

Attachment E

<p>Environmental Sustainability Progress Report</p>
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Sydney2030/Green/Global/Connected



Green Environmental Sustainability Progress Report

July 2019 to December 2019

A detailed bi-annual overview of the City of Sydney's progress against our environmental sustainability targets for both the Local Government Area (LGA) and the City's own operations.

city of villages

Green Smart Connected

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Since 2008, Sustainable Sydney 2030 has articulated the collective vision of residents and visitors, workers and businesses. The City then committed to ambitious targets and strong actions across six key environmental focus areas, set out in the Environmental Action 2016-2021 Strategy and Action Plan

The Green Report outlines the progress of our environmental program. The Green Report is the City's state of the environment report and fulfils the reporting requirements of the NSW Local Government Act 1993 No. 30 Section 428A and the Integrated Planning and Reporting guidelines.

The City's Environment Policy¹ applies to all City of Sydney's operations, assets, activities and staff.

An Environmental Management System (EMS) supports the City's commitment to sustainable asset management and operations.

Message from the CEO

In June 2019, we declared that climate change poses a serious risk and should be treated as a national emergency. The devastating summer Australian bushfires highlight the importance of all levels of government to take leadership on climate change and for all of us to take individual action.

In response to the bushfire crisis, the Office of Local Government (OLG) has teamed up with the City of Sydney, Sydney Resilience Office and Local Government NSW to provide a disaster recovery council resource coordination service to assist councils impacted by the bushfire crisis. The Local Government Bushfire Recovery Support Group will enable unaffected councils to offer assistance, resource sharing and temporary deployment of relief staff to councils in need.

Insights from the 2050 Community Engagement highlighted that people overwhelmingly want a response to climate change. During this period the City commenced preparing a Climate Emergency Response detailing how the City will take further action. Our response will be available in Q1 2020.

This Green Report provides an update for the most recent period, July to December 2019 on our programs, initiatives, achievements and an update of the latest climate science in the Climate Adaptation section.

Highlights include the City's commitment to use 100 per cent renewables from 1 July 2020 through an agreement with Flow Power from Sapphire wind farm in the New England area, Bomen solar farm at Wagga Wagga and the community owned Shoalhaven solar farm.

Operational water efficiency programs have resulted in a reduction in potable water use from 2017/18 to 2018/19 demonstrating the City's commitment to achieving water targets. The City has successfully activated its commitment to phasing out seven single-use items at City properties with the food scrap trial and at City events with engagement with vendors and waste providers.

I encourage everyone to read and distribute this report widely to share ideas and inspire environmental leadership everywhere.



Monica Barone, Chief Executive Officer

¹ City of Sydney Environment Policy can be seen in Appendix 2.

1. Our environmental targets

Sustainable Sydney 2030 outlines the aspiration of our community and businesses for our local government area to be an environmental leader on a global scale.

The following are environmental targets outlined in the Environmental Action 2016 - 2021 Strategy and Action Plan.

City of Sydney Operations



Low-carbon city

- **44** per cent reduction in greenhouse gas emissions by end June 2021 based on 2006 levels
- **70** per cent reduction in emissions by 2030 based on 2006 levels
- **50** per cent of electricity from renewable sources by end June 2021



Water sensitive city

- Annual potable water use of **180** L/m² of irrigated open space by end June 2021
- **Zero** increase in potable water use by end June 2021 from 2006 baseline, achieved through water efficiency and recycled water
- **Zero** increase in potable water use by 2030 from 2006 baseline, achieved through water efficiency and recycled water



Zero waste city

- **70** per cent resource recovery of waste from City-managed properties by end June 2021
- **80** per cent resource recovery of construction and demolition waste generated and managed by City operations by end June 2021
- **50** per cent resource recovery of waste from City parks, streets and public places by end June 2021



Active and connected city

- **Zero** increase in fleet emissions from 2014 baseline by end June 2021



Green and cool city

- The average total canopy cover is increased by **50** per cent by 2030 (from 15 to 23 per cent), and increased by **75** per cent by 2050 (to 27 per cent), from a 2008 baseline
- Plant **700** new street trees each year until 2021
- Plant **50,000** new trees and shrubs in City parks and street gardens each year until 2021
- Tree species diversity will not consist of more than **40** per cent for any particular plant family, **30** per cent for any genus or **10** per cent for any one species by 2021
- Habitat sites in the city are protected and the area of bush restoration sites is increased by **100** per cent by 2023 from a 2012 baseline of 4.2 hectares
- Indigenous fauna species diversity, abundance and distribution is **maintained or increased** by 2023 based on a 2012 baseline
- A progressive **increase** in the number of habitat features for priority fauna species is established along potential habitat linkages by 2023



Local Government Area

Since the targets for Sustainable Sydney 2030 were set, the City of Sydney local government area (LGA) has undergone significant growth and is expected to continue to grow.

Regardless of future growth, the 2030 targets set by the City of Sydney are absolute.



Low-carbon city

- **70** per cent reduction in greenhouse gas emissions by 2030 based on 2006 levels
- Net **zero** emissions by 2050



Water sensitive city

- **Zero** increase in potable water use by 2030 from 2006 baseline, achieved through water efficiency and recycled water
- **50** per cent reduction in the annual solid pollution load discharged to waterways via stormwater by 2030
- **15** per cent reduction in annual nutrient load discharged to waterways via stormwater by 2030



Zero waste city

- **70** per cent recycling and recovery of residential waste from the local government area by end June 2021
- **70** per cent recycling and recovery of commercial and industrial waste from the local government area by end June 2021
- **80** per cent recycling and recovery of construction and demolition waste from the city by end June 2021



Active and connected city

- **33** per cent of trips to work during the AM peak undertaken by walking by 2030, by city residents
- **10** per cent of total trips made in the city are undertaken by bicycle by 2030
- **80** per cent of trips to work during the AM peak are undertaken by public transport by 2030, by city residents and those travelling to Central Sydney from elsewhere
- **30** per cent of city residents who drive (with an unrestricted drivers licence) are members of a car sharing scheme by 2030



Green and cool city

- The average total canopy cover is increased by **50** per cent by 2030 (from 15 to 23 per cent), and increased by **75** per cent by 2050 (to 27 per cent), from a 2008 baseline

2. Highlights

Local Government Area

Low Carbon City



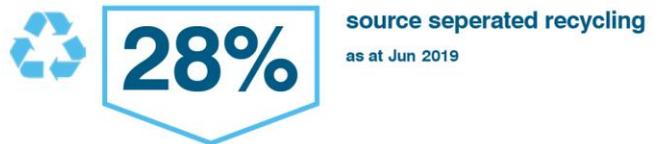
Water Sensitive City



Active and Connected City



Zero Waste City



City of Sydney Operations

Low Carbon City



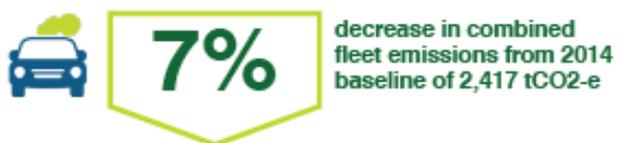
Water Sensitive City



Solar Power



Fleet Emissions



Carbon Neutral



Green and Cool City

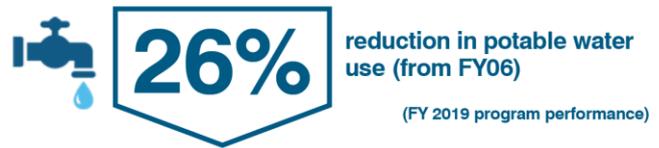


Zero Waste City



Delivering to the community

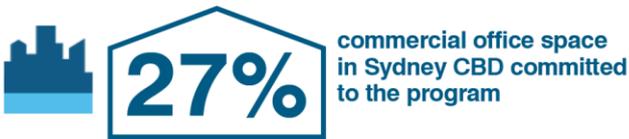
Better Buildings Partnership



Sustainable Destination Partnership



CitySwitch Green Office



Smart Green Apartments



Number of environmental performance grants





3. Low Carbon City



What our cities do to address climate change sets the agenda everywhere for communities and governments to promote innovation and solutions to achieve a net zero future.

In *Sustainable Sydney 2030*, we set a 2030 target to reduce emissions both across the city and in our operations by 70 per cent below 2006 levels. In our Environmental Action 2016-2021 Strategy and Action Plan, we have strengthened our renewable energy targets for both our own operations and in our local government area, extending our target to net zero emissions by 2050.

These Council endorsed targets and actions are represented by a waterfall chart that outlines organisational emissions and the anticipated results of actions that will be taken in order to achieve the 2021 target of 44 per cent reduction. (Chart 2)

The City's 'Asset Environmental Budget' (AEB) translates operational carbon emissions targets into a detailed plan. The AEB is incorporated into the [Resource Plan](#) to promote transparency in monitoring of our emissions performance, timely decision making at a strategic level allowing the

organisation to stay on track, and visibility of successful reduction measures.

City of Sydney to go 100 per cent renewable

The City of Sydney will further slash its greenhouse gas emissions by using 100 per cent renewables to meet its grid electricity needs, from July 2020. The renewables commitment endorsed by Council in March 2019 will see the City's operations cut emissions by around 18,000 tonnes a year – equivalent to the power consumption of around 4,000 City households.

The City will purchase renewable power from Sapphire wind farm in the New England area, Bomen solar farm near Wagga Wagga and the community owned Shoalhaven solar farm.

Using 100 per cent renewable electricity is essential to achieve our commitment to reduce organisational emissions by 70 per cent, well on the way to net-zero by 2050.

More broadly, the shift to renewable energy in the electricity sector is happening much faster than anyone imagined as the cost of new renewable energy continues to fall. The City estimates it may save up to \$500,000 a year (compared to previous electricity bills) by sourcing its grid electricity from renewable energy. With the recent declaration that climate change should be treated as a national emergency, this is another way in which we can demonstrate that we lead by example, to inspire local residents and businesses to take action themselves.



City of Sydney is a founding member of BRC-A



Business Renewables Centre Australia (BRC-A) provides a membership platform to simplify, streamline and accelerate corporate purchasing of large-scale wind and solar energy and storage. The City of Sydney is one of the founding members of this important organisation, along with over 60 other organisations, including councils, project developers and some of Australia's best known and biggest companies.

Working with its partners, the BRC-A will drive best practice principles for negotiating and delivering, and eventually standardising corporate renewable power purchase agreements (PPAs) that reduce costs for purchasers, deliver fair returns for developers and financiers, and contribute to local and regional economies.

"It just goes to show that switching to renewable energy is a sound business decision, and one that is being considered in boardrooms and planning meetings all around Australia," said Monica Richter, Project Director for BRC-A."

The BRC-A website has been launched in Sydney and Melbourne.

Net Zero and 100 per cent Renewable Energy Commitments



The City has set targets in line with what is necessary at the global scale to avoid the worst impacts of climate change. We all need to contribute to this outcome and the large and increasing number of organisations making these commitments is testament to the new opportunities from a clean economy.

ClimateWorks Australia has identified that 25 per cent of Australia's largest banks are working towards setting emissions targets which are consistent with a net zero pathway for both their operations and their investment and lending activities and almost half of Australia's largest listed property companies have made commitments to reduce greenhouse gas emissions that closely align with the Paris Climate Agreement.

See https://www.climateworksaustralia.org/resource_category/tracking/

After only 1-year having an Australian presence, many prominent Australian companies - including all of the big-four banks - have signed up to the RE100 program to use 100 per cent renewable energy, many by 2025 or sooner.

The City acknowledges leading organisations operating in our area who are using renewable energy and committing to net zero emissions targets. (Please let us know if your organisation is not shown here.)

Timeframe	Organisation	Commitment
Now	GPT	Signs Net Zero Carbon Buildings Commitment
	Bank Australia	100 per cent renewable
	Frasers Property Australia	First carbon neutral certified building. All base buildings certified by 2020
	Allens, ANZ, APN Outdoor, CBRE, Dexus, Frasers Property Australia, GPT, JCDcaux, NAB, Pangolin, PWC, Sydney Opera House, Westpac, WWF	Certified carbon neutral
	UNSW	100 per cent renewable
2025	City of Melbourne	100 per cent renewable
	GPT	Wholesale Office Fund net zero by 2021
2030	ANZ, Atlassian, Maquarie Group, NAB, QBE, Westpac	100 per cent renewable by 2025
	Lendlease	Australian Prime Property Fund Commercial (APPFC) net zero by 2025 and Carbon Positive Barangaroo
	AMP Capital	Wholesale Office Fund net-zero property portfolio by 2030.
	Dexus	Net zero property portfolio by 2030
	Frasers Property	Company wide carbon zero target by 2028
2040	GPT	Entire property portfolio to be zero carbon by 2030
	Mirvac	Net zero positive by 2030 and 100 per cent renewable energy buildings
	Commonwealth Bank	100 per cent renewable by 2030
2040	Investa	Net zero organisation by 2040 with science-based targets
	JLL	Reduce emissions from its own offices 80 per cent by 2040



Advocacy

The City has numerous successful partnerships and programs to deliver on our targets, and we are committed to leading by example in our own operations. However substantially more action and policy is required by the NSW and Australian governments to meet the City's target for net zero emissions by 2050 – a target which aligns with Australia's commitment to the Paris Agreement and the NSW government state-wide target.

During the past six months the City has prepared submissions to:

- NSW Productivity Commission - Kickstarting the productivity conversation.
- Energy Security Board - Post 2025 Market Design Issues Paper.
- Australian Building Codes Board - NCC 2022 and beyond scoping study.
- National Energy Productivity Plan Secretariat - Achieving Low Energy Existing Homes draft report.
- National Energy Productivity Plan Secretariat - Achieving Low Energy Existing Commercial Buildings draft report.
- NSW Government - Energy Savings Scheme (ESS) 2018-19 Rule Change Consultation Paper.
- Parliament of New South Wales - Sustainability of Energy Supply and Resources in NSW
- NSW Government - Empowering Homes Market Sounding paper
- Climate Change Authority - meeting Australia's Paris commitments.
- Energy Efficiency Council - Australian Energy Efficiency Policy Handbook update.
- Centre for International Economics (CIE) for the Australian Government - Review of the Commercial Building Disclosure Draft Report.

We continue to work with a range of strategic partners including the Green Building Council of Australia and the Property Council of Australia to demonstrate the benefits of expanding the Commercial Buildings Disclosure scheme. Shared industry recommendations include reducing the threshold of disclosing energy performance; and expanding the scope of disclosure to include office tenancies and other building sectors.



City of Sydney Operations

Carbon Neutral Program

The City has been measuring, reducing and offsetting all of its operational greenhouse gas emissions since 2006/07. In 2011, the City of Sydney became the first of any level of Government in Australia to be certified as Carbon Neutral under the Australian Government Climate Active program (previously called the National Carbon Offset Standard).

The City remains carbon neutral by continuing to implement emissions saving projects, developing a greenhouse gas emissions inventory with independent verification each year, and through the provision of accredited offsets equivalent to 100 per cent of the organisation's emissions.

How we do it

Measure

Any carbon neutral claims must be accurate and verified independently.

Avoid and reduce

The City has been achieving real energy and greenhouse gas emissions savings in our buildings, street lighting, and fleet operations.

Renewable Energy

The City is rolling out solar PV to sites it owns and manages to generate clean and from July 2020 will be purchasing 100 per cent renewable electricity.

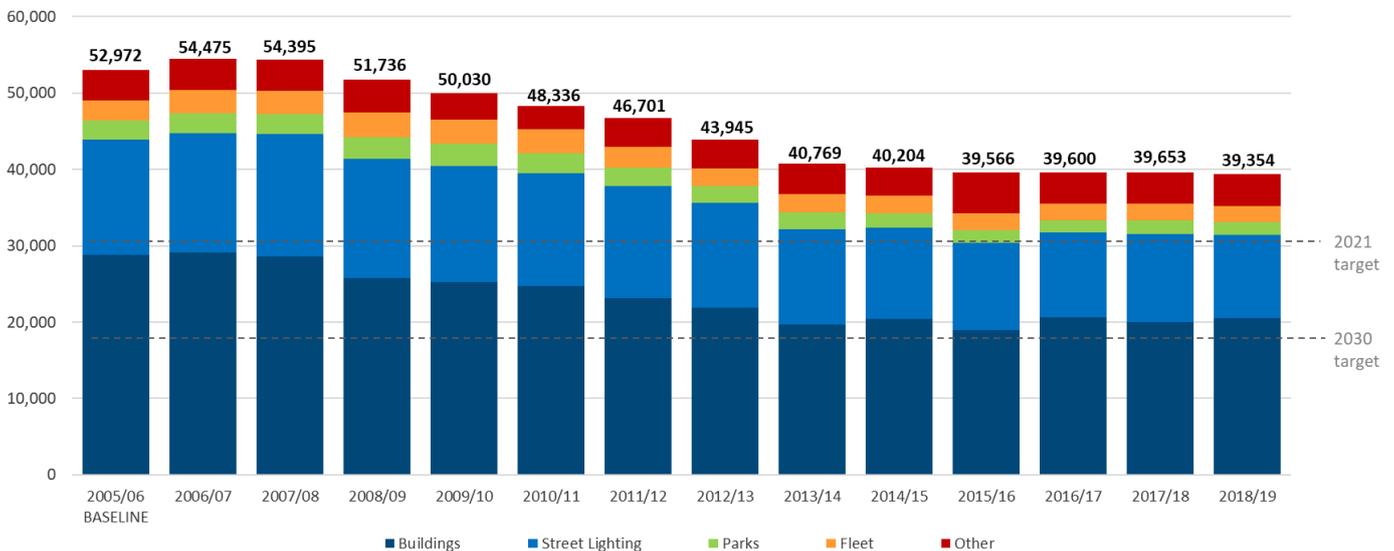
Offset

The City reduces its carbon liability by avoiding and reducing emissions and using offsets for emissions that cannot be avoided.

Relevant links

- [Carbon Neutral Program](#)
- [NCOS documentation](#)

Chart 1: City of Sydney operations greenhouse gas emissions





Our operational targets



Greenhouse gas emissions

- 44 per cent reduction in greenhouse gas emissions by end June 2021, based on 2006 levels
- 70 per cent reduction in greenhouse gas emissions by 2030 based on 2006 levels



Renewable energy

- 50 per cent of electricity demand met by renewable sources by end June 2021

How we are tracking

Annual greenhouse gas emissions

Chart 1 tracks our actual annual operational emissions by category to the Sustainable Sydney 2030 target of a 70 per cent emission reduction against the 2005/06 baseline. Chart 2 incorporates projects currently in progress and their proposed effects. It is anticipated that as projects currently in progress begin to deliver scoped benefits, overall emissions will reduce accordingly.

Emissions from grid electricity are calculated based on the emissions factors, for NSW, currently 0.81 tCO₂-e/MWh for scope 2 and 0.09 tCO₂-e/MWh for scope 3 emissions. Greenhouse gas emissions are calculated using National Greenhouse Factors².

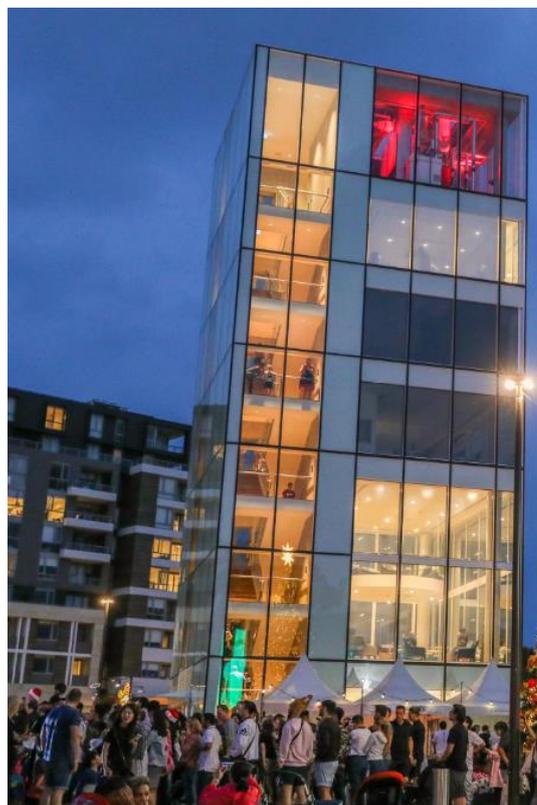
The table below describes the sources for the annual operations greenhouse gas emissions data. For more information, see [Appendix 1: Data Management Plan](#).

Title	Source
Buildings, parks and street lighting	SMART (Sustainability Management and Reporting Tool)
Fleet	Fleet services fuel consumption data.
Other GHG	Various systems are used to collect emissions from other business activities such as contractor fuel, waste, flights, taxi journeys and refrigerants.

Energy consumption data

The table below shows energy consumption data for the organisation. It is important to note that while the City's total energy consumption has been increasing, total emissions have decreased due to more renewable energy in the grid. The City will focus on new opportunities to improve energy efficiency and the new procurement of renewable energy to meet energy and emissions targets.

Organisation	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline (Jun 2016)	42,427	21,894	174,631
Last Year (Dec 2018)	31,139	77,424	189,524
Most recent (Dec 2019)	30,585	77,013	187,120
Difference (baseline)	-11,842 (-28%)	+55,119 (+252%)	+12,489 (+7%)
Difference (last year)	- 553 (-2%)	+5,210 (+7%)	-2,404 (-1%)



² <http://www.environment.gov.au/climate-change/climate-science-data/greenhouse-gas-measurement/publications/national-greenhouse-accounts-factors-july-2018> .



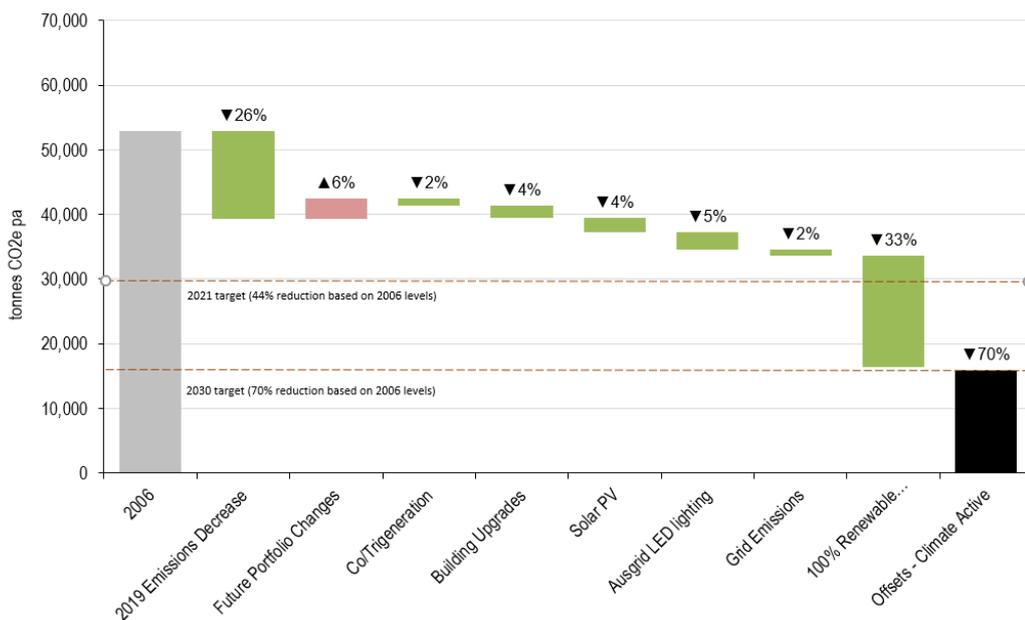
How we will get there

As at June 2019, the City has a verified emissions reduction of 26 per cent from the 2006 baseline. The chart below shows the initiatives that the City has undertaken and the estimated contributions of the programs we will implement across our operational portfolio to exceed the target of reducing our emissions by 44 per cent by 2021. The commitment to 100 per cent Renewable Electricity will enable the City to be on track to achieve the 70 per cent reduction of emissions by 2021. We will maintain our certified carbon neutral status each year through the purchase of verified offsets for those emissions we cannot eliminate, as we have since.

Chart 2: City of Sydney operations greenhouse gas emissions targets to 2021. Estimated contribution of initiatives.

City operations GHG target to 2021

Forecast Jan 2020



Completed Initiatives – 26 per cent reduction achieved

The result since 2006 has been achieved by:

- Portfolio change (+3 per cent) over time including additional facilities Ian Thorpe Aquatic Centre, 343 George Street, Sydney, and Surry Hills Community Centre. In recent years Green Square Community and Cultural Precinct, Green Square Library and Plaza, Perry Park Recreation Centre and Darling Library have come online.
- Energy efficiency programs, solar installed to date, improved energy measurement and monitoring, behaviour changes and small works.
- Annual weather and changes in emissions factors.

Initiatives to be completed by 2021

The 2021 emissions target remains at 44 per cent reduction from the 2006 baseline and due to the City's commitment to 100 per cent renewable electricity the current forecast is a 68 per cent reduction.

- Future portfolio increase (+6 per cent) assumes the expansion of the City's property portfolio for community and operational purposes. Including Gunyama Park Aquatic Centre expected to open in 2020 and increases through developer contributions to the City including Greenland Tower Creative Hub and 178-186 George Street.
- Co/Trigeneration (-2 per cent) reductions will be accomplished through the operation of co/trigeneration facilities at Town Hall House, Cook and Phillip Park Aquatic Centre, Ian Thorpe Aquatic Centre.
- Building upgrades (-4 per cent) reflects estimated savings from efficiency upgrades in the most resource intensive properties via the Major Properties Efficiency Project (MPEP).
- Solar Photovoltaics (PV) (-4 per cent) on City properties (can deliver 15 per cent of electricity demand if battery storage provides a cost effective solution and the City can take advantage of virtual net metering between our sites).
- Ausgrid LED lighting (-5 per cent) The City is working with Ausgrid to do an accelerated upgrade of lighting to LED.
- Grid emissions (-2 per cent) estimate reductions from greening of the grid.
- Renewable energy - for electricity (-33 cent) to be purchased by the City directly from a renewable project through a Power Purchase Agreement



Solar Exports under National Carbon Offset Standard



The City of Sydney has been certified as carbon neutral under the National Carbon Offset Standard program since 2011. Over this period the City has installed around a megawatt of solar panels to its sites. Where these solar systems export clean power back to the grid, it is possible to claim the emissions savings from onsite solar exported to the grid where appropriately metered. This ability to claim emissions savings potentially encourages larger solar installations which cost-effectively contribute to the City's renewable energy and emissions targets.

Environmental Management System (EMS)

The City continues to improve its environmental management processes, in line with the ISO14001 standard and to ensure all City staff are aware of their environmental management responsibilities. The City commenced delivering its own Sustainability at the City training sessions, where participants collaborate to identify ways they can work sustainably both at work and at home; from our business as usual activities, through to day to day micro decisions.



Fleet

The new Alexandra Canal Depot in Alexandria is a state-of-the-art, purpose-built depot which is home to the new Fleet Workshop. Fleet Services moved to the site in March 2018. The site achieved a five-star Green Star Design rating, and utilises low-energy lighting along with solar and battery technologies.

Fleet emissions continue to contribute approximately 7 per cent of the City's total emissions and continuing efforts at emissions reductions focus on low-risk and eco-driving strategies. Low-risk driving practices almost always contribute to lower fuel or battery use and fewer emissions.

Building upgrades

Ultraviolet (UV) Modulation for Aquatic Operations

The City has installed new technology UV control systems for the indoor pools at Cook and Phillip Park Pool. This new equipment allows the UV to be controlled using water chemistry parameters rather than running continuously and then sterilises the water to comply with requirements. The UV Modulation units were installed in July 2019 and from the initial data gathered they

have exceeded the initial estimated outcomes by more than three times the savings. The units at Cook and Phillip Park Pool will be saving 85 tonnes of greenhouse gas emissions per year and energy worth \$15,000 per year. Two UV Modulations units will also be installed at Ian Thorpe Aquatic Centre in early 2020 which will improve indoor pool energy efficiency even further.

Project Updates

Solar PV and Energy Storage

The City is installing solar PV (photovoltaic) panels at multiple Council sites including office buildings, civic halls, libraries, works depots, community centres, sporting fields and other venues.

Three major installations totalling up to 400 kW were added during July-Dec 2019

The City also hosts the first major customer-based battery storage facility in Sydney. In collaboration with TransGrid, a 500 kWh Lithium Ion battery system has been installed at the new Alexandra Canal depot. The battery facility allows the depot to use more of the renewable energy generated via the massive on-site solar PV installation (if there was no batteries, more on-site energy would be exported to the grid).

Trigeneration

The trigeneration system at Town Hall House has been installed and supplies low carbon electricity as well as heating and/or cooling to both Town Hall House and Sydney Town Hall.

The City regularly monitors the system and investigates for further fine-tuning and improvements.

It is expected that the system will cut carbon emissions by more than 40,000 tonnes over its 30-year lifetime, producing less than half the emissions than power from coal-fired plants that supply the majority of Sydney's electricity.

Cogeneration at Ian Thorpe Aquatic Centre

Installation and commissioning of the new cogeneration plant at ITAC has been completed. The cogeneration is fully operational now and operates between 6:00am and 9:00pm daily. The project is expected to achieve up to 600 tonnes of CO₂ emission reduction per annum.

Cogeneration at Cook + Phillip Park Aquatic Centre

The City has signed a contract to install new heating and cooling equipment. The project includes a new 250 kW cogeneration unit, a new chiller with heat pump, new heat pumps and new boiler. The project will be completed in calendar year 2020 and will deliver up to 700 tonnes a year of emission reductions in total.



Geopolymer Trial Update



The City has been working with the Cooperative Research Centre (CRC) for Low Carbon Living to trial the use of Geopolymer, a sustainable concrete blend cement used in the production of concrete.

The production of cement globally accounts for between five per cent and seven per cent of man-made carbon emissions.

Throughout the past century Portland cement has been the standard industry product to bind the materials that are used in the manufacture of concrete.

Geopolymer concrete blend will use Geopolymer cement as a substitute for Portland cement. Geopolymer cement generates only 180 kilograms of CO₂ per tonne, compared to 900 kilograms used in Portland cement production.

In March 2019, the City commenced the trial of Geopolymer concrete on a section of Wyndham Street, Alexandria. The trial involves the reconstruction of two sections of concrete road, one section using traditional concrete and the other using the Geopolymer product.

The CRC's UNSW-based researchers will monitor the performance of the Geopolymer concrete.

The CRC will submit the findings to Standards Australia to develop industry codes for commercial production and procedural guidance for the use of Geopolymer concrete in pavements and roads.

Plastic, Glass and Recycles Asphalt in Roads



Downer EDI Works Pty Ltd (Downer) provides road renewal services to the City under the Asphalt Road Services Contract and has developed an asphalt product known as Reconophalt.

The product is an innovative asphalt product that contains high recycled content from materials such as soft plastics, glass, toner, silt removed from stormwater pits and recycled asphalt.

City staff are working with the South Sydney Regional Organisation of Councils (SSROC) and other councils across Australia to trial the product. If the product is successful, the use of the recycled material will become mainstream across the industry.

Downer has approval from the Environmental Protection Authority to trial the product.

Reconophalt is a collaboration between Downer and Close the Loop, with soft plastics supplied to Close the Loop through the RedCycle and Plastic Police collection programs.

Every two-lane kilometre or road paved with plastic and glass modified asphalt will account for approximately:

- 500,000 plastic bags
- 165,000 glass bottles
- waste toner from 12,000 printer cartridges

Example locations for the Reconophalt trial include Chalmers Street, Surry Hills and Pine Street, Chippendale. The resurfacing in these streets equates to around 270 metres of two lane road.

The results of the trial will inform the specification for the use of waste material in asphalt in Australia and internationally. If successful, the City will then include this as a standard product in the Sydney Streets Technical Specification.



Alexandra Canal Depot demonstrates climate positive operations

The Solar PV-Battery installation at Alexandra Canal Depot has been self assessed by the City to demonstrate that the Depot operation exports renewable energy, making it climate positive for FY19.

The assessment considers all power drawn from and returned to the grid in addition to gas consumption at site based on equivalent tonnes of carbon. The key benefits of the installation include reduction in both grid demand and energy costs, as well as significant savings in energy and reduction in greenhouse gas emissions.

The substantial net surplus of power returned to the grid means that the City is not making payments for electricity charges on the energy bill for the site. On days of high electrical demand, Transgrid operates the battery manually to fully discharge the energy to ease the load on the electricity network. As a public asset, this building provides an exemplar to all other buildings of similar use.

Alexandra Canal Depot has been nominated as a finalist in the Development Innovation Award category by Property Council of Australia 2020 Innovation and Excellence Awards, for the Solar PV-Battery operation and also achieving a 5 Star Green Star Design and As Built Rating. [List of 2020 Finalists.](#)

Green Globe Awards

Green Square town centre was nominated as a finalist in the Built Environment Award category for achieving a 6-Star Green Star Communities Rating at the 20th NSW Green Globe Awards. Green Globe Awards are NSW's premier environmental awards, celebrating collaboration, partnerships and projects that encourage others to achieve positive change and protect our environment. This nomination further endorses Green Square as an outstanding model for sustainable urban renewal.



Advocacy LED streetlights

The City of Sydney aims to be the first local government area in Australia to replace all public lighting in its local area with energy-efficient LEDs. Having complete the roll-out of LEDs on City-owned lighting poles, the City is now partnering with Ausgrid (our local electricity utility) to fast track the upgrade of utility-owned street lights.

The Ausgrid upgrade involves replacement of conventional street light fittings (e.g. mercury vapour, compact fluorescent, sodium) with more energy-efficient LED street lights.

Stage One involves 3,500 utility-owned street lights on residential streets and other minor roads. This will reduce emission by about 1,000 tonnes a year. Stage Two involves 6,500 utility-owned street lights on main roads and in places with high public lighting levels (e.g. commercial centres). This will reduce emissions by another 2,400 tonnes a year.

The project is expected to be a third of the way through by June 2020 and completed by June 2021. When both stages are complete, emissions will have been reduced by about 3,400 tonnes a year. The City will also save over \$1 million in annual operational savings, thanks to reductions in light bulb failures (LEDs last over 10 years) and in electricity use.

As noted, the Ausgrid upgrade program builds on the success of an earlier initiative to replace City-owned street light fittings with LEDs. The City was the first local government area to install energy-efficient LED street lights on a large scale. Via a \$7 million project, we replaced over 6,000 City-owned street and park lights between 2012 and 2016. This reduced emissions by over 2,000 tonnes a year and reduced operational costs by about \$800,000 a year.

More information about the Ausgrid street light upgrade program is on the Ausgrid website at:

<https://www.ausgrid.com.au/In-your-community/Streetlights/LED-Streetlight-Rollout>



The local government area

Local government area targets



Greenhouse gas emissions

- 70 per cent reduction in greenhouse gas emissions by 2030 based on 2006 levels
- Net zero emissions by 2050



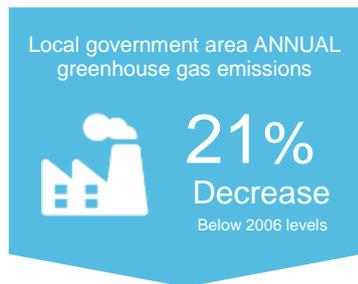
Renewable energy

- 50 per cent of electricity demand met by renewable sources by 2030³

How the local government area is tracking

Annual greenhouse gas emissions

Chart 3 tracks actual emissions from the local government area. Note that as at 2017-18 emissions have reduced by 21 per cent since the 2006 baseline. Over the same period there have been 45 per cent more residents⁴, 22 per cent more jobs and more than 50 per cent growth in the economy. This clearly shows that energy and emissions have been decoupled from growth.



The City recently updated the way we report emissions in order to become compliant with the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)⁵ – the new international benchmark for reporting city emissions.

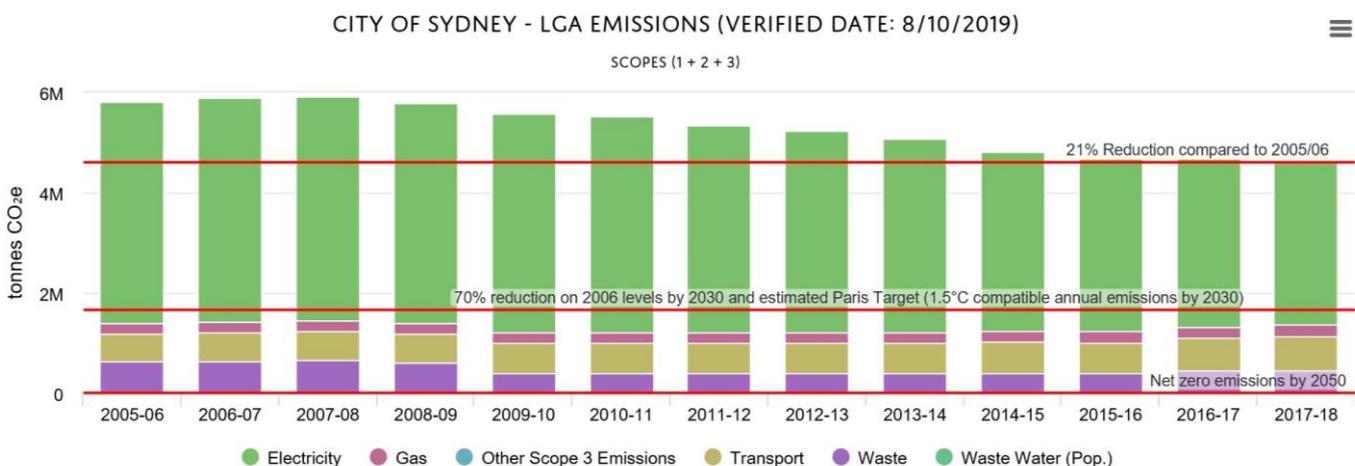
Energy consumption data

The table below shows energy consumption data for the LGA. Please note, LGA data is shown to June 2018, which is the most up to date data available. The City is advocating to Ausgrid to provide this data much sooner after the financial year.

LGA	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline	4,159,436	3,038,529	18,012,502
Most recent (to June 2018)	3,417,973	3,436,993	15,741,694
Difference	-741,463	+398,464	-2,270,805
Difference (per cent)	-18%	+13%	-13%

For more information see [Appendix 1: Data Management Plan](#).

Chart 3: Local government area greenhouse gas emissions



³ The renewable electricity target incorporates renewable electricity both within the grid and classified as additional to the grid.

⁴ Based on 2017/18 LGA population data for residents/workers/visitors compared to 2005/2006 baseline.

⁵ <http://www.ghgprotocol.org/city-accounting>



How we will get there

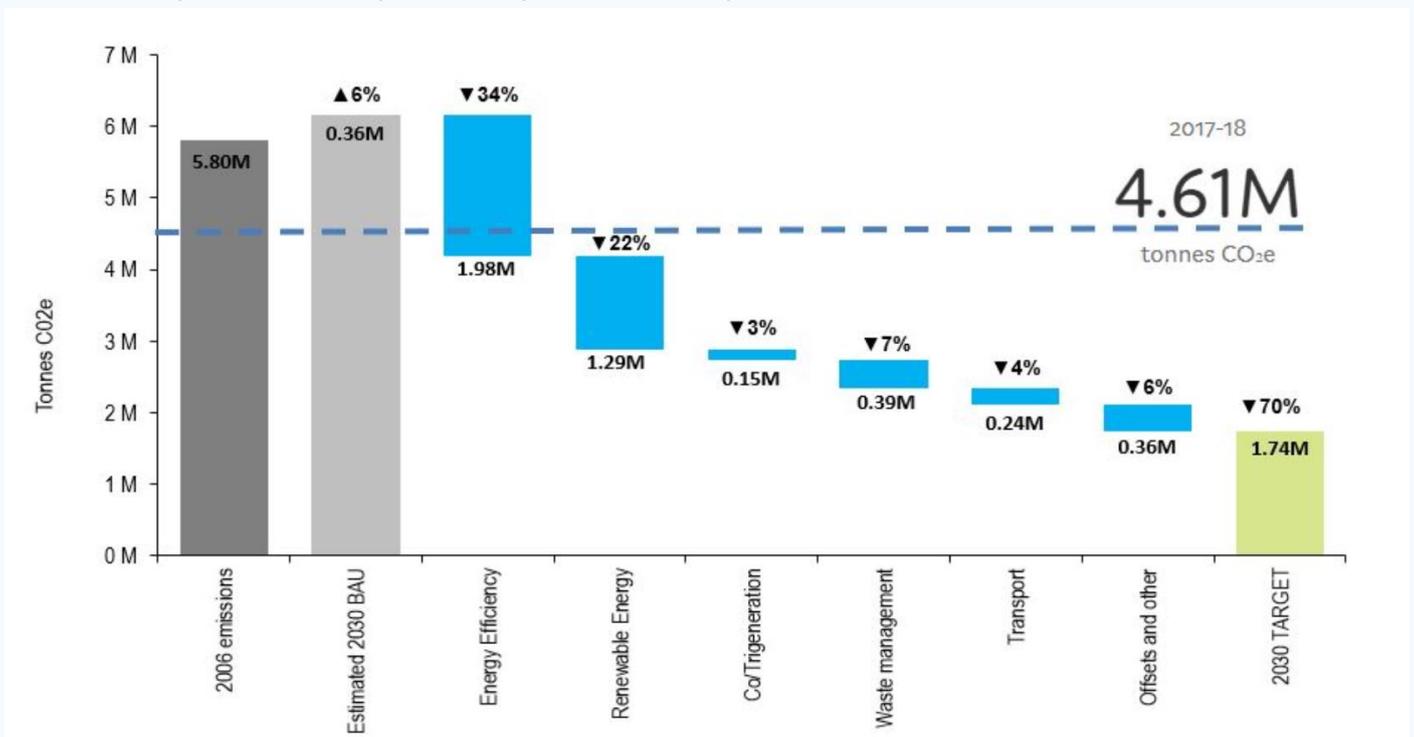
Chart 4 shows the estimated contributions of the initiatives we expect could lead to reduction of the city’s emissions by 70 per cent by 2030.

Since 2007 total greenhouse gas emissions across the local government area have continued to fall and this is despite significant growth in the economy (32 per cent), the number of new residents (25 per cent) and businesses, new developments and other economic indicators.

Most greenhouse gas emissions in the City of Sydney local government area are due to buildings. Emissions are falling due to improved energy efficiency awareness and practices, and the increase of renewable energy in the grid and locally. However, as buildings become more efficient, and as more people live and work in the area, emissions from transport are growing as a proportion of the total.

Achieving the target will require a major increase in focus on improving the energy efficiency of new and existing buildings, and increasing the amount of renewable energy locally and in the grid, especially as Australia’s aging coal generation fleet reaches end of life. The electrification of transport, powered by an increasingly renewable grid will make a notable contribution to reducing emissions from transport.

Chart 4: Local government area greenhouse gas emissions target. Estimated contribution of initiatives.



- Energy efficiency (-34 per cent) calculated on the basis of existing and new state and federal government policies and programs
- Renewable energy (-22 per cent) reflects 50 per cent of electricity being provided by renewable sources
- Co/trigeneration (-3 per cent) is based on historic average installation rates
- Waste diversion/advanced waste treatment (-7 per cent) reflects savings from avoided landfill emissions
- Transport (-4 per cent) emissions reductions would be realised by use of vehicles with lower emissions intensity, and by changing the mode split to move away from car travel and towards public transport and walking and cycling
- Offsets and future opportunities (-6 per cent) include savings that could be made from transport, waste, renewable energy, energy efficiency, regulatory and/or technological improvements, or other opportunities. Offsets could be purchased by those entities generating emission

High Voltage Electricity Data

The electricity distributor has provided community-wide high-voltage (HV) electricity data for City of Sydney local government area. HV electricity is now around 14 per cent of total LGA electricity however we do not include this in the City’s official GPC community inventory as it is unclear how reliable or replicable this data is due to confidentiality reasons. While electricity usage is generally declining as buildings and equipment become more efficient, HV electricity is actually on the increase - most likely due to increasing demand for rail public transport and data centres. More renewable energy supply will be key to reducing emissions from these sectors on a trajectory to net zero.



Take action

Sydney needs to accelerate its transition from a city powered by coal, to a low-carbon city, and ultimately to a net zero city by 2050. On paper, these are straightforward targets, however the path to becoming net zero is complex and costly, even for the most motivated resident or organisation.

The 2019 Climate of the Nation Report, commissioned by the Australian Institute, reported that 81 per cent of Australians are concerned about climate change. This sentiment was echoed at a local level through the City's Sustainable Sydney 2050 engagement report. Our community express a desire to be part of the solution but they are looking for more information from trusted sources on the practical actions they can take.

One way that we have been addressing this community need, and to achieve 50 per cent of electricity demand from renewable sources by 2030 through voluntary action, is through broad scale marketing.

Here are some examples of the materials the City has produced to educate our community about renewable energy:

- Development of the [Renewable Energy Help Centre](#) – an online knowledge base covering everything from solar panels to power purchase agreements.
- A short [video](#) (Facebook login required) and article educating students about climate action beyond the Fridays for Climate marches.
- An illustrated [video explaining how GreenPower](#) works and why it's the quickest and easiest way to switch to renewables at home and work.

This is an ongoing program of marketing which is planned to be in market until 2022.

Relevant links

- [Sustainable Sydney 2030](#)
- [Energy Efficiency Master Plan – improving energy productivity: 2015-2030](#)
- [Decentralised Energy Master Plan - Renewable Energy: 2012-2030](#)
- [Carbon Neutral Program](#)

Advocacy

Standards for urban renewal precincts

Two upcoming urban renewal precincts in our local area – Central to Eveleigh/Waterloo, and the Bays Precinct – present the opportunity to deliver world-leading environmental sustainability outcomes. The NSW state government will be redeveloping these sites, and the City will advocate for high environmental standards for these areas as they will be bringing tens of thousands of new residents into our LGA – and we want their environmental footprint to be as small as possible. This is a key way for the State Government to apply its own target for net zero emissions across the state by 2050.

Advocacy

Increase the building code targets

BASIX and the National Construction Code are the mandatory planning instruments that set the minimum standard for energy and water efficiency of new buildings. The BASIX standard was set 12 years ago and has not kept pace with new technology and falls short of current best-practice. Standards must be raised now to ensure we don't build more new poor-performing buildings that will lock-in carbon emissions for decades to come. The NSW government needs to increase BASIX targets for minimum environmental performance in residential buildings. The National Construction Code also needs to develop a net zero trajectory with clear review and update milestones. The City is a member of the Australian Sustainable Built Environment Council (ASBEC) which has prepared a major report called *Built to Perform: An Industry Led Pathway to a Zero Carbon Ready Building Code* www.asbec.asn.au/publications/ - this will provide a good basis for City advocacy.



4. Water sensitive city



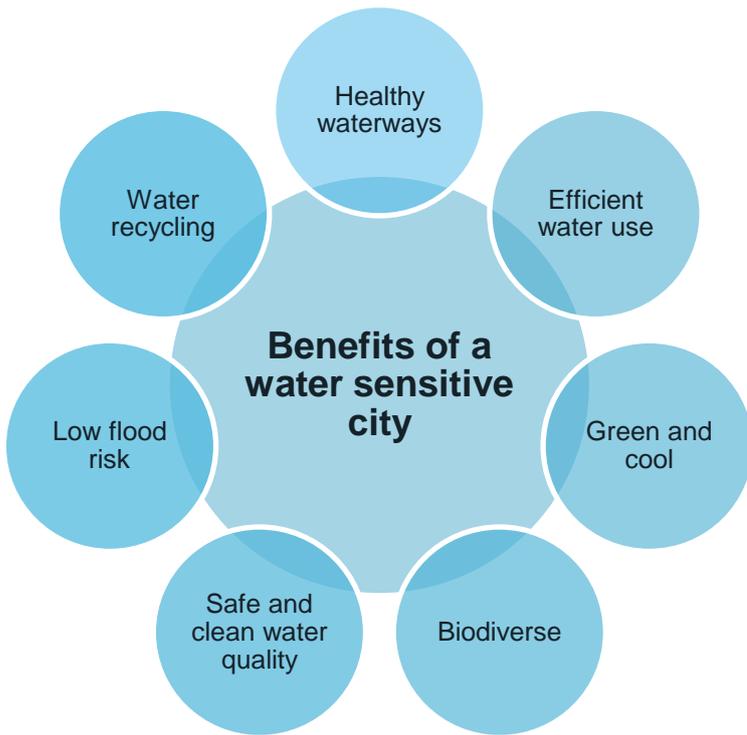
Water is crucial to the social, economic and environmental wellbeing of our city. Sydney is under pressure from rapid population growth and urban densification. Water sensitive approaches help deliver a more sustainable and liveable city with green public spaces and healthy waterways.

Greater Sydney in Level 2 water restrictions

As drinking water storage levels in the Greater Sydney region continue to fall, Sydney Water responded with enacting Level 2 water restrictions for residents and businesses on 10 December 2019.

Water is a limited and natural resource. Greater Sydney's population is growing rapidly and creating new and increased pressure on our water supplies. To add to this pressure, urbanisation is impacting on our local communities' water needs and waterway health. An increasingly variable and changing climate means we can't know with certainty how much rainfall will support our water supply system in the future.

The City continues to use alternative water sources including rainwater, groundwater and stormwater; as well as investigate recycled wastewater, which is non-rainfall dependent.



Advocacy

Recycled Water

Recycled water becomes even more critical as Sydney’s drinking water supplies continue to diminish through the ongoing drought. However current water pricing and policy makes investment in recycled water schemes complex and expensive. This is why the City of Sydney continues to advocate to the NSW Government for changes that will promote investment, innovation and competition in the recycled water market.

The City commended IPART on positive changes proposed during its recent review of recycled water prices for public utilities. These changes begin to recognise the external benefits of recycled water including enhanced liveability and improved environmental outcomes.

To drought proof Sydney, the City will continue to advocate for further essential reforms that encourage investment in recycled water schemes.

Our operational targets



Water consumption

- Zero increase in potable water use by end June 2021 from 2006 baseline, achieved through water efficiency and recycled water
- Annual potable water use of 180L/m² of irrigated open space by end June 2021

City of Sydney operations

Why reduce our potable water use?

The predicted impacts of climate change and population growth will strain our potable water supplies, with potable water demand in the local government area estimated to be 30 per cent higher in 2030 than in 2006.

To respond to this, the City is transforming to be a water sensitive city that is resilient, cool, green and productive. This will aim to drought-proof our city so we can use water when it is hot and dry. Our waterway health will be improved, and non-potable water supplies will be safeguarded for use in the next century and beyond.

What is potable water?

Potable water, also called drinking water, is water suitable for drinking, cooking and personal bathing.

What is non-potable water?

Non-potable water is not the same quality as drinking water and can be used for purposes such as irrigation, toilet flushing and dust suppression.

What makes up City operational water use?

Type	Includes
Parks and Public Domain	Parks, reserves, playgrounds, street closures, garden beds and nature strips. Also included are water features that are in the public domain.
Commercial buildings	Income producing buildings, such as Customs House, parking stations and retail shops. It also includes properties acquired for strategic purposes that do not fall into the above categories
Community buildings	Includes childcare centres, libraries, community centres and town halls.
Aquatic facilities	Includes Victoria Park Pool, Andrew (Boy) Charlton Pool, Cook and Phillip Park Aquatic Centre, Ian Thorpe Aquatic Centre and Prince Alfred Park Pool.
Operations	Depots and workshops



The City of Sydney’s approach

Our approach to meeting our water targets and becoming a water sensitive city involves:

- Using less water through changes in behaviour and using water efficient fixtures and fittings
- Capturing alternative water sources to recycle and use for non-potable purposes
- Connecting our parks and buildings to alternate water supplies, such as harvested stormwater and rainwater
- Reducing stormwater pollution, minimising local flood risk, enhancing greening and urban cooling through retrofitting the stormwater management network with raingardens, wetlands, swales and gross pollutant traps
- Upgrading irrigation systems to be more efficient
- Improved data management and monitoring to identify, investigate and rectify anomalies in water consumption.

How we are tracking

Annual water consumption

As at December 2019, the City operations potable water use increased by 10 per cent from the 2006 baseline, from 431 to 474 megalitres per annum (MLpa).

City of Sydney operations - water use comparison	
Baseline (FY 2006)	431 ML
Current (FY 2019)	474 ML
Difference (ML)	43 ML
Difference (%)	10%

For more information see [Appendix 1: Data Management Plan](#)

The below table summarises the difference between our current and 2006 baseline water use. The data for 2018/19 has been updated which include 1 per cent accruals.

Chart 5 shows our organisation wide water use over the past 5 financial years.

The decrease since the baseline is mainly due to:

- Improvements in water data management via the new utilities management system (SMART) platform allowing us to identify, investigate and address anomalies in water consumption, for example the City uncovered previously unidentified accounts and meters.
- Identifying and rectifying water leaks and high consumption at multiple sites.
- Changes to City’s portfolio (buildings and parks) and high consumption tenant sites.

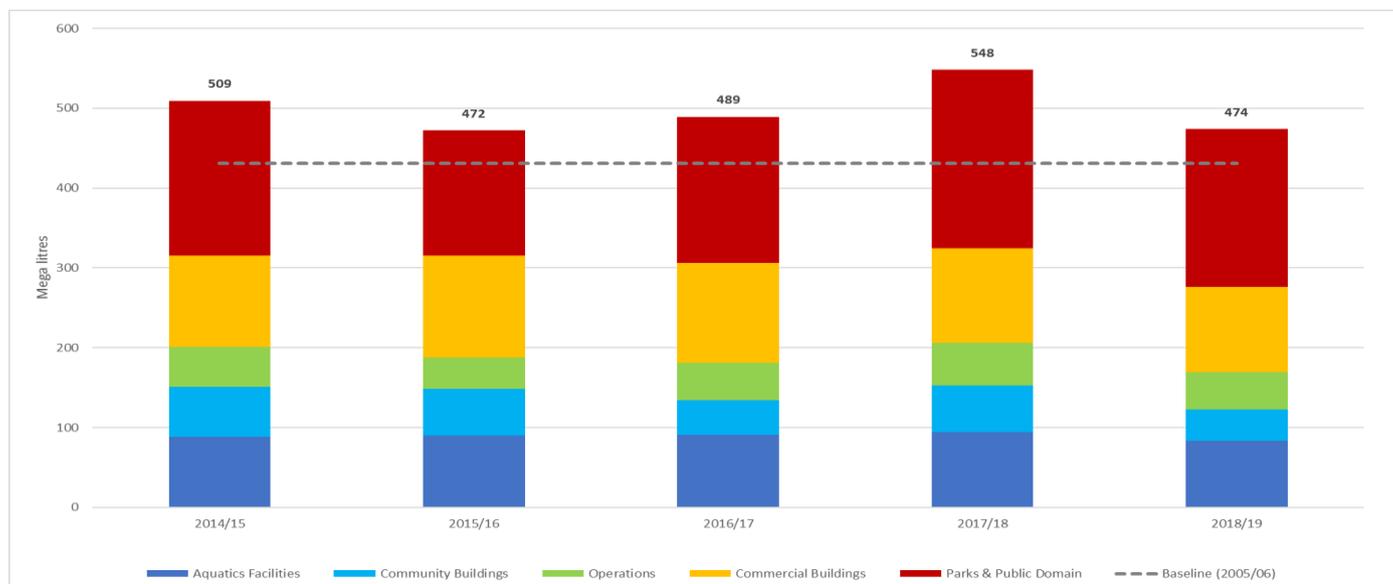


Chart 5: City of Sydney operations potable water use

- All data was sourced directly from Sydney Water and stored within the City’s new data management system SMART.
- Exceptions - Only sites where the City has ‘operational control’ are included. Properties where a whole building is leased and the tenant has full building operations and maintenance obligations, such as the Queen Victoria Building and the Capitol Theatre, are excluded.
- Categorisation method – When allocating multi-purpose City buildings to one of the above categories, the dominant water use type for the reporting period is the determining factor for the reporting period. For example Customs House has office, retail, library and exhibition uses, and is allocated to Commercial Buildings. Over time the categorisation of a property may change depending on the use.

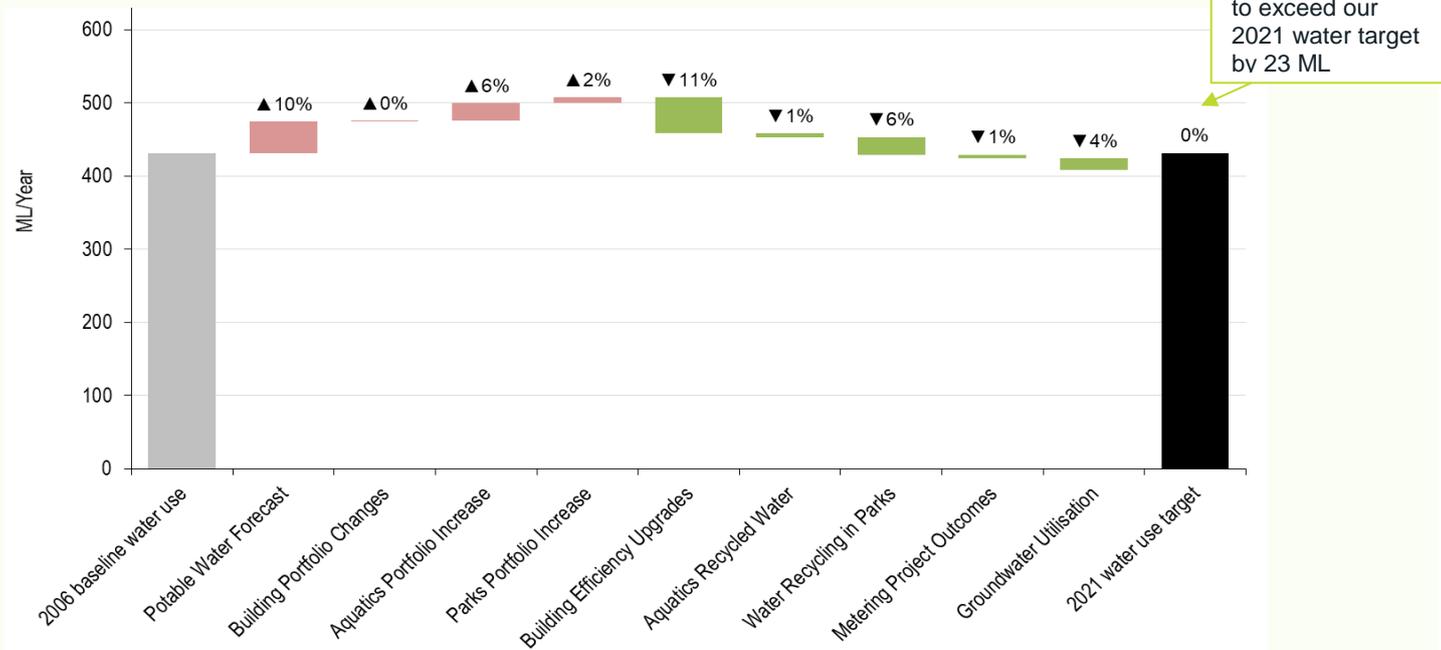


How we will get there

Chart 6 shows the forecast increase in water consumption due to the City’s growing portfolio of buildings, aquatic

centres and parks. It also shows the estimated reductions in potable water consumption associated with projects we plan to implement across our operational portfolio to meet our target to maintain our potable water use at 2006 levels.

Chart 6: City of Sydney operations potable water use target to 2021. Estimated contribution of initiatives.



We are expected to exceed our 2021 water target by 23 ML

Projects

The City has a suite of projects underway to reduce potable water through both efficiency and connection to recycled water through to 2021. These include:

- The Major Properties Efficiency Project (MPEP) has identified 23MLpa potable water savings across the City’s highest 14 water using properties through rainwater harvesting, water efficient fixtures and fittings and facilities’ management actions.
- Condition assessments and upgrades of our building’s rainwater tanks and cooling towers.
- Gunyama Aquatic centre rainwater harvesting system will provide water for pool top up and recycled water from Green Square Town Centre water reuse scheme will be used for toilet flushing, saving a total of 5MLpa
- Recycled water will be supplied to parks (approximately 24MLpa) including Sydney Park and Green Square town centre through stormwater harvesting schemes
- The metering project has been estimated to save 5MLpa through improved detection of leaks and reduced response times for rectification, however these may not be realised until after 2021.

- The City has identified a 16 ML of groundwater that can be utilised by the City to keep our City green through essential irrigation and watering, replacing precious potable water.

Initiatives

In addition to this program of works, updates to the Parks Water Saving Action Plan will further identify efficiency measures, development of alternative water sources, improved management practices, new technologies and improvements to monitoring and reporting.

Our data management working group continues to improve our data management and reporting processes through timely review of water consumption data to identify and rectify anomalies such as leaks; continual review of water data categorisation to ensure we only pay and report on the City’s operational footprint; and development of a comprehensive metering and monitoring program to provide more granular and regular data at sites.

Current outlook

With the implementation of our projects and ongoing initiatives, the City is on track to meet and potentially exceed our potable water consumption operational area target.



Project Update

Water Consumption in Parks

Since 2006, the area of parks and open spaces requiring irrigation in the Local Government Area (LGA) has increased by over 50 per cent. This includes Harold Park, Wentworth Park, Redfern Park, Redfern Oval, Pirrama Park, Harmony Park, Prince Alfred Park, Paddington Reservoir Gardens, Peace Park, Lillian Fowler Reserve, Mary O'Brien Reserve and Coulson Street Reserve.

The City's target for water usage in city parks is 180L per square metre of irrigated space by the end of 2021. In the 2018-2019 financial year, we reported that the City parks and open spaces used an estimated 260L per square metre of irrigated space. However, with improved water meter data being collected in SMART and more accurate asset area data in the City's Corporate Asset Management System (CAMS), there is a need to review the accuracy of our irrigation rate. This will be reported on in the next Green Report.

Response to Drought

Following the introduction of Level 2 water restrictions, and the ongoing drought conditions, the City has been investigating how to further reduce water use in our parks. Where available are continuing to use recycled and bore water to irrigate parks and playing fields, water trees and floral displays, and we have modified maintenance practices to minimise water use.

To help preserve water, the City will turn off many of its fountains and water features, including interactive water play areas.

The City will also be installing signage and messaging on our website to let the community know how we are playing our part in reducing the use of water during the drought

Improving Our Data

The Organisation Wide Metering Project that will start implementation in early 2020 will deliver important benefits for the management of water in Parks, including:

- Sub meters and data logging on our large irrigation systems. This data, combined with more accurate asset areas from CAMS, will be used to more accurately report on irrigation efficiency and fine tune irrigation practices.
- Automated collection of water consumption data at major parks will give much better visibility of how water is being used. More than 90 per cent of water consumption in parks and open spaces will be monitored on a daily basis, or even more frequently. This will help improve the City's system for monitoring and controlling park irrigation, to further drive water efficiency and reduce water consumption where possible.

Financial Year	Actual potable water use (ML)
2006	133
2015	194
2016	157
2017	183
2018	224
2019	197

This table provides estimated water usage numbers as described for chart 5



Project Update

CBD Recycled Water Scheme

As part of the construction of the Sydney Light Rail project, at the request of the City, recycled water pipelines have been installed along George Street between Circular Quay and Central.

This will provide an invaluable opportunity to develop a recycled water scheme and connect the city's highest water demand area with a recycled water source.

It is envisaged that wastewater could be collected in the city and treated to produce recycled water for non-potable uses such as irrigation and cooling tower use.

The recycled water pipelines would be used to deliver recycled water to buildings and parks in the CBD. A recycled water pipeline has also been installed in Wynyard Walk which could potentially link the Barangaroo precinct to the CBD. The recycled water scheme would require approval and a license under the Water Industry Competition Act.

Initially the City plans to connect its own highest water using assets including Town Hall House and Hyde Park.

Existing building owners could also connect their cooling towers and new buildings could connect for all non-potable uses.

By replacing potable water with recycled water, this project has the potential to provide a valuable contribution to the City's target of zero increase in potable water use by 2030 from 2006 baseline.

Project Update

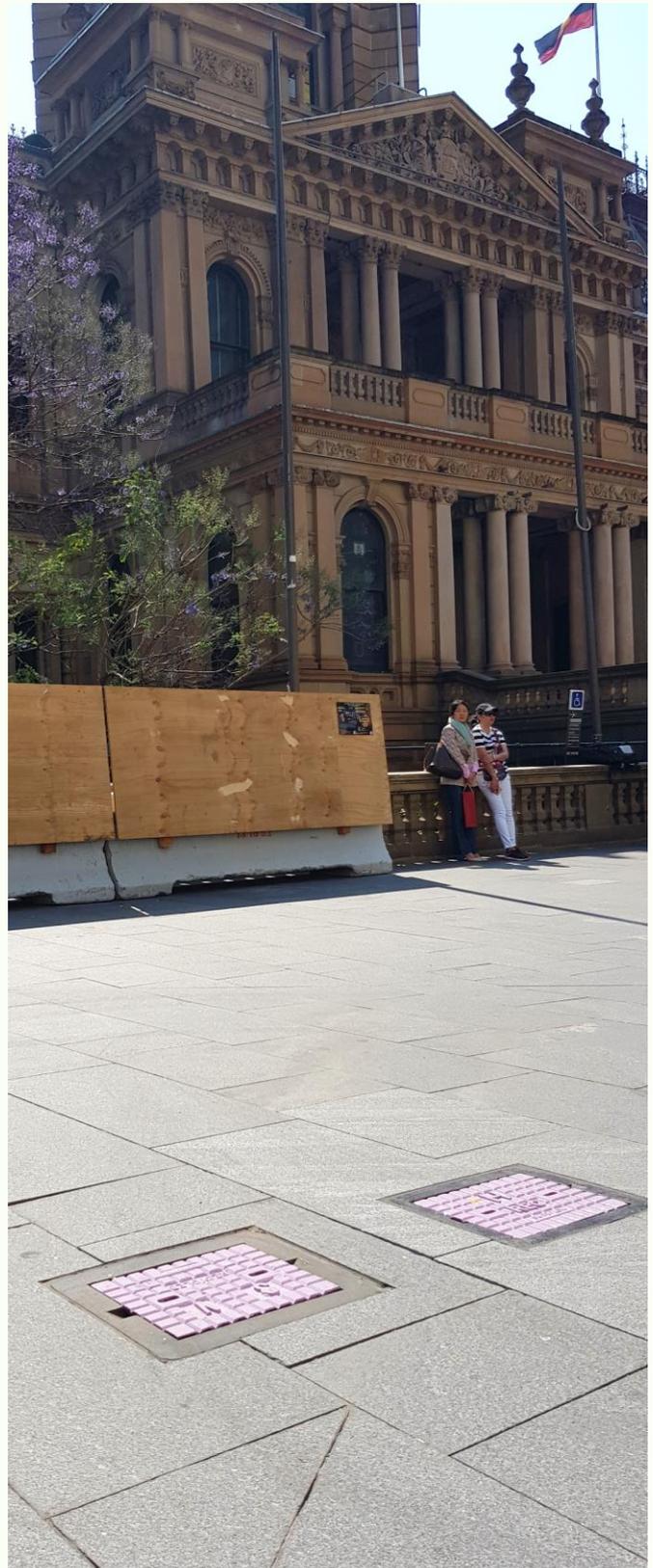
Green Square Water Reuse - Stage 2

The best opportunity to develop water recycling projects in the City of Sydney area is within urban renewal areas because they provide the density and scale required for efficient investment in recycled water infrastructure.

Infrastructure provision can be planned and installed at the time of development, which is cheaper and more efficient than retrofitting.

Redevelopment also allows private water utilities to offer water services across an entire precinct, improving commercial viability. The City is investigating the use of planning controls to encourage the delivery of recycled water services.

The City is developing a utility led water reuse scheme in the Greater Green Square area outside of the town centre. Unlike Green Square Water Reuse Stage 1 which captures stormwater for reuse, Stage 2 will collect locally generated wastewater for treatment and reuse. The development of the Stage 2 scheme has slowed, in part by 2016 changes to water pricing. Current pricing and regulatory barriers in the water sector continue to challenge the development of recycled water schemes such as the one envisaged for Stage 2.





Local government area targets



Water consumption – Zero increase in potable water use by 2030 from 2006 baseline, achieved through water efficiency and recycled water



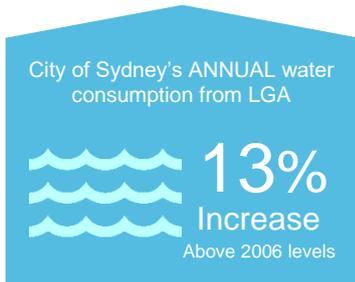
Stormwater quality – 50 per cent reduction in the annual solid pollution load discharged to waterways via stormwater by 2030
– 15 per cent reduction in annual nutrient load discharged to waterways via stormwater by 2030



The local government area

How are we tracking?

Chart 6⁶ shows annual potable water consumption across the city has grown 13 per cent against our 2006 baseline, during which time the city's population has grown at least 45 per cent, jobs have increased 22 per cent and the economy has experienced more than 50 per cent growth⁷. This is an increase of one per cent on 2016/17 consumption data, which is impacted by a dry, hot year.



Water efficiency programs, environmental performance grants and recycled water schemes will continue to relieve pressure on our potable water supplies.

Our policies to incorporate recycled water in new precinct scale developments will assist in keeping our city green and cool and use less potable water for non-potable uses.

Increased growth in the local area and the removal of state government-imposed water restrictions after the previous drought have led to annual consumption rising above the baseline in recent years. This is despite great success in the City's Smart Green Business and the Better Buildings Partnership⁸ programs saving over 2,000 ML (mega litres) per annum in potable water. Sydney Water introduced Level 2 water restrictions on 10 December 2019 in response to the ongoing drought. This should reduce potable water consumption which may be observed in future reports.

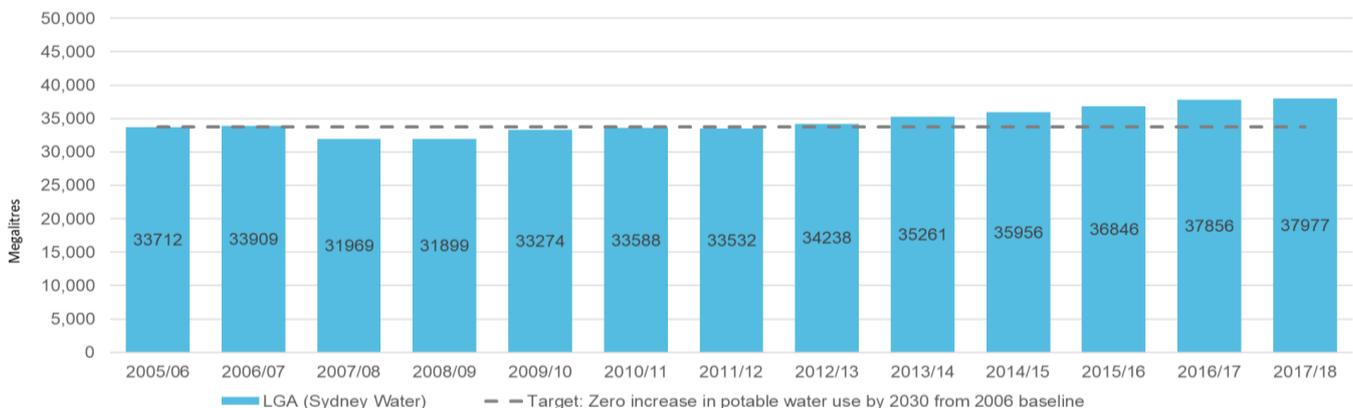
Water consumption data

This table shows water consumption data for the local government area. Data for the local government (LGA) is based on actual data received from Sydney Water in October 2018 for consumption to end 2017/18. Data for 2018/19 will be available from Sydney Water by mid 2020 and will be included in the next report.

	Baseline (ML)	Current (end 17/18) (ML)	Difference (ML)	Difference (%)
LGA	33,712	37,977	4,265	13

For more information, see [Appendix 1: Data Management Plan](#)

Chart 6 City of Sydney's local government area potable water use



⁶ All data sourced directly from Sydney Water.

⁷ Based on 2017/18 LGA population data for residents/workers/visitors compared to 2005/2006 baseline.

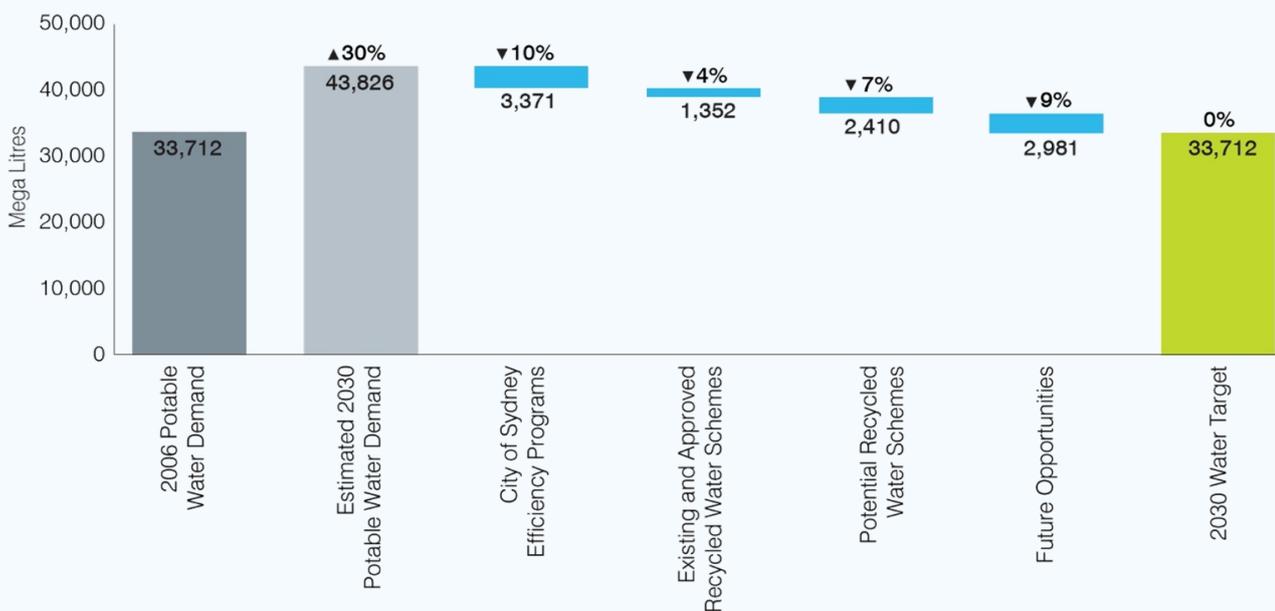
⁸ See [Delivering to the community](#) section.



Estimated contribution of initiatives

Chart 7 shows the estimated contributions of the initiatives we believe could minimise the amount of potable water consumed in the local government area by 2030, despite the growth that the area will see in that time. The City of Sydney will take a range of actions to achieve its target of zero increase in potable water use by 2030 from the 2006 baseline, however city-wide water consumption is influenced by a number of factors outside the City's control.

Chart 7 Local government area potable water use target. Estimated contribution of initiatives.



Key points are highlighted below:

- City of Sydney efficiency programs (-10 per cent) help residents and business to reduce water consumption
- Existing and approved recycled water schemes (-4 per cent) include the City's stormwater harvesting schemes, and private water recycling schemes, based on operations at full capacity
- Potential recycled water schemes (-7 per cent) reflects opportunities for additional recycled water infrastructure; for example, the potential to include recycled water schemes in urban renewal areas that are redeveloped by the NSW state government
- Even if all identified opportunities for recycled water infrastructure are implemented, 2030 potable water use across the city will likely exceed 2006 levels by around nine per cent. We will need to work with Sydney Water, other government entities and private sector to identify water conservation opportunities, recycling and alternative water supply, to safeguard potable water supply and meet the predicted increased demand on water supplies

Stormwater quality and pollution reduction

The city has some of the oldest stormwater drainage infrastructure in Australia. Traditionally large pipes and channels remove excess stormwater from the city to minimise flood risk and damage. As population and development increases, there are less pervious areas for stormwater to infiltrate, so storm-water run-off enters our waterways with large amounts of litter, other pollutants and nutrients. By incorporating stormwater management systems such as raingardens, wetlands and swales into our streets and parks, stormwater is slowed and filtered. This reduces pollution in our waterways. Our key water sensitive urban design (WSUD) actions:

- Mandate WSUD in new developments where appropriate
- Retrofit the drainage network with gross pollutant traps to remove litter and large solids from stormwater
- Retrofit public open space with raingardens, swales and wetlands to slow down stormwater flows and reduce pollution
- Incorporate raingardens into road renewal and other streetscape project.

MUSIC model

The City has developed a model to estimate progress towards reducing pollution entering our local waterways via stormwater run-off generated in our LGA. The model captures information about WSUD initiatives in both the public and private domain, including Sydney Park water reuse scheme, stormwater harvesting schemes, gross pollutant traps and raingardens. The model uses MUSIC (Model for Urban Stormwater Improvement Conceptualisation) software, to predict the performance of stormwater quality management systems and provides the optimal locations for the best use of stormwater water quality devices. It will help the City plan design (at a conceptual level) and report on appropriate urban stormwater management systems for our catchments.

The City now has MUSIC Link for developers to use to design stormwater quality devices in new developments in accordance with the City's Water Quality 2030 targets. This will further reduce stormwater pollutants entering our waterways.



5. Climate resilient city



The best available scientific evidence tells us that climate change is occurring faster than initially predicted. Without immediate actions, we will miss the opportunity to limit global warming to 1.5°C and our resilience as a city in the face of increasing climate hazards will be severely tested.

Climate Adaptation Strategy

The Council endorsed the Climate Adaptation Strategy in 2015 to help us prioritise and plan actions to prepare the city for the environmental, social, cultural and economic impacts of climate change.

This report provides an update of trends and climate observations as at December 2019. We know that now, globally, we need to take clear and fast action to reduce

greenhouse gas emissions significantly in around ten years, to achieve net zero emissions well before 2050, to remove warming gases from the atmosphere, and to implement geo-engineering solutions to cool the planet.

Under the Paris Agreement, most countries agreed to halt warming at well below 1.5°C in view of the predicted risks to the environment, our societies and our economies. However the 2019 Emissions Gap Report by the UNEP shows that current levels of commitment are insufficient to meet this target. There is an urgent need for us to act globally now to reduce emissions, to avoid the devastating impacts of global warming that are forecast. Inaction comes with economic and social costs; disproportionately shouldered by those who can least afford it.

As a result, the City is fast-tracking priority actions of the Climate Adaptation Strategy to reduce the impacts of urban heat island effects through the urban canopy planting program and intense storm impacts through floodplain and stormwater management, along with myriad social and economic plans.

The strategy, titled “Adaption for Climate Change: A long term strategy for the City of Sydney” can be downloaded from our website. The strategy will next be updated in 2022 when the IPCC release the climate report.



Impacts for Sydney

Human activities are estimated to have already caused 1.1°C⁹ of global heating above pre-industrial levels. In 2019, Australia experienced an annual national mean temperature 1.52 C above average¹⁰. Across Australia we are witnessing this as alarming episodes of extreme heat, water shortage, flooding and bushfires, all of which impact our vulnerable populations, livestock, food production and of course, our native flora and fauna.

In Sydney, our major climate hazards include extreme heat, drought and bushfire impacts.

Extreme heat

On 17 December Australia endured its hottest day on record with average maximum temperatures exceeding 40.9 C. This followed other record weather events in 2019 with records for extreme heat broken, and record consecutive days above seasonal averages in July. It is not only the frequency of hot days that poses a danger – extreme heat days start earlier, become hotter, and last longer.

The overall climate of Sydney is considerably influenced by its coastal position and proximity to the ocean, despite the cooling sea breeze the City still suffers from Urban Heat Island impacts. The City commissioned the [Cooling Sydney Strategy](#) to provide urban overheating mitigation recommendations to support the strategic planning of Sydney. Appropriate design features include cool roof, cool facades, green roofs, vertical greenery, tree canopies, cool building materials, natural ventilation and smart use of water are some of the ways to mitigate urban heat island impacts.

Drought

The national rainfall average for 2019 was extremely low - 40 per cent below the national average - comparable to the other driest periods in Australia's recorded history including during the Federation Drought and the Millennium Drought. Since 2017, much of NSW rainfall has been close to or below previous record low readings and the impacts of low rainfall in this multi-year period have been intensified by record high temperatures.

In this setting, available water evaporates more quickly, and low soil moisture is experienced. This in turn adversely affects the filling of water catchments when it does rain¹¹.

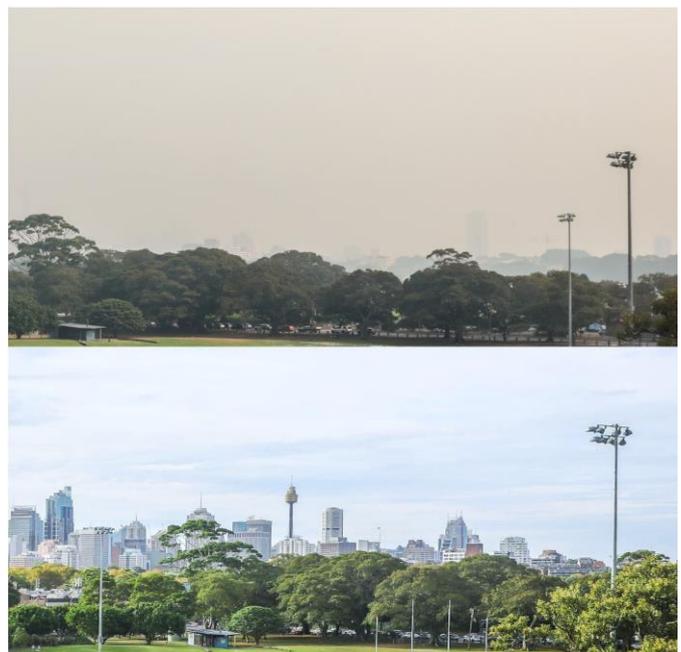
The City has committed to being a water sensitive city where we continue to identify opportunities for operational

improvements in the use of water, to develop alternative water supplies and to advocate to the NSW Government to promote investment in recycled water schemes. The availability and smart use of water is just one way of making our city resilient when it is hot and dry. With the recent announcement by Sydney Water of Level 2 water restrictions, now more than ever it is important for the City to advocate strongly and expedite water saving initiatives.

Bushfire

The effects of the 2019 drought, paired with heat and strong winds, created unprecedented and devastating bushfires across multiple Australian states; starting earlier, lasting longer, and spreading further. The NSW Government declared a State of Emergency on 12 November then again on 19 December 2019. A 60-kilometre long "mega fire" around Sydney was larger in size than the Sydney metropolitan area and the resulting air quality, even in the centre of Sydney, was deemed hazardous – the worst on record.

In response to Australia's recent bushfire crisis, the Office of Local Government (OLG) has teamed up with the City of Sydney, Sydney Resilience Office and Local Government NSW to provide a disaster recovery council resource co-ordination service to assist councils impacted by the bushfire crisis. The Local Government Bushfire Recovery Support Group will enable unaffected councils to offer assistance, resource sharing and temporary deployment of relief staff to councils in need.



⁹ <http://www.bom.gov.au/climate/current/annual/aus/#tabs=Global>

¹⁰ <http://www.bom.gov.au/climate/current/annual/aus/>

¹¹ <http://www.bom.gov.au/climate/current/annual/aus/>



Why it is so important to act now

Mitigating climate change is a fundamental challenge facing cities, governments and communities. On a city, state and national level we have made global commitments for action that will contribute to managing and mitigating extreme weather in Sydney.

It is important to also keep in sight that action on climate change not only averts natural disasters. It brings social and economic benefits. Energy prices could be lower and more secure, cities cleaner, more people employed and human health improved through better diet and cleaner air.

The scale of the challenge outlined by the IPCC is that global emissions need to be half by 2030, and net zero by 2050 – to have a 50 per cent chance to limit global warming to 1.5°C.

The City of Sydney responds to this climate emergency by using all levers available to local government. However, the transformative change required cannot be delivered by local government alone. State and Federal government policy, legislation and funding need major changes to reduce greenhouse gas emissions, manage the transition and adapt to climate impacts.

Sydney's Air Quality Monitoring

During the second half of 2019 two significant air quality-related matters came to the fore for the City. Driven by City advocacy, the NSW government re-established government-grade, air quality monitoring (AQM) equipment that reports publically, online and typically hourly, on multiple air quality indicators. These indicators include airborne particles at PM 10 and PM 2.5 diameter, carbon monoxide, ozone and sulphur dioxide.

There has been no permanent AQM station within the City of Sydney LGA for nearly two decades so the re-establishment of equipment which provides strong, science based evidence regarding local air quality is considered an important gain for the City.

At the end of 2019 we also experienced the dramatic downturn in urban air quality as a result of the prolonged bushfire emergency affecting New South Wales. This event highlights that air quality monitors allow us to quantify the true impact to our community of natural events such as these bushfires, major projects and human-induced air pollution sources such as traffic, by establishing a reliable baseline, and that they allow accurate data to be quickly disseminated to the community, informing important health and safety measures.

On the re-establishment of this high performance equipment and the public reporting of data, work can commence on installing a network of smaller, less costly air quality sensors. These can be calibrated against the government-grade AQM to verify accuracy and reliability, and be used in public health and land use planning contexts.



The Hon.MP Matt Kean and Lord Mayor Clover Moore

100 Resilient Cities

The Resilient Sydney Strategy (2018) is the first of its kind for metropolitan Sydney. Our vision is for Sydney to be connected, inclusive and resilient.

The strategy provides five directions and 35 actions to increase understanding of our risks, improve preparedness and develop action to address the challenges facing our city.

We are now more than a year into implementation of the strategy, with many actions underway or in development. A few examples are as follows:

Direction 1 focuses on enabling communities to thrive across metropolitan Sydney. Action 2 the Metropolitan Engagement Practitioners Network, is in development to facilitate integrated place-based decision making to meet community needs.

Direction 2 addresses our challenges around extreme weather. Action 13 is the award winning Resilient Sydney Platform (see below) providing an environmental footprint of metropolitan Sydney, and each local government area across the city, through data and reports. Councils are accessing the platform including using the information to develop plans and strategies.

Direction 3 focuses on increasing community connections. In Action 16 Resilient Sydney is exploring partnerships to develop a consistent methodology for measuring social cohesion across our city. Action 18, Supporting communities to know their neighbours, is



already underway. Action 17, Learning from First Nations Elders is now complete.

Direction 4 addresses preparedness for disasters and disruption. Councils are promoting Action 23, the Get Prepared App to increase community preparedness. The Local Government Bushfire Recovery Support Group (Recovery Support Group) has now been established to assist councils affected by the 2019/2020 bushfire disaster. The service, established by the Office of Local Government in partnership with the City of Sydney, Sydney Resilience Office and Local Government NSW is designed to coordinate assistance from non-bushfire affected councils to those in need.

Direction 5 is implementing Action 33, developing a framework, indicators and tools to monitor and evaluate our progress and impact in implementing the strategy.

Resilient Sydney receives awards in 2019



In June 2019, Resilient Sydney received the Chief Commissioner's Award at the Greater Sydney Planning Awards. Lucy Turnbull AO commended Resilient Sydney stating, "This powerful example of innovation and collaboration has immense potential to create positive change in our metropolis".

In September 2019, the Resilient Sydney Platform, a collaboration between Resilient Sydney, City of Sydney and Kinesis, received 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.

Resilient Sydney is using the platform to deliver Action 13 of the Resilient Sydney Strategy. Action 13 involves pioneering a standardised metropolitan-wide process for measuring and reporting on carbon emissions, energy, water and waste in Sydney to enable place-based targets and action.

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

standardised data in their Local Strategic Planning Statements.

The platform is based on an innovative technology solution developed by Kinesis and enabled by significant contribution of expertise and investment by the City of Sydney. The platform provides information in-line with the international GPC (Cities Protocol) reporting standard known as 'GPC BASIC'.

As part of delivery of Action 13, Resilient Sydney ran a series of capacity building workshops, including a masterclass in partnership with the NSW Government, to enable councils to navigate the platform, access reports and use information for decision making. Workshops also facilitated council collaboration, information sharing and exploring best practice to develop effective place-based interventions.

As of September 2019, 140 strategic planners, environmental managers and general managers representing all the 33 councils of metropolitan Sydney are using the Resilient Sydney platform.

Tool to model impact of climate change



The City has been a foundation partner in the development of XDI (cross-dependency) Sydney Pilot Project, along with Sydney Water, Transport NSW, NBN and other agencies. The project been led by OEH (now DPIE) and has resulted in an online tool, that models the impact of climate change on real

assets and also models options to mitigate the impacts.

In November 2019, representatives of Climate Risk, demonstrated the tool's capabilities and provided examples of how the City could use it to understand risks and make decisions.



What we are doing

The City is already actively adapting to climate change. Within our own operations and the city, we have:

Urban Canopy – Planted 13,892 new street trees since 2005 and installed 3,561 square metres of landscaping throughout the city's streets this reporting period (see Section 9, Urban Canopy).

Floodplain management – In NSW, local councils are responsible for managing flood prone land. The NSW Government Flood Prone Land Policy assists in determining if development on floodplains is appropriate and sustainable. The Floodplain Development Manual 2005, developed by the NSW Government requires preparation of a Flood Study and a Floodplain Risk Management Study and development and implementation of a Floodplain Risk Management Plan. The City has completed flood studies and floodplain risk management studies for all catchments located within the LGA. Council approved the last of the studies on the 15 August 2016.

A flood implementation plan has been prepared setting future floodplain management works for each catchment (see project update in the next page). Review of the Alexandria Canal and Johnston's Creek Flood Risk Management Plan respectively have been undertaken to include the effects of the Green Square Trunk Drain and the effect of bridge raising on flood level in both catchments. These studies were finalised in early 2018.

These flood studies including the implementation plan require periodic review to maintain up to date flood information based on the changes in the catchments; and newly available information and guidelines to estimate flood information. Accordingly, the Alexandria Canal and Blackwattle Bay flood studies are being reviewed to include the new rainfall revision by Australian Rainfall and Runoff (ARR) 2019.

Relevant links

- [Adapting for climate change – a long term strategy for the City of Sydney: 2015-2070](#)
- [Preliminary Resilience Assessment](#)
- [Resilient Sydney: City Context Report](#)
- [Green Square Stormwater Drain map](#)
- [Interim Floodplain Management Policy](#)

Stormwater management – The City has made significant investments in stormwater management infrastructure to mitigate local flooding and to improve

stormwater quality for receiving waterbodies (see project update in the next page).

The City recognise the management of the stormwater assets is key to maintain optimum performance of the stormwater system. Accordingly, the City continues to assess its stormwater assets condition with the use of CCTV and implement maintenance and renewal works where appropriate. This process is approximately 40 per cent complete and will be finalised in the FY 2021/22.

Cooling Sydney Strategy: Planning for Sydney 2050

A key direction of the planning for Sustainable Sydney 2050 is to 'live with our climate'. Within this, extreme heat is identified as the one of the primary challenges for Greater Sydney and addressing it requires collaborative action and policy to minimise the associated health risks and resource demands.

Sustainable Sydney 2050 will provide urban overheating mitigation recommendations to support the strategic planning of Sydney 2050 based on in-depth research conducted by the Cooperative Research Centre for Low Carbon Living (CRCLCL) and the University of New South Wales (UNSW).





Project Update

Green Square Stormwater Drain

Green Square sits on a floodplain and was home to thousands of generations of Aboriginal people amongst a network of ponds, wetlands and creeks that drained to the Cooks River and Botany Bay. As an industrial area hazardous flooding was a constant challenge, with floodwaters reaching 2.3m in Joynton Avenue during storms in April 2015.

The City, in partnership with Sydney Water formed an alliance with UGL Engineering, Seymour White Constructions, WSP, RPS and Rob Carr (the DG Alliance) to build a 2.4km stormwater drain from Link Road in Zetland to the Alexandra Canal, running through the Green Square town centre. The drain now carries floodwaters from South Sydney into Botany Bay.

We helped fund this project because without it, flood risks prevent development. With a flow capacity of 30 cubic metres and a capital value of \$150 million the drain is the largest brownfield urban drainage project in Sydney for 30 years.

The drain route from Link Road to Alexandra Canal was chosen to minimise impact on residents, businesses and the environment. Micro-tunnelling construction technique was chosen to further minimise adverse impact. Two of the largest commercially available gross pollutant traps in Australia were also installed to treat stormwater runoff and ultimately improve water quality in the Cooks River. The project also involved raising and lengthening Huntley Street Bridge and widening Sheas Creek Channel.

A shared bike path has been built along the Sheas Creek Channel that will provide important recreational and commuting links between the Cooks River, Sydney Airport and destinations such as Sydney Park, Perry Park and Centennial Park to the existing bike network into the city.

A new stormwater harvesting system now diverts water from the drain to the recycling plant in the Green Square Infrastructure Centre within the Community and Creative Precinct in Joynton Avenue. The treated water is now used by thousands of residents in the Green Square town centre.

The project won the Infrastructure Project Innovation Award at the 2019 Australian Water Association NSW Awards.

The Joynton Avenue link is still to be constructed and once complete will finalise the project.

Construction began: February 2015

Completed: November 2019

World Engineering Convention

In November 2019 the World Engineering Convention (WEC) was held for the first time in Australia, to commemorate the centenary year of Engineers Australia. Known as the 'Olympics of Engineering', this international convention is held every four years. The City's Amarnath Reddy delivered a presentation under the title "Green Square: Enabling Urban Renewal Through Effective Flood Risk Management". The paper focussed on the successes and learnings from the Green Square Stormwater Drainage Project.



WEC is an important opportunity for engineers worldwide to explore the world's biggest problems and debate ways for solving them. WEC's conference six themes were aligned to the United Nations

Seventeen Sustainable Development Goals (UNSDGs) and prompt us to challenge how we can adapt to and mitigate climate change, and build resilience through the engineering profession with a view in to the next 100 years.

C40 Cities Climate Leadership Group

Created and led by cities, the C40 Cities Climate Leadership Group (C40) represents 94 global cities, 500 million people and one-quarter of the global economy. C40 focusses on driving urban action to reduce emissions and climate risks, while increasing the health, wellbeing and economic opportunities of cities



6. Zero waste city

***Leave Nothing to Waste* is our strategy for managing Sydney's resources to 2030. The City is working to achieve its zero waste target by 2030, with a focus on waste avoidance, reuse and better recycling.**

The City of Sydney area produces more than 5,500 tonnes of waste every day from homes, offices, at the city's many venues and events and during construction of buildings and transport infrastructure. Approximately 69 per cent of all waste is recycled but there are still opportunities to divert and exploit more than 2,000 tonnes which currently goes to landfill each day.

To assist with achieving our zero waste targets the City has identified six priority areas:

- **Promote innovation to avoid waste** – advocate for and assist the city's businesses and community to facilitate innovation and reduce waste
- **Improve recycling outcomes** – optimise the use of existing City services, reduce contamination and explore new services

- **Sustainable design** – increased focus on planning for waste in new developments
- **Clean and clear streets** – maximise amenity improvements and efficiency of waste and recycling
- **Better data management** – improve monitoring, reporting and verification of data
- **Future treatment solutions** – secure long term solution for the treatment of non-recyclable waste using alternative waste treatment technology

City of Sydney Operations

Delivering Best Practice Sustainable Events

The City's Major Events and Festivals team has increased the amount of water bubblers and compostable food bins at Sydney Christmas and Sydney New Year's Eve events, at the same time reducing the amount of single-use plastic items across all events. Plastic water bottles, straws and utensils, flyers, plastic samples and giveaways and polystyrene food containers were nowhere to be seen at seven Sydney Christmas 2019 events, or at any City-managed sites on New Year's Eve.





For Sydney New Year's Eve 2019, the City focused on environmental management wins around vending, waste and messaging. Contractors committed to phasing out single-use items and using 100 per cent Australian Standard Compostable Packaging and plain paper and bamboo items only, as well as reducing food waste. Waste management, recycling and public communications to keep environmental management issues front of mind were also effective.

The MAJEV team is systemising and improving its capacity in sustainable event management, a project driven collaboratively with the City's Sustainability team. A gaps analysis was undertaken via external consultants Edge Environment, to determine a road map for the City's major events to meet ISO 20121, the international standard on sustainable event management. This analysis spearheaded the development of a Sustainable Event Management Framework, as well as Sustainable Event Management Guidelines and Supporting Forms for ongoing practical application.

Sustainable Event Management Training will support the embedding of these documents and practices across the team in early 2020.

Other events hosted by the City also successfully implemented a variety of improved sustainability initiatives. Sydney Water and Ruzi were engaged to provide water, along with sustainable reusable cups and collection points. Food at events has been provided by the OzHarvest food truck, which provides a zero-waste inspired menu and uses compostable plates and bowls.

City of Sydney events overall are seeing increasingly sustainable practices to continue leading the way in environmental leadership.

Food scrap recycling

In the last 12 months we recycled over 26 tonnes of food scraps from two City properties; Town Hall House and Pittsway Arcade, a food court that the City manages. This equates to about 50 tonnes of carbon emissions that would normally be generated from food breaking down in landfill.

Food scrap recycling is now a standard recycling option at Town Hall House and Pittsway Arcade thanks to the efforts of all staff and tenants who took part in the successful food scrap collection trial. A recent City Property portfolio waste audit identified 10 buildings with high proportions of food waste therefore the City is planning to extend food scrap collection services to City managed child care and community centres, and depots in early 2020.

Innovation grants

Demonstration of multi-fibre textile recycling (MTR) technology



Through its environmental innovation grants scheme the City awarded funding for a demonstration project to reduce wastage caused by fast fashion, using separation technology to transform unwanted polyester cotton blend clothing into their original fibres ready for reuse.

BlockTexx has developed proprietary technology that separates polyester and cotton materials such as clothes, sheets and towels of any colour or condition back into their high value raw materials of PET and cellulose for reuse as new products for all industries.

The recovered PET is treated and extruded to create virgin-quality plastic pellets suitable for use in textiles, packaging and building products. The recovered cellulose is processed to create cellulose powder for use in many industries such as textile, pharmaceutical, and food.

Recycling at aquatic centres



In line with the priorities to improve recycling outcomes across our organisation public place recycling has been updated and improved at our aquatic centres. New recycling bins, signs and collection services have been introduced to all five facilities. Further waste improvements are planned at our aquatic centres to ensure that the staff and visitors are engaged and understand the behaviours and processes needed to achieve better recycling outcomes.



Our operational targets



Recycling and resource recovery

- 50 per cent resource recovery of waste from City parks, streets and public places by end June 2021
- 70 per cent resource recovery of waste from City managed properties by end June 2021
- 80 per cent resource recovery of construction and demolition waste generated and managed by City operations by end June 2021

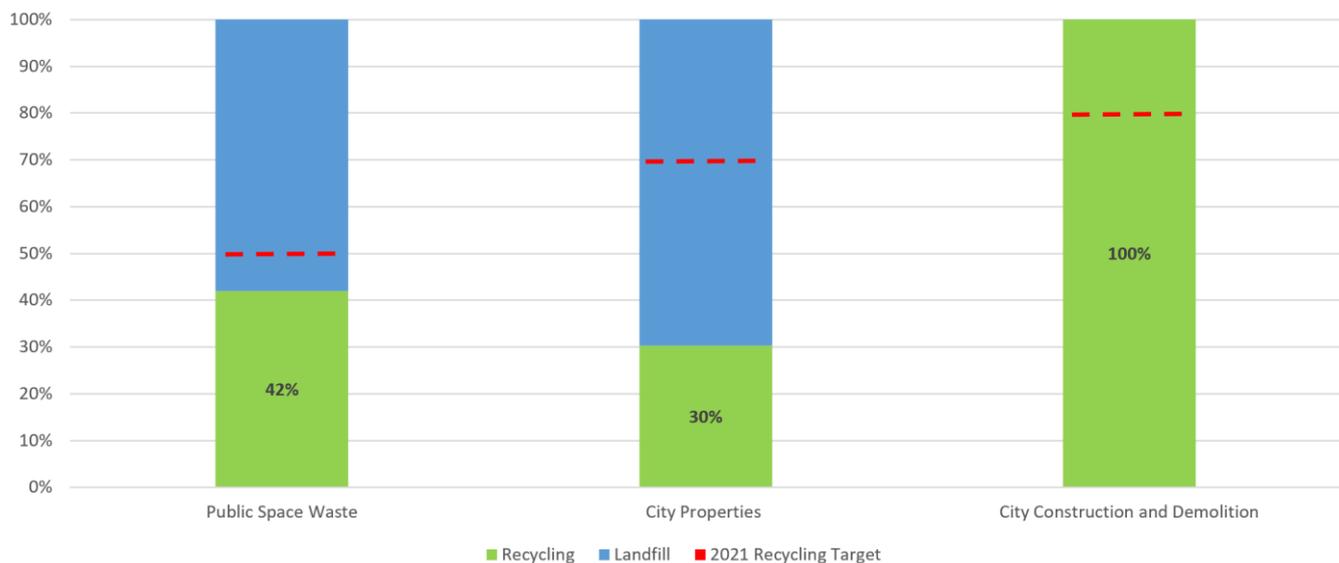
How we are tracking

Recycling of waste from City parks, streets and public places has increased from 26 per cent to 46 per cent between 2017/18 and 2018/19, closing the gap on our 2021 target of 50 per cent diversion from landfill. The increased recycling rate was the result of changes to waste processing contracts that divert organic waste from public litter and removal of inert materials from the City’s street sweepings and stormwater pit material.

Construction and demolition waste produced by the City increased by 500 tonnes between 2017/18 and 2018/19 as a result of increased project numbers, however our diversion rate remained high at 100 per cent. The City has also developed a mechanism to capture construction waste from our major projects and we will be in position to report on this going forward.

City properties waste has reduced its waste generation by 154 tonnes or seven per cent between 2017/18 and 2018/19. The City has been implementing its Waste Improvement Program across four of its key sites with clear signs of improvement in avoidance and recycling and it is intended to roll these improvements out across all sites.

Chart 8. City of Sydney operations waste disposal and resource recovery in tonnes (totals Jul-18 to Jun-19)



- City managed properties waste includes City of Sydney owned and managed buildings where the City has responsibility for the collection and management of the waste generated (approximately 65 buildings and five aquatic centres).
- City streets, public place and stormwater waste is not separated for disposal. Separate tonnages are based on waste audit estimates.



Local government area targets



Recycling and Resource recovery

- 70 per cent recycling and recovery of commercial and industrial waste from the city by end June 2021
- 70 per cent recycling and recovery of residential waste from the city by end June 2021
- 80 per cent recycling and recovery of construction and demolition waste from the city by end June 2021



The local government area

How we are tracking

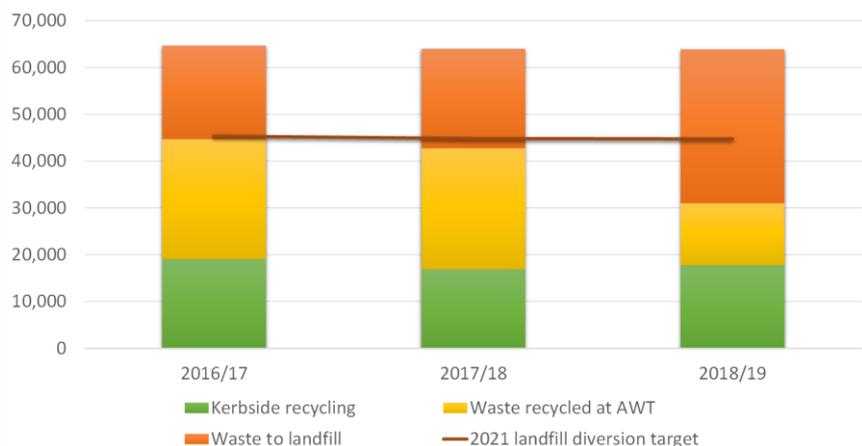
Waste minimisation – since 2015 the per capita annual waste generation rate of our residents has reduced by more than 12 per cent per resident. This means that each of our residents is producing less waste (by weight) each year. The cause of this reduction is likely to be a combination of factors including; light weighting of products through the manufacturing process, home composting, the introduction of the container deposit scheme and more residents taking up waste avoidance initiatives.

Recycling – as a result of recent EPA regulation changes the residential waste diversion from landfill has fallen to 48 per cent, and our source separated kerbside recycling rate has remained at 28 per cent, despite an overall reduction of 700 tonnes for the year. The most likely explanation for this reduction is the

impact of the container deposit scheme. The City’s target is to achieve 35 per cent recycling from source separated collections by 2021.

To achieve this, the City is introducing new services and initiatives to target individual waste streams currently going into the red bin. The new initiatives include e-waste collections, food waste collection trials and textiles collections.

Residential Waste and Recycling Performance





Project Updates

Safely disposing of household chemicals and keeping e-waste out of landfill



The City held its annual household chemical cleanout event which provides residents the opportunity to drop off unwanted household chemicals for recycling and safe disposal. The event attracted 702 attendees who dropped off 27 tonnes of household chemicals.

The top five items dropped off were paint (water and oil based), lead acid batteries, gas cylinders, oil, inert solids and fire extinguishers. Paint remains the single largest item household chemical dropped off for recycling. All the materials collected are either recycled or disposed of in an environmentally responsible way.

Moving bins off the streets



The City continues to focus on keeping streets clean and clear, by engaging residents to store their bins appropriately regardless of collection days.

Targeted approaches in various suburbs across the City has resulted in over 550 resident requests being addressed, greater compliance in correct storage of bins outside of collection times and an overall 80 per cent reduction in bins being stored on the footpath outside of collection times.

Keeping our residents informed



City staff held four community education stalls reaching over 680 residents at events in Erskineville, Redfern, Waterloo and Woolloomooloo. The events promoted how to use the City's booked pick up services to increase awareness of the service and reinforce that illegal dumping is not an acceptable social norm.

These events have led to an increase in awareness of the booked pick-up service among attendees. Some residents dropped off light bulbs and batteries for recycling, increasing access for the community and reinforcing the correct disposal of some problem wastes.

Expanding e-waste recycling

In July 2019, the City commenced kerbside collection of e-waste, increasing access and convenience for our residents to have their unwanted e-waste collected and recycled. The City has continued to hold e-waste drop off events and in this period two events were held at our Alexandria Canal Depot, with events attracting 1290 attendees. The majority of attendees are residents who have used the service previously, demonstrating a commitment to recycling and keeping resources in the economy. The combined kerbside collection service and events have led to over 56 tonnes of e-waste being collected and recycled.



Residential Food Scraps Collection Trial



The City's residential food scraps recycling trial commenced at the end of July 2019.

Households participating in the trial are provided with a kitchen caddy, supply of compostable caddy liner bags and a food scraps bin – everything needed to make separating food scraps for recycling easy. The collected food scraps are sent to the EarthPower anaerobic digestion processing facility in western Sydney where they are converted into electricity and fertiliser.

Initial results from the first five months of operation of the trial indicate early success. As at the end of December, the City had collected and recycled 84.78 tonnes of food scraps from the 62 apartment buildings and 324 houses participating in the trial.

Bin contamination has been very low, estimated at less than 5 per cent by weight. Our collection staff have reported only 27 incidents of contaminated bins to date. Feedback about the trial coming in from participating households and apartment building managers and champions has been overwhelmingly positive. Results of a survey of trial participants conducted in September indicated that:

- 89 per cent of participants think the service is easy to use.
- 92 per cent of apartment building manager or champions are happy to very happy with the way the service is running in their building.

Planning is underway for Phase II of the trial.

Food scraps recycling trial information sessions for apartment buildings



The City has delivered a comprehensive education and communications campaign for the residential food scraps recycling trial to encourage trial participation and promote the necessary behaviour change.

One of the key initiatives of the education and communications campaign is the delivery of on-site information sessions at medium to large participating apartment buildings (i.e. buildings with more than 50-60 apartments).

To date the City has held 24 food scraps recycling information sessions at apartment buildings participating in the trial. During these sessions, educators engaged with more than 850 residents about the trial, and registered 167 residents to participate. Feedback from the sessions has been nothing but positive.

The two-hour information sessions feature a drop-in style display stall positioned within an apartment building in a high traffic area like the foyer or courtyard. Stalls are run by two educators and include pull-up banners, brochures, and samples of the kitchen caddy, compostable liner bags, and food scraps bin. The educators are also equipped to complete the online registration form for residents that want to take part in the trial and order a kitchen caddy.

Relevant links

- [Leave Nothing to Waste, City of Sydney Waste Strategy](#)
- [Waste Management Local Approvals Policy](#)



Advocacy

Circular economy

The City supports the development of circular economy approaches to the management of waste and resources, signalling a move away from the traditional linear 'take, make and dispose model'. The City believes that an overhaul of how governments, industry and the community view the value of materials we use, and our collective responsibility to reduce the impact of our consumption habits is required.

The City is advocating for a minimum percentage recycled content and repair targets for all products to help shift responsibility from consumers to product manufacturers.

In Europe governments encourage better product design by differentiating the financial contribution paid by producers under its extended producer responsibility schemes on the basis of the end-of-life costs of their products.

Promoting Innovation

Recycled Material in Road Construction

The City joined other councils in the Southern Sydney Regional Organisation of Councils (SSROC) that unanimously signed a Memorandum of Understanding (MoU) which sets out how they will work together to create a circular economy for recycled materials, which councils are in a strategic position to support and drive, by prioritising recycled content in civil works materials.

Australia's current domestic markets for recycled materials and the infrastructure needed to process them into a clean, usable form is inadequate to meet the demands of the industry. With the Council of Australian Governments (COAG) set to ban the export of recyclable materials, developing domestic markets for these materials is crucial to avoid stockpiling and landfilling of valuable resources.



7. Active and connected city

We are committed to promoting the most sustainable modes of transport for residents, workers and visitors.

City of Sydney Operations

Fleet emissions

The City's motor vehicle fleet has continued to address greenhouse gas emissions through its Sustainable Fleet Management Program. The Program is focussed on maintaining emissions at 2013/14 levels by further reducing fuel use until new low-emission products and technologies become available in Australia.

The City's fleet has continued to reduce its size, balancing vehicle numbers with the demands placed on providing essential services to residents, workers and visitors.

The combined fleet emissions for Q1 and Q2 2019/20 were 135 tCO₂-e less than the same period last year, and the annual total remains below the target level.

Blended bio-diesel continues to be the prime fuel type used by the City's diesel and diesel hybrid motor vehicle fleet. Petrol hybrids use Shell Unleaded E10 exclusively.

Telematics

The City is currently installing telematics technology across the City's fleet and the project is now in trial phase.

On completion of the trial the City will begin gathering crucial data which will assist with driver safety, environmental efficiencies and legal compliance.

Gaining quality data through telematics will assist the Fleet team and its internal customers to make more informed decisions on efficiencies, strategy, and workflow planning which will help to further reduce overall emissions.



Our Operational Targets



Fleet emissions

– Zero increase in emissions from the City's fleet of vehicles by 2021, from 2014 levels



Electric Vehicle News

The City has integrated 19 new fully electric Nissan Leafs into the Fleet. The Leaf has an average range of 270kms, which can increase with urban driving thanks to regenerative power through city driving, and the all new e-pedal.

In addition to Electric passenger vehicles, The City has ordered its first Electric Commercial vehicle – a fully electric Tipper Truck, which is due to arrive next quarter and will be utilised by key business units in order to gain feedback on the viability of utilising electric technology in commercial vehicle applications across the City.

The process to upgrade the charge points for the City's electric fleet from type 1 to type 2 has been awarded. The upgrade will align The City with the electric vehicle industry, which is now producing all new vehicles with type 2 connectivity as standard, bringing better reliability and faster charging capabilities. The upgrades are expected to be completed within months.

Active transport

City staff continue to embrace greener transport options and are increasingly choosing to walk, cycle or use public transport to commute to work and travel within their working day.

City staff plan their travel using a simple transport hierarchy:

- Active Transport (walking or cycling using the City's own bike fleet)
- Public Transport (buses and trains)
- Drive Green (the City's own fleet of low and zero emissions vehicles)

To support the use of active transport, staff are encouraged to use the City of Sydney's bicycle fleet in preference to fleet cars and taxis. The bike fleet includes

a range of bikes suited to various operational requirements, including a cargo bike, some electric assist bikes and bikes with additional carrying capacity. Before using the fleet, staff members take part in a cycling confidence course and are provided with personal protective equipment, and are encouraged to build their cycling skills with regular group rides.

Eight new e-bikes were added to the City's fleet this year, to help staff travel to meetings, between City venues, and for site visits.

Most of the City's bike fleet is housed in our end-of-trip facility provided for staff who walk or ride to work, or exercising during work hours. The Pitstop includes 150 bike parking spaces, 150 lockers, ensuite and accessible bathrooms, showers, change rooms and a water station.

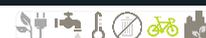
Since opening on 13 October 2014 an average of 94 people have accessed the Pitstop daily. There are a total of 26 fleet bikes located at a variety of Council facilities including King George Recreational Centre, Epsom Rd and Bay St Depots. The fleet has travelled more than 52,000 kilometres since 2011.

The following table shows the kilometres travelled by staff using the City Bike Fleet since its introduction in January 2012 and the number of staff members who have completed training to enable them to use the bike fleet. Distances travelled are measured using odometers mounted on each bike.

We piloted a new program Walk or Wheel Wednesday with six local schools. The program encourages local primary school children to ride or walk to school. The City provided marketing materials and resources to help schools promote the program.

We also piloted workplace cycling courses with local businesses. The team building courses encourage staff to try electric bikes in a safe environment with familiar faces.

Bike Fleet	19/20 Q1	19/20 Q2	Year to date	Program to date
Staff trained #	18	21	39	767
Distance (km)	2,778	3,152	5,930	55,965



The local government area

Local government area targets

 Walking	– 33 per cent of trips to work during the AM peak undertaken by walking by 2030, by city residents
 Cycling	– 10 per cent of total trips made in the city are undertaken by bicycle by 2030
 Public transport	– 80 per cent of trips to work during the AM peak are undertaken by public transport by 2030, by city residents and those travelling to Central Sydney from elsewhere
 Car sharing	<ul style="list-style-type: none"> – 30 per cent of city residents who drive with an unrestricted drivers licence are members of a car sharing scheme by 2030 – Increase the number of car share bookings – Increase the number of on-street car share parking spaces

Walking

Walking is a low cost, reliable, healthy and environmentally friendly transport option. Research confirms that walking accounts for around 90 per cent of trips in the city centre and plays a major role in the local transport hierarchy.

The City continues to work to ensure that our built environment is designed to encourage residents and commuters to undertake short trips on foot.

The City recognises the importance of a safe walking environment so we are continuously working to improve pedestrian safety throughout the city, including advocating to the NSW Government.

Some of the City's achievements for pedestrian safety include prioritising walking and cycling in new developments like Green Square and Ashmore, upgrading and widening footpaths, installing new footpath lighting and street furniture, successfully advocating for improved pedestrian amenity along George Street, advocating for reduced waiting times for pedestrians at signalised intersections throughout the city centre (with Transport for NSW recently agreeing to reduce the wait time from 110 to 90 seconds at many intersections), and advocating for reduced traffic speeds throughout the city and local centres (including 40 km/h zones).

The City has made a submission to Infrastructure Australia, seeking for the cost of pedestrian delay in the City Centre to be identified as a national economic priority for investment and policy reform.

In our urban renewal areas we are designing walkable and liveable streets and places, ensuring new development provides new walking links. In Green Square we announced three pedestrian-only streets for the town centre, creating traffic free plazas for dining, relaxing and connecting to local shops and transport.

We launched the new Rainbow Crossing in Taylor Square – a trial painted road surface celebrating the local community and a new pedestrian priority zone.

The City is trialling a pedestrian counting device in Central Sydney suitable for counting pedestrians in high volume areas. These counters will be able to provide high accuracy data on pedestrian activities 24/7 in our busiest pedestrian areas.

Works began to replace the Cutler Footway. The footway links Burton Street, Darlinghurst, and MacDonald Street, Paddington. It will be replaced with a new wider footway for people walking and riding, new safety barriers, lighting and signs. The Burton Street viaduct arches below will also be repaired.

The City's rollout of an \$8 million Legible Sydney Wayfinding System is helping people get around Sydney with pedestrian-friendly maps, information pylons, new signs and digital technology. Over 600 signs, including 2,100 braille and tactile street signs will be installed across our local area by the end of the year.



Cycling

The City’s Cycling Strategy and Action Plan (2018-2030) sets ambitious targets for the City to substantially complete 11 regional routes to link the inner city, homes, schools, businesses and other destinations. The Strategy guides projects and programs to help more people ride bikes in Sydney. It prioritises connecting the bike network, supporting business and people to ride and lead by example.

Dockless bikes continue to be popular in Sydney, providing a sustainable transport option for thousands of people. Share bikes can help fill transport gaps, free up space on the roads for people who need to drive, reduce air and noise pollution and improve health and wellbeing.

Since late November 2018, over 120,000 people registered 435,000 Lime e-bike trips spanning 5 million minutes. While in 24 months of operation from July 2017, Mobike reported over 3 million minutes of bike usage and half a million trips.

We work closely with operators in Sydney and other local councils on bike share guidelines and proactively manage issues around considerate parking.

Project Updates

- Construction of the Wilson Street cycleway was completed. This separated cycleway is an important link for people riding from the Inner West to the CBD and the city’s east, with 9000 bike trips weekly.
- The Epsom Road cycleway in Green Square was completed, establishing a separated route from Green Square to Randwick.
- Separated cycleways were completed on Geddes Avenue and Gadigal Avenue in Zetland.
- Construction began on the Burren Street and Lawson Street cycleways in Redfern.
- Consultation and design was undertaken on a number of cycleway links which will be delivered in 2020, including Miller and Saunders Streets in Pyrmont, Chalmers Street and to fill gaps on Liverpool Street.

	Q1	Q2	Year to date
Share the Path sessions	19	21	40
STP Tune Ups (#)	250	406	656
STP maps issued (#)	772	999	1,771
STP bells issued (#)	186	233	419
Cycling courses (# participants)	58	17	75
Maintenance courses (# participants)	41	46	87
Balance Bike Clinic	977	531	1,508



Public transport

The City continued to work with Transport for NSW to improve transport infrastructure and services across the City of Sydney, with particular emphasis on the City Centre, Green Square and Ashmore.

The City is collaborating with Transport for NSW on a Green Square and Waterloo Transport Action Plan. This will focus on implementation of actions in the five year timeframe that will address current transport and access issues e.g. improving bus priority on routes to the City Centre.

The proposed Metro West remains a centrepiece of the NSW Government's plans. It will support the growth of both Sydney and Parramatta, renewal elsewhere, and increase capacity on rail lines serving the City Centre. The NSW Government announced the route and station locations in late 2019, with planned completion in 2031. The City is continuing to make the case for a station at Pyrmont, a strategic option still being investigated by Sydney Metro.

The City is also seeking NSW Government commitment to the next link in the Metro network, which the City believes should run from the planned terminus of Metro West in the City Centre to Randwick via Zetland and potentially other locations.

The City has supported the NSW Government in seeking ongoing recognition by the Australian Government (Infrastructure Australia) of the national importance of improved connections between the City Centre, Green Square and Southern Sydney.

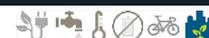
City Access and Transport addresses transport and land use integration by providing strategic transport advice and advocacy on major developments in the city.

The City has continued to work closely with Transport for NSW on the CBD and South East Light Rail. The Light Rail commenced operation in December 2019.

Events & Campaigns Update

- The City delivered a three-month program of cycling events during Sydney Rides 2019, from September to November. Sydney Rides 2019 attracted over 20,000 attendees.
- 7500 people attended the opening event, Light the City, at Mrs Macquaries Rd. 6500 people joined a day of family fun at The Big Adventure in Sydney Park.
- The City supported 30 partner events throughout Sydney Rides. Major partner events included Spring Cycle and the Bike Film Festival. Smaller supported events ranged from scavenger hunts, to overnight bike trips to Cockatoo Island, to guided foreshore picnic rides.
- Three try-a-bike events were held across the city, attracting over 250 participants who were given the opportunity to borrow a bike and experience riding in the city.
- A free guided ride was held to experience the new Epsom Road cycleway. This ride was fully booked with 20 participants.
- We also continued our bike maintenance courses, our Cycling in the City and Rusty Riders courses, plus our popular balance bike clinics for kids, which take place at Sydney Park Cycling Centre.





Liveable Green Network

The Liveable Green Network (LGN) is the City's plan to create a network of high quality walking and cycling routes in the City. The LGN connects the City to its urban villages, connects village to village and to parks and leisure facilities. The LGN ensures all residents are within reasonable walking distance to most local services including fresh food, childcare, health services and social, learning, and cultural infrastructure. At least 10 per cent of city trips will be made by bicycle and 50 per cent by pedestrian movement.

The network features include traffic calming measures, widened footpaths and more pedestrian crossings, way-finding, planting for shade and amenity, bubblers, seats, cycleways, bike parking and lighting.

Major footpath improvements were completed in Missenden Rd and Foveaux Streets including wider footpaths with new surfacing, new landscaping, continuous footpaths across intersections and new pedestrian crossings. Primary LGN works include"

- Abercrombie Street, Darlington
- Riley Street, Darlinghurst
- Reservoir Street, Darlinghurst
- Kellet Street, Kings Cross
- Craigend Street, Kings Cross
- Goodlet Street Surry Hills
- Liverpool Street, Darlinghurst
- Fitzroy Street at Nichols Street
- Dalmeny Avenue Rosebery
- Buckland Street Chippendale
- Granite infill in Lime Street and Campbell Street in Central Sydney
- Smartpoles Darlinghurst Road and Oxford Street

Car sharing

Over 60,000 City of Sydney residents and businesses are members of a City authorised car share organisation. Around 37 per cent of city residents who drive (with an unrestricted drivers licence) are members.

Car sharing is part of Council's strategy to make the City of Sydney sustainable. It's an efficient use of road and parking space, allowing a single vehicle to be used by a large number of people. This reduces congestion and competition for parking spaces, which ultimately benefits all road users. It also reduces overheads for residents who rarely drive and don't need to have their own vehicle.

Car sharing in the City operates under two business models. One is a 'back to base' system that uses dedicated car share spaces on the street. These are approved through the Local Pedestrian, Cycling and Traffic Calming Committee. The other is a 'peer to peer' arrangement where residents can borrow a car from other residents. These vehicles aren't permitted to use the dedicated on-street parking spaces.

The City installed its first car sharing parking space in 2008. Since then almost 800 dedicated on-street car share parking spaces have been added to the network. In addition, our local planning controls will increase the number of car sharing spaces provided in new commercial and residential developments.

Relevant links

For a comprehensive list of actions the City will take to become more connected see the following :

- [Connecting our city: 2012](#)
- [Walking Strategy and Action Plan: 2014](#)
- [Cycle Strategy and Action Plan: 2007-2017](#)
- [Liveable Green Network](#)



8. Green and cool city

Dealing with heat is identified as a priority for reducing shocks and stresses on our city and its community. Greening our city is an important component of the Sustainable Sydney 2030 vision to be green, global and connected.

The Cooperative Research Centre for Low Carbon Living (CRCLCL) and the University of NSW (UNSW) with the City of Sydney have released the [Cooling Sydney Strategy: Planning for Sydney 2050](#) which provides the first strategic direction for the city to live with our changing climate.

Reducing the effects of urban heat through measures such as increasing shading and canopy, water misting, and careful selection of building and road materials are increasingly important to reduce the overall heat impacts for our communities. We are also focussed on increasing and preserving local indigenous plant and animal populations in our city, through parks and streets verges.

The City maintains sensors in City locations that measure temperature and humidity to collect locally specific background data to monitor and evaluate the effectiveness of urban heat treatments.

The City is involved in leading research into urban heat impacts and opportunities is through the Cooperative Research Centre for Low Carbon Living who are developing an urban heat decision tool and index. The City is also involved with the Cool Cities network of the C40 and the Resilient Sydney program, to learn and share best practice with other jurisdictions.

A collaborative effort between the City, the community and other land managers is needed to improve our city's urban canopy and ecological value. We will continue to work with our community and others in the city to deliver this commitment.



City of Sydney Operations

What we are doing

The City has programs and measures to increase canopy cover, habitat linkages and native plant and animal species in its open spaces and streetscapes. We have:

- Planted thousands of new street trees since 2005 and installed landscaping and additional plants throughout the city's streets and parks
- Provided annual floral displays and hanging baskets in areas with no landscaping or planting through the City's Living Colour program
- Planted thousands of native plants and increased habitat across our bush restoration sites since 2015
- Upgraded 77 parks since 2008 and installed 249 raingardens

How we are tracking

The City's canopy cover was 15.5 per cent in 2008, 17.1 per cent in 2013, and 17.8 per cent in 2019. Whilst the City is one of the few councils in Sydney that has managed to increase canopy cover over this time, we need the rate of canopy cover growth to increase more quickly to meet the urban canopy target of 23 per cent by 2030.

Progress against our fauna targets will be measured formally every five years through a comprehensive survey. Bush restoration sites in the city have increased to 12.3ha, from the baseline of 4.6ha in 2012.



Our operational targets

 Urban canopy	<ul style="list-style-type: none"> – The average total canopy cover is increased by 50 per cent by 2030 (from 15 to 23 per cent), and increased by 75 per cent by 2050 (to 27 per cent), from a 2008 baseline – Plant 700 street trees each year until 2021 – Tree species diversity will not consist of more than 40 per cent for any particular plant family, 30 per cent for any genus or 10 per cent for any one species by 2021
 Urban ecology	<ul style="list-style-type: none"> – Habitat sites in the city are protected and the area of bush restoration sites is increased by 100 per cent by 2023 from a 2012 baseline of 4.6 hectares – Indigenous fauna species diversity, abundance and distribution is maintained or increased by 2023 based on a 2012 baseline – A progressive increase in the number of habitat features for priority fauna species is established along potential habitat linkages by 2023
 Urban greening	<ul style="list-style-type: none"> – Plant 50,000 new trees and shrubs in City parks and street gardens each year until 2021

Local government area target

 Urban canopy	<ul style="list-style-type: none"> – The average total canopy cover is increased by 50 per cent by 2030 (from 15 to 23 per cent), and increased by 75 per cent by 2050 (to 27 per cent), from a 2008 baseline
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The local government area

The City of Sydney recognises the importance of trees and other plants in providing significant environmental, social and economic benefits for the community. There is growing international recognition of the role of cities and local governments in supporting and promoting biodiversity.

The City is committed to increasing tree coverage, improving urban ecology and biodiversity and supporting community greening to make Sydney one of the world's leading green cities. To achieve this, the City has developed the Greening Sydney Plan.

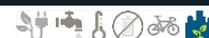
The Plan acknowledges the importance of ecology and biodiversity to city living and supports the development of the Urban Ecology Strategic Action Plan.

Three strategic focus areas have been identified informing the objectives and targets of the Plan:

- **Urban Canopy** - developing and protecting the city's urban forest
- **Urban Ecology** - greening to improve habitat for biodiversity
- **Community Empowerment** - to green and care for our urban landscape

Relevant links

- [Greening Sydney Plan: 2012](#)



Urban canopy

The City of Sydney recognises that trees and green spaces are one of a city's most important natural assets. They are crucial to maintaining the high quality of our public realm and achieving Sustainable Sydney 2030, by assisting the creation of green corridors and increased canopy cover.

The in-road tree planting project was completed in Rosebery Avenue. Design work continues for streets in Glebe, Beaconsfield and Rosebery, with a wider greening precinct approach being developed for the eastern area in Danks Street Waterloo.

This planting is undertaken as part of the City's Street Tree Master Plan 2011¹², which is a blueprint for street tree plantings across the City of Sydney.

The City is continuing to deliver a number of parks upgrades within the LGA. Since 2008, 77 parks have been completed, including two completed during Q1 and Q2 in 2019-20 and several more currently being planned. The upgrade of Lew White Reserve has been completed and new fitness equipment has been installed at Waterloo Park. Upgrades of Maybeanke Reserve, Ross Street Playground and Pirramma Park Fitness are due for completion in 2019-20. Planning and design for over 20 park renewal projects are currently underway. A further eight small parks across the local government area will commence design in 2019-20, with delivery over the next three years.

Under the Greening Sydney program various areas have been converted to increase the vegetated space within the City. During Q1 and Q2 in 2019-20 3,561 m² of landscaping (grass and planting installation) was completed. Major planting works were completed at Hyde Park, Chippendale Green and Sydney Park.

Raingardens are one of the simplest forms of Water Sensitive Urban Design (WSUD), improving water quality and managing runoff to improve biodiversity and the liveability of urban environments. 249 raingardens have been installed to date.

Description	Q1 19/20	Q2 19/20	19/20 target	Year to date	Total to date
Park upgrades (#)	1	1		2	77
Landscaping (grass/planting) (m ²)	1,829	1,732	8,000	3,561	102,517 since 2009
New shrubs and grasses planted in City parks and streets	22,780	20,182	50,000	42,962	724,599 since 2009
Raingardens (#)	N/A	N/A	trend	N/A	249
Street trees planted since 2005 (#)	250	11	700	261	13,892

Description	Q1 19/20	Q2 19/20	2030 target	Year to date	Total to date
Canopy cover (on current) (%)*	N/A	N/A	23.5	N/A	17.8

Please note numbers on the table above are compiled from various sources and may include adjusted totals as more accurate data is received.

* Canopy cover is measured every five years. 2013 data was made available in 2016, with new measurement undertaken in early 2019, and the data shown in the table above.

Relevant links

- [City of Sydney Street Trees](#)
- [Sydney's Green Streets](#)
- [Urban Forest Strategy: 2013](#)



¹² <http://www.cityofsydney.nsw.gov.au/live/trees/tree-policies>



Photo: Eastern Suburbs Banksia Scrub expansion works at Sydney Park



Photo: Spring baseline invertebrate study

Urban Ecology

The ecological health of urban areas influences not only the diversity and abundance of plant and animal species, but also the quality of life of urban residents. Improved urban ecosystems can consequently have both environmental and social benefits.

The City's Urban Ecology Strategic Action Plan (UESAP) was adopted by Council in March 2014. The Plan outlines the City's approach to identify, protect and rebuild locally indigenous plant and animal populations.

The pilot Sydney Park community bird monitoring program, 'Budding Birdos' was delivered with Birdlife Australia across 11 months in 2019. It combined the City's biodiversity and engagement priorities, with Birdlife Australia's monitoring and education resources by guiding participants through online learning, social events, skilled outdoor workshops and participation in bird surveying in a fun and relaxing way. The goal was to have an active, engaged, and enthusiastic community of people who are networked and inspired to build a better world for Sydney's urban biodiversity. Five workshops in Sydney Park and two field trips were delivered under the program.

The Urban Ecology workshop series commenced in September and saw a total of 153 community members participate in 10 workshops to date. The workshops varied from drawing with nature skills to improving frog ID skills to several events held throughout National Bird week including a Peregrine falcon walk and talk, to a breakfast with the birds in Sydney Park.

An additional four native bee hives have been installed in community gardens and bush restoration sites across the LGA. Taking the total to seven hives as part of the trial. When placed in sites managed by volunteers, there is a

requirement to attend a workshop on native beekeeping. To date, all seven of the native bee hives installed in 2019 have survived. Based on the success of this trial a policy will be developed outlining how community members can apply to install a native bee hive in their local park, bushcare site or community garden.

A baseline invertebrate survey was commenced in October with the University of Sydney ecologists. The spring survey saw 19 sites across the LGA assessed. The diversity and abundance of cicadas, native bees, butterflies and spiders were recorded. Initial surveys identified cicadas at 17 sites, at least 12 species of native bees, eight butterfly species and six different spider species recorded at all 19 sites. The results are surprisingly low compared to data recorded across several databases since 2014. Initial suggestions that the drought and unusually warmer weather could be impacting on invertebrates. A second summer survey will be undertaken in February and results collated. Management and habitat opportunities will be identified to improve the City's invertebrate diversity and population.

Bush restoration works continue to be implemented under the new bush regeneration contract. Across sites in northern LGA, 2934 plants were installed with some minor expansion works of 375m² in Glebe. Sydney Park continues to see improvements to the bush restoration sites with 4126 plants installed and an expansion of 215m² with a focus on planting species from the coastal freshwater reedland vegetation community, an original vegetation community in that area.

Relevant links

- [Urban Ecology Strategic Action Plan 2014](#)



Community Empowerment

Community gardens and community planting

The City recognises that community gardening offers residents the opportunity to grow and harvest their own organic vegetables, herbs and flowers and helping reduce household waste through community composting. Community gardens also bring people together to transform knowledge and skills into harmonious demonstration spaces within our city.

The City continues to support and implement community gardens in the local government area, with 20 gardens, two community footpath verge gardens, and a new, community composting group being developed.

We have established a community garden at the Lawrence Hargraves Reserve Kings Cross Community Garden, with two more on the way at Frances Newtown

Reserve Palmer St Community Garden and Cowper St Community Garden

The City also supports five Bushcare groups who play a vital role in restoring bushland areas by undertaking weeding, litter removal and tubestock planting. A new Bushcare group is being established for Sydney Park.

Community planting events happen throughout the year to assist existing Bushcare groups or to green open spaces by inviting the local residents and community to participate in planting native seedlings.

Relevant links

- [City of Sydney Community Gardens](#)
- [City of Sydney Community Composting](#)
- [City of Sydney Bushcare](#)

Performance	Q4 18/19	Q1 19/20	19/20 target	Year to date	Total to date
Community Gardens (#)	1	No new	>18	No new	20
Landcare groups (#)	No new	No new	trend	No new	5
Community footpath verge gardens (#)	-1	No new	trend	No new	2
Community composting groups (#)	No new	-1	trend	No new	0



Photo: National Tree Day



Green roofs and walls

Green roofs and walls make an important contribution to the urban environment. They help mitigate the impacts of the urban heat island effect, slow and clean stormwater, improve air quality, increase habitat for biodiversity and create additional space for urban food production and recreation. The Green Roofs and Walls Policy – the first of its kind in Australia, was formally adopted by the Council in 2014.

The City has developed resources to inform, inspire and encourage building owners to include green roofs and walls in their developments. These include a guide to waterproofing for green roofs and walls, a green roofs and walls inspiration guide and case studies showcasing two of the City’s own green roof projects, Surry Hills Library and Beare Park amenities block. The City’s work on green roofs and walls, including the policy, guidelines and its own green roofs and walls, was ‘highly commended’ in the NSW Government’s Green Globe Awards in October 2015.

The guides, case studies and more can be downloaded from www.cityofsydney.nsw.gov.au/green-roofs-and-walls

Green roofs and walls are becoming a standard feature in new developments, as developers seek to make the most of rooftop spaces and provide attractive offerings for residents and workers. In 2019 the City approved 43 developments featuring green roofs or green walls, and received a further 25 development applications still under assessment.

Currently the City has at least 155,319 m2 of green roofs and walls. 2019 saw an additional 4212 m2 delivered on eight new properties.

Performance	2018 new sites	2019 new sites	Total to date ^[1]	Total area (m ²)
Green roofs in the LGA (#)	11	5	156	151,580
Green walls in the LGA (#)	1	3	46	4317
Total green roofs and walls (#)	12	8	202	155,319

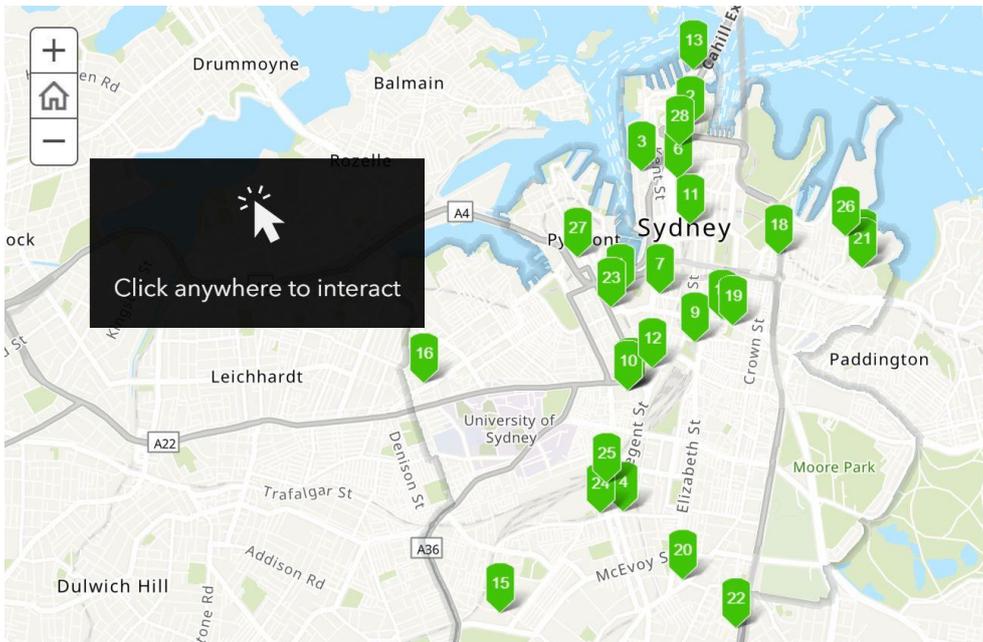
Relevant links

- [Green Roofs and Walls](#)

^[1] 2012/13 was the first year of measurement.



9. Delivering to the Community



The new interactive Environmental Grants online map – click through to inspiring project descriptions and pictures

Highlights

The City continues to work with the business community and our local residents to improve environmental outcomes and achieve progress towards our Sustainable Sydney 2030 goals.

We established the Sustainable Destinations Partnership – a partnership of over 40 accommodation and entertainment sector leaders – which achieved combined savings of 5 per cent carbon emissions and a zero increase in potable water consumption in its first reporting year (FY19). The Partnership has since increased to 46 members, including many major hotels which represent 61 per cent of all hotel rooms in the city. Program partners took the lead on the City's Single Use Pledge – to reduce plastic waste by eliminating single use items (such as takeaway containers and straws).

The Better Buildings Partnership released annual results for FY19 showing further reductions in carbon emissions to achieve a total 53 per cent reduction across partner buildings from the program baseline in FY06. However while partners continue to drive down carbon emissions, potable water use in partner buildings increased 5 per cent in FY19-20 (compared to the previous year).

The City is working with program partners to determine the cause for the increased consumption, investigating the impact of factors such as warmer weather, with Australia experiencing its hottest year on record, and greater use of end of trip facilities as more office workers choose active transport, like walking or cycling.

With the 2019 program intake, Smart Green Apartments now includes 158 Sydney apartment buildings, home to 25,500 residents. Since 2016, buildings in the program have implemented projects to save an estimated 14,660 tonnes carbon emissions and 253 kilolitres of potable water annually. During July to December 2019, the City awarded 36 Environmental Grants - bringing the total number of grants to over 380 and City funding of over \$5.2m in cash and value-in-kind approved since 2006.

In November the City launched a new online interactive map to showcase projects that have been supported by the City's Environmental Grants program. This map shows buildings who have received grants and describes their achievements. This provides valuable information for future grant applicants and inspiration for action towards Sustainable Sydney 2030.



BUSINESS SECTOR - PROGRAM UPDATE

Sustainable Office Sector Plan

Sydney's Sustainable Office Buildings Plan was adopted by Council in 2018 and highlights 35 actions to achieving more sustainable buildings across the office sector.

The City has collaborated with sector stakeholders to achieve the following:

- Championed the expansion of the federal Commercial Building Disclosure program to include smaller buildings and office tenants
- Collaborated with national peak bodies to develop a shared position on an integrated policy framework to drive continuous improvement of environmental performance
- Encouraged Sydney LGA businesses to set net zero targets and commitments

Better Buildings Partnership

The Better Buildings Partnership released preliminary annual results for 2018-2019, showing how the partnership has achieved carbon emission reductions of 53 per cent from the FY 2006 baseline. Potable water consumption has increased over the last two years, five per cent over the last 12 months. Executives from the Partnership attended an event with the City of Sydney to discuss the key outcomes and opportunities for the Partnership in the coming year.

The Better Buildings Partnership continues to facilitate the uptake of renewable energy by members and their tenants; define pathways to achieve a circular economy; and deliver innovative initiatives to achieve increased tenant engagement. The partnership continues to support the pilot of the Better Buildings Cup with eight buildings in Sydney participating.

Good Environmental Choice Australia developed and released its waste services standard to industry. The standard was developed in conjunction with the Partnership to help increase the capability and quality of services provided by the waste industry. Two waste organisations (ORG and iTreat) have now been certified by the Good Environmental Choice Australia's waste services standard.

Relevant links

[Better Buildings Partnership](#)

Performance	2005 - 2006 Baseline	2018-19 results	% change 12 months (since 2017-2018)
Carbon emissions (tonnes CO2e)	401,897	213,851	6% reduction
Potable water kL	3,160,760	2,311,665	5% increase



CitySwitch Green Office NATIONAL

In 2019 CitySwitch signatories across Australia achieved a reduction of 98,050 tonnes of emissions from energy efficiency improvements, and a further 844,160 tonnes of emissions were abated through the purchase of carbon offsets.

State and National awards were held in November. National award winners included the Commonwealth Bank of Australia, Finder, Kua and Cundall. Staff engagement projects, strategy implementation and energy efficiency projects were prominent among the achievements of award recipients.

CitySwitch developed and delivered two new waste engagement campaigns. 'Wipe Out Waste' focuses on the need to avoid creating unnecessary waste and 'Beyond the Bin' encourages improved separation for better resource recovery. In addition, the 'Positive Power' campaign was developed with a suite of digital resources for office businesses to reduce energy use and emissions, and transition to renewable power.

A substantial increase to program membership was realised in 2019 as Property NSW included an additional 562 tenancies with a combined floor space over 650,000 square metres to their existing program commitment. The program now represents over 1,500 offices and over 19 per cent of the office floor space across Australia.

Performance - Cumulative	Q1 19/20	Q2 19/20
Signatories (#)	619	623
Tenancies (#)	947	1,534
Office floor Space - NLA (m2)	4,225,647	5,014,938
Percentage of all Australian office space ¹³	16.8	20.0
Average NABERS Energy rating (stars)	-	4.5

Relevant links

[CitySwitch Green Office](#)

¹³ Based on 25.1 million NLA m2 total per Property Council of Australia, Office Market Report 2016



2019 CitySwitch NSW and CitySwitch National award winners

CitySwitch Green Office SYDNEY

Signatory annual reporting and awards take centre stage towards the end of the calendar year. Sydney hosted the NSW and national CitySwitch awards event in November, with Sydney signatories well represented amongst award winners. NSW New Signatory of the Year was awarded to Finder for the innovative ways they have engaged staff and customers; NSW Partnership of the Year to Finder and coffee provider and circular economy partner Kua; NSW Signatory of the Year Under 2000sqm to Steensen Varming who continue to demonstrate leadership; and NSW Signatory of the Year over 2000sqm to Commonwealth Bank of Australia for their outstanding abatement and renewables action. Highly commended awards also went to Sydney signatories The George Institute and the Garvan Institute of Medical Research.

In 2019, Sydney signatories have achieved a reduction of 37,715 tonnes of emissions from energy efficiency improvements. This represents a total annual energy saving, through reduced energy costs, to members of over \$11 Million.

Over the past six months, the program continued engagement campaigns on a range of topics with members, as well businesses and building managers through the Better Buildings Cup, and other stakeholders from the residential and entertainment and accommodation sectors. The opportunities in the circular economy was explored at Beyond the Bin: better solutions for resource recovery event, and the Cup materials promoting waste improvement, renewable energy, carbon neutrality and energy efficiency action.

Performance - Cumulative	Q1 19/20	Q2 19/20
Signatories (#)	140	142
Tenancies (#)	167	222
Office floor space NLA (m2)	1,198,971	1,367,253
Office floor space as proportion of Sydney (%) ¹⁴	23.6	26.9
Average NABERS energy rating (stars)	-	4.6

Making Sydney a Sustainable Destination Plan

Making Sydney a Sustainable Destination Plan was adopted by Council in 2018 and highlights 28 actions to achieving more sustainable buildings across the accommodation and entertainment sector.

The City has collaborated with sector stakeholders to achieve the following:

- Sydney ranked eighth on the Global Destination Sustainability Index (GDSI) in 2019, up from ninth place in previous year. GDSI also awarded the City's Sustainable Destination Partnership the Innovation in Sustainability award as a result of its outstanding work in collaboration and environmental footprinting.
- Nine accommodation and entertainment buildings received grant funding to support their first third party environmental performance rating or energy audit
- Engagement with government travel buyers to include environmental rating requirements in their accommodation Request For Proposals has resulted in Local Government NSW endorsing this advocacy position, and COAG's Energy Council committing all Australian governments to preference hotels with NABERS rating by mid-2021.

Sustainable Destination Partnership

The Sustainable Destination Partnership (SDP) released its first progress report which highlights five percent reduction in carbon emissions, zero increase in potable water and significant improvements in waste reporting in its first year of collaboration. All partners reported increased organisational and staff capacity, and initiation of new projects to drive sustainable change in their businesses.

Five new partners joined the Partnership which now encompasses 61 per cent of hotel rooms in the city.

The Partnership has committed to a Roadmap to Halving Food Waste by 2026, four years ahead of the national target

The Partnership commenced work on its second annual work plan which will focus on improving waste reporting, working towards halving food waste, identifying water saving opportunities, implementing actions towards the Single Use Pledge and increasing knowledge and investment in renewable energy.

Performance	2017-18 Baseline	2018-19 results	2020-21 Target
Carbon emissions (tonnes CO2e)	242,656	234,884 (5% reduction)	10% reduction
Potable water kL	2,032,196	2,012,308	Zero increase

Relevant links

- [Sustainable Destination Partnership](#)

¹⁴ Based on 5.1 million NLA m² total per Property Council of Australia, Office Market Report 2016



COMMUNITY & BUSINESS - PROGRAM UPDATE

Renewable Energy Program

Sydney needs to accelerate its transition from a city powered by coal, to a low-carbon city, and ultimately to a net zero city by 2050. On paper, these are straightforward targets, however the path to becoming net zero is complex and costly, even for the most motivated resident or organisation.

The 2019 Climate of the Nation Report, commissioned by the Australian Institute, reported that 81 per cent of Australians are concerned about climate change. This sentiment was echoed at a local level through the City's 2050 engagement report. Our community express a desire to be part of the solution but they are looking for more information from trusted sources on the practical actions they can take.

One way that we have been addressing this community need, and to achieve 50 per cent of electricity demand from renewable sources by 2030 through voluntary action, is through broad scale marketing.

Here are some examples of the materials the City has produced to educate our community about renewable energy:

- Development of the [Renewable Energy Help Centre](#) – an online knowledge base covering everything from solar panels to power purchase agreements.
- A short [video](#) (Facebook login required) and article educating students about climate action beyond the Friday for Climate marches.
- An illustrated [video explaining how GreenPower](#) works and why it's the quickest and easiest way to switch to renewables at home and work.

This compliments the ongoing focus on renewable energy and carbon positive action that the City has been driving across the LGA since 2005 through our sustainability leadership programs for the residential apartment, accommodation and entertainment and commercial office sectors. Program partners within the commercial office sector are already demonstrating global leadership with 11 Sydney CitySwitch signatories certified carbon neutral, and 77 Better Buildings Partnership buildings with carbon neutral commitments.

Building Tune Up Program

The City continues to drive the uptake of 'Building Data Analytics' systems in commercial buildings in the City. A recent evaluation showed that savings of 10 to 15 per cent of site energy and water use are possible through the program. Actions implemented by building owners have saved 160 tonnes of carbon emissions per annum and over \$33,000 per annum for the buildings in the program. The program has created a panel of accredited building environmental performance assessors to deliver energy and water ratings to Sydney's commercial buildings.

Relevant links

- [Building Tune Up](#)



Sydney Water Partnership

In response to the ongoing drought, the City has partnered with Sydney Water to deliver water savings across the council area. The Sydney Water Partnership commenced in June 2019 and aims to engage with residents and businesses to improve water use efficiency and deliver water saving opportunities over the next two years. By June 2021 we aim to achieve 150kL/day of water savings and participation of 50 non-residential stakeholders.

Performance	Results to date	Program Target
Non-residential participants (#)	10	50
Savings identified (kL/day)	15.7	
Savings achieved (kL/day)	-	150

Love Food Sydney Pilot

In June 2019 the City was awarded a Love Food Community grant from the Department of Planning, Industry and Environment. Over 18 months, Love Food Sydney will build the capacity of residents, businesses and tertiary institutions to avoid food waste. The program will be delivered through the City's existing programs including Smart Green Apartments, Sustainable Destination Partnership and CitySwitch, as well as through partnerships with University of Sydney and University of Technology Sydney. The program will raise awareness and provide practical support to reduce food waste in homes and businesses.

Performance	Program Targets
Residential participants (#)	3,434
Business participants (#)	167
Businesses in tertiary institutions	20

Environmental Grants

In the second half of 2019 the City awarded 36 Environmental Grants to facilitate action and catalyse solutions required to achieve the targets set by Sustainable Sydney 2030.

Environmental Grant stream	Number awarded Jul-Dec 2019
Environmental Performance	
Innovation	5
Building Operations	2
Ratings and Assessment	26
Knowledge Exchange	2
Matching	1

Through the City's Environmental Grants supported 26 Ratings and Assessments projects to assist building owners and managers better understand their environmental impact and to identify opportunities for improvement, 2 Building Operations projects to determine baseline electricity consumption, and 5 Innovation projects to:

- Increase the biodiversity of the environment through installation of specially designed tiles that mimic the natural habitat (Sydney Institute of Marine Science).
- Demonstrate to commercial landlords and their tenants the benefits of solar and identify mechanisms to overcome solar split incentives (Income Energy Pty Ltd)
- Educate retailers and the designers of shop fit-outs on store design to increase energy efficiency (The Footprint Calculator Pty Ltd).
- Identify the opportunities, barriers, risks and scale of urban farming possible within the local government area (Blakthumb).
- Assist consumers reduce their carbon footprint with personalised recommendations of quality carbon-neutral alternatives for major household spend items (Purposed Pty Ltd).

Through the Knowledge Exchange program, funds were provided to 2 projects to:

- Share information and enable better education, in order to create more harmonious strata communities, and future proofing these strata communities through better regulation (Owners Corporation Network of Australia Ltd).
- Comprehensively review risk and safety requirements for installation of large scale batteries in buildings and the installation of charging stations and management of electric vehicles (GPT RE Ltd)

Through the matching grant program funds were provided to 1 project to reduce food waste and food insecurity in the local area by expanding participation in the Y Waste app that connects users with food retailers who have unsold food.

In November, the City launched an online interactive map tool to communicate the achievements of previous grant recipients.

Relevant links

- [Environmental Performance Grants](#)
- [Knowledge Exchange Sponsorships](#)
- [Matching Grants](#)
- [Environmental grants interactive map](#)



RESIDENTIAL SECTOR – PROGRAM UPDATE

Residential Apartment Sustainability Plan

The Residential Apartment Sustainability Plan (RASP) adopted by Council in August 2015 contains 30 actions to drive demand for better performing buildings over a ten year period.

The City has continued to collaborate with 18 stakeholders from the NSW State Government, industry and community organisations to reduce the environmental impact of apartment buildings through our Residential Apartments Sustainability Reference Group. This group met in August and November to discuss opportunities and collaboration around improving sustainability in the strata sector; particular focus has been on the drought and upcoming legislative changes to the Community Land Management Act 1989 (NSW).

Following the launch of the NABERS tool for residential apartment buildings in June 2018, the City is supporting the take-up of this tool through Smart Green Apartments. The City has directly supported 55 ratings (either individual strata buildings or layered schemes in precincts). The ratings are on a scale from 0 stars (poor) to 6 stars (market leading).

Two Leadership Network events were held with 77 participants representing buildings from the Smart Green Apartments alumni. One event focused on exploring the City's sustainability vision and the role of electric vehicles.

The City has designed a Residential Building Manager Training series with the NABERS team and Green Strata. The training program is intended to provide a national platform for the professional development of residential building managers utilising NABERS as the core framework for improved building performance and governance. The City's second Building Manager Training program commenced was delivered with Lendlease in Barangaroo. This series was delivered in five, four-hour sessions. All sessions have been delivered; session four covered NABERS and renewables, and session five; EV charging, and the war on waste for apartment buildings.

The City promoted the value of improved environmental performance and sustainability upgrades in residential strata through presentations at the following:

- Griffith University National Strata Conference
- Strata Community Association NSW Conference
- NABERS National Steering Committee

Relevant links

[Residential Apartment Sustainability Plan: 2015](#)

Smart Green Apartments



2019 Smart Green Apartments awards winners

Smart Green Apartments is the City's flagship retrofit program for apartment communities. To date, direct engagement has occurred with 127 strata plans, 158 buildings and 25 500 residents in 12 778 apartments.

Energy efficiency projects have been implemented in the 2016, 2017 and 2018 intake years, avoiding 14,660 tonnes CO₂ per year and saving participating owners corporations a total of \$2.09 million per year.

Through the City's Waterfix partnership with Sydney Water; 2676 individual apartments have been retrofitted within 12 buildings. These upgrades will achieve water savings of 253,000 kilolitres per annum and cost savings to owners of \$500,000 per annum in reduced water bills.

The annual Smart Green Apartments Awards were held in November, with over 150 attendees celebrating the achievements of the City of Sydney's strata communities and welcoming 25 buildings to the 2019 program intake.



Green Villages

The Green Villages brand aims to connect sustainable living content and initiatives to drive and celebrate sustainable city villages.

In Q1 and Q2, five Green Villages talks, attended by 147 participants, were delivered at Sydney Park on the topics; Worm farming and composting basics, Edible Green Walls and Small space gardening. Pop-up reuse workshops were delivered in Newtown and Glebe as part of the Seaside Scavenge. Talks were delivered by City Farm with support from the Sustainability Programs Team. Evaluation surveys indicated that 100 per cent of respondents rated the workshop they attended as excellent, very good or good. Follow-up surveys of participants indicated that 95 per cent of respondents have undertaken one or more new actions since attending the talk.

Performance	Q1 18/19	Q2 18/19	Year to date	2019/20 target
Workshops and forums (#)	3	2	5	8
Participants (#)	84	63	147	240
Participants implementing (per cent)	92	91	91	85

Relevant links

- [City of Sydney Environmental News](#)



Green Villages community education – vertical gardening workshop

10. Glossary

Active transport: Involves any physical activity that gets you from one place to another, such as walking and cycling.

Annual Carbon Inventory: Internal database developed by the Sustainability Unit summarising annual greenhouse gas emissions from all City of Sydney assets and activities (buildings, street lighting, parks & other) resulting from consumption of electricity, gas and fuel and other sources.

Arterial transport: A high-capacity urban road or route.

BASIX or Building Sustainability Index: A NSW government index, to rate energy and water efficiency performance of residential buildings, that aims to reduce water consumption and greenhouse gas emissions by 40 per cent compared to pre-BASIX (2004) buildings.

Biodiversity: Biological diversity including species richness, ecosystem complexity and genetic variation.

Business-as-usual: A projection (e.g. greenhouse gas emission levels) based on the assumption that all existing policy measures remain in place with no new measures introduced.

Canopy cover: The proportion of land area occupied by the tree's crown or canopy, or combined canopies, when visualised from directly above. It is often expressed as a percentage of the total area covered.

Carbon intensity: Electricity that has a high emissions concentration, or energy intensity, for example coal-fired electricity has a high emissions concentration, or carbon intensity.

Carbon neutral or net zero emissions: Balancing the amount of carbon released with an equivalent amount offset by purchasing carbon credits to make up the difference.

COP21: The 2015 United Nations Climate Change Conference held in Paris, December 2015 that negotiated the Paris Agreement - a global agreement on the reduction limiting global warming to less than 2°C compared to pre-industrial levels and to drive efforts to limit the temperature increase even further to 1.5°C.

C40 Cities: is a network of the world's megacities committed to addressing climate change.

Dual plumbing: A plumbing system with two separate pipes supplying potable and reclaimed water to a building or precinct.

Ecosystem: Animals, plants and microorganisms that live in one place, as well as the environmental conditions that support them.

Energy efficiency: Using less energy to achieve the same output.

Energy storage: The capture of energy produced at one time for use at a later time.

Environmental Action 2016 – 2021 Strategy and Action Plan The strategy and action plan combines the insights and data from environmental master plans and strategies that the City developed between 2008 and 2015. The plan outlines our progress to date, and approach to achieving our bold Sustainable Sydney 2030 targets.

Environmental Management System (EMS): is a structured system designed to help manage environmental impacts and improve the environmental performance of the City's operations.

Environmental Upgrade Agreements: A NSW government finance mechanism for building owners to access finance for upgrade works of existing buildings that result in energy, water and other environmental savings.

Greenhouse gas emissions: Gases that trap heat in the atmosphere. Greenhouse gases from human activities are the most significant driver of observed climate change since the mid-20th century.

Locally indigenous: A native plant that is limited to a particular geographic area and often confined to a specific habitat.

Low-carbon energy: Electricity produced with lower amounts of carbon dioxide emissions than conventional fossil fuel power generation, such as wind, solar and hydro power.

Mitigate: Taking action to reduce impact on the environment, as well as contributions to climate change (in this context).

National Australian Built Environment Rating System or NABERS: An Australian government initiative that measures and rates the environmental performance of Australian buildings and tenancies.

National Greenhouse Accounts (NGA) Factors: Published by the Department of Climate Change "The National Greenhouse Accounts (NGA) Factors" has been prepared by the Australian Government and is designed for use by companies and individuals to estimate greenhouse gas emissions for reporting under various government programs and for their own purpose.

Net zero emissions: Balancing the amount of carbon released with an equivalent amount offset. Usually offsets are through purchasing carbon credits to make up the difference. The best practice approach is to reduce, or avoid, carbon emissions first, then offset any unavoidable emissions.

Non-potable water: Water that is not of a quality for drinking and cooking purposes, used for purposes such as laundry, gardening, car washing and cooling towers.

Paris Pledge for Action: At COP21 in Paris (December 2015), a group of global cities, regions, companies and investors committed to achieve climate stability, limiting global temperature rise to less than 2°C.

Performance Planning: Performance Planning (PP) is a TechnologyOne product that stores measures, projects and targets. Data can be imported or manually entered depending on the source. Managers are responsible for ensuring accuracy of the data. PP also contains Corporate Plan KPI's and projects.

Potable water: Treated water that is safe enough for consumption, use in kitchens and bathrooms. Water that is of drinking water quality for use in bathrooms, kitchens and for consumption.

Raingardens: Gardens that allow rainwater runoff to be absorbed, providing rainwater for plants and improving water quality in waterways by up to 30 per cent.

Recycled water: Former wastewater (sewage) is treated to remove solids and impurities and used for non-potable water needs, rather than discharged into waterways.

Renewable energy: Energy from resources which are naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat.

Resilience: The capacity to survive, adapt and grow no matter what kinds of chronic stresses and acute shocks are experienced.

100 Resilient Cities: Pioneered by the Rockefeller Foundation (100RC) is dedicated to helping cities around the world become more resilient to the physical, social and economic challenges that are a growing part of the 21st century.

Scope 1 GREENHOUSE GAS emissions: Emissions directly occurring "from sources that are owned or controlled by the institution, including: on-campus stationary combustion of fossil fuels; mobile combustion of fossil fuels by institution owned/controlled vehicles; and "fugitive" emissions. Fugitive emissions result from intentional or unintentional releases of greenhouse gases, including the leakage of hydro fluorocarbons from refrigeration and air conditioning equipment".

Scope 2 GREENHOUSE GAS emissions: Indirect emissions generated in the production of electricity consumed by the institution. Scope 2 emissions physically occur at the facility where electricity is generated.

Scope 3 GREENHOUSE GAS emissions: All the other indirect emissions that are "a consequence of the activities of the institution, but occur from sources not owned or controlled by the institution" such as commuting, air travel for university activities, waste disposal; embodied emissions

from extraction, production, and transportation of purchased goods; outsourced activities; contractor owned- vehicles; and line loss from electricity transmission and distribution".

Sea level rise: Long-term increases in the mean sea level due to global warming.

Sustainability Management and Reporting Tool (SMART): SMART is a new utilities management system that will manage and record energy and water usage by directly extracting consumption data from relevant authorities.

STEvE (System for Tracking EVerything Environmental): STEvE (the System for Tracking EVerything Environmental) is a Utilities Information Monitoring System.

Stormwater harvesting: Water from intense rainfall events (stormwater) is captured, cleaned and typically re-used for non-potable purposes.

Sustainable Sydney 2030: City of Sydney publication that sets the 2030 vision for the city aligned to the strategic priorities of Green, Global & Connected. Sets the direction, defines the road map and articulates the step changes required to achieving a more sustainable future.

Swales: Low, moist or marshy land, naturally landscaped feature or a human-created one, that manages water runoff, filters pollutants and increases rainwater permeation.

The best practice approach is to reduce or avoid carbon emissions first, then offset any unavoidable emissions.

Trigeneration: A system providing cooling, power and heating. Electricity is produced locally, the waste heat is used to supply heating and hot water, and converted into cooling via a heat-driven chiller system.

Urban heat island effect: Cities are often warmer than rural areas because vegetation is replaced with hard structures, such as pavements and buildings, which absorb and release more heat than the natural landscape.

Urban renewal areas: A program of land redevelopment in areas of moderate to high density urban land use.

Utility corridors: A passage built underground or aboveground to carry utility lines such as electricity, water and sewerpipes.

Water efficiency: Using less water to achieve the same output.

Water sensitive urban design: A design approach which integrates the urban water cycle into urban design to reduce environmental degradation and improve aesthetic appeal.

Wetlands: A land area saturated with water that forms a distinct ecosystem of aquatic plants that manage water runoff, filter pollutants and increase rainwater permeation.

11. Appendix 1: Data management plan



Low-carbon city

City of Sydney (Operations)		
Data type	Current Status	Forward Plan
Electricity	<p>Reporting underway from SMART.</p> <p>Electricity currently is reported quarterly in arrears. Data provided by electricity retailers.</p> <p>Daily monitoring occurring at all large electricity using sites (over 100,000 kWh per annum).</p>	Continue to implement and monitor data through Sustainability Management and Reporting Tool (SMART)
Natural gas	Gas data is reported quarterly in arrears. Additionally gas account data (usage) may be estimated in cases where the gas retailer cannot read meters.	Continue to implement and monitor data through Sustainability Management and Reporting Tool (SMART)
Other sources	<p>Emissions sources including flights, taxis, contractor fuel, onsite fuel usage, and refrigerants are added to SMART quarterly.</p> <p>Events data is estimated on previous years' performance.</p>	Improvement plan priorities include improving contractor reporting templates and consistency in recording staff travel data.
Co/Tri generation and renewable energy	The City is working to improve the measurement and reporting of, trigeneration and solar power generation. Data is estimated based on system size.	Improvement plan being developed to improve metering and incorporate data into SMART.
Asset Environmental Budget (Emissions)	<p>Asset Environmental Budget (emissions) has been developed based using baseline data from the NCOS report.</p> <p>Estimations for portfolio increases has been based on existing portfolio performance, Project projects for co/trigeneration, MPEP, Solar Photovoltaics program programs have been based on estimations for each program. In addition Ausgrid lighting roll out program has been estimated based on the anticipated delivery program.</p>	The Asset Environmental Budget will be reviewed annually.
Local Government Area (LGA)		
Data type	Current Status	Forward Plan
Electricity	<p>CCAP City - reported through the Environmental Sustainability Platform.</p> <p>The electricity distributor has provided community-wide high-voltage electricity data for City of Sydney local government area at a high level. Due to confidentiality clauses, a breakdown of the high-voltage data by source has not been provided and hence is not included in the City's community inventory.</p>	<p>Continue to monitor and report electricity data.</p> <p>The City is working to get more detailed information on high-voltage electricity consumption and shall include in its inventory if and when it is available.</p>
Natural gas	CCAP 2.0 reported through the Environmental Sustainability Platform	Continue to monitor and report

Other sources	CCAP 2.0 reported through the Environmental Sustainability Platform	Continue to monitor and report
Co/tri generation and renewable energy	Information about renewable energy installations is available through the Clean Energy Regulator. The Australian PV Institute have developed a solar map with funding through ARENA at http://pv-map.apvi.org.au/ Currently there is no formal mechanism in place for tracking installed co and trigeneration systems.	Continue to monitor and report



Water sensitive city

City of Sydney (Operations)		
Data type	Current Status	Forward Plan
Water	The transition of water data to SMART, the new utility data management system is almost complete. First water utility data set has been released in this report and will be verified in future reports. Data is collated from water utility bills. Accruals for June have been calculated based on previous periods.	The organisation-wide sustainable metering program will address key priorities to improve metering and monitoring of water, energy and other sustainability components including recycled water consumption.
Annual potable water use by irrigated open space	The irrigated areas are being reviewed and will be updated in the next report.	Irrigated areas are being verified so the irrigation intensity can be accurately determined.

Local Government Area (LGA)		
Data type	Current Status	Forward Plan
Water	Reporting mains water consumption annually only. No existing process for accurately capturing and reporting non-mains water consumption except manually via IPART for WICA licensees only (annually in arrears). Data for LGA potable water usage available annually only.	Continue to monitor and report



Zero waste city

City of Sydney (Operations)		
Data type	Current Status	Forward Plan
Waste	Commercial waste and recycling from 65 City of Sydney properties is reported quarterly. Construction and demolition waste reporting is limited.	The City has recently completed an organisation wide review into the way in which it collects, reports and verifies recycling and landfill diversion performance data, to significantly improve the accuracy and transparency of our reporting. The City is committed to improved reporting processes and implementing solutions for increased recycling performance of the waste it manages.
City managed property waste	All City managed property waste reported from SMART with the exception of aquatic centres.	Aquatic centres waste data to be incorporated in to SMART

Local Government Area (LGA)		
Data type	Current Status	Forward Plan
Waste	Construction and demolition waste from the city reporting is limited.	LGA commercial waste data capture to be improved and verified.
Residential waste	LGA residential waste data available and reported in the Corporate Plan. Residential and city streets waste tonnages are reported from processor reports and invoices that are extrapolated into local master spreadsheets.	
City parks, streets and public place waste	City Parks waste tonnages are reported directly from processor reports and invoices. City streets, public place and stormwater waste is not separated for disposal. Separate tonnages are based on estimates from the <i>Operations Waste Databases Audit July 2017</i> .	City parks, streets, public place and stormwater waste tonnages to be reviewed for incorporation into SMART.
e-waste	City runs e-waste drop off events tonnage collected is included in the report and also included in the corporate report.	

Active and connected city

City of Sydney (Operations)		
Data type	Current Status	Forward Plan
Fleet	Provided from the City's data management system Ausfleet.	Improvement plan to be developed and data to be incorporated into SMART.
Cycling	Event data, attendance at training sessions and monitoring is collated by City staff and maintained in registers.	Improvement plan to be developed to assess management of data.

Local Government Area (LGA)		
Data type	Current Status	Forward Plan
Car sharing	Car share operators provide monthly usage and membership data to the City. Issues with reviewing data due to operator's capacity to plot suburb boundaries, parking areas. Operators do not have common membership categories. Peer to Peer car share membership is not collected by the City. RMS publishes licensing data each quarter. City maintains database of on-street and off-street car share parking using Traffic Committee data and operator reports.	Improvement plan to be developed to assess management of data.



City of Sydney (Operations)		
Data type	Current Status	Forward Plan
Green and cool city	Organisational reporting currently not centralised.	Improvement plan to be developed to assess management of data

Local Government Area (LGA)		
Data type	Current Status	Forward Plan
Urban canopy	Urban canopy measurement is currently undertaken every five years, through the use of Lidar or other high resolution aerial imagery. Tree planting figures are provided through the Corporate Asset Management System (CAMS)	A review of the canopy cover timing will occur as part of the Urban Forest Strategy review. Improvement plan to be developed to assess management of data
Urban ecology	Event data and attendance data is collated by City staff and maintained in registers. Survey data collates as described in the City's Urban Ecology Strategic Action Plan	Improvement plan to be developed to assess management of data.
Community Empowerment	Event data and attendance data is collated by City staff and maintained in registers	Improvement plan to be developed to assess management of data.
Green roofs and walls	Green roofs and walls data is collated by City staff and maintained in registers	Improvement plan to be developed to assess management of data.

Delivering to the Community

Local Government Area (LGA)		
PROGRAM NAME	Current Status	Forward Plan
Better Buildings Partnership	Program data collated from participants in spreadsheets and uploaded to CCAP 2.0 Environmental Sustainability Platform for archiving and analysis. Details of participants (individual buildings and floor space), energy use and energy savings implemented reported annually in arrears.	Continue to monitor and report
CitySwitch	Program data collated in national CitySwitch CRM database for archiving and analysis. Sydney data entered to CCAP 2.0 Environmental Sustainability Platform. Details of participants (individual tenancies and floor space), energy use and NABERS ratings reported annually in arrears.	Continue to monitor and report
Sustainable Destination Partnership	Program data collated from participants in spreadsheets and uploaded to CCAP 2.0 Environmental Sustainability Platform for archiving and analysis.	Continue to monitor and report
Smart Green Apartments	Program data collated in SUMS data platform. Details of participants recorded annually, energy and water use data uploaded monthly and details from assessment reports recorded through phases of assessment process. NABERS ratings numbers provided by NSW Government Household and Small Business Program	Archiving and analysis to be improved through inclusion in CCAP 2.0 Environmental Sustainability Platform
Environmental Grants	Program data collated in SmartyGrants platform and in program manager spreadsheets. Information recorded as prompted by phases of grant process (application to acquittal).	Ease of analysis to be improved through inclusion in Programs CRM database

12. Appendix 2: Environment Policy

environment policy

The City of Sydney is the local government authority responsible for the central business district and more than 30 suburbs over 26.15 square kilometres. The City provides services for more than 180,000 residents and 20,000 businesses. On any given day, the local population swells to more than 1 million. Sydney is a vibrant, cosmopolitan city with a diverse population, with people from 186 nations, including one of Australia's largest Aboriginal communities.

The City of Sydney has adopted ambitious greenhouse gas emission reduction targets in response to mounting evidence of a warmer, more unstable climate. These targets can be found at www.cityofsydney.nsw.gov.au/greenreport.

All levels of government, the private sector and the community have a vital role to play to ensure that we: stabilise emissions to maintain an acceptable global climate, ensure the city can cope with the impacts of rising sea levels and increased heat and flooding, reduce the unsustainable growth in energy, water and resource demands, prevent pollution and waste to landfill, ensure energy security and minimise impacts of climate threats and pressures from population increase, including on green space and urban ecology objectives.

The City is committed to protecting the environment through: complying with relevant legislation and regulation, complying with relevant government policy commitments and continuous improvement of environmental management processes.

We are prioritising and planning actions needed to prepare the city for the environmental, social, cultural and economic impacts of climate change. These include: a Resilience Strategy for Sydney being developed with the support of the Rockefeller Foundation's 100 Resilient Cities initiative and a Climate Adaptation Strategy to assess and mitigate risks from climate change for the local government area and our own operations.

The objectives shown below are taken from the City of Sydney's *Sustainable Sydney 2030 Community Strategic Plan (2014)*, Direction 2: A Leading Environmental Performer. The Plan is reviewed every four years.

our commitments

Objective 2.1

Energy consumption and greenhouse gas emissions are reduced across the local government area.

City now

- Reliance on centrally provided energy infrastructure outside the city.
- Legacy in existing buildings, lifestyle and work practices of a high energy consumption era.
- Reasonable level of engagement in property industry regarding the importance of efficient buildings.

City in 2030

- Continuous improvement in energy efficiency, energy productivity and greenhouse gas emissions.
- Ultra efficient buildings.
- A growing number of regenerative buildings or precincts that help to improve the carbon footprint of their surrounds.
- Networks of low and zero carbon local energy production and sharing.

Objective 2.2

Waste from the city is managed as a valuable resource and the environmental impacts of its generation and disposal are minimised.

City now

- City focused on diverting residential waste from landfill.

City in 2030

- A city that sees waste from all sectors as a valuable resource.
- Waste management practice of all sectors are coordinated to minimise environmental impacts.

Objective 2.3

Potable water consumption and gross pollutant loads to the catchment are reduced across the local government area.

City now

- Water is seen as a cheap, renewable resource.
- Invisible drains that quickly remove water which is treated like waste.

City in 2030

- The value of water is properly recognised.
- Potable water use is rationalised and opportunities to replace demand with recycled water are realised.
- The quality of city waterways meet the needs of the community while minimising impact on the environment.

Objective 2.4

City residents, businesses, building owners, workers and visitors improve their environmental performance.

City now

- An urban management practice that focuses on what is easier - new development.
- Leading environmental practice in silos not enabling transformative change.

City in 2030

- A community that understands the environmental impact and one that collaborates in the development and implementation of initiatives that improve the environmental performance of the city.
- An urban development norm that means that all new and redeveloped buildings operate with high environmental performance - supported by robust State and local planning policy and standards.

Objective 2.5

The City of Sydney's operations and activities demonstrate leadership in environmental performance.

City now

- A commitment to strategic environmental initiatives

City in 2030

- International recognition for environmental leadership across all areas of the City of Sydney activities.

Objective 2.6

The extent and quality of urban canopy cover, landscaping and city greening is improved.

City now

- The city has some tree lined streets and great urban parks.
- Urban canopy is 15.5 per cent of the city area and there is very little remnant vegetation or landscape.
- The City is working with the community to green local streets and spaces.

City in 2030

- The City is planting trees into every available road and footpath, and residents and developers are planting large canopy trees on private property.
- The urban canopy has increased and the community are enjoying the financial, social and environmental benefits of their trees.
- The urban heat effect has reduced and there are wildlife corridors linking the city's major parks.
- The city has the highest quality parks and open spaces maintained to best practice standards.
- The community are active participants in protecting and enhancing the city's trees, parks, flora and fauna.



Monica Barone
Chief Executive Officer April 2015

LEGEND

CO₂	Carbon dioxide
GWh	Gigawatt hours
Kg	Kilogram
kL	Kilolitres
kWp	Kilowatt peak
LED	Light Emitting Diode
LGA	Local Government Area
m²	Square meters
ML	Megalitres
MWh	Megawatt hour
MWe	Megawatt equivalent
t	Tonne
tCO₂-e	Tonnes of carbon dioxide equivalent

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<http://www.cityofsydney.nsw.gov.au/council/forms-and-publications/environmental-plans-reports>

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Sydney2030/Green/Global/Connected



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