder Aunty Julie Freeman, is at Green Square's Gunyama Park Aquatic and Recreational Centre. The work provides close links to the area's history and traditional culture and represents Eora bark water carriers. Photographer: Silversalt Photography

Executive summary

The world is heating up – and it's happening faster in Australia. The Paris Agreement aims to halt warming to 1.5°C or well within 2°C above pre-industrial levels. But the world is already close to 1.2°C above pre-industrial levels, and the speed of heating is accelerating.[1]

Climate change will increase the scale and frequency of extreme weather events, and it will affect the health of people – and of the natural and built environment – as well as the liveability of the city. Infrastructure for energy, water, transport, telecommunications and food production will come under increasing pressure.

Cities contribute to climate change. According to UN Habitat, they consume 78 per cent of the world's energy.[2] So inaction comes at a high price, motivating the City of Sydney to want to be a global leader in tackling the environmental and economic effects of climate change.

We have already worked hard to develop sophisticated strategies with ambitious targets to make our city resilient; protect our residents, workers, visitors and businesses; and restore the natural environment. We are making strong progress toward our targets of reducing carbon emissions in the local area by 70 per cent by 2030 and getting to net zero emissions by 2035.

Our operational achievements include improving our energy and water efficiency and waste management, making deep cuts in our operational emissions, and expanding the sustainability of our transport fleet. We have also contributed to green measures for our local area, ranging from helping to reduce greenhouse gas (GHG) emissions, to allocating $3.8 million in environmental grants since 2016.

This Strategy has four directions and 23 actions, and outlines the most important measures to help make Sydney a sustainable and resilient city. Key operational measures include phasing out natural gas from our operations, and using alternative water sources to keep our parks green. We will also look for opportunities to reduce embodied carbon in our supply chain, electrify our fleet, and support the growth of a circular economy.

The City is committed to growing the number of net zero emissions buildings. We have advocated for better performance standards for new buildings; now we will focus on opportunities to make existing buildings more energy- and water-efficient, with improved waste management.

Transport is a major source of air pollution. In 2017–18, the sector contributed 16 per cent of emissions in Sydney. The City can't control many aspects of transport, which is overseen by the NSW Government, but we can advocate for more walking, cycling and public transport, and for the transition to zero emissions fuel sources.

We will also continue to work on initiatives that mitigate the urban heat island effect, improve air quality and contribute to a water-sensitive city that protects biodiversity, green spaces and waterways. Our Draft Greening Sydney Strategy outlines how we will work towards increasing overall green cover to 40 per cent of the local area, including at least 27 per cent tree canopy, by 2050.

We must act urgently to create a city that is more resilient, inclusive and regenerative.

1 http://www.climaterealitycheck.net/

2 https://www.un.org/en/climatechange/climate-solutions/cities-pollution

Direction 1
Smart and resilient City operations

1 Deliver energy, water and resilience outcomes through City asset design and management

2 Keep City parks green with water efficiency and alternate water sources

3 Regenerate the environment through the City's carbon-neutral commitment

4 Ensure the City's programs and services use resources efficiently

5 Reduce the amount of operational waste sent to landfill through avoidance and resource recovery

6 Reduce embodied carbon in our supply chain and support circular economy outcomes

7 Manage environmental risks and issues

Direction 2
Efficient, future-proof buildings and transport powered by renewable energy

8 Improve energy efficiency, water efficiency and waste management in existing buildings

9 Drive all new buildings to be resource-efficient and net zero energy

10 Support the transition to zero-emissions transport

11 Encourage community uptake of renewable electricity and stimulate the green economy

12 Support our residents to reduce utility costs and environmental impact

13 Help businesses to reduce utility bills and demonstrate environmental achievement

Direction 3
Regenerative and inclusive city

14 Incorporate the perspectives of Aboriginal and Torres Strait Islander people in environmental action

15 Address equity issues related to climate change

16 Build community resilience and momentum on climate action

17 Support the development of circular economy systems

18 Drought-proof the city by facilitating water recycling

19 Regenerate polluted waterways, air and land

20 Reduce the amount of residential waste sent to landfill through avoidance and resource recovery

Direction 4
Strong foundations for delivery

21 Build staff capability to deliver environmental outcomes

22 Deliver high-quality internal and external environmental reporting and communications

23 Employ efficient and effective decision-making processes

Our achievements since 2016

City operations

Reduced emissions by estimated

76%

including 31 per cent through energy efficiency and on-site solar

100%

renewable electricity from July 2020

Installed a grid-scale battery at our Alexandra Canal depot in 2018

Installed **2MW of onsite solar photovoltaic panels** on our properties

Composted 7 tonnes of food waste a month from City properties

City fleet has 19 electric cars, 40 hybrid cars, 70 hybrid trucks and one fully electric truck

Set up water reuse schemes in twenty parks, providing **80,000 litres of non-potable water per day in summer**

Established a precinct-scale recycled water scheme at Green Square

Increased recycling in our buildings from 28 per cent in 2018 to 42 per cent in 2020

Introduced guidelines for reducing single-use items to help staff and event managers avoid waste and increase recycling

Developed Sustainable Design Technical Guidelines for our assets

Introduced a Sustainable Procurement Policy

Local Area

Emissions reduced by **22%** to June 2019

Worked with NSW Government to install an air quality monitoring station

Over **3,000** street lights converted to LED

Owners corporations in **172 apartment buildings saved over $4 million reducing emissions by 20,000t and water by 697ML**

Established the Sustainable Destination Partnership, which has **46 members**

75% zero of Better Buildings Partnership members committed to net zero emissions

Signed up more than 30 leaders from the hospitality, events and property sectors to the Sydney single-use pledge

Advocated for a National Australian Built Environment Rating System (NABERS) tool for apartment buildings, with 89 buildings rated

Laid a recycled water pipeline in George Street in the city centre

Installed **10.19kms** of separated cycleways

11,000 households have access to a food scraps collection service

Made e-waste recycling collections available to all residents

Allocated over $3.8 million in environmental grants

Increased canopy cover from **15.5%** in 2008 to **19.2%** in 2020

Created **11.5ha** of new green space since 2009

Achieved 6 Star Green Star – Communities rating for the Green Square town centre

Established Sydney City Farm

Planted 15,052 street trees since 2005

Our targets

City operations

Targets	Latest data
Carbon	
80% reduction in emissions generation by end June 2025, from 2006 baseline	31% reduction (June 2020) Estimated 76% reduction by June 2021
Maintain emissions from the City's fleet below 2014 levels, and aim to achieve zero fleet emissions by 2035 or sooner	40% reduction (June 2020)
Water	
Zero increase in potable water use annually until 2025, from 2006 baseline	4% reduction (June 2020)
Waste	
90% diversion from landfill, with 50% source separated recycling, from City-managed properties by end June 2025	92% landfill diversion (September 2020) 42% recycling (December 2020)
15% reduction in total waste generated from City-managed properties by end of June 2025, from 2019 baseline	945 tonnes (2019 baseline)
70% resource recovery of waste from office strip out and fit out by end of June 2025 [4]	Data not yet available
90% resource recovery of construction and demolition waste generated and managed by City operations by end June 2025	89% (June 2020)
50% resource recovery of waste from City parks, streets and public places by end June 2025	46% (June 2020)

4 This is a new target and data is not yet available. The City will establish a measurement process later in 2021

Local area

Targets	Latest data
Carbon	
70% reduction in greenhouse gas emissions by 2030, from 2006 baseline	22% reduction (June 2019)
Net zero emissions by 2035	
50% of electricity demand met by renewable sources by 2030 [5]	17.7% (NSW average, December 2020)
Water	
Reduce residential potable water use to 170 litres per person per day by 2030	223 litres/person/day (June 2019)
10% reduction in non-residential potable water use per m2 by 2030, from 2019 baseline	2.32 litres/sqm/day (June 2019)
50% reduction in the annual solid pollution load discharged to waterways via stormwater by 2030 [6]	Data not yet available
15% reduction in the annual nutrient load discharged to waterways via stormwater by 2030 [7]	Data not yet available
Greening	
Increase overall green cover to 40% across the local area, including 27% tree canopy by 2050	33% green cover (2020) 19.2% tree canopy (2020)
Waste	
90% diversion from landfill of residential waste, with 35% as source-separated recycling by 2030	45% diversion, 27% source-separated recycling (June 2020)
90% diversion from landfill of commercial and industrial waste by 2030 [8]	56% diversion (estimate, June 2016)
90% diversion from landfill of construction and demolition waste by 2030 [9]	77% diversion (NSW average, June 2018)
15% reduction in residential waste generation per capita by 2030, from a 2015 baseline	12% per capita reduction in waste since 2015 (June)

5 Comprehensive data on renewable electricity use for our local area is not available. Therefore the City uses data from OpenNEM that measures the average amount of renewable electricity in the NSW grid.

6 The City anticipates it will be able to report against this target later in 2021.

7 The City anticipates it will be able to report against this target later in 2021.

8 The City does not have jurisdiction over commercial and industrial waste collection. Data on landfill diversion rates for commercial and industrial waste is not available at a local area level. In 2016 the City undertook a survey to establish an estimated landfill diversion figure. The City will repeat this survey in 2021 to enable an updated figure to be reported.

9 The City does not have jurisdiction over construction and demolition waste collection. Data on landfill diversion rates for construction and demolition waste is not available at a local area level. Therefore the City uses the NSW average landfill diversion figure for this waste stream, supplied by the EPA.

Why we need to act

A heating planet

Signatories to the Paris Agreement have agreed to halt warming to 1.5°C or well below 2°C above pre-industrial levels. Yet global heating is already approaching 1.2°C above pre-industrial levels [10] and it is accelerating.

The Intergovernmental Panel on Climate Change [11] says that to limit global warming to 1.5°C global emissions must be 45 per cent lower than 2005 levels by 2030. To date, commitments by countries around the world are nowhere close to being on track to limit global heating.

Global heating is occurring faster in Australia, where the average surface air temperature has already increased by more than 1.4°C since 1910. [12] The CSIRO/Bureau of Meteorology *State of the Climate 2020* report identified 2019 as Australia's hottest year on record – and this would be an average year in a 1.5°C warmer world. [13] High temperatures exacerbated the Black Summer bushfires and widespread drought [14].

The Bureau of Meteorology recently gave evidence to the Senate Standing Committee on the Environment and Energy that shows Australia is on track for 4.4°C of warming this century.[15] This would be catastrophic for our health, economy and environment. Many areas would be unliveable and mass extinctions would take place.

Climate change is projected to increase the magnitude and frequency of extreme weather events. These will affect urban infrastructure systems for energy, transportation, telecommunications, water and wastewater, solid waste and food production. [16]

In January 2021, the Climate Targets Panel, an independent group of Australia's most senior climate scientists and policymakers, said in a report that to comply with its commitment to reduce warming by 2°C, Australia would need to reduce its emissions to 74 per cent below 2005 levels by 2030, and reach net zero emissions by 2045. [17] To achieve a 1.5°C target, it would need to cut emissions by 74 per cent by 2030 and reach net zero emissions by 2035.

Australia's emissions fell 4.4 per cent in the year to September 2020, due to the continued rise in renewable electricity production and the impact of COVID-19 restrictions.[18] However, Australia needs to increase its annual emissions reductions.

For this reason, the City of Sydney joins international leaders, the scientific community, major business groups, and all state and territory governments in setting and working towards a net-zero target.





Images (Above): Storm in Sydney 2020. © City of Sydney. (Below): George Street during the black summer bushfires in 2019. © VirtualWolf

10 http://www.climaterealitycheck.net/

11 https://www.ipcc.ch/sr15/chapter/spm/

12 https://www.climatechangeinaustralia.gov.au/en/changing-climate/climate-trends/australian-trends/

13 http://www.bom.gov.au/state-of-the-climate/

14 https://theconversation.com/yes-australia-is-a-land-of-flooding-rains-but-climate-change-could-be-making-it-worse-157586

15 https://www.aph.gov.au/Parliamentary_Business/Hansard/Hansard_Display?bid=committees/commrep/5ca35f98-9c86-4d68-bd04-327e34cfef3e/&sid=0002

16 https://resourcecentre.c40.org/resources/assessing-risks-in-cities

17 https://www.climatecollege.unimelb.edu.au/australias-paris-agreement-pathways

18 https://www.industry.gov.au/data-and-publications/national-greenhouse-gas-inventory-quarterly-updates

The cost of inaction and climate risk

The economic benefits of emissions reduction far outweigh the costs of extreme weather events if nothing is done.

A Climate Council report states that extreme weather events have cost Australia $35 billion over the past decade, which is double the cost in the 1970s. [19] By 2038, these events, as well as the impacts of rising sea levels, could cost the Australian economy $100 billion every year.

The University of Melbourne recently estimated that not meeting the Paris Accord target from now to 2050 could cost Australia $1.19 trillion. [20] This is due to infrastructure damage ($611 billion from lost property values), agricultural and labour productivity losses ($211 billion), and the effects on biodiversity and human health ($368 billion).

Sixty of the world's central banks, including the Reserve Bank of Australia, have warned that without action on climate change, global gross domestic product (GDP) could fall by 25 per cent by 2100.[21] This would be reduced to 4 per cent if global heating is limited to 2°C.

Business responses

The Australian Prudential Regulation Authority (APRA) has been advising large financial institutions about the financial risks posed by climate change and the possibility of future lawsuits if no action is taken. [22]

According to APRA, banks and insurers are preparing for worsening bushfire seasons and more extreme weather events. [23] This will push up the cost of insurance premiums and lead to millions of people being uninsured, with resulting pressure on the financial system.

In response, institutions are moving away from investing in or lending to climate-damaging projects and shifting towards technologies for efficient and clean energy, sustainable farming and carbon drawdown - processes that draw carbon out of the atmosphere and lock it away such as in soils.

To date, more than 135 globally significant banks – including Australia's Big Four – and insurers have announced they will divest from coal mining and/or coal-fired power plants. [24]

Recognition of climate risk

To help investors make informed decisions about which companies will endure and prosper as the climate changes, the Financial Stability Board established the Task Force on Climate-related Financial Disclosures (TCFD). [25] This requires companies to incorporate climate-related risks and opportunities into their risk management and strategic planning processes.

At November 2020, 58 of Australia's top 100 companies were following the TCFD and 78 per cent of S&P/ASX 100 companies had acknowledged climate change as a financial risk to their business. [26]

19 https://www.climatecouncil.org.au/resources/hitting-home-compounding-costs-climate-inaction/

20 https://sustainable.unimelb.edu.au/news/what-are-the-full-economic-costs-to-australia-from-climate-change

21 https://www.theguardian.com/australia-news/2020/jun/26/reserve-bank-warns-of-25-gdp-loss-by-2100-unless-action-taken-on-climate-change

22 https://www.theguardian.com/australia-news/2021/mar/02/climate-change-could-put-insurance-out-of-reach-for-many-australians

23 https://www.theguardian.com/australia-news/2021/mar/02/climate-change-could-put-insurance-out-of-reach-for-many-australians

24 https://ieefa.org/finance-exiting-coal/

25 https://www.fsb-tcfd.org/about/

26 https://home.kpmg/au/en/home/media/press-releases/2020/11/asx100-companies-ahead-of-global-firms-in-acknowledging-climate-risks-20-november-2020.html



Green recovery – the benefits of action

Around the world, cities have been at the forefront of responding to the COVID-19 crisis. Measures to help economies and communities recover from the pandemic focus on building an equitable and sustainable 'new normal'. This means being able to contain future pandemics, and addressing the immediate and longer-term impacts of climate change on our economies, ecosystems and populations.

A green recovery embeds a sustainable vision for business, for equity across our populations, and for greener, healthier living spaces.

As outlined by the Organisation for Economic Co-operation and Development, cleaner air, healthier water, effective waste management and enhanced biodiversity protection help make communities more resilient and less vulnerable to pandemics.[27] This has the potential to boost economic activity, generate income, create jobs and reduce inequalities.

ClimateWorks Australia's *Decarbonisation Futures* report found that if governments directed stimulus spending to climate solutions, Australians could use available technologies to reach net zero emissions by 2035.[28]

Examples include photovoltaic technology for homes and commercial buildings; large-scale renewable energy and storage; electric vehicle charging; recycling in supply chains; and planting and protecting trees to sequester carbon.

This would also create more jobs. Every $10 million invested in the renewable energy sector creates 75 jobs, and energy efficiency 77 jobs, compared to 27 jobs for every $10 million invested in fossil fuel industries.[29]

Image: Sydney park wetlands. © City of Sydney

27 http://www.oecd.org/coronavirus/en/themes/green-recovery

28 https://www.climateworksaustralia.org/resource/decarbonisation-futures-solutions-actions-and-benchmarks-for-a-net-zero-emissions-australia/

29 https://www.mckinsey.com/featured-insights/coronavirus-leading-through-the-crisis/charting-the-path-to-the-next-normal/can-a-low-carbon-recovery-agenda-create-jobs-and-help-the-economy



As a centre for finance, investment, insurance and innovation, Sydney is well placed to support a green recovery by providing capital, knowledge and services to renewable new industries. The NSW Government wants to establish Sydney as a world-leading carbon services hub by 2030, as part of the state's Net Zero Plan. [30]

The City has called on the NSW and Australian governments to establish a 'just transition' authority, to secure workers' rights and livelihoods by diversifying jobs and investing in communities that depend on fossil fuels. Government investment is needed to develop new industries and employment opportunities in communities that will be affected by decarbonisation.

The role of cities

Cities are major contributors to climate change. According to UN-Habitat, cities consume 78 per cent of the world's energy. [31] C40 Cities has calculated that urban areas produce more than 70 per cent of GHG emissions. [32]

However, cities also have a vital role in managing climate change. Individually and collectively, cities can drive change, influence future policy and demonstrate the power of collaboration for communities and governments, addressing the impacts of climate change globally.

C40 Cities

The City of Sydney is part of C40 Cities, a network of 97 megacities, representing more than 700 million (one in 12) of the world's citizens and a quarter of the global economy. C40 Cities members collaborate, share knowledge and drive meaningful, measurable and sustainable action on climate change.

The City's Environmental Strategy 2021-2025 delivers on a C40 Cities requirement to develop an inclusive and equitable climate action plan that meets the aims of the Paris Agreement and commits to a green recovery from COVID-19.

Image: The Sydney CBD viewed from Pyrmont. © City of Sydney

30 https://www.environment.nsw.gov.au/topics/climate-change/net-zero-plan

31 https://www.un.org/en/climatechange/climate-solutions/cities-pollution

32 https://www.c40.org/ending-climate-change-begins-in-the-city



What we heard from the community

Our extensive community engagement work to inform Sustainable Sydney 2050 revealed an overwhelming desire for a response to climate change. [33]

It is an important issue for people of all ages, genders, nationalities and socio-economic groups. In an online survey, 86 per cent of respondents agreed that the City should invest in and advocate for addressing climate change. How we manage our environment and climate change is a top priority for high school and primary school students, who want their voices heard because Sydney in 2050 is their future.

Residents at community sessions emphasised that they wanted better waste management, with more recycling, reuse and waste reduction, especially of plastic.

Many participants want more education programs and initiatives that encourage people to reduce their waste, and for the City to use new technologies to manage waste and recycling more efficiently.

Business owners acknowledge that a sustainable environment is essential for the City's future and are already preparing for changing consumer behaviours.

Citizens' jury

In August 2019, a citizens' jury of 43 randomly selected Sydneysiders came together over three months to imagine the city in 30 years' time. Those who were living in Sydney 30 years ago recognised that it has changed dramatically in that time and will continue to change over the next three decades.

The jury envisioned the city as a leader in reversing climate change and restoring the natural environment. It wants space to be maximised for the greater community good (such as more spaces for trees and less for cars); buildings to be made of materials that support the environment, not degrade it; and people to transform their waste into materials that feed back into the economy.

The jury produced a vision for Sydney that bridges the past to the future. [34] It concluded by saying: "Our hope for Sydney in 2050 is that it is a sustainable, inclusive, diverse city that is welcoming and embraces people from all walks of life. A city where people want to live."

Image: The City hosted summits with children and young people as part of planning for Sydney 2050. © City of Sydney

33 https://www.cityofsydney.nsw.gov.au/-/media/corporate/files/2020-07-migrated/files_f/final-community-insights-low-rez-web.pdf

34 https://www.cityofsydney.nsw.gov.au/-/media/corporate/files/2020-07-migrated/files_c/citizens-jury-concepts-report.pdf



01

Smart and resilient City operations



Reducing our footprint

The City has worked on minimising our environmental footprint for more than a decade. This has involved introducing programs to save water and energy, and minimise waste. Where possible, we have also switched to renewable power sources to reduce our emissions. While it is incumbent on us to reduce our own environmental footprint, it is by seeking transformative environmental performance that we also positively influence change in the operations of our service providers, businesses and communities and establish Sydney as a global exemplar in environmental performance.

A net-zero organisation

At June 2020, efficiency projects and generation of renewable electricity on our properties had reduced the City's operational emissions to 31 per cent below 2006 levels. From July 2020, we began using 100 per cent renewable electricity sources, and we expect our emissions to drop to more than 76 per cent below 2006 levels by the end of June 2021.

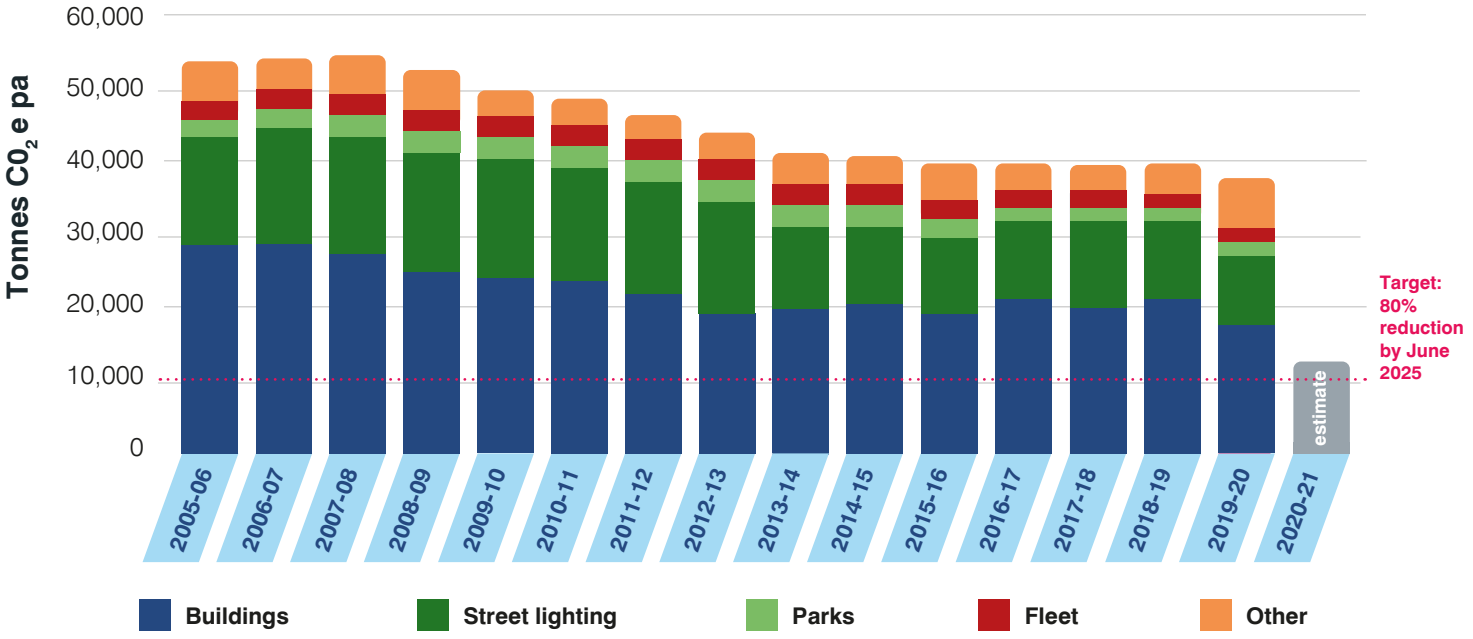
The City has been certified as a carbon-neutral organisation under the Australian Government's Climate Active program since 2011. We achieved energy savings through significant projects like our Major Properties Efficiency Project to improve lighting, heating and cooling systems.

We have been working with Ausgrid to install LED street lights, which improve lighting quality and reduce energy consumption and bills. Installation is due to be completed in 2022.

Better monitoring of energy consumption and other utilities in our properties and parks has also led to better detection and response times when problems are detected.

In July 2020, the City began a 10-year 100 per cent renewable electricity contract for power from the Sapphire Wind Farm in New England, the Bomen Solar Farm near Wagga Wagga and the community-owned Repower Shoalhaven solar farm. This will reduce our annual emissions by around 24,000 tonnes initially, based on 2019–20 levels.

Chart 1: Operational emissions history



At December 2020, the City had installed over 2MW of onsite solar PV panels on our properties. Onsite renewable electricity generation is important as it provides the energy directly where it is used, avoiding system losses and the need for costly electricity network infrastructure. Also, it pays for itself by saving on energy bills.

The City has also installed over 2MW of trigeneration and cogeneration, reducing grid electricity demand by around 6,000 MWh a year, avoiding 5,340 tCO2e of grid electricity emissions.

In partnership with the transmission operator TransGrid, we have also installed a grid-scale battery at our Alexandra Canal Depot, which in conjunction with 1665 rooftop solar panels enables the site to generate more electricity than it consumes.

We have also been transitioning to electric and hybrid vehicles, and have introduced eco-driving strategies.

Since 2020, we have been buying nature-based offsets, which remove carbon from the atmosphere. In 2021, we sourced our offsets from a Tiwi Island traditional land management cultural burn project in northern Australia. This is an important partnership that also delivers toward the City's Aboriginal and Torres Strait Islander economic development plan. The City will also continue to purchase carbon offsets to remain a certified Carbon Neutral organisation under the Climate Active program with an increasing share of higher quality, nature-based carbon offsets.

Over the next four years the City will focus on leveraging its investment in efficiency measures, management systems and low emissions technology.

The City has made significant emissions reductions through energy efficiency and the use of renewable electricity. The next major opportunity to meeting our corporate target of 80 per cent reduction in emissions generation by end June 2025 on 2006 levels will be to procure renewable gas.

Renewable gas can be generated from composted food or the nutrients in wastewater, through an anaerobic digestion facility. Gas is then injected back into the gas grid to supply home and business gas needs, as natural gas does, but with a much lower carbon footprint. There is an emerging renewable gas market in NSW. An accreditation scheme will need to be established to enable gas customers, like the City, to purchase renewable gas credits, in a similar way to how renewable electricity from off-site sources is procured.

Image: © Bomen solar farm

City of Sydney goes 100 per cent renewable



The City of Sydney began using 100 per cent renewables to meet its grid electricity needs in July 2020. The renewables commitment will see the City's operations initially saving around 24,000 tonnes a year – equivalent to the power consumption of around 4,000 households.

The City's 2019–20 emissions were 31 per cent below our 2006 baseline, and our 2020–21 emissions are expected to be around 76 per cent below 2006 levels by using 100 per cent renewable electricity. Using 100 per cent renewable electricity is essential to achieve our commitment to reduce organisational emissions by 80 per cent.

The City purchases renewable power from Sapphire Wind Farm in the New England area, Bomen Solar Farm near Wagga Wagga, and the community-owned Repower Shoalhaven solar farm.

The shift to renewable energy in the broader electricity sector is happening much faster than anyone imagined as the cost of new renewable energy continues to fall. The NSW Government's *Electricity Infrastructure Investment Act 2020* now provides significant support to assist with the renewable energy transition.

The City estimates it may save up to $500,000 a year in electricity costs by sourcing its grid electricity from a renewable energy provider.

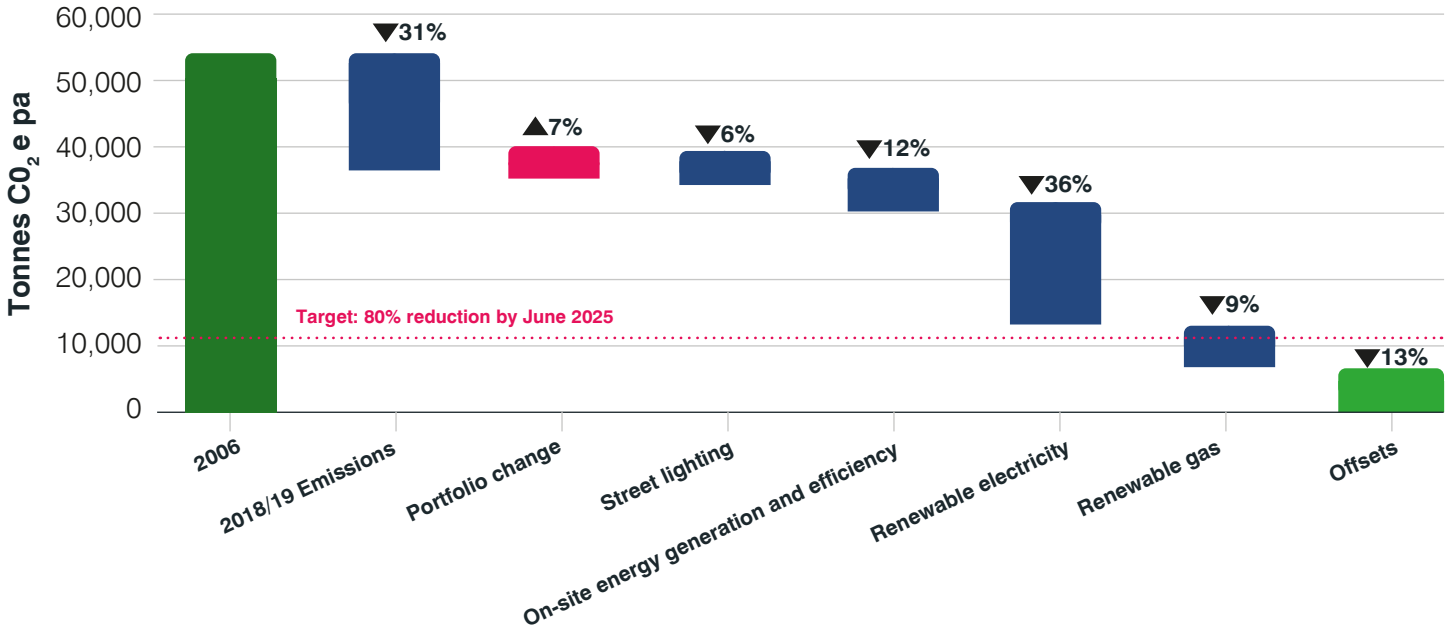




Image (Left): An electric truck, part of the City of Sydney fleet. © City of Sydney. (Right): Tiwi Island Carbon Project staff and Indigenous rangers. © Aboriginal Carbon Foundation

This chart shows potential emissions reductions from opportunities identified by the City and may be subject to change. For example, if more energy efficiency is deployed, the City would require less renewable electricity, and vice versa. Likewise, the City will continue to purchase additional high-quality carbon offsets to remain carbon neutral until renewable gas becomes available. Ultimately, the mix of energy efficiency measures the City deploys will be based on what is most feasible and cost-effective.

Chart 2: Operational emissions to 2025





Water-sensitive operations

The City aims to keep potable water use below 2006 levels, but this been challenging because the area of parks and open spaces requiring irrigation has since increased by more than 50 per cent, and we have also grown our property portfolio.

To help drought-proof our parks, we have implemented water reuse schemes at twenty parks, established a real-time irrigation monitoring and control system, embedded sustainability key performance indicators into our service contracts and optimised performance of our water recycling schemes, water features and irrigation systems.

We are also installing water-efficient fixtures and fittings in our properties and training our staff and contractors to make sure they are proactively identifying, reporting and fixing leaks.

Chart 3 shows the City's operational water use since the baseline year of 2016. In 2019-20 we exceeded our target for the first time in a decade. Savings are due to the measures described above, with a portion of savings also attributed to increased rainfall and COVID-19 related closures of water intensive City sites such as aquatic centres and public buildings.

The City has contributed to minimising local flood risk and enhancing greening and urban cooling by retrofitting the stormwater management network with raingardens, wetlands, swales and traps that reduce stormwater pollution.



Image (Above): Most of Harold Park's irrigation needs are met by an extensive stormwater harvesting and treatment scheme.
© City of Sydney. (Below): © City of Sydney.



Chart 3: Operational water use history

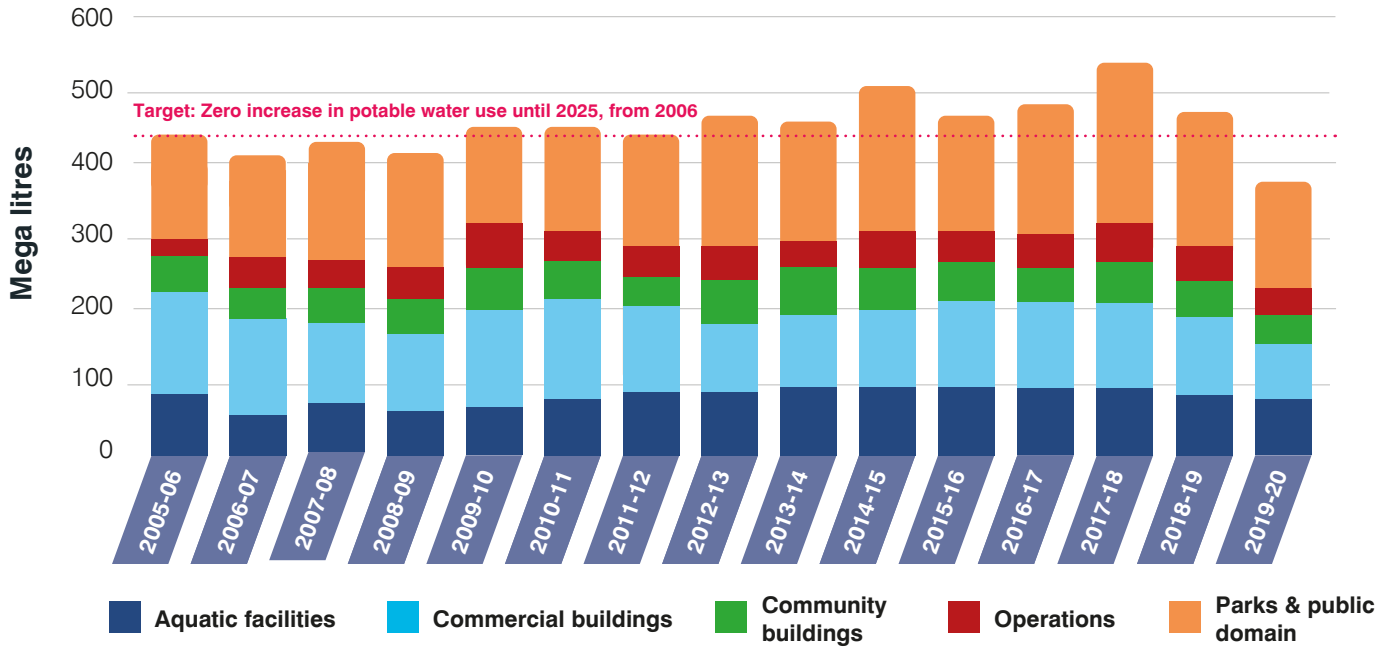


Image: Monitoring water reuse at Harold Park.
© City of Sydney

Reducing operational waste

We strive to show leadership in sustainability through our own management of waste and resources. As part of this effort, we created a digital platform to improve the accuracy and transparency of data on how we collect, report on and verify recycling and landfill from our operations. This also helps us better monitor our performance against our targets, and react more quickly to changes in waste types or volumes.

Recycling from City-owned buildings has increased from 28 per cent in 2018 to 42 per cent in 2020. We achieved this by introducing a separate food waste collection service and improving our education programs. Garbage that previously went to landfill is now sent to a processing facility where it is used to create fuel that displaces coal in a local brick kiln.

In 2019, the City also pledged to dramatically reduce single-use plastics by phasing out bottled water, straws, serveware, utensils and cups at our buildings and venues, and at events in our area.



Image (Above): Battery, mobile phone and light bulb recycling stations located at Green Square Library, one of the City's ten recycling stations. © City of Sydney. (Below): Getty Images.

Paving the way to better glass recycling



Around 14 per cent of glass collected from recycling bins during kerbside garbage collections can't be recycled and is instead stockpiled or sent to landfill.

To reduce the amount of materials going to landfill, the City supported and promoted the Paving the Way program, as a member of the South Sydney Regional Organisation of Councils (SSROC). The program focuses on using glass fines (crushed glass) instead of virgin sand for building roads and footpaths. This will increase the amount of collected glass that can be recycled from 65 per cent to 79 per cent, the equivalent of nearly 100 million glass containers each year. This Sydney-based initiative also reduces the transport of glass interstate and provides long-term markets for what was previously considered a waste product.

The program demonstrates collaboration on circular economy principles in procurement between local, regional and state governments. It is the first project under the Procure Recycled memorandum of understanding (MoU), signed by SSROC members in November 2019, to promote the procurement of recycled materials.

Climate resilience and risk management

The effects of climate change – such as increasing temperatures, changing rainfall patterns, flooding and rising sea levels – pose risks for the City's $5.3 billion portfolio of assets. The cost of not proactively managing these risks could be extremely high, so the City is diligent about ensuring climate resilience.

Managing risk begins with asset design. The Sustainable Design Technical Guidelines define the sustainability requirements for all our capital works and upgrade projects. This tool addresses all aspects of sustainability – from ecology to energy intensity and construction management practices.

We use our environmental management system (EMS) to comply with relevant legislation and apply a risk based approach to improve environmental processes. The scope of the EMS includes construction works, operations, property management, depots, libraries, community centres, aquatic centres, parks, events, and the purchase of goods and services.

We are strengthening processes related to management of contaminated land, implementing the Sustainable Procurement Policy, piloting materials with low embodied emissions in construction works and developing climate risk assessments for projects. The City has also implemented staff sustainability training, focusing on the foundations of environmental sustainability and embedding outcomes into work processes and behaviour.



Socially responsible investments

We avoid investments that are harmful to the environment and work with financial institutions and investment advisors to investigate suitable products that support positive environmental performance and meet our financial risk and return outcomes. Following market feedback, including from the City of Sydney, Westpac developed a new sustainable investment product known as a Green Tailored Deposit. The City was the first council to invest in Green Tailored Deposits, in late 2018. These deposits are associated with a defined pool of eligible assets which meet the Climate Bond Standard criteria including renewable energy, low carbon transport, low carbon intensity emitting buildings, waste and water products and are independently certified annually.

The Commonwealth Bank subsequently launched a similar product, with the City placing its first investment in early 2020.
At February 2021, the City held $85 million across thirteen tranches with Westpac's Green Tailored deposit, $5 million in a Floating Rate Note (FRN) / Sustainability Bond issued by Bank Australia and $95 million (sixteen tranches) in Climate Bond-certified Green Term Deposits with the Commonwealth Bank of Australia.

Image: Glebe Library © City of Sydney

Actions



Action 1

Deliver energy, water and resilience outcomes through City asset design and management

The City will continue to electrify its fleet to achieve zero emissions before 2035. We aim to trial an electric version of most vehicle and plant types while expanding our electric passenger fleet. Our ongoing driver behaviour program both improves safety and reduces emissions.

We will continue to power many of our facilities with onsite renewable electricity. Building on the 2MW already installed, we will add solar to new properties that present a strong business case. Because local power sources improve grid resilience, we will install batteries on our properties where this contributes to energy and cost savings.

The City aims to phase out natural gas from our operations. We will develop a plan to electrify gas-using assets and in the interim we will seek to purchase renewable gas to provide all our gas needs by 2025.

In the next four years, we will also focus on continuously improving the sustainability performance of our properties. As part of this, we will invest in metering and monitoring to address anomalies, which can significantly improve energy efficiency.

The City will continue to improve the Sustainable Design Technical Guidelines that define the sustainability requirements for our capital works and upgrade projects. An update of the guidelines in 2021 will streamline these requirements, particularly for small works and asset renewal programs and projects. Other codes and guides will also be updated to embed environmental requirements into asset design.

Keeping our city cool and resilient against extreme weather events will become increasingly important, so we will actively integrate climate risk assessments into asset design and management.

Action 2

Keep City parks green with water efficiency and alternate water sources

The CBD recycled water scheme will provide non-potable water for keeping parks green, as well as enabling City-owned and privately held buildings to connect to an alternate water source.

We will investigate and implement alternative water sources for priority parks. Some of them could be connected to the CBD recycled water scheme while others will require individual solutions. In addition, the City will analyse irrigation data to set a new target for parks irrigation, supported by efficiency plans.

Action 3

Regenerate the environment through the City's carbon-neutral commitment

The City is committed to maintaining carbon-neutral operations in perpetuity. Over the next four years, we aim to transition away from purchasing overseas offsets and instead use 100 per cent high-quality Australian regenerative offsets. We will also work with other offset purchasers and Indigenous organisations to help strengthen the local regenerative offset market and support expansion of traditional land management practices by providing and selling nature-based Australian carbon credit units.

Action 4

Ensure the City's programs and services use resources efficiently

We will strengthen the environmental performance of City-run events, venue management, external events on City land and grant-funded projects, ensuring they align with our Environmental Sustainability Policy.

Action 5

Reduce the amount of operational waste sent to landfill through avoidance and resource recovery

The City will collect more food waste from our largest commercial food service areas and our busiest buildings. Increasing awareness among staff and visitors about waste avoidance and what can be recycled is another priority. We will also improve resource recovery from our own construction and demolition projects and office strip-outs.



Action 6

Reduce embodied carbon in our supply chain and support circular economy outcomes

We will evaluate our supply chain for opportunities to reduce embodied emissions and deliver circular economy outcomes. Where those opportunities are identified, the City can specify increased use of recycled content in major contracts and collaborate with other local governments to establish standards for sustainable content in procured products.

Action 7

Effectively manage environmental risk and issues

The Environmental Management System (EMS) is a vital tool for managing environmental risks associated with our operations and services. We will continue to implement the EMS to improve the processes for managing and monitoring capital works programs, operational environmental impacts, and works on Council-owned contaminated land and provide relevant environmental controls training for staff.

Image (Previous page): Solar panels on the roof at Gunyama Park Aquatic and Recreation Centre © City of Sydney, Paul Patterson (This page): Monitoring building efficiency © City of Sydney, Jessica Lindsay

02

Efficient, future-proof buildings and transport powered by renewable energy



Working together

Opportunities abound in our local area to reduce emissions and move to a zero carbon economy

We partner with key commercial sectors in our local area to facilitate the transition to renewable energy sources by building owners, residents and commuters.

Through consistently providing up-to-date information to the public, establishing and facilitating business and community programs, and mechanisms such as environmental grants and sponsorship programs we influence environmental resilience in decision making. In addition, a dynamic entrepreneurial sector harnesses opportunity for a competitive, green economy through innovative new technologies and services, backed by a strong professional services sector.

Energy efficient buildings

The move toward net-zero-emissions buildings is gaining momentum, with key groups such as the Australian Sustainable Built Environment Council, private developers and the Property Council of Australia making significant contributions.

The minimum energy performance standards for new buildings and major retrofits of existing buildings are defined in the National Construction Code. This is updated every three years, and the 2019 update demanded significantly improved performance for new commercial buildings. The next review will focus on residential buildings.



Closer to home, the City has been working with developers, the NSW Government and other local councils to establish performance standards for new buildings, including multi-unit residential and commercial buildings, shopping centres and hotels. The standards cover energy efficiency, onsite renewable energy and offsite renewable energy recognised in the planning system. Importantly, these standards are tailored to the Sydney climate and are designed to be used by other councils across metropolitan Sydney.

New buildings are only part of the story. The performance of existing buildings presents the biggest opportunity to reduce energy and emissions, improve the comfort and resilience of occupants, and reduce costs.

Australia has the world-leading National Australian Built Environment Rating System (NABERS) scheme, which rates the performance of many building classes. As NABERS tools are developed and adopted voluntarily, there is potential to introduce mandatory disclosure so that tenants and owners are better informed about the performance of a building, especially when making purchasing decisions. We also have the Green Star sustainability rating and certification system. Under this system, buildings must be net-zero (fully electric, fossil-fuel free and 100 per cent powered by renewables) to achieve the highest possible 6 Star rating.

New technologies are helping more buildings meet their heating, cooling and cooking needs with electricity rather than natural gas, which is a fossil fuel. Our research shows that any increase in the use of natural gas would result in the city exceeding its carbon budget in decades to come due to the long

Image (Previous page): Fleetview building, a participant of the Smart Green Apartments program. © City of Sydney, Jessica Lindsay. (This page): Businesses in Sydney increasingly choose GreenPower. © City of Sydney, Jessica Lindsay

life of gas assets. The gas grid is likely to transition to renewable energy sources more slowly than the rate of greening underway for the electricity grid. This supports the case for electrification of new buildings. Existing buildings with gas connections should procure renewable gas as it becomes available for the remaining life of gas assets.

Reducing transport emissions

The transport sector produces emissions, through either petrol-fuelled vehicles or electricity generation to power transport systems and vehicles. In Sydney – especially in the city centre – poor air quality caused by vehicle emissions has been an issue for decades.

In 2017–18, the transport sector contributed 16 per cent of Sydney's carbon emissions, which are increasing every year. As at September 2020, transport emissions accounted for 17.6 per cent of Australia's total emissions [35].

With a growing population, the City is increasingly focused on the best use of public space. This means a shift is needed away from private vehicles, which have high emissions and take up space, to modes of transport with lower emissions that need less space - public transport, walking and cycling. This also reduces congestion and noise, improves air quality and leaves more space for greening.

The City does not control many aspects relating to transport sector emissions or the uptake of low- or zero-emissions vehicles. We are responsible for planning and development; working with residents and businesses to achieve sustainability outcomes; and implementing changes to roads (such as adding new cycleways) if the NSW Government approves.

We can help to reduce emissions from transport by partnering with the Australian and NSW Governments. The NSW Government is already committed to net zero emissions by 2050 and is developing programs to accelerate the uptake of zero-emissions technologies. It is best placed, for example, to facilitate the rollout of a network of electric vehicle charging stations.

To achieve our net zero by 2035 target, significant changes will be required to the transport system in our city: reducing and eliminating emissions at the point source; speeding up the shift from private cars to walking, cycling and public transport; transitioning public transport and private vehicle fleets to zero-emissions fuel sources and supporting off-street charging for electric vehicles.

Choosing renewable energy

In the year to March 2021, the National Energy Market delivered 27.6 per cent renewable energy, with 6.8 per cent from rooftop solar. [36] However, the NSW grid, which still relies on coal-fired power stations, delivered just 18.8 per cent renewable energy. About 5.7 per cent of electricity consumption in this state comes from rooftop solar.

The Australian Energy Market Operator (AEMO) has been modelling scenarios for the energy transition currently underway.[37] Its most ambitious scenario envisages a grid that is nearly 100 per cent renewable by 2040. The next iteration of the AEMO plan, to be released in 2022, will model renewable energy generation in excess of 100 per cent, to allow for renewable energy exports.

The NSW Government has passed the *Electricity Infrastructure Investment Act 2020* and released a roadmap to provide support and investment certainty for Renewable Energy Zones across the state. This is expected to deliver a NSW grid that is 60 per cent renewable by 2030. [38]

Renewable energy from wind and solar is now the cheapest form of new electricity generation in most areas of the world. The International Energy Agency notes that "solar PV is consistently cheaper than new coal- or gas-fired power plants in most countries, and solar projects now offer some of the lowest-cost electricity ever seen". [39]

Australia has one of the highest rates of rooftop solar PV installations in the world. At June 2020, more than 2.5 million units had been installed, with a combined capacity of almost 12 gigawatts – equivalent to six small coal-fired power stations.

But fewer buildings in the city have rooftop solar due to their small roof areas and height, and the complex decision-making in strata properties. The City estimates that there is approximately 400 megawatts of potential rooftop solar capacity in the local area. So far, 14 megawatts of rooftop solar has been installed, and at current installation rates, the City projects the local area will reach 50 megawatts by 2030.

Despite this, the number of significant installations is increasing, including on apartment buildings. In 2021, amendments to the *Strata Schemes Management Act 2015* (NSW) make it easier to install renewable energy in strata buildings, partly due to advocacy by the City.

35 https://www.industry.gov.au/data-and-publications/national-greenhouse-gas-inventory-quarterly-updates

36 https://opennem.org.au/energy/nem

37 https://aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp

38 https://www.theguardian.com/australia-news/2020/nov/09/nsw-unveils-32bn-renewable-energy-plan-with-focus-on-pumped-hydro

39 https://www.iea.org/reports/world-energy-outlook-2020

Encouraging residents and businesses to switch to renewable electricity

We've heard from residents and businesses that they overwhelmingly want a response to climate change and to reduce emissions [40]. At a national level, since the devastating Black Summer bushfires in January 2020, 82 per cent of Australians are concerned that climate change will result in more bushfires, up from 76 per cent in 2019 [41].

In response to this concern, the City has been supporting residents and businesses to switch to offsite renewable electricity, through a rolling program of communication and online education. Targeting renters and residents in apartments, a range of resources and marketing content promoting GreenPower have been shared online through the Renewable Energy Help Centre, social media, City of Sydney News and media partnerships.

Starting with the promotion of our own power purchase agreement, the City developed a range of resources to educate businesses about offsite renewable electricity options, including PPAs and GreenPower.



Image © City of Sydney, Jessica Lindsay

40 City of Sydney, Community Engagement Insights Report, 2020

41 The Australia Institute, Climate of the Nation report, 2020

Chart 4: Local area emissions history

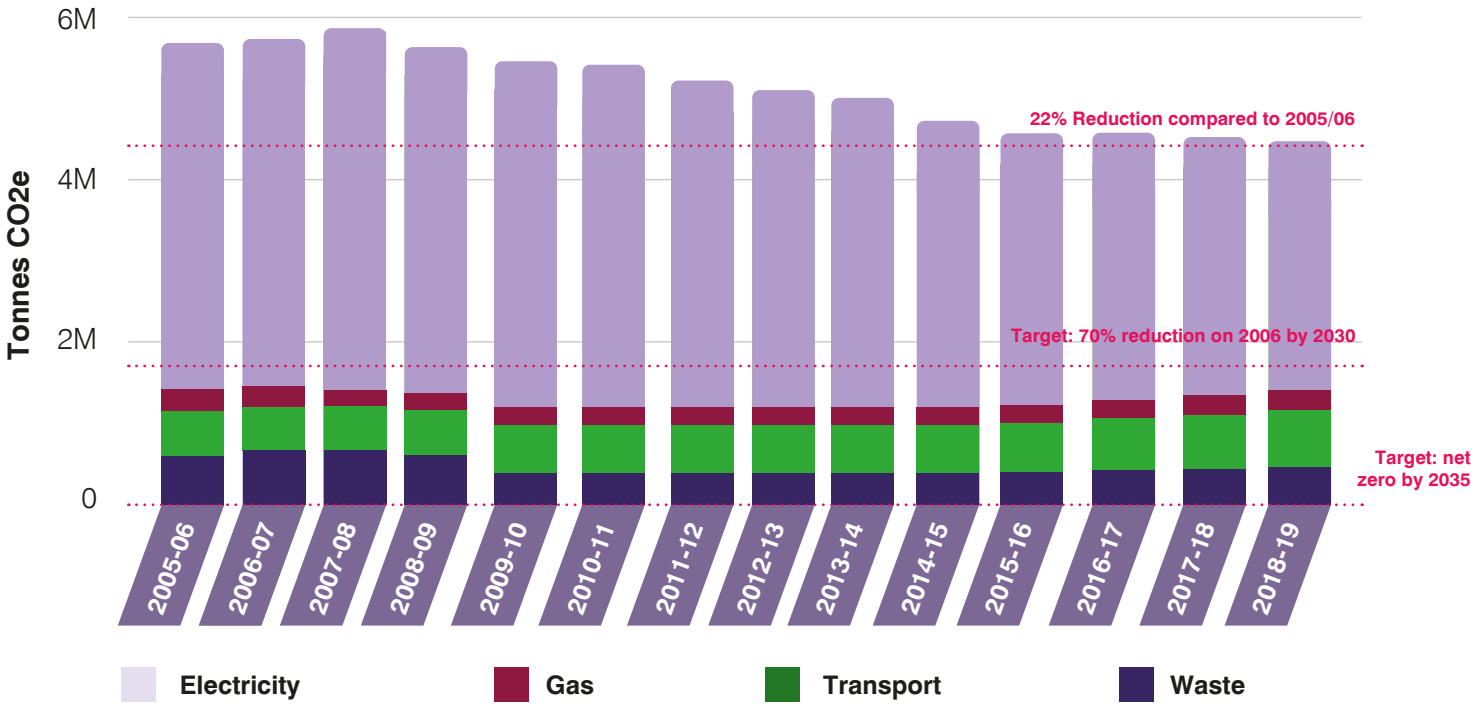
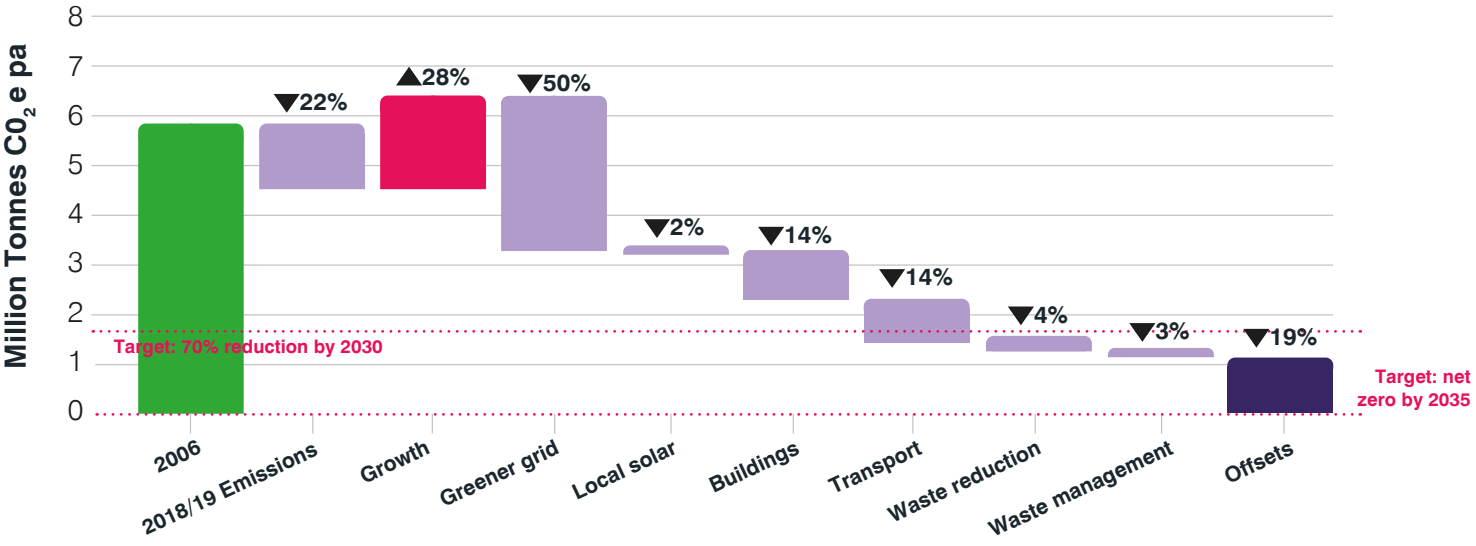


Chart 5: Local area emissions in 2035

The renewable energy transition is well underway in Australia. By 2035, increasing use of renewable energy in the electricity grid will help reduce GHG emissions. The greening of the grid is happening fast - whilst this chart shows emissions reduction of 50 per cent, it may be 70 per cent or more by 2035. The energy performance of new and existing buildings and the transport sector should have also improved, along with waste avoidance and management.



Green economy growth

The green economy covers activities ranging from environmental law and sustainable goods and services to advocacy, education, regulation and advisory services. This is particularly important for the City's economy, which is based on professional services and education rather than manufacturing.

In 2019, we studied the green economy in our local area and found that it was robust and fast growing. Based on 2018 figures, it:

– accounted for 16,000 workers (2.5 per cent to 3 per cent of employment), half of them employed in environmental law, advocacy, and research and development

– added $2.4 billion in gross value to the local economy

– generated $400 million in economic value in the sustainable finance sector

– provided strong connections to state and national green economies – for example, waste streams from the local area create around 500 processing jobs elsewhere

– created growing demand for green skills in occupations such as law, sales and marketing

– showed a doubling in employment compared to overall jobs growth, but lagged behind international peers.

This shows a robust base for growth in our green financial and professional services industries.

Sydney is at the heart of Australia's financial and professional services sector, as many capital raising and management and support services are located here. There is an opportunity for the city to be the centre for carbon and other trading systems. Sydney's strengths in the finance and professional services sectors will play an important role in raising capital, redirecting financial systems, and providing the knowledge that will help NSW and Australia become renewable energy superpowers.

The city also has a dynamic entrepreneurial sector that is developing solutions to climate change and methods for building a circular economy.

The City's forthcoming Economic Strategy will explore further how we can help develop the green economy.

CleanTech knowledge sharing grows Australia's green economy



One of the key programs under the City of Sydney's Tech Startup Action Plan is the Visiting Entrepreneur Program (VEP). Since its November 2017 launch, the VEP has brought high-profile international entrepreneurs to Sydney to share their expertise and knowledge with the local tech startup community. The program has delivered 74 events for over 6,500 founders, and in doing so, helped to foster a culture of entrepreneurship and innovation and raise awareness of Sydney's tech startup ecosystem globally.

The 2020 CleanTech program was disrupted by COVID-19 restrictions. However, due to the importance of the content, amount of planning that was already complete and the need to support this vulnerable part of the tech startup ecosystem, we decided to adapt the program and run a virtual event series.

There were strong indications pre-pandemic of a shift towards a green economy. Now, as the economy restarts, a clean energy transition will be more vital than ever. As a hub of knowledge, capital exchange and innovation, Sydney has a key role to play in enabling and facilitating Australia's transition to green.

The program with our three virtual visiting entrepreneurs live streamed discussions to over 1,100 viewers where the CleanTech conversations focussed on the intersection of technology, environmental sustainability goals and the growth of the green economy. Technology has an important role in the transition to sustainable energy, particularly as we rebuild from the pandemic. Australia is well placed to export goods, services and technology locally in Asia's clean energy transition. Food and agritech entrepreneurs are reimagining the food system to meet the needs of a growing global population, whilst also committing to sustainable growth.

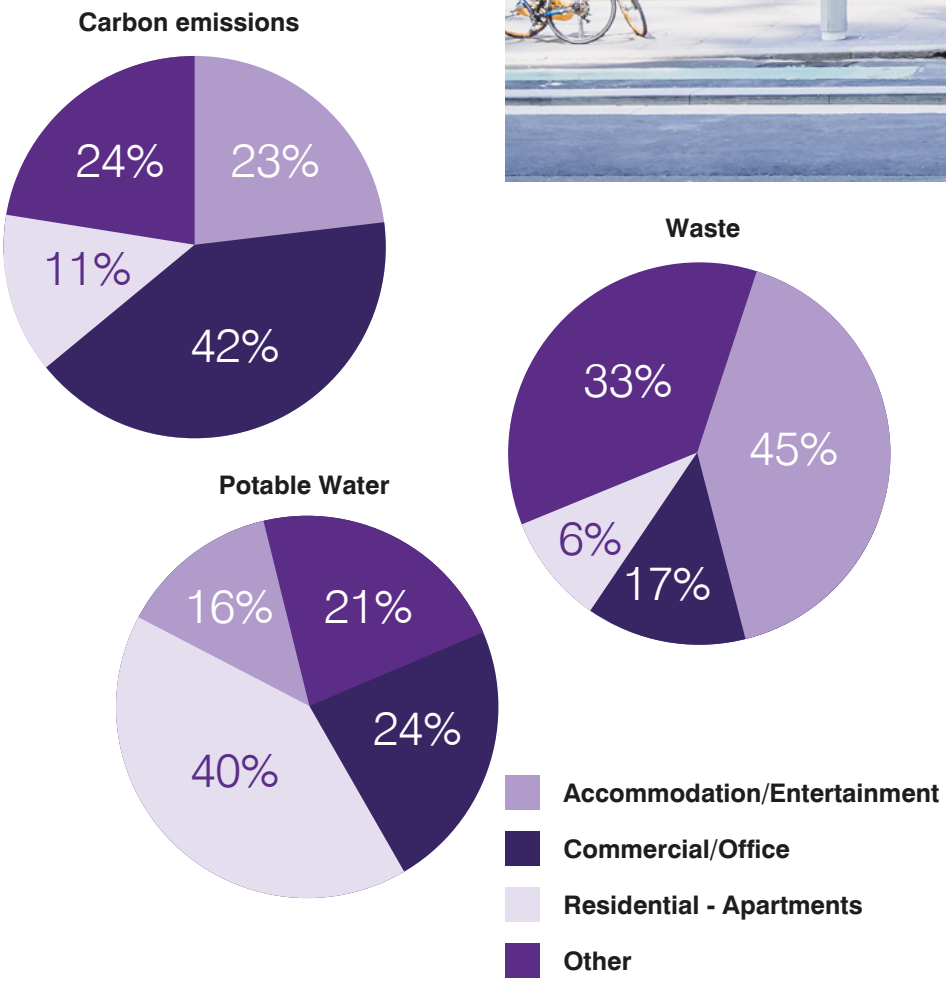
Image: © City of Sydney

Partnering with our key sectors

The City works closely with the sectors that have the greatest environmental impact in our local area. The commercial office sector is responsible for 42 per cent of the city's emissions; the accommodation and entertainment sector contributes 45 per cent of waste sent to landfill; and residential apartment buildings use 40 per cent of the city's potable water. Through programs like Smart Green Apartments, the Better Building Partnership (BBP), CitySwitch Green Office and the Sustainable Destination Partnership, we partner with owners and operators to reduce these impacts.



Chart 6: Local area environmental footprint by sector



Residential apartments sector

Around three-quarters of our residents live in apartment buildings. The City of Sydney has the highest residential density on any local government area in Australia. Between 2020 and 2030, the population is forecast to increase by more than 29 per cent, to around 319,000, and about 80 per cent of residents will live in apartments. At least 90 per cent of new buildings will be six or more storeys high.

Image: Barrack Place, 420 George Street, Sydney by Investa. © Investa

There is significant energy and water efficiency potential within residential apartment buildings. Increasingly complex centralised plant, equipment and services coupled with rising energy and water costs mean efficiency and good asset management is an increasing priority for city residents. Occupants of high-rise apartment buildings are responsible for more carbon emissions than people in houses. This is a result of the high energy consumption of centralised equipment systems on common property, which increases with building height.

The Smart Green Apartments program is a key initiative of our Residential Apartments Sustainability Plan. We work with strata communities to improve environmental performance and a building's liveability and value, while reducing operating and maintenance costs for owners.

The environmental performance of buildings is unlikely to improve without intervention and assistance. The collective ownership model of strata and unique governance structures require tailored support and information to better operate and upgrade buildings and precincts. Barriers for existing buildings include access to independent and accurate information; lack of time, expertise and support; and the long, complex decision-making processes in strata buildings. For new buildings, improving performance standards could significantly lower environmental footprints from the start.

We aim to work with the sector to raise the bar on environmental performance, build capacity for environmental decision-making and empower communities to make green living choices.

Achievements

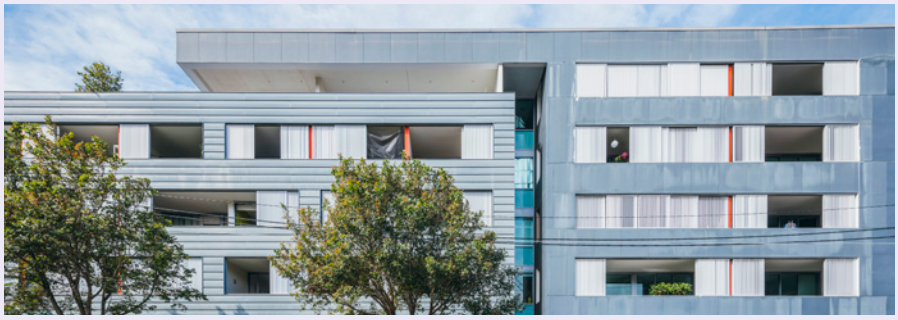
– The Smart Green Apartments program currently includes 172 buildings, with 13,876 apartments that are home to more than 27,000 people.

– The program has reduced GHG emissions by an average of 30 per cent per strata community.

– It has also cut energy use by 31 per cent, saving $2.89 million on power bills.

– WaterFix® Strata, a partnership with Sydney Water, has reduced consumption of potable water by almost 700 kilolitres, saving $1.30 million in water bills.

Environmental grant enables building owners to cut electricity use by 85 per cent



With an exceptionally low monthly electricity bill for powering its common areas ($14.71!) and an impressive 6 Star NABERS energy rating, it is worth taking a closer look at the environmental achievements of Zinc, a 45-lot apartment building in Alexandria.

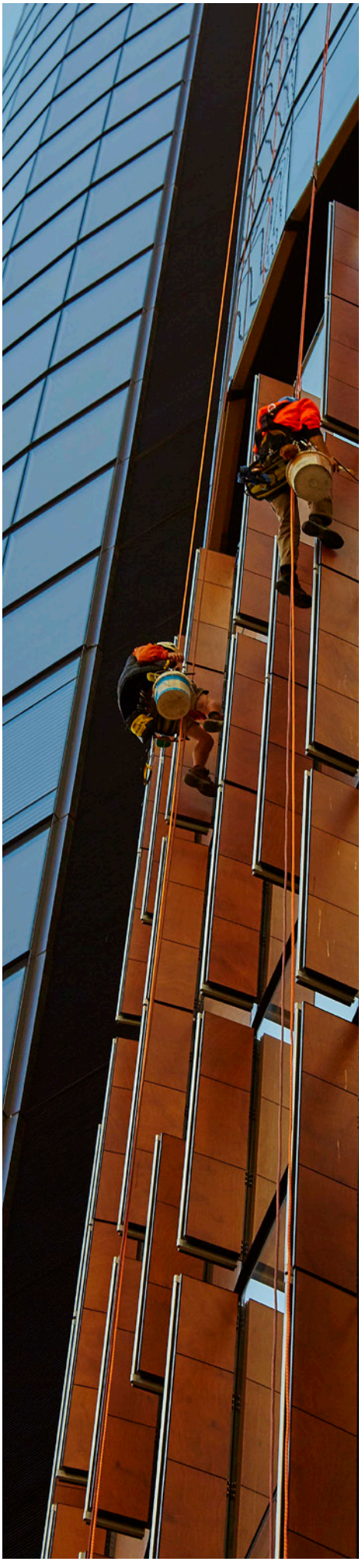
Using an environmental grant from the City, the owners corporation engaged an independent consultant to conduct an energy efficiency assessment, solar feasibility study and NABERS rating. Nathan Hage, strata committee representative, credits the City's environmental performance grants program with gaining the participation of all owners in the building – and results that followed.

"Having the initial energy efficiency assessment and NABERS rating fully funded by the City was key to our success. It would have been much harder for a relatively small building like ours to sell it to the owners," Nathan said.

Work started with an upgrade of common-area lighting, which was soon followed by the installation of a 27 kilowatt-hour rooftop solar system. Next up, the owners switched to an electricity provider offering a renewable and carbon-neutral product, to cover the emissions from their grid-sourced electricity. The results? An 85 per cent reduction in common area electricity use, with a corresponding 99 per cent cost saving.

The owners are now looking to invest in solar sharing technology and battery storage to supply power to individual apartments.

Image: © City of Sydney



Commercial office sector

Commercial office buildings and their tenants contribute 44 per cent of the city's carbon emissions, making it vital to reduce this impact. The City's long-running BBP and CitySwitch programs have helped reduce GHG emissions and water consumption, improve energy efficiency, and increase use of renewable electricity and recovery of materials from waste.

Sydney is home to Australia's largest commercial property cluster, and the City through the BBP has provided a forum for sharing knowledge and grappling with the market transformations required to meet our environmental goals and deliver a sustainable city. In addition to environmental outcomes both BBP and CitySwitch deliver unique intellectual and social capital through the networking and capacity building that arises from collaborating and networking on common sustainability problems.

The benefits of these programs extend beyond Sydney. All BBP portfolio owners are implementing sustainability initiatives in their other property types across Australia. By design, CitySwitch is a national program that engages tenants and businesses in other local government areas.

In addition to these programs facilitated by the City other factors have also contributed to the excellent sustainability performance of the commercial office sector in Sydney. These include, mandatory NABERS ratings, international reporting requirements of the Task Force on Climate-related Financial Disclosures and the Global Environmental, Social and Governance Benchmark for Real Assets. There is also an investor-led desire for green investment options and tenants who want sustainable work and retail spaces driving environmental improvements in this sector.

Achievements

– We engage with 59 per cent of commercial landlords in the city through the BBP. These landlords reduced carbon emissions by 61 per cent and water use by 39 per cent in 2019–20, compared to 2006. (The city has six net-zero commercial office buildings, and another 18 committed to achieving net-zero targets.)

– The BBP has delivered sector-wide change, particularly in waste management, which is embedded in NABERS Waste and Good Environmental Choice Australia certification of waste service providers. The program has also established best practices in energy demand management, the circular economy, cooling tower management and pathways to net-zero buildings.

– Through CitySwitch, we engage with 221 office tenants (27 per cent of commercial tenants). The average carbon emissions reduction of these tenants is 26.4 per cent, and 29 have been certified as carbon-neutral by Climate Active.

Image: EY Centre at 200 George Street, Sydney, by Mirvac. © City of Sydney

Accommodation and entertainment sector

Sydney's accommodation and entertainment sector has a large environmental footprint. Accommodation needs lights, air conditioning and ventilation 24 hours a day. Entertainment venues use energy-intensive stage lights, sound systems and air conditioning. Food and beverage outlets have high energy and water consumption, and they generate large amounts of waste.

Industry members wanting to improve their performance have signed up to the SDP, a collaboration of 46 property owners, managers and key influencers. The International Convention Centre, Sydney Opera House, Art Gallery of NSW and iconic hotels are among the 72 buildings represented by these property owners.

Before the COVID-19 pandemic, Sydney had more than 10 million annual visitors. This number fell dramatically in 2020 due to COVID-19, with an extreme slowdown in business. Despite this, more hotels sought a NABERS rating; more SDP members identified water leaks in empty buildings and worked on their sustainability strategies; and more staff used the downtime to train in food waste avoidance through Love Food Sydney, a City partnership with the NSW Government.

Many opportunities exist to lessen the environmental impact of the sector; for example, energy and water-efficiency, minimising waste, increasing sustainable procurement, and raising the energy performance standards for new buildings and major refurbishments, including 4 Star NABERS Commitment Agreements for new hotels. These measures would also provide long-term economic benefits.

The City's support includes providing grants for environmental ratings and assessments, and promoting actions to improve environmental performance.

Sydney awarded for its innovative sustainability initiatives



Sustainability is big business in Sydney – or should we say, big in business. So much so that Sydney has ranked 8th in the world for hosting sustainable business events, in the Global Destination Sustainability Index (GDS-Index).

The GDS-Index rates the business events industries of more than 50 cities globally against benchmarks for social and environmental performance.

In 2019, Sydney's Sustainable Destination Partnership (SDP) won the GDS-Index's Innovation in Sustainability award at the International Congress and Convention Association's annual conference, in Houston, in the US. The award recognised outstanding collaboration in environmental footprinting with ambitious targets.

"Sustainability is becoming an important requirement for our global client base when choosing a host destination, and the City of Sydney's approach in creating a collaborative framework for our whole industry to work with them is truly visionary," said Business Events Sydney CEO and SDP Associate Member, Lyn Lewis-Smith.

The City established the SDP to work in partnership with major hotels and tourist attractions to help reduce their environmental impacts and combat climate change. Sydney Lord Mayor Clover Moore said, "This award recognises their success in becoming more sustainable and working to address the most pressing issue of our time. I hope it encourages more businesses and organisations to become involved."

Achievements

– Emissions have been reduced by 19 per cent, compared to the target of 10 per cent from the 2017–18 baseline. Use of potable water has been cut by 21 per cent against a target of zero increase on the 2017–18. Currently, 74 per cent of partners report waste data, edging closer to the target of 100 per cent reporting. A total of 37 per cent of waste is diverted from landfill against a target of 75 per cent. (These figures are based on 2018–19 results, with data for 2019–20 delayed due to COVID-19).

– In 2019, the SDP won the Global Destination Sustainability Index award for innovation in collaboration.

– Since 2018, the SDP has launched the single-use pledge, developed a roadmap to halve food waste by 2026, worked with Sydney Water to research water-saving opportunities, and tested NABERS waste in City-owned buildings.

Image: © Australian National Maritime Museum.



Environmental grants and sponsorship program

Our grants and sponsorship program supports initiatives and projects that build the social, cultural, environmental and economic life of the city. We partner with the community and businesses to meet the targets set by Sustainable Sydney 2030.

The environmental grants and sponsorship program offers a powerful incentive for residents and businesses to improve their environmental performance. It provides funding for innovation; energy, water and waste management projects; and ratings and assessments. It also aims to address barriers to action.

Since 2016 the City has awarded $3.8 million in environmental grants in response to 330 applications from 198 individual organisations.

- 248 Environmental performance grants - assisting building owners and managers better understand their environmental impact by undertaking ratings and assessments, and to initiate projects to improve the environmental performance of their buildings. A comprehensive profile of environmental grants can be found here.
- 46 Innovation grants – supporting testing or use of new technologies or processes that are not being implemented in the local market and could be used at scale in the local area. These are technologies that have the potential to support greenhouse gas emission reductions, climate adaptation efforts, resource efficiencies, sustainable transport or greening initiatives.
- 20 Knowledge Exchange Sponsorships with environmental outcomes - supporting programs or events that promote the sustainable development of cities; tools or guides to communicate best practice and build skills and expertise; and networking events that bring people together to learn from each other.
- 16 Matching Grants with environmental outcomes - supporting grassroots and local projects that contribute to vibrant sustainable communities and economies by matching contributions towards a project.

Image: City farm, Sydney Park.
© City of Sydney

Innovation grant helps demonstrate the value of integrated green roofs

The City is proud to support a flagship green roof project through its environmental performance innovation grants program. The project involves a partnership between University of Technology Sydney (UTS), Lendlease and Junglefy to compare two rooftops on two identical buildings in Barangaroo: one made of concrete with a solar PV system, and the other comprising a solar PV system integrated with a green roof.

The research project is one of the longest and most complete studies of its kind in Australia. It will provide the City with empirical evidence and data on the benefits of integrated green roofs in Sydney, and the results to date are compelling.

Integrated green roofs appear cooler on average by 5.5°C. The green roof remains at a steady 25°C throughout the day, compared to the usual swings of 20–60°C on a typical city roof. A green roof cools the roof, resulting in more power from the solar panels.

An integrated green roof stores and 'polishes' rainwater. It slows discharge to the stormwater system in high rainfall events to 7 litres/second, compared to 634 litres per second on the concrete roof. The green roof's plant species provide an added benefit through their biological processes, which work to increase air quality.

Green roofs encourage biodiversity in city spaces. Whereas a typical non-green roof might host four species of fauna, more than 30 species have been observed on the project's green roof, including native bees, insects and birds.

There is huge potential across the city for more integrated and co-located solar green roofs.

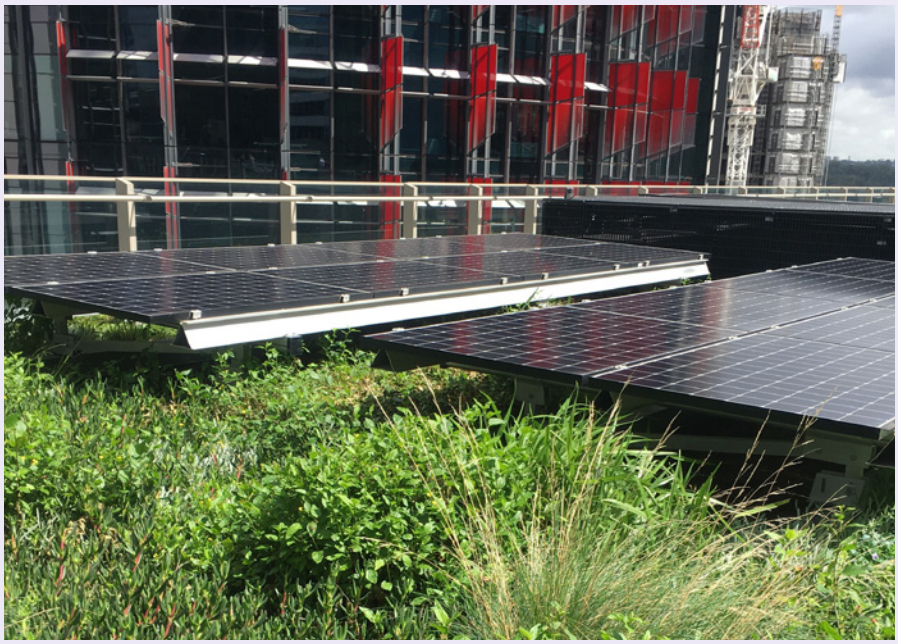


Image: © Lucy Sharman Lend Lease

Actions



Action 8

Improve energy efficiency, water efficiency and waste management in existing buildings

The City will advocate for stronger requirements for mandatory disclosure of environmental performance. Through our partnerships and grants programs, we will support building owners, operators and tenants to implement efficiency measures, use renewable electricity and transition from gas to electricity.

Action 9

Drive all new buildings to be resource-efficient and net-zero energy

We will implement net-zero performance standards in our planning controls, and look for opportunities to develop controls to reduce the impact of urban heat.

The City will continue to advocate for higher environmental design standards, including in the National Construction Code and the Building Sustainability Index (BASIX).

Where the City can comment on State Significant Developments, we will advocate for ambitious environmental goals, including alignment with the NSW Government's target of net-zero emissions by 2050.

Action 10

Support the transition to zero-emissions transport

Our transport priorities can be delivered via direct actions, partner actions and advocacy. We will advocate that the Australian Government develop a national plan for transitioning vehicle fleets to zero emissions by 2035. One key element will be transitioning existing service stations to become zero emissions fuelling stations, creating the backbone of the urban charging network.

The City will advocate for public transport projects, partnering with the NSW Government to build a bicycle network and reallocate road and kerb space for walking, cycling and public transport. We will also advocate for a low-emissions zone in the city centre.

Image: Cycling through Green Square.
© City of Sydney

We will also advocate for public transport powered by renewable energy and the uptake of zero emissions vehicles for point-to-point operators, ridesharing, and last-mile delivery and servicing systems.

We will support charging for electric vehicles in off-street parking through City planning instruments and advocacy to the NSW Government.

Action 11

Encourage community uptake of renewable electricity and stimulate the green economy

Through our partnership programs, we will provide advice and support to increase the use of onsite and offsite renewable energy. We will also look for opportunities to help local businesses to aggregate their purchasing power for renewable electricity, which can create economic opportunities within NSW.

Action 12

Support our residents to reduce utility costs and environmental impact

We will continue to encourage residential apartment building owners to improve the energy and water efficiency of their buildings. The City will also keep advocating for capacity building in relation to strata legislation and management, to help residents manage their buildings.

Action 13

Help business to reduce utility bills and demonstrate environmental achievement

The City will provide ongoing support for the BBP, strengthening its contribution to a sustainable city, and embedding best-practice standards and tools. Focus areas in the next four years will include the circular economy, shifting from gas to electricity, and whole-of-building performance.

Through the CitySwitch Sydney program, we will support office tenants in their work with building owners to improve environmental performance. We will use the CitySwitch national program to support collective action, including in relation to mandatory tenant disclosures.

As the accommodation and entertainment sector recovers from the devastating impact of COVID-19, the City will help members of the sector make their operations more efficient while also positioning Sydney as a safe and sustainable destination.

Innovative technology enables metropolitan-wide decision making on environmental performance



The Resilient Sydney Platform is a collaboration between Resilient Sydney, City of Sydney, Kinesis and the local councils of metropolitan Sydney. This award winning platform provides previously disparate datasets to the 33 metropolitan councils across Sydney so they can measure and understand how the local community is contributing to carbon emissions, using energy and water and generating waste. By providing councils with a standardised, metropolitan-wide process for measuring and reporting on environmental performance, the Platform supports more strategic and evidence based planning and decision making.

In September 2019, the Resilient Sydney Platform was acknowledged as an important innovation to support collaboration, joint action and advocacy across the Sydney area, receiving two awards at the Smart City Awards 2019: the ‘Data as an Enabler’ category award and the overall award for the Best Smart City Project.

This is the first time a robust, accessible, environmental data platform has been available for every local government area (LGA) of Sydney.

Over 200 strategic planners, environmental managers and general managers representing all the 33 councils of metropolitan Sydney are now using the platform in their Local Strategic Planning Statements.

© Lucy Sharman Lend Lease

03

A regenerative and inclusive city





Identifying solutions

Increasingly, councils are recognising that the knowledge and cultural practices of Aboriginal and Torres Strait Islander people can make an important contribution in this area, playing a central part in strengthening the sustainability of our cities.

Environmental action will need to include establishing a strong circular economy to reduce and manage waste, regenerating natural resources such as waterways, and using nature-based solutions to reduce emissions.

A regenerative city

A city that is future-proof and resilient contributes to regenerating the natural resources it consumes. This starts with pursuing efficient use of resources and local circular initiatives, and minimising the pressure the city is placing on global ecological and social systems.

Our citizens' jury, run during the Sustainable Sydney 2050 consultation, identified the concept of the city as a 'regenerative ecosystem'. The jury recognised that there are finite natural and financial resources, and that air and water pollution, and water scarcity, must all be addressed if we are to achieve a healthy city. Buildings must not contribute to the degradation of the city, and waste must be transformed to feed back into the economy. Over the next four years, the City will explore how to bring this concept to life.

Globally, we need to stop burning carbon as much as possible, as soon as possible. We also need to draw down carbon from the atmosphere in significant quantities. This is achieved through reforestation, agroforestry, garden cities, regenerative agriculture, blue carbon (kelp and other seaweed growth), and direct CO2 capture from the air.

Nature-based climate solutions reduce emissions from the atmosphere while restoring the biosphere – the land, air and water. It is estimated that conservation, restoration, and management of forests, grasslands and wetlands can deliver a third of the emission reductions needed globally by 2030. [42]

Image (Previous page): The South Eveleigh community building rooftop garden. © Community Rooftop Garden, Mirvac. (This page): St Helens community garden provides locals the ability to grow their own fresh produce © City of Sydney, Katherine Griffiths

42 https://www.nature.org/en-us/what-we-do/our-insights/perspectives/natural-climate-solutions/

Indigenous land management practices have enormous potential to reduce emissions and sequester carbon. Sustainable funding models, such as carbon credits, can help support Indigenous businesses and communities to expand their traditional practices, including cultural burns.

Local and state governments share responsibility for regenerating the waterways within our city. We are working with other councils on catchment management plans for the Cooks River and Sydney Harbour. These include plans to protect and enhance biodiversity, preserve Aboriginal and Torres Strait Islander culture and artefacts, improve water quality and adapt to climate change.

Sydney Park delivers for the environment and for the community



For nearly 100 years, there was no wildlife to speak of on the site that is now Sydney Park. A former brick pit and rubbish tip have given way to a regenerative oasis of thriving wetlands and green open space, with the help of stormwater harvesting and multi-award-winning design.

The 44-hectare park has four wetland areas that not only clean stormwater, manage floods and reduce urban heat but also attract wildlife to this urban area. The plantings of native grasses surrounding the wetlands form bioretention swales, which help filter stormwater runoff and reduce contaminants flowing downstream into Botany Bay.

The wetlands are also an important habitat for native wildlife during dry periods. A wide variety of birds, frogs and turtles are attracted to the area, including migratory birds that visit the park.

Before the City established stormwater harvesting in the park, the wetlands did not have enough water to regenerate fully on their own. Each year, the park harvests 850 million litres of stormwater, which is used to top up the wetlands, for irrigation and to supply the nearby City of Sydney depot. In 2021, the park received the Jury Award in the Architecture +Water category of the 2020 Architizer A+Awards in New York.

Harvesting stormwater in this way helps the City achieve our 2030 target to reduce sediments and nutrients from stormwater runoff and will also help us meet 10 per cent of water demand through local water capture and reuse.

The park is also home to Sydney City Farm, a place for people to learn about urban agriculture and sustainable food production. The farm uses organic growing principles to produce nearly half a tonne of fresh food annually, and is run with the help of more than 300 volunteers. It donates produce to local food banks.

Image: © City of Sydney



Our city is on Gadigal land

The City acknowledges that this place we now call Sydney is, was and always will be an Aboriginal place. We also acknowledge the importance of the living cultural practice of caring for Country. The Gadigal of the Eora Nation have used resilient land management practices for thousands of generations. Aboriginal people know that if we care for Country, it will care for us.

'Eora' means 'the people' in the Gadigal language, so the City's Eora Journey is 'the people's journey', We're working with Aboriginal and Torres Strait Islander artists to create seven major public art projects symbolising the Eora Journey. We currently provide support for a range of events that celebrate Aboriginal and Torres Strait Islander arts and culture, from the Yabun festival held on 26 January in Victoria Park each year to local NAIDOC Week events. We have developed our first economic action plan to focus on Aboriginal and Torres Strait Islander communities, and in 2018 we purchased the former Redfern Post Office for use as a local Aboriginal and Torres Strait Islander culture and knowledge centre.

A body of work is evolving around the country to increase cities' involvement of Aboriginal and Torres Strait Islander people and cultural knowledge in urban planning and decision-making, to improve sustainability and resilience.

Research by the Clean Air and Urban Landscapes Hub explores the concept of cities as Indigenous places.[43] It reinforces the importance of giving Aboriginal and Torres Strait Islander people meaningful roles at all levels of decision-making that relates to our cities.

The NSW Government Architect has published the Connecting with Country Draft Framework to inform the planning, design and delivery of built environment projects in NSW.[44] It provides guidance for the community, government and developers on how to support the wellbeing of Country; value and respect Aboriginal and Torres Strait Islander knowledge; and ultimately reduce the impact of natural disasters through sustainable land and water management practices.

The City will enhance its environmental program by working with Aboriginal and Torres Strait Islander groups and investing in knowledge and practices that restore natural equilibrium by caring for Country.

Image: Aunty Margaret Campbell starts her educational walking tours at these large fig trees in Circular Quay which she refers to as great grandmother trees. © City of Sydney, Katherine Griffiths

43 https://nespurban.edu.au/wp-content/uploads/2020/11/Cities-for-People-and-Nature.pdf

44 https://www.governmentarchitect.nsw.gov.au/projects/designing-with-country

Inclusive environmental action

People already marginalised in our city are likely to suffer disproportionate impacts from climate change and urban hazards. As we create solutions to our challenges, we need to be inclusive. We must look at which groups are most affected by climate change, who benefits from our environmental programs, and how we can diversify the voices heard when shaping our environmental future.

Our research to establish an Equality Indicator Framework revealed serious inequalities within our community. Aboriginal and Torres Strait Islander people, those on low incomes and people with disability experience clear inequalities in relation to employment, skills and education, housing, health, transport, and access to and involvement in public life.

Climate impacts can worsen these inequalities. For people with disability, it can be difficult to get around during floods or storms, or to find information about extreme weather events. While some homeowners can afford solar panels and other energy-efficient measures, people on low incomes can struggle to pay electricity bills, going cold in winter and sweltering in summer.

Many people in these disadvantaged groups are among the 75 per cent of those who rent in the city. When it comes to managing the impacts of climate change, renters are disadvantaged; for example, they can't install insulation to protect against extreme heat.

Access to affordable clean energy remains a key issue. Low-income and disadvantaged households pay a higher proportion of their incomes on essential services, and have less choice and control to reduce costs. Currently, GreenPower is more expensive than standard grid electricity, putting access to clean energy out of reach for many residents.

The City's Draft Greening Sydney Strategy acknowledges the importance of equity. Having access to cool green spaces close to home contributes to residents' ability to deal with extreme heat and to their mental wellbeing. While our overall canopy cover has increased, it is not evenly distributed. We will analyse its distribution as we plan future investment in greening, to improve access for everyone.

Reducing embodied carbon

Embodied carbon refers to the GHG emissions produced during the extraction, manufacture and transport of materials used day to day and in buildings and streetscapes. Reducing embodied carbon would significantly cut global emissions.

The City is part of the Materials Embodied Carbon Leaders' Alliance, which is working to grow the local market for low-emissions concrete, and green steel and aluminium.

The embodied carbon of materials is not counted in the current carbon footprint of a local area because these emissions are difficult to quantify and are attributed to the areas where they originate. However, University of New South Wales (UNSW) research has found that the carbon footprint of Greater Sydney would be approximately double if the supply-side emissions of goods and services consumed were taken into account.

Reusing materials and using recycled materials, avoiding the demolition of buildings (by reusing and retrofitting buildings) and other circular economy principles are the simplest and most cost-effective way to reduce embodied carbon. Meeting the Paris Agreement targets will require new zero- and negative-emissions products made using renewable energy, and many jurisdictions and businesses are working on this.

Urban heat mitigation

The urban heat island effect exacerbates warming in cities. Materials such as pavements and buildings absorb and radiate significant amounts of heat, raising temperatures significantly.

The Resilient Sydney Strategy identifies extreme heat as a big challenge for Greater Sydney.[45] More frequent hot days and nights – and longer and hotter days and nights – have a significant impact on human health and the liveability of our city. Addressing this requires collaborative action and policy.

In 2019, the City commissioned UNSW to develop an urban heat reduction guideline: the Cooling Sydney Strategy.[46] Its recommendations have the potential to decrease peak ambient temperatures by 2–3°C, which would cut energy demand for cooling and reduce heat-related mortality and morbidity.

Increasing the canopy cover and other forms of greening in our city is one of the most effective mechanisms to reduce urban heat. Our revised Greening Sydney Strategy reaffirms our commitment to initiatives that will help achieve a greener, cooler, calmer and more resilient Sydney.

Other techniques for cooling the urban environment include:

– cool pavements

– water features and evaporative cooling

– external shade structures

– integrated shading devices

– heat refuges.



Image: Sustainable building design curbs the effects of urban heat. © Stable Group

45 https://www.cityofsydney.nsw.gov.au/governance-decision-making/resilient-sydney

46 http://www.lowcarbonlivingcrc.com.au/resources/crc-publications/crclcl-project-reports/sp0012u3-cooling-sydney-strategy

Monitoring air quality

In addition to GHG emissions, communities are increasingly concerned about the effect of air pollution on health. Vehicles that run on fossil fuels are a significant source of air pollution in Sydney.

The NSW Government is largely responsible for measuring and regulating air quality in Sydney. It is developing the NSW Clean Air Strategy 2021–30 to reduce the effects of air pollution, especially during extreme events like the 2019–20 bushfires.

The NSW Strategy targets better preparedness for pollution events, cleaner industry, transport, engines and fuels, and healthier households and places. The NSW Government also plans to electrify the state's bus fleet.

Within the City of Sydney area, the NSW Government has installed ambient air quality monitoring at Cook & Phillip Park with plans to expand to other sites in our area. This station measures ozone, nitrogen dioxide, visibility, carbon monoxide, sulfur dioxide and airborne particles.

People can access real time air quality classifications from the NSW Government website. The site in the City is consistently classified as 'good' which means there are no changes needed to normal outdoor activities, even for sensitive groups.

The City is focused on local monitoring, and communicating information about air pollution to increase community support for zero-emissions transport and greening. It is deploying 21 low-cost sensors in the local area to measure air quality as well as noise and temperature. These sensors will complement NSW Government monitoring efforts.

A water-sensitive city

A water-sensitive city meets water needs and enhances liveability and resilience, including through biodiversity, public green spaces, healthy waterways and connected communities. [47] As the City of Sydney local area grows and the climate changes, more water will be needed for consumption, to green the city and combat the effects of climate change.

Greater Sydney's water storage dams have experienced severe drought in recent years, which is predicted to occur with growing frequency and longer duration because of climate change.

Since 2005–06, water use in our local area has increased 14 per cent while overall floorspace has grown 11 per cent. This is partly due to growth in high-water-use sectors (for example, apartments) and reduction of low-water-use sectors (such as industrial production).

Existing recycled water schemes are estimated to supply 0.2 per cent of total water demand across the local area. This low rate is largely attributed to:

– the low cost of water compared to other building costs, meaning that the low financial return from reducing consumption doesn't justify the capital expenditure required for water efficiency or reuse

– an unsupportive regulatory framework for recycled water

– higher fees imposed on utilities by the Independent Pricing and Regulatory Tribunal, which have challenged the financial viability of recycled water schemes in urban renewal locations.

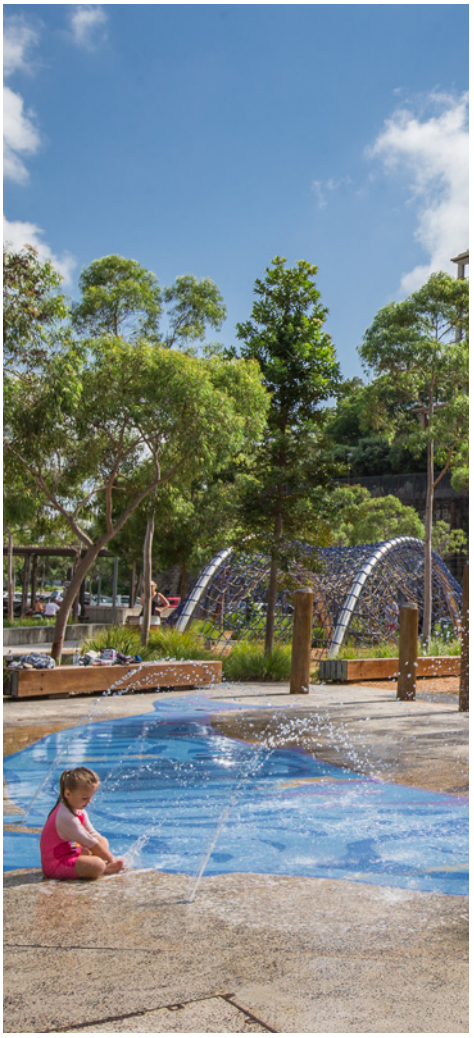


Chart 7: Local area potable water usage history

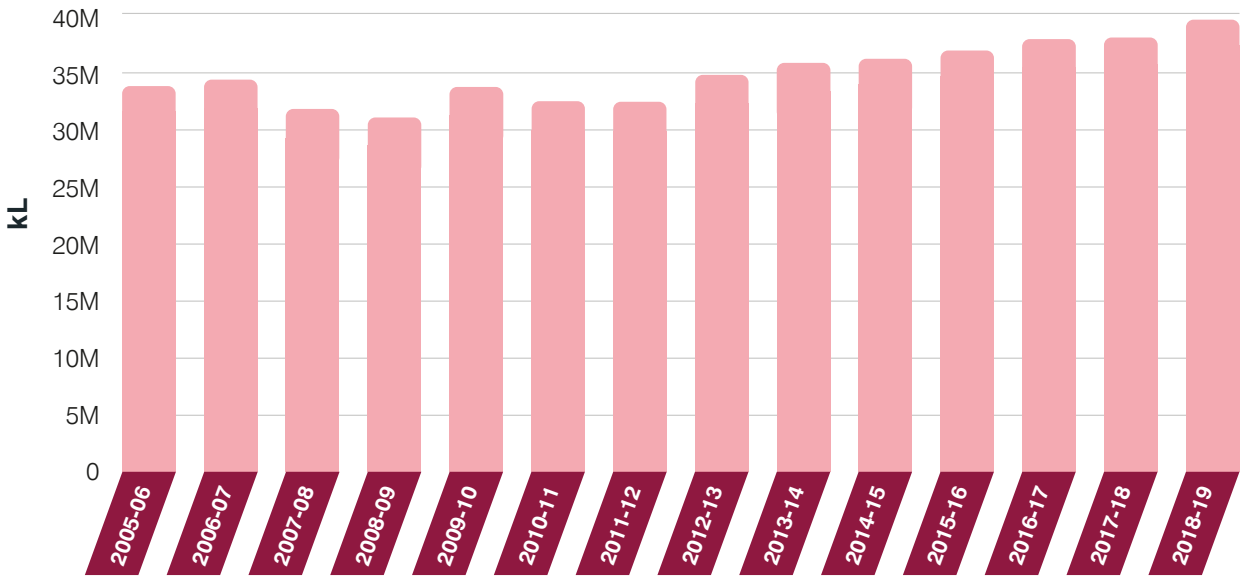


Image: Pirrama Park © City of Sydney

47 https://watersensitivecities.org.au/wp-content/uploads/2016/05/TMR_A4-1_MovingTowardWSC.pdf

The NSW Government is developing a 20-year statewide water strategy to improve the resilience of water resources, including in response to climate change. [48] It is also working on the Greater Sydney Water Strategy which is due for public exhibition in late 2021. Sydney Water is developing the Eastern Sydney Regional Master Plan. The Masterplan, anticpated to be made public in mid-2021, will present options for the future drinking water balance including how reliant the Eastern Region will be on desalinated water and recycled water.

The City recognises that decentralised recycled water schemes can contribute to managing the impacts of climate change and keeping the city green and cool. Such schemes will have a role to play in the future, but the delivery model may change. If the NSW Government introduces recycled water for drinking into Sydney's potable water supply, local recycled water systems will become less important for a resilient and drought-proof water supply.

Over the next four years, the City will continue working to deliver a greater mix of recycled water to the network. Interventions at the planning stage will ensure new developments use water efficiently. The George Street recycled water pipeline will facilitate use of recycled water in new developments along the corridor, retrofitting cooling towers and delivering drought-proof water to key public open spaces across the local area.

The City is establishing two new targets to track the local area's water use:

– Reduce residential potable water use to 170 litres per person per day person by 2030

– 10% reduction in non-residential potable water use per m2 by 2030, from 2019 baseline

Water-saving program helps businesses cut water bills

The Water Savings Partnership program started in June 2019 in collaboration with Sydney Water to help businesses use water more efficiently, with water savings measured over two years.

Despite building access restrictions due to the COVID-19 pandemic, the program is delivering well against targets. This demonstrates the demand and opportunities for water savings in the business sector.

As part of the program, a water efficiency assessment for a major shopping centre identified opportunities to save 63 kilolitres of water each day. The centre has so far implemented changes to save an estimated 22 kilolitres each day.

The program is currently focusing on helping small to medium-sized businesses such as cafes, restaurants, childcare centres and gyms reduce their water bills. Forty-seven participants involved to date have identified 567 kilolitres of water savings, and have achieved 110 kilolitres to date.



Image: © City of Sydney

48 https://www.industry.nsw.gov.au/water/plans-programs/strategy/about

Food scraps recycling trial diverts tonnes of waste from landfill



The largest single waste stream in City residents' red-lid rubbish bin is food waste. It typically accounts for one-third or more of a bin's contents. Recycling food waste saves landfill space, reduces greenhouse gas emissions, creates compost and fertiliser, and with the right processing can generate green energy.

We committed to investigating solutions to the food waste problem by starting a food waste collection and recycling trial for residents in July 2019, with support from the NSW Government. The trial now covers 1,019 houses and 132 apartment buildings across the city, comprising almost 11,000 households. Preliminary results are very encouraging, with good participation from those who have signed up for collections. We are recovering a high percentage of food waste from households, with very low rates of contamination.

The food scraps are collected by the City's Cleansing Operations team and checked for contamination. They are then processed at the EarthPower anaerobic digestion facility, which produces green electricity and fertiliser. By the end of March 2021, more than 460 tonnes of food scraps had been collected for recycling, with a contamination rate of just 1 per cent.

Phase II of the trial is now underway and will see the availability of the service increase to around 21,000 households by the end of September 2021.

Image: Residential food waste trial
© City of Sydney, Katherine Griffiths

Managing waste and resources

Managing waste and resources from residences, parks, public spaces, neighbourhood centres and our own operations is one of our core services.

The City of Sydney area produces more than 5,500 tonnes of waste every day and contributes to approximately 8 per cent of the city's total GHG emissions. This is made up of waste generated at home, at work, by the city's many venues and events, and during the construction of new buildings and transport infrastructure. Around 69 per cent of this waste is already recycled, but more than 2,000 tonnes still goes to landfill each day.

Residential and City buildings waste

Each year, the City collects and manages around 65,000 tonnes of waste from more than 120,000 households, and about 11,000 tonnes from our own assets, parks and public places. By 2030, this is forecast to grow to more than 100,000 tonnes of waste.

Commercial and industrial waste

Commercial and industrial waste is all non-residential waste produced by businesses and institutions. It is largely organic or biodegradable, and accounts for around 700,000 tonnes – more than 90 per cent of the city's total waste – each year. By 2030, this is forecast to grow to more than 800,000 tonnes a year. [49]

It also generates a significant proportion of the emissions created by landfill. And although the City does not collect or manage this waste, we need to identify ways to reduce it.

49 Edge Environment Pty Ltd. City of Sydney Commercial Waste Data Review. Sydney: (unpublished), 2017.



Construction and demolition waste

Each year, construction and demolition of new buildings and major infrastructure such as roads creates more than 1 million tonnes of waste in the city.[50] This waste is largely inorganic or inert, meaning it does not decompose or generate GHGs. Recovering and reusing this waste would reduce GHG emissions by cutting back on the extraction of resources.

Challenges

Residential apartments account for more than 75 per cent of households in the city, and this number is predicted to rise to 80 per cent by 2036.[51] Many of these households have competing demands for space, particularly for storing waste and recycling, which contributes to illegal dumping on footpaths and in public spaces. Where no storage is available, bins are also often left on footpaths. These both cause obstructions, create bad odours and feed perceptions of an area as being unclean or unsafe. Putting non recyclable rubbish in recycling bins causes contamination leading to recyclable materials being sent to landfill.

During community engagement for the City's Sustainable Sydney 2050 strategic plan, 86 per cent of residents said they want to preference recycling over landfill.[52] However, our residential recycling rate has remained at below 28 per cent since 2016. Reasons for this include confusion about what can be recycled, lack of access to recycling infrastructure in buildings and more complex packaging materials. Increasing demand for electronic and electrical items that are hard to repair or quickly become obsolete has added to the amount and types of waste.

China's ban on importing waste

In 2017, China notified the World Trade Organization that it was banning imports of 24 kinds of solid waste, including plastics from household sources, unsorted scrap paper, discarded textiles and mixed paper.[53] In 2016–17, Australia exported 1.4 million tonnes of paper and cardboard to other countries for recycling, and 63 per cent of that went to China. Of the 182,000 tonnes of plastics exported for recycling, 68 per cent also went to China. The ban has affected the City because about half of the recycling we collect is paper and plastics.

Image: Recycle It Saturday - free recycling dropoff event © City of Sydney

50 Edge Environment Pty Ltd. City of Sydney Commercial Waste Data Review. Sydney: (unpublished), 2017.

51 https://www.cityofsydney.nsw.gov.au/strategic-land-use-plans/local-housing-strategy

52 https://www.cityofsydney.nsw.gov.au/vision-setting/planning-sydney-2050-what-we-heard

53 https://www.wto.org/english/news_e/news17_e/impl_03oct17_e.htm

Waste data

It is difficult to track and accurately report on waste quantities and recycling rates once waste is moved, particularly if it is sent interstate or overseas. Waste from the commercial and industrial sectors is especially hard to track because it is managed by many different independent operators.

Textiles

Textiles, which make up around 6 per cent of waste in red bins in the City of Sydney, are a growing issue. Only about 1 per cent of textiles are recycled in Australia, while clothing consumption has approximately doubled in the last 15 years. [54] Globally, the textiles and clothing industry accounted for 92 million tons of waste (in addition to using 79 billion cubic metres of water and generating 1,715 million tons of CO2 emissions) in 2015. It is estimated this figure will increase by at least 50 per cent by 2030. [55]

Food

Significant opportunities exist to separate and treat food waste, especially through anaerobic digestion facilities that can produce biofertiliser and biogas, a renewable energy source. But councils would need to invest heavily in new collection services and bins, and educate residents about separating food waste. This outcome would need to be supported by NSW Government as part of a metropolitan wide plan for waste treatment facilities.

State and Commonwealth Government action

– National Waste Policy Action Plan - The Commonwealth Government published its National Waste Policy Action Plan in 2019. It set targets for reducing and recovering waste, increasing the use of recycled content and improving data. It also banned the export of waste materials.

– National Plastics Plan - The plan addresses Target 5 of the National Waste Policy Action Plan. It focuses on five key areas: phasing out problem plastics; increasing recycling; educating consumers; reducing plastics in oceans and waterways; and researching plastics recycling technology.

– 20-Year Waste Strategy for NSW - This is designed to be a whole-of-government initiative that provides a long-term strategic direction for communities, industry and all levels of government to work together to build resilient services and markets for waste resources. The City is advocating for a strategy that will provide regulatory and investment certainty, and appropriate levels of funding. The draft strategy is expected to be released in 2021.

Implications for the City

Our residents understand the need to better manage our resources through waste avoidance and increased recycling. They willingly participate in initiatives such as a food scraps trial and e-waste collections. But continuing changes to products and packaging make it difficult for us to provide the infrastructure for collecting and processing waste. We struggle to get our kerbside recycling rate above 28 per cent, which is short of our 35 per cent target. The recycling industry's inconsistent information about what is and isn't recyclable has also resulted in confusion for residents and businesses. Ongoing engagement and education is needed to rebuild the community's confidence in waste and resource management.

Collaboration at the federal, state and regional levels is needed to overcome challenges and create opportunities to improve the management of waste and recycled materials. Industry support and investment in innovation is needed across the entire materials supply chain.

The City already supports innovation through our environmental grants to incubators. At the commercial level, our procurement processes send appropriate demand signals to the market. And we will continue to engage with businesses and our communities on the circular economy and waste avoidance.

54 https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report.pdf

55 https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf

A circular economy

The economic system is linear: take, make, waste. Resources are extracted to be transformed into products, which are used and then discarded. Our approach to consumption must change.

The circular economy has three principles: designing out waste and pollution; keeping products and materials at their highest value for as long as possible; and regenerating natural and social systems.

Raw material use must be minimised through design, use of recycled materials, share-economy initiatives, and changes in consumer behaviour and producer responsibility. This will extend product lifecycles and keep disposal to an absolute minimum.

To change behaviour, it is important that the full environmental impact of all products is clear, including embodied emissions.

Although the circular economy is rapidly gaining traction globally, there isn't a blueprint for this transition. It is an emerging concept that requires learning by doing. City governments are interpreting and advancing a circular economy in different ways, depending on their unique strengths, challenges and aspirations.

The NSW Government released its Circular Economy Policy Statement in 2019[56]. It focuses on seven key principles: sustainable management of resources; valuing resource productivity; designing out waste and pollution; maintaining the value of products and materials; innovative new solutions for resource efficiency; creating new circular economy jobs; and fostering behaviour change through education and engagement. The policy is also to form the basis of the forthcoming NSW 20-Year Waste Strategy.



The City supports this approach and has advocated for change in government organisation and levels of funding, and for the establishment of a new coordination body and strong governance frameworks.

We have already undertaken initiatives that align with the circular economy; however, these are often isolated and have been motivated by objectives such as better waste management or social outcomes. To achieve a fully circular approach, we will need to move from reactive and isolated initiatives towards deliberate and scalable implementation of the circular economy.

This will also allow us to capitalise on the significant economic opportunities it will bring. New jobs and businesses can be created that are regenerative by design and decouple growth from the consumption of finite resources.

Image: Sustainable commercial interiors use resources many times over © Profile of Design

56 https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/recycling/19p1379-circular-economy-policy-final.pdf?la=en&hash=F80151EA9C2C3E27BA889D15D18041CDF7A4D25A

Actions



Action 14

Incorporate the perspectives of Aboriginal and Torres Strait Islander people in environmental action

The City will work with Aboriginal and Torres Strait Islander groups and invest in knowledge and practices that restore natural equilibrium by caring for country. We can use our partnership networks to raise awareness of reconciliation objectives. We will explore ways to celebrate Aboriginal and Torres Strait Islander peoples' living culture in our designs and management of places in the city.

Action 15

Address equity issues related to climate change

We will engage with vulnerable groups in the community to gain a clearer understanding of how climate-related issues are affecting them. The City will also collaborate with other organisations to advocate for more equitable access to clean energy and resilient housing. As part of our emergency preparedness work, we will look at how we can provide more options for respite for vulnerable community members during extreme weather events.

Action 16

Build community resilience and momentum on climate action

Our collaboration with other local governments to push for national action on climate change will continue via Climate Emergency Australia. We will advocate on key climate emergency issues, including the need for an inclusive economic diversification plan for a zero-carbon economy, driven by a national carbon price and an emissions target that aligns with the Paris Agreement.

The City will also further embed the directions of our Resilient Sydney Strategy[57] in our local area.

Image: Crete Reserve Playground, Rosebery. © City of Sydney, Katherine Griffiths

57 https://www.cityofsydney.nsw.gov.au/-/media/corporate/files/focus/governance-decision-making/resilient-city/resilient-sydney-a-strategy-for-city-resilience-2018-part-3.pdf?download=true

Action 17

Support the development of circular economy systems

We will partner with the NSW Government, other local governments and industry on circular economy initiatives and on creating a local market for low-embodied-energy materials.

Action 18

Drought-proof the city by facilitating water recycling

The City will deliver the CBD recycled water network, establishing an alternative source of non-potable water that can help keep the city green. We will continue to advocate for policies and regulations that support a water-sensitive city.

Action 19

Regenerate polluted waterways, air and land

In partnership with other councils and the NSW Government, the City will develop catchment management plans for the Cooks River and Greater Sydney Harbour. We will strengthen water quality measurement and reporting, and our approach to stormwater asset management. We will also look at how we can strengthen our planning controls to improve water-sensitive urban designs.

We will finish installing our low-cost air quality sensor network, and continue working with the NSW Government to establish additional Environment Protection Authority air quality monitoring stations across the city.

Action 20

Reduce the amount of residential waste sent to landfill through avoidance and resource recovery

The City will increase its focus on reducing waste, improving kerbside resource recovery through education, collecting a wider range of items for recycling, and promoting the City's waste services. We will expand the current food scraps recycling trial so the service is available to all our residents.

We will need to collaborate with other councils and the NSW Government to address the longer-term challenges relating to waste data, regional infrastructure and treatment solutions.



Image: Glebe.© City of Sydney, Katherine Griffiths

04

Strong foundations for delivery



Actions

Background

We aspire to outstanding environmental performance in our operations and local area. The City wants to be a leader globally in tackling climate change with ambitious, focused and collaborative approaches.

This Strategy sets out the specific directions and actions we aim to achieve. However, strong organisational foundations are needed to succeed.

COVID-19 has had a significant financial impact on the City. We anticipate having tighter financial constraints for the term of the Strategy, and we will need to make sure we have strong key organisational processes and systems to ensure we meet our goals. We will need to prioritise our actions and use our financial and human resources efficiently.

Consideration of the climate emergency needs to be integrated into key decision-making processes in the City. This includes strategy development, major projects and tenders, delivery of services, asset management, investment and the establishment of new programs and services. Engagement with staff has told us that our people are highly motivated to take environmental action and make a difference.

Action 21

Build staff capability to deliver environmental outcomes

We will retain a cohort of environment experts and we will continue to strengthen the environmental competencies of a broader range of staff.



Action 22

Deliver high-quality internal and external environmental reporting and communications

Develop a robust internal communications program to help to increase staff capability. We will leverage the City's powerful network of external communications channels to ensure members of our community understand our goals and actions, and how they can play their part. We will continue to provide a annual environmental report to Council and the community and benchmark the City's performance through the CDP-C40 global reporting program. The City will also use our improved data analytics capability to provide better reporting on progress against environmental targets and goals.

Action 23

Employ efficient and effective decision-making processes

Consideration of the climate emergency will be integrated into key decision-making processes, and we will review our current governance model to ensure there is appropriate oversight on the actions in this Strategy.

Image: (Previous page): Pirrama Park © City of Sydney. (Above): Victoria Park © City of Sydney

Implementing the Strategy

Multiple City departments will help to implement this Strategy. The City will report outcomes against all targets annually, both to Council and to our community.

Climate science, climate change impacts, economic circumstances and responses to the COVID-19 pandemic are continually evolving. Developments in national and state policy can also allow us to take advantage of new initiatives, or respond with further advocacy and collaboration when change is not fast enough.

Implementing an effective response that addresses the environmental challenges faced by our city requires collaboration from all parts of our community. We look forward to implementing this Strategy in partnership with our residents, the business community, and the NSW and Commonwealth governments.

Image: © City of Sydney



Strategy context



A holistic approach

The City has a range of strategies and initiatives to promote a green and liveable city, and to mitigate or adapt to the effects of climate change.

Sustainable Sydney 2030

After more than 10 years of implementing Sustainable Sydney 2030 – our vision and strategic plan for making our city green, global and connected – we are reviewing our progress and targets. At the same time, we are preparing for our 2050 vision, consulting with people who live, work, study, do business and seek entertainment in our local area. Like our first plan, Sustainable Sydney 2050 will be a long-term strategy, with measurable targets for a more sustainable, prosperous and liveable city.

Local Strategic Planning Statement

Our Local Strategic Planning Statement sets out a 20-year land use vision, balancing the need for housing and economic activities with protecting and enhancing local character, heritage, public places and spaces. It links state and local strategic plans with our planning controls to guide development, and includes measures to protect and enhance the natural environment. This is achieved by maximising the efficient use and reuse of water, energy and waste in new buildings and precincts, and improving the resilience of our natural and built environment to protect people from natural and urban hazards. It also outlines the key transport system changes to facilitate high quality growth and a connected community, with increased use of public transport, walking and cycling.



Environmental Policy

Our Environmental Policy is key to reducing our environmental footprint in response to the climate emergency. It lays out our commitments for transforming our own operations and establishes expectations for our environmental performance and that of our stakeholders – from employees and volunteers to service providers and customers.

Climate Emergency Response

The City of Sydney is taking bold steps to reduce our environmental footprint and promote fair and inclusive energy production, resource consumption, water use and climate adaptation.

We set science-based targets to reduce our own operational carbon emissions, and to support and empower our communities to reduce their carbon impacts, water use and waste.

Adapting for Climate Change

Adapting for Climate Change addresses the effects of climate change on our city, and what the City of Sydney, businesses and residents must do in response, while maintaining wellbeing and prosperity for all.

Leave Nothing to Waste

Our strategy is designed to manage Sydney's resources to 2030. This includes achieving our zero-waste target by focusing on waste avoidance and reuse, and improved recycling.

Residential Apartments Sustainability Plan

This plan includes practical actions for increasing sustainability and resilience in new and existing apartment buildings by reducing carbon emissions, water and waste.

Sydney's Sustainable Office Buildings Plan

This plan helps commercial building owners and tenants to reduce their environmental impact by achieving environmental ratings, adopting renewable energy, reducing water consumption and waste.

Making Sydney a Sustainable Destination Plan

The entertainment and accommodation sector has significant scope for saving resources and reducing waste. This plan focuses on environmental sustainability to reduce costs, attract more customers and engage employees throughout the sector.

Image: Living colour display City of Sydney.
© City of Sydney



Whether it is for managing heat – or for addressing mental health issues, happiness levels, physical activity, or reduced incidence of disease and illness – an increase in canopy cover, green space and nature provides many benefits for the community.

Image: Green Square © City of Sydney

Greening Sydney Strategy

Research shows that green infrastructure is vital for human health and for tackling climate challenges. We developed our first Greening Sydney Plan in 2012, which included programs and measures to increase canopy cover, biodiversity and nature in our city, and to expand and improve our open spaces and streetscapes. Our key achievements include increasing canopy cover from 15.5 per cent in 2008 to 19.2 per cent in 2020.

Our revised Greening Sydney Strategy reaffirms our commitment to initiatives that will help achieve a greener, cooler, calmer and more resilient Sydney.

Based on the latest research, we aim to increase overall green cover to 40 per cent of the local area, including at least 27 per cent tree canopy, by 2050.

We have exhausted most of the opportunities for easy greening and tree planting. So we will need to use a more focused, multidisciplinary approach that involves the entire Council and the community.
We also need to continue to address the complex challenges posed by climate change and the growing population. These include competition for space for new developments; growing pressure on transport infrastructure; the effects of heat, drought and air pollution on the health and biodiversity of our local ecosystem; and collaboration with government and other agency stakeholders, as well as residents and business owners.

To achieve our vision, for a cool, calm and resilient city, the revised Greening Sydney Strategy outlines six directions, and 20 supporting actions through to 2050. It will be next reviewed in 2031.

Direction 1 – Turn grey to green
Direction 2 – Greening for all
Direction 3 – Cool and calm spaces
Direction 4 – Greener buildings
Direction 5 – Nature in the city
Direction 6 - Greening together



