Attachment E

Fourth Quarter 2019/20
Environmental Sustainability Progress Report

Green Environmental Sustainability Progress Report

January 2020 to June 2020

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

CITY OF SYDNEY

contents

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 Policy [1] 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

The period from January to June 2020 has been unprecedented. The year commenced with the devastating summer Australian bushfires highlighting the importance of all levels of government to take leadership on climate change. This was followed by the impact of the Covid-19 pandemic, both crises have challenged all of us on the way we live and work, and we outline in this report how the City has responded.

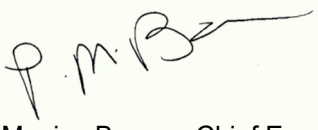
In February 2020, Council endorsed the Climate Emergency Response, in accordance with the City's Climate Emergency Declaration June 2019, when we declared that climate change poses a serious risk and should be treated as a national emergency. The response outlines the priority actions for the City and calls for all of us to take individual action.

In June 2020, Council endorsed the Community Recovery Plan. When the pandemic first hit Sydney, the City responded quickly, closing our community facilities, increasing cleansing and waste regimes, and establishing new grants programs to help support our creatives, community sector and small businesses.

The recovery plan gives direction to how we will work in partnership with our communities, businesses, the state government and other local governments to lay the groundwork for and support economic and social recovery in our City. In taking action, we will also look for opportunities to embed climate action in all that we do, to ensure culture and creativity is central to the recovery effort and to create a more equitable and resilient city and community in future.

This Green Report provides an update for the most recent period, January to June 2020, on our programs, initiatives, achievements, and includes the latest climate science in the Climate Adaptation section.

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/m^2 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[2]
- **50** per cent of electricity demand met by renewable sources by 2030

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] Accelerated target of net zero by 2040 proposed February 2020 by the Lord Mayor Clover Moore will form part of the City's new long-term strategic plan, Sustainable Sydney 2050

2. 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. In light of the climate emergency, we realise that even more urgent action is required, and in early 2020 proposed a target for the local government area of net zero emission by 2040 to be included in the City's new long-term strategic plan, Sustainable Sydney 2050

Council endorsed operational targets and actions are represented by a waterfall chart that outlines operational 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 and is incorporated into the Resourcing Strategy to promote transparency in monitoring of our emissions performance.

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 Repower 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.

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, JCDecaux, NAB, Pangolin, PWC, Sydney Opera House, Westpac, WWF	Certified carbon neutral
	UNSW	100 per cent renewable
	City of Melbourne	100 per cent renewable
2020	City of Sydney	100 per cent renewable
2025	GPT	Wholesale Office Fund net zero by 2021
	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
2030	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
	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 the Future of NABERS Energy consultation paper and Australian Government Technology Investment Roadmap discussion paper.

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 electricity and from July 2020 will be purchasing 100 per cent renewable electricity.

Offset

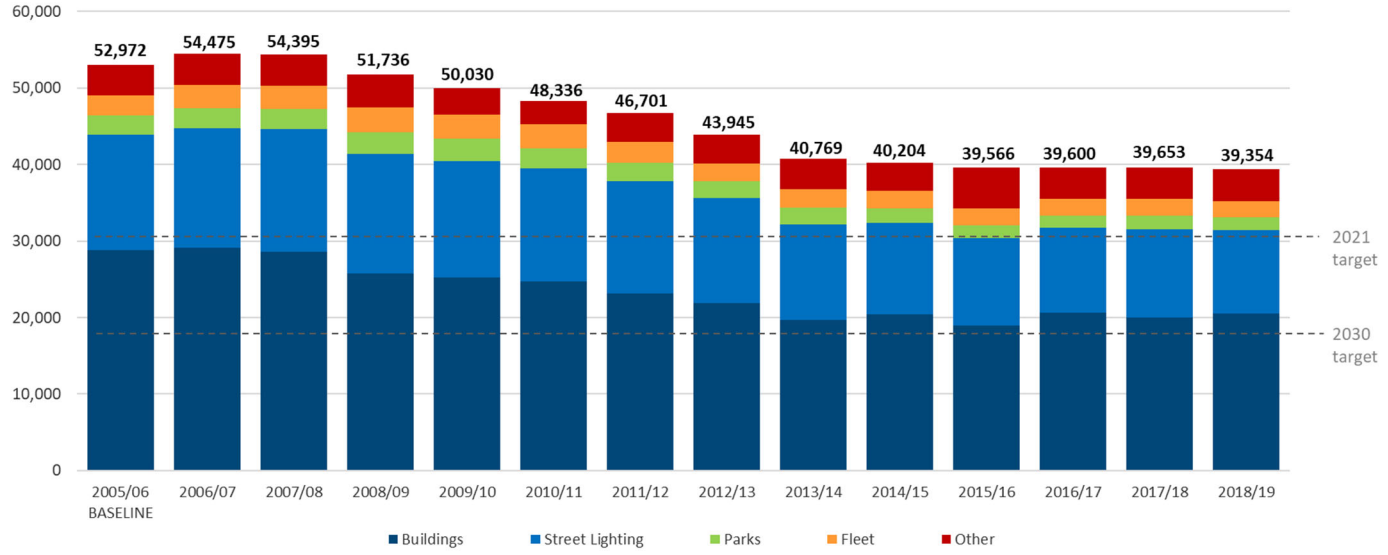
The City reduces its carbon liability by avoiding and reducing emissions and using offsets for emissions that cannot be avoided.

In some instances, the City also includes third party emissions. Contractor emissions are outside of the City's operational control however are included as scope 3 emissions on the basis that they provide core local government services that would otherwise need to be provided by the City. Similarly, we include our own flight and accommodation emissions as well as making an allowance for flights paid for by others, because it is sometimes hard to prove if the external party offset the City's flight. Emissions from travel by City staff accounts for less than 0.5 per cent of the City's total inventory. Each year the City purchases additional offsets to cover any variability in data.

Relevant links

– Climate Active

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 Factors[3].

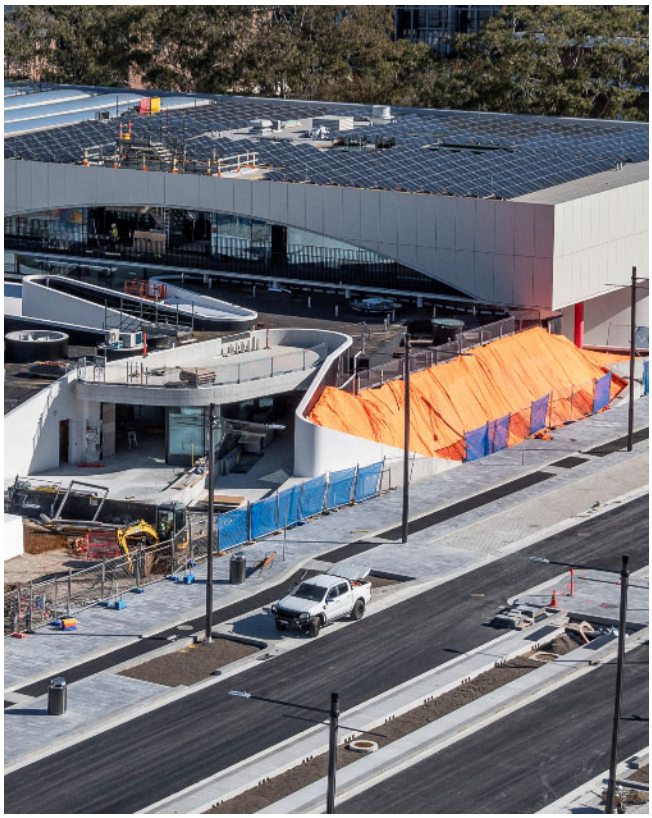
Energy consumption data

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 (Jun 2019)	31,250	75,853	188,353
Most recent (Jun 2020)	29,080	82,917	187,606
Difference (baseline)	-13,347 (-31%)	+61,023 (+279%)	+12,975 (+7%)
Difference (previous year)	-2,170 (-7%)	+7,064 (+9%)	-746 (0%)

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.

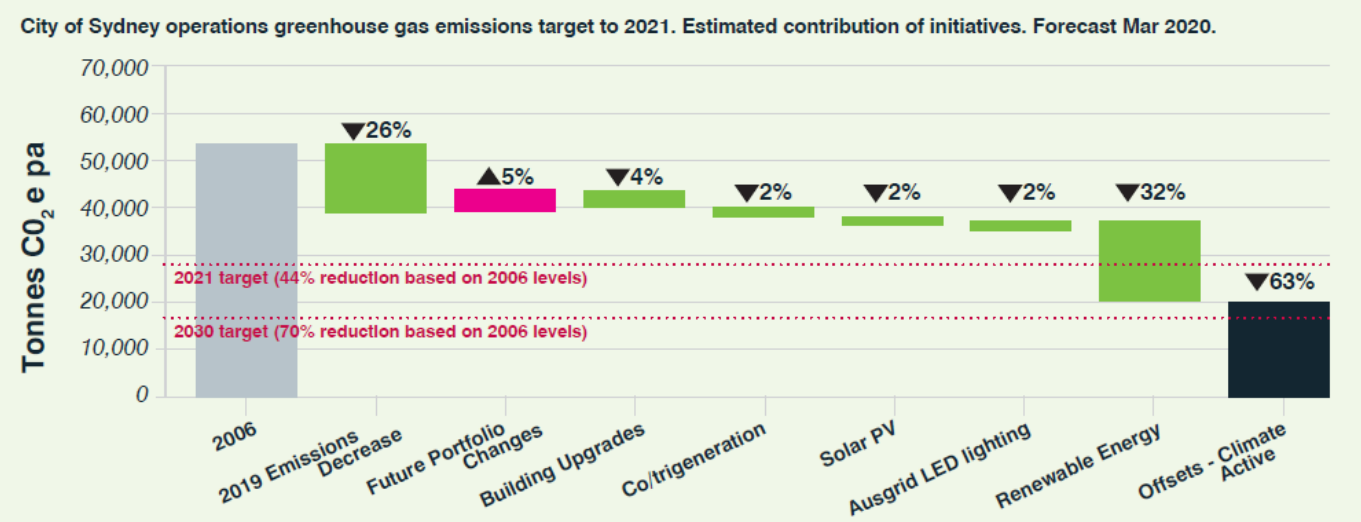


[3] Greenhouse gas factors August 2019.

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 well before 2030. 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 2011.

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



Completed initiatives – 26 per cent reduction achieved

The result since 2006 has been achieved by:

- Portfolio change (+4 per cent) over time including additional facilities in 2018/19 Green Square Community and Cultural Precinct, Green Square Library and Plaza, Perry Park Recreation Centre and Darling Library. In previous years Ian Thorpe Aquatic Centre, 343 George Street, Sydney, and Surry Hills Community Centre.
- 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 63 per cent reduction.

- Future portfolio increase (+5 per cent) assumes the expansion of the City's property portfolio for community and operational purposes. Including:
    - Increases in acquisition of 546-552 George St in 2019/20, and Gunyama Park Aquatic Centre expected to open in 2020
    - Increases through developer contributions to the City including Greenland Tower Creative Hub and 178-186 George Street
    - Proposed Divestments including Oxford St holdings.
    - Increased pedestrian lighting and maintenance for parks and public domain at Green Square.
- Building upgrades (-4 per cent) reflects estimated savings from efficiency upgrades in the most resource intensive properties via the Major Properties Efficiency Project (MPEP).
- Co/Trigeneration (-2 per cent) reductions will be accomplished through the operation of cogeneration facilities at Cook and Phillip Park Aquatic Centre and Ian Thorpe Aquatic Centre.
- Solar Photovoltaics (PV) (-2 per cent) on City properties.
- Ausgrid LED lighting (-2 per cent) The City has partnered with Ausgrid to change all conventional street lights in the City area to LEDs.
- Renewable energy for electricity (-32 cent) to be purchased by the City directly from a renewable project through a Power Purchase Agreement. This is enacted through the purchase of Large Scale Generation Certificates (LGC). 1 LGC is created for 1MWh of renewable electricity. 20% of LGCs created must be surrendered to the Australia Government under the Renewable Energy Legislation. The remaining 80% are retired to ensure that they are not double counted.
- Note Covid-19 impacts have not been included in the estimates.

Gunyama Park Aquatic and Recreation Centre: Construction works

Operational Emissions Target

The following table provides annual asset portfolio carbon emission estimates to 2023. The estimates are presented in a similar format to a four year financial budget and include how the City will exceed the 2021 target.

GHG Tonnes CO2e	2019/20	2020/21	2021/22	2022/23
Property Emissions Portfolio				
Carried Forward Portfolio Balance	*21,008*	*19,357*	*19,348*	*18,022*
Add				
Net Portfolio Changes	254	2,050	214	364
Reductions Emissions Projects				
Building Upgrades	(857)	(997)	(383)	0
Co/Trigeneration Installations	(522)	(476)	(476)	0
Solar Installations	(526)	(585)	(680)	0
Total Property Emissions at End of Period	19,357	19,348	18,022	18,386
Parks and Street Lighting Emissions				
Carried Forward Portfolio Balance	*12,641*	*12,308*	*11,443*	*10,376*
Add				
New Street Lights	0	114	134	162
Reduction of Emissions				
Ausgrid LED Street Lighting Program	(333)	(979)	(1,201)	(1,255)
Total Streets and Parks Lighting Emissions at End of Period	12,308	11,443	10,376	9,283
Other Emissions				
Refrigerants, Waste and Water	2,065	1,724	1,598	1,500
Contractor Fuel	1,269	1,329	1,341	1,354
Organisational Fleet	2,417	2,417	2,417	2,417
Corporate Emissions (Events, travel etc)	916	916	916	916
Grid Emissions (benefit from greening the grid)	(408)	(240)	(164)	0
Total Other Emissions	6,259	6,147	6,108	6,187
Reduction of Emissions				
Offsite Renewables	0	(17,134)	(17,134)	(17,134)
Total Offsite Renewables Emissions	0	(17,134)	(17,134)	(17,134)
Total Emissions at End of Period	**37,924**	**19,803**	**17,372**	**16,722**

Baseline June 2006 Emissions GHG Tonnes CO2e 52,972 Estimated Emissions reduction June 2021 (63%)

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. During the period the following was undertaken:

- The City released the Climate Emergency Response to the City's Climate Emergency declaration in July 2019 (see Section 4 below)
- The City has developed a suite of procurement documentation that will embed social and sustainable procurement practices as the norm. These practices as well as local buy initiatives will have an impact in the next financial year

  The Procurement Returnable Schedules have been developed for prospective suppliers to assess and provide assurance and/or commitment to the City's legal and strategic objectives in relation to Climate Change, Local Buy Corporate Social Responsibilities, Chain of Responsibility, Modern Slavery Act, environmental impacts, recycling content and other elements to develop towards a Circular Economy. Other documents include a Code of Conduct for Suppliers
- The City has developed Sustainable Event Management Guidelines to support the delivery of major events (see more details below). A site audit was undertaken by the EMS team for New Year's Eve and the audit findings informed the development of the guidelines
- Council owned land that have an associated Contaminated Land Environment Management Plan (CLEMP) were loaded on the Dial Before You Dig (DBYD) platform. Ongoing construction works projects on the associated land will now have direct access to the CLEMPs through the DBYD request system
- All staff sustainability training has been rolled out to City staff (see more details below).

SMART - Sustainability Management and Reporting Tool

SMART is the City's system to manage, monitor and report on utilities and other sustainability metrics for all assets owned or managed by City of Sydney. It provides City asset managers and staff with improved visibility on electricity, gas, water consumption, and waste generation.

The platform has been implemented and is now in an operational phase with a process set up for regular utility monitoring, reporting and continual improvement.

For the period July 2019 – June 2020, SMART led to identification of utility variances within City's portfolio in tune of 321 megawatt hour of electricity, 19 terajoules of natural gas, 29 mega litres of water. The electricity and natural gas variances equates to 1,285 tonnes of greenhouse gas emissions.

Building upgrades

The City has continued to improve on the energy efficiency of its property portfolio through building upgrades projects such as:

- LED lighting replacements across key City properties including within its aquatic centres and community centres which has not only achieved energy efficiency, but also improved light levels, occupant safety, maintenance requirements and aesthetics.
- Aquatic centre improvements including heat recovery from backwashing, new efficient heat pumps, UV modulation units and high efficient motors for pumps.
- Heating, Ventilation and Air-Conditioning (HVAC) improvements through better controls and sensors, installation of variable speed drives (VSDs), refrigerant management and targeted maintenance.
- Proactive building management through Building Analytics (building management systems) where optimisation, fault detection and efficiency measures are identified and actioned.
- Regular site inspections by City staff helps identify assets or systems for potential improvement as well as safety concerns.

A key program for delivering energy and water efficiency within City buildings is the Major Properties Efficiency Project (MPEP). The program targets fourteen of the City's highest energy and water consuming sites and is a four year program running from 2016/17 to 2020/21. The program is in its final year of delivery and to date has delivered approximately 1,597 tonnes of CO2 emissions savings through the above projects.

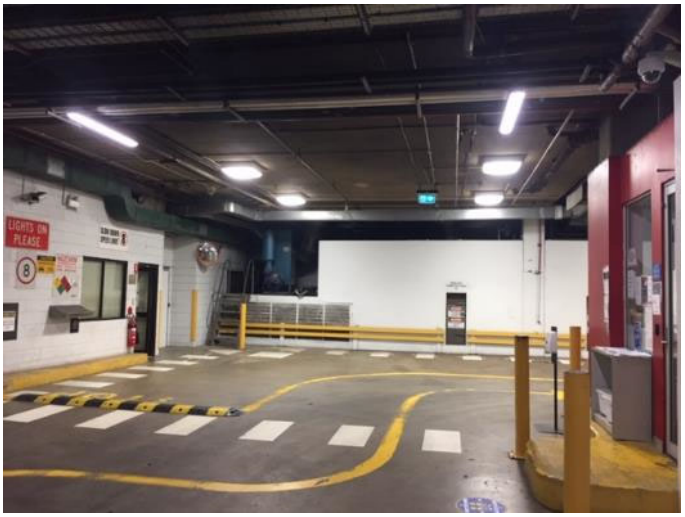
Additionally, the City continues to work on its initiatives to improve the sustainable building ratings of its own property portfolio through implementing a Green Star gap analysis, NABERS improvement program and commitment to the Government Resource Efficiency Policy (GREP).

Ultraviolet (UV) modulation for aquatic operations

Through MPEP, the City has installed UV control technology for its indoor pools. This equipment allows UV to be controlled using water chemistry parameters rather than running continuously. The units at both pools will save a combined 167 MWh/yr and more than $33,000 per year.

LED lighting upgrades at Town Hall House car park

Through MPEP, Town Hall House car park is using only 50% of the previous energy used, saving almost 67 MWh of electricity a year, which equates to $14,000 a year.



Fleet

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.

Project updates

Solar PV and energy storage

To date, the City has installed 42 solar PV systems at multiple Council sites including office buildings, child care centres, libraries, works depots, community centres, sporting fields and other venues.

Five solar PV systems, totalling up to 550 kW, were added on City buildings during FY19/20.

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 generated energy would be exported to the grid).

Cogeneration at Ian Thorpe Aquatic Centre (ITAC)

Installation and commissioning of the new cogeneration plant at ITAC was been completed in October 2019. 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 CO_2 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.

Sustainability at the City learning

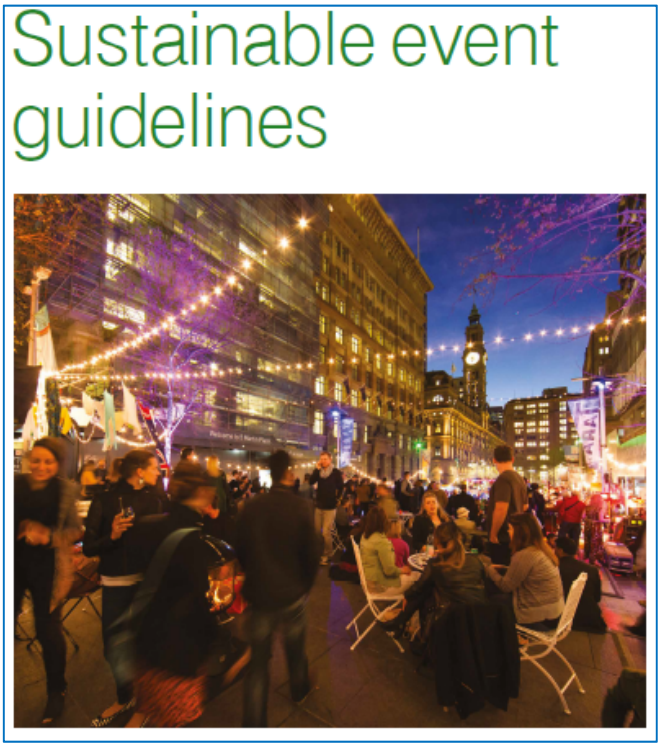
Nearly 500 staff from all areas of the City have completed a special, interactive course called Sustainability at the City. The course is designed to generate discussion and collaboration of ideas about what it means to be sustainable at work and at home.

The course presents sustainability in the context of 'care'; caring for place, for future and in our daily decisions.

Participants discuss how, in our everyday roles, no matter what our role is, we can make decisions that have a positive impact on the environment. The connections between our roles and the City's environmental targets are explored with common discussion areas including waste avoidance and recycling, responsible procurement and water savings. On the home front there are new commitments made to review solar and green power options, incorporate more active transport in to the day and composting of food waste.

One of the most common commitments by individuals completing the course is to have more, and braver conversations about what it means to make sustainable decisions. Many participants nominate that conversations with suppliers, colleagues, the community and family as a key way to share sustainable values widely.

Sustainable event guidelines



The City has developed the sustainable event guidelines to help event organisers implement environmental sustainability into practice during the design, management and implementation of events.

The City is committed to aligning event management with ISO 20121 Sustainable Event framework. To be internationally recognised as a leader in the design and delivery of sustainable events, whilst maintaining excellence in quality and audience satisfaction.

The City hosts a variety of major indoor and outdoor events as well as community events. Audiences includes local Sydney communities, the wider communities across Australia and an international audience for major events such as New Year's Eve and Sydney Lunar Festival. We work with a range of stakeholders and suppliers to present events and we encourage and value partners who share a commitment to achieving leading environmental performance for a sustainable future.

The guidelines include advice on the following topics:

Planning

1. Planning
2. Stakeholder engagement
3. Marketing and Communications
4. Procurement

Operational

5. Merchandise, printing and signs.
6. Waste
7. Energy
8. Water
9. Transport
10. Local Environmental Impacts

Evaluation

11. Outcomes and evaluation

Our major events teams will work to create the lowest environmental impact possible, while inspiring audiences to participate in and contribute to the event's sustainability through low impact activities and actions.

The sustainable event guidelines will be available online now.

Advocacy

LED streetlights

The City aims to be the first council in Australia to replace all public lighting in its area with energy-efficient LEDs. Having completed the roll-out on City-owned lighting poles, the City is now partnering with Ausgrid (our local electricity utility) to upgrade utility-owned streetlights.

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

Stage one of the program is now largely complete with 80 per cent of residential lights changed over at June 2020. Ausgrid is now accelerating stage two of the changeover of other streetlights (typically on major roads and in commercial areas). When both stages are complete in mid-2022, emissions will have been reduced by about 3,400 tonnes a year (based on standard grid emission factors). The City will also save over $1 million a year in operational savings, thanks to reductions in maintenance charges (LEDs last over 10 years) and in electricity bills.

As noted, the Ausgrid upgrade program builds on the success of the City's earlier initiative to replace City-owned streetlight fittings with LEDs. The City was the first local government area to install energy-efficient LED streetlights 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 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 2030[4]

How the local government area is tracking

Annual greenhouse gas emissions

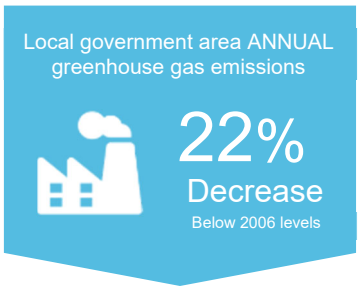


Chart 3 tracks actual emissions from the local government area. Note that as at 2018-19 emissions have reduced by 22 per cent since the 2006 baseline. Prior to the Covid-19 pandemic there have been 45 per cent more residents[5], 22 per cent more jobs and more than 50 per cent growth in the economy. This 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)[6] – the new international benchmark for reporting city emissions.

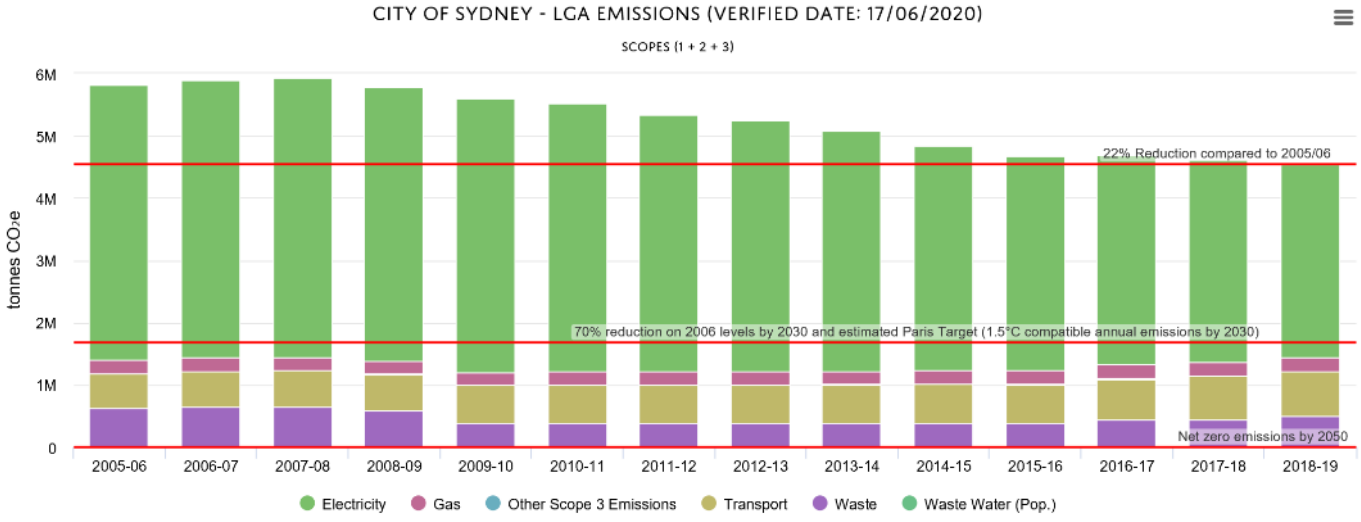
Energy consumption data

The table below shows energy consumption data for the LGA. Please note, LGA data is shown to June 2019, which is the most up to date data available.

LGA	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline	4,159,436	3,038,529	18,012,502
Most recent (to June 2019)	3,369,046	3,572,753	15,701,322
Difference	-790,389	+534,224	-2,311,177
Difference (per cent)	-19%	+18%	-13%

For more information see Appendix 1: Data management plan.

Chart 3: Local government area greenhouse gas emissions



[4] The renewable electricity target incorporates renewable electricity both within the grid and classified as additional to the grid.
[5] Based on 2017/18 LGA population data for residents/workers/visitors compared to 2005/2006 baseline.
[6] http://www.ghgprotocol.org/city-accounting

How we will get there

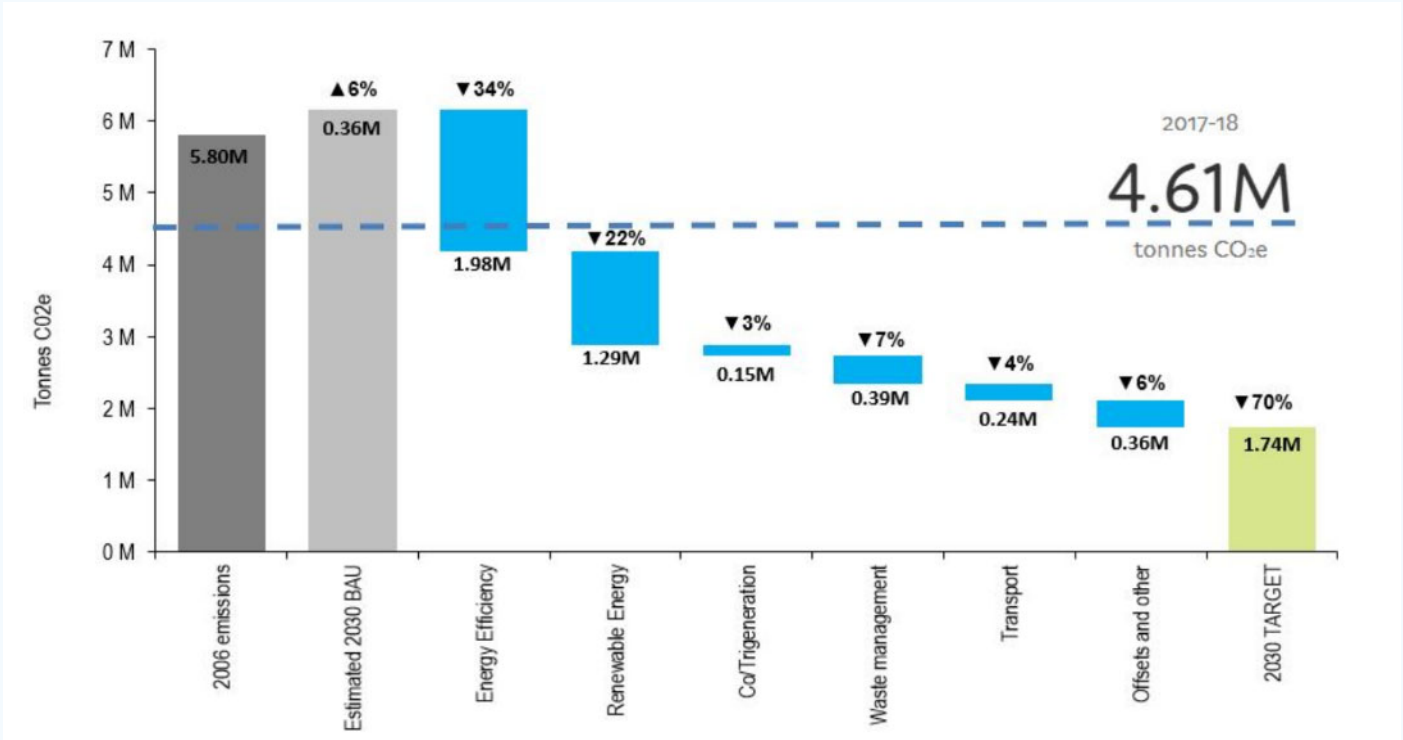
Chart 4 shows the estimated contributions of the initiatives we expect could lead to reduction of the city's emissions by 70 per cent by 2030.

Since 2007 total greenhouse gas emissions across the local government area have continued to fall.

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.

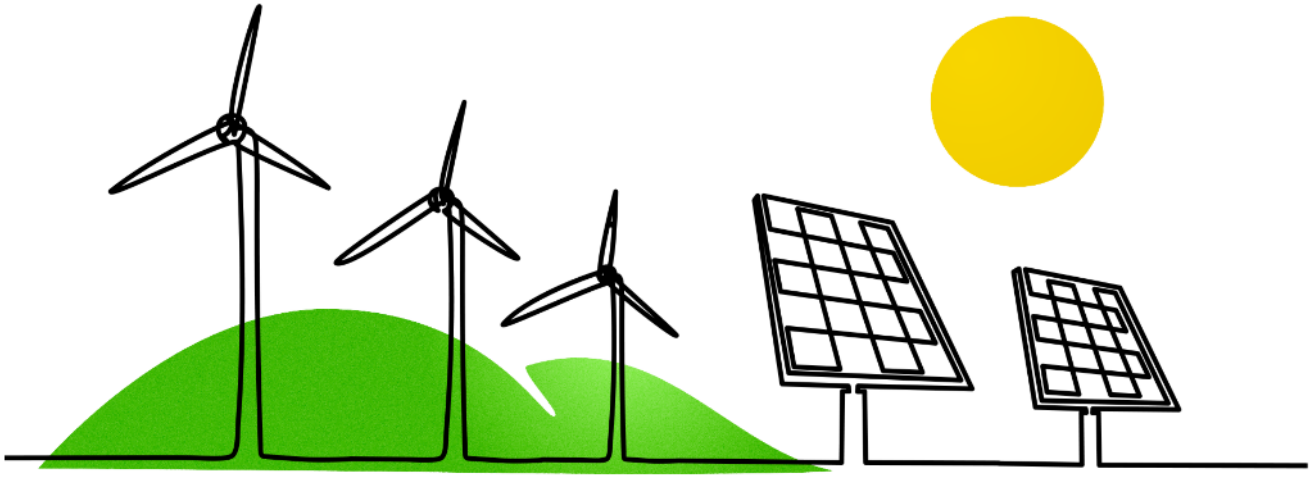
Chart 4: Local government area greenhouse gas emissions target. Estimated contribution of initiatives.



- 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 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.
- An illustrated video explaining how GreenPower works and why it's the quickest and easiest way to switch to renewables at home and work.

Relevant links

– Sustainable Sydney 2030

Advocacy

Standards for urban renewal precincts

Upcoming urban renewal precincts in our local area – such as Waterloo Estate, Central Station precinct 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.

3. Water sensitive city

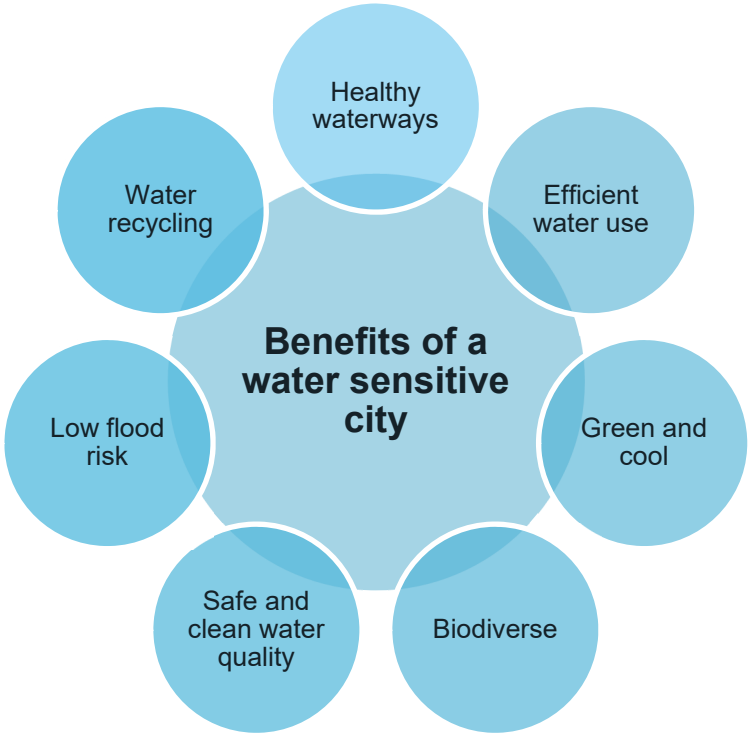
Water is crucial to the social, economic and environmental wellbeing of our city. Sydney is under pressure from rapid population growth and urban densification. Water sensitive approaches helps deliver a more sustainable and liveable city with green public spaces and healthy waterways.

Water conservation in Greater Sydney

A report released in June 2020 by the NSW Audit Office unfortunately concluded that “the NSW Department of Planning, Industry and Environment and Sydney Water have not effectively investigated, implemented or supported water conservation initiatives in Greater Sydney.” “As a result, Greater Sydney's water supply may be less resilient to population growth and climate variability, including drought.”

Recent rain allowed Greater Sydney water restrictions to be eased back to Level 1, but one of Sydney’s most severe droughts on record is still a concern. Sydney Water states “it’s still too early to tell if the recent rain is just temporary relief from drought or a sign that things are improving.”

Water conservation; which includes water recycling, leakage management and programs to enhance water efficiency; is key to sustainable management of Sydney’s water supplies.



Advocacy

Water recycling

The current 2017 Metropolitan Water Plan states that recycling water makes Sydney's drinking water supply go further. The NSW Audit Office concluded that there has been limited action by the NSW Department of Planning, Industry and Environment to remove barriers to water recycling.

Recycled water becomes even more critical as Sydney's drinking water supplies continue to face challenges including population growth, urbanisation and a changing climate.

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

The City of Sydney also continues to advocate to the NSW Government for changes that will promote investment, innovation and competition in the recycled water market.

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/m^2 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. We aim to drought-proof our operations, so we can use water when it is hot and dry to help keep the City green and cool. The City's non-potable water supplies will safe-guard our water supplies so even in times of drought, we can help 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 June 2020, it is estimated that the City operations potable water use has decreased by 4 per cent from the 2006 baseline, from 431 to 413 megalitres per annum (MLpa).

The below table summarises the difference between our current and 2006 baseline water use. The data for 2019/20 has been updated which include 23 per cent estimated accruals.

City of Sydney operations - water use comparison	
Baseline (FY 2006)	431 ML
Current (FY 2020)	413 ML
Difference (ML)	-18 ML
Difference (%)	-4%

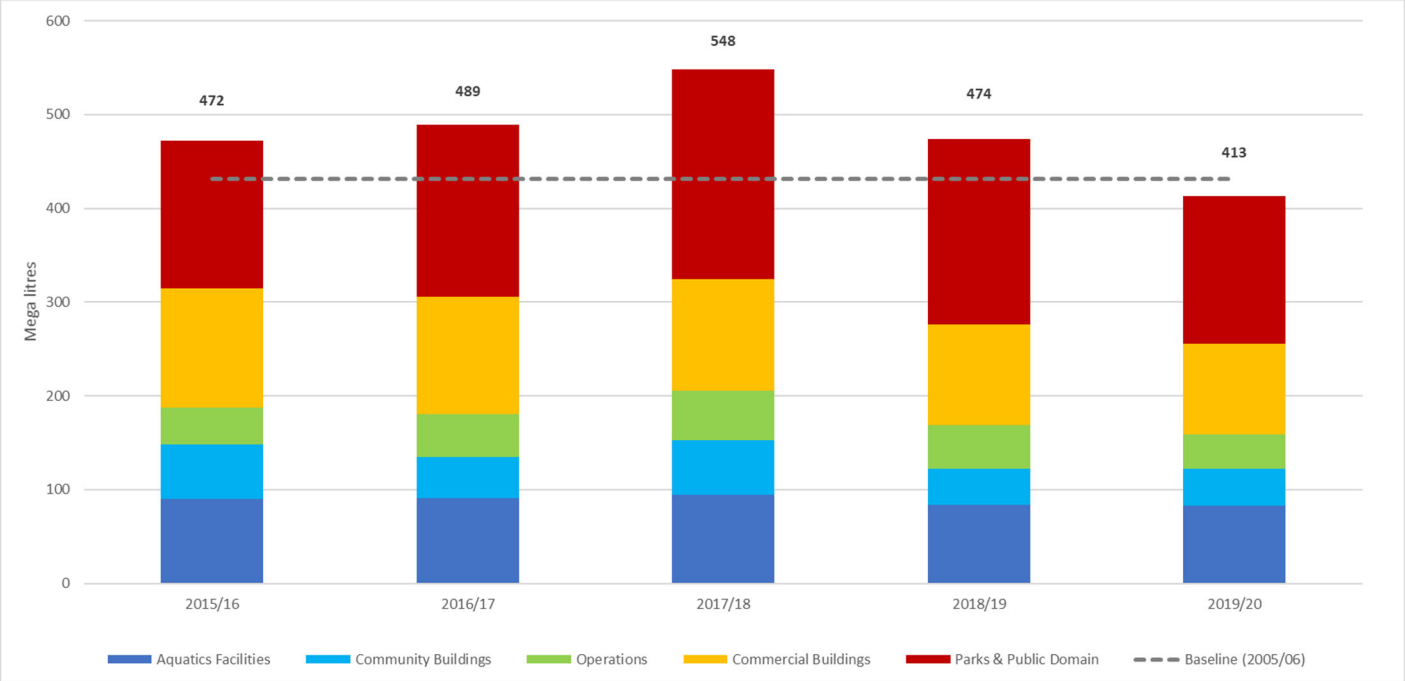


Chart 5: City of Sydney operations potable water use

Chart 5 shows our organisation wide water use over the past 5 financial years. Most of the savings for FY 2019/20 are due to identification and rectification of leaks, results from our tenancy on-charging program and potential Covid-19 impacts.

Decreases since the baseline year of 2006 baseline is mainly due to: improvements in water data management; rectification of water leaks, changes to City's portfolio (buildings and parks) and use of recycled water for irrigation.

For more information see Appendix 1: Data management plan

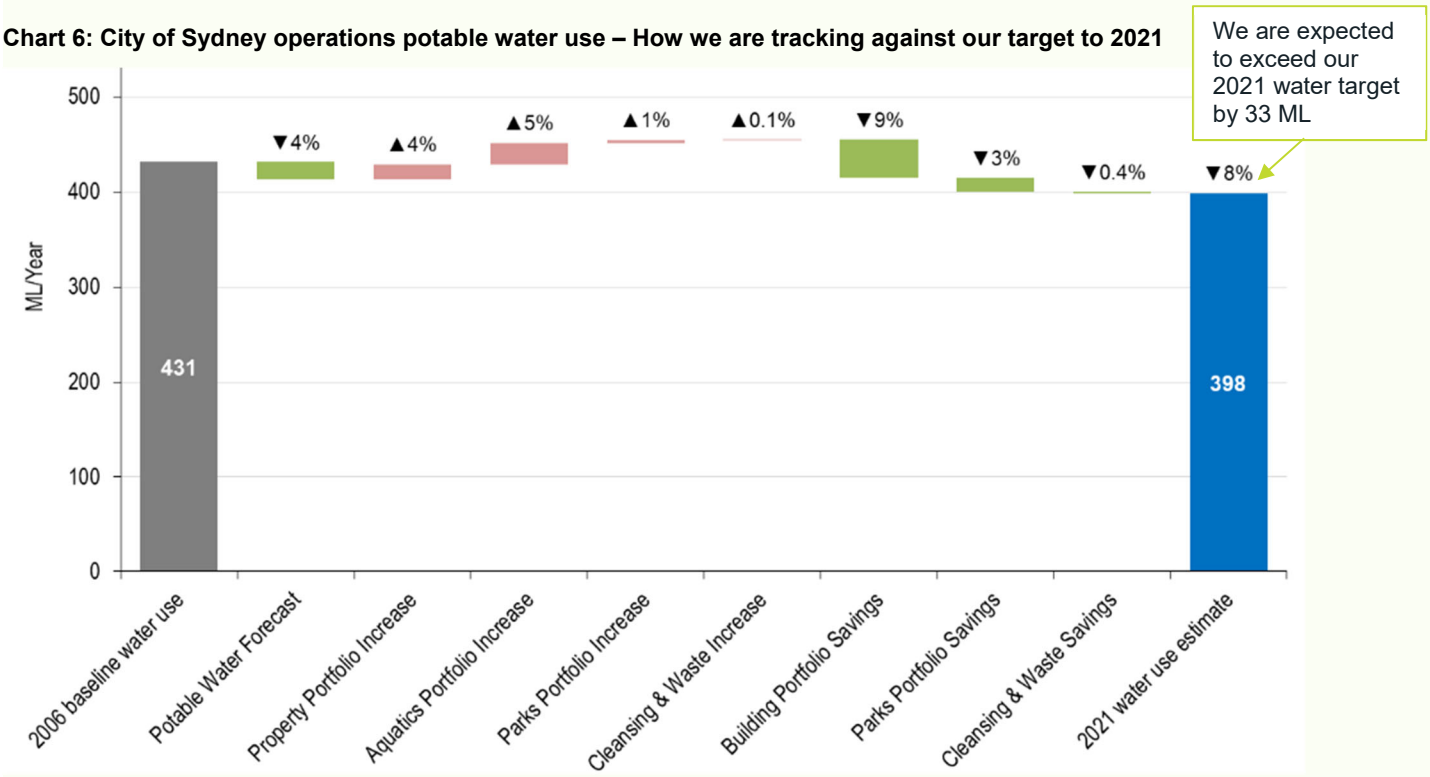
Notes for Chart 5:

- The 2019/20 figure of 413 ML is made up of 77% actual data and 23% accrued data.
- All data sourced directly from Sydney Water and stored within the City's SMART data management system.
- 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 change in the City's operational water use. Estimated increases in water use are due to the City's growing portfolio of buildings, aquatic centres and parks. Estimated reductions in potable water use is associated with projects we plan to implement across our operational portfolio to meet our 2021 water target of maintaining our potable water use at 2006 levels.

Chart 6: City of Sydney operations potable water use – How we are tracking against our target to 2021



Projects and initiatives

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

- The Major Properties Efficiency Project has identified 23 ML/year potable water savings across the City's highest 14 water using properties through rainwater harvesting, water efficient fixtures and fittings and facilities' management actions.
- Upgrades at Bay Street Depot and Alexandria Canal Depot Rainwater Harvesting systems – to enable increased rainwater collection and improved performance of existing system
- Undertaking water audits of key City buildings to identify and undertake water efficiency improvement opportunities. Key City buildings include our rainwater systems, cooling towers and key buildings (including Green Square Community and Cultural, Bay Street Depot, Woolworths Building, 307 Pitt Street and Pittsway Arcade)
- Implementing a "user pays" model has increased awareness of tenant water consumption which helps our tenants take responsibility for their water usage and encourages further water savings.
- Gunyama Aquatic centre rainwater harvesting system will provide water for pool top up and recycled water from the City's Green Square water reuse scheme will be used for toilet flushing and irrigation, saving a total of 5 ML/year
- We continue to increase the use of non-potable water in the public domain to keep our streets clean and irrigate green spaces such as parks, trees and verge gardens. We use recycled water from our Sydney Park and Green Square stormwater recycling schemes, rainwater harvesting systems, and groundwater bores.
- The City continues to improve water data management through review of water consumption data to identify and rectify anomalies such as leaks; and development of a comprehensive metering and monitoring program to provide more granular and regular data at sites.

The current outlook, estimates that the City is on track to meet or potentially exceed the operational potable water consumption targets.

Project update

Water consumption in parks

Since 2006, the area of parks and open spaces requiring irrigation in the 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 our parks is 180L per square metre of irrigated space by the end of 2021. Improved water data being collected in SMART and more accurate asset area data in the City's Corporate Asset Management System (CAMS), the accuracy of irrigation rates will be reviewed and when complete reported through future Green Reports.

The table below provides estimated potable water usage in City Parks and Public Domain (as shown in Chart 5). The *2019/20 figures are made up of 77% actual data and 23% accrued data.

City Parks and Public Domain	
Financial Year	**Potable water use (ML)**
2006	133
2015	194
2016	157
2017	183
2018	224
2019	197
2020	158*

Smart watering project

The Smart watering project is focused on delivering automated, digital, close-to-real-time view of water usage needs in the City's parks to inform water management decisions impacting the City's potable water consumption targets. A proof of concept for Alexandria Park Oval is currently under development. Soil moisture sensors will soon be installed in Alexandria Oval and data visualisation will be developed to help operational staff and management make better decisions about water use.

Response to drought

To build resilience, particularly in times of drought, the City continues to investigate how to further reduce water use in our parks. We are continuing to increase the use of recycled water, rainwater and bore water to irrigate parks and playing fields and water trees; and we have modified maintenance practices to minimise water use.

Improving our data

The organisation wide metering project commenced implementation in early 2020 and is delivering 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. At least 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.

Projects updates

Sydney Park water reuse scheme upgrade

The Sydney Park water reuse project was originally completed in 2015 and enables around 850 million litres of stormwater each year to be harvested from our urban stormwater network and captured in a series of wetlands within Sydney Park.

These wetlands provide several benefits to our community. They provide habitat for wildlife, enhance the park's visual amenity, and naturally clean the stormwater before being discharged into the Cooks River via Alexandria Canal.

The capture of stormwater in Sydney Park's wetlands also provided the opportunity to treat and re-use this stormwater for non-potable water uses such as: irrigation of Sydney Park, growing plants at our nursery depot, and watering street trees and street gardens. There is also opportunity to improve the treated water quality better for ablution use.

In 2017, the original water treatment plant at Sydney Park was removed to accommodate changing land use resulting from the NSW State Government's WestConnex road project. This required the City to build a new fit-for purpose stormwater recycling treatment plant, so we could continue to utilise recycled water in and around Sydney Park.

Construction of the new recycling plant is nearing completion, and the Sydney Park water recycling scheme will be back up and running by the end of this year, making a significant contribution to the realisation of the City's Sustainable Sydney 2030 targets for water recycling.

The new treatment plant even has the capability to expand in the future and increase the supply of recycled water to other customers in the area, such as to new apartment blocks and industrial facilities.

Green Square water reuse

The best opportunity to develop water recycling schemes is within urban renewal areas because they provide the density and scale required for efficient investment in recycled water infrastructure, and can be planned and installed at the time of development, which is cheaper and more efficient than retrofitting

It 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 has successfully delivered Green Square Stage 1: In 2018, we switched on one of Australia's first decentralised stormwater recycling schemes in an urban environment. The scheme currently provides recycled water to parks, community facilities and more than 3,000 apartments in the Green Square Town Centre for garden and turf irrigation, toilet flushing and clothes washing.

The City supports efforts to expand water recycling in the Green Square area. It would like to see a Stage 2 project achieved, namely 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 would collect locally generated wastewater for treatment and reuse. Further development of a Stage 2 scheme is currently hampered by 2016 changes to water pricing. Current pricing and regulatory barriers in the water sector continue to challenge the development of recycled water schemes like the one envisioned for Stage 2.

CBD Water recycling scheme

As part of the construction of the Sydney Light Rail project, at the request of the City, recycled water pipelines were installed along George Street between Circular Quay and Prince Alfred Park next to Central Station. Along with the recycled water pipeline installed along Wynyard Walk, the City has an invaluable opportunity to develop a recycled water scheme in Sydney's centre.

It is envisaged that selected City of Sydney assets and interested customers (such as building owners and developers) could connect to a recycled water pipe network and be provided with recycled water for non-potable (non-drinking water) uses such as park irrigation, garden watering, toilet flushing and cooling tower use.

A successful CBD water recycling scheme will require diligent planning and delivery, as well as approval and a license under the NSW Water Industry Competition Act. The City is currently working to understand how best to develop the recycled water pipelines into a successful water recycling scheme for our city centre.

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

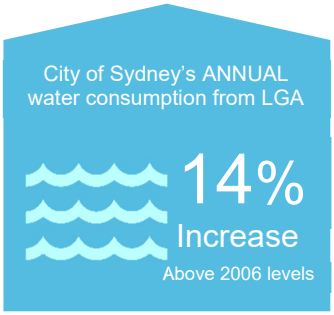
Local government area targets

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 6 [7] shows annual potable water usage across the city has grown 14% against our 2006 baseline, during which time the city's population has grown at least 50 per cent.[8] This is an increase of one per cent on 2017/18 consumption data, which was 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 on a precinct scale 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.

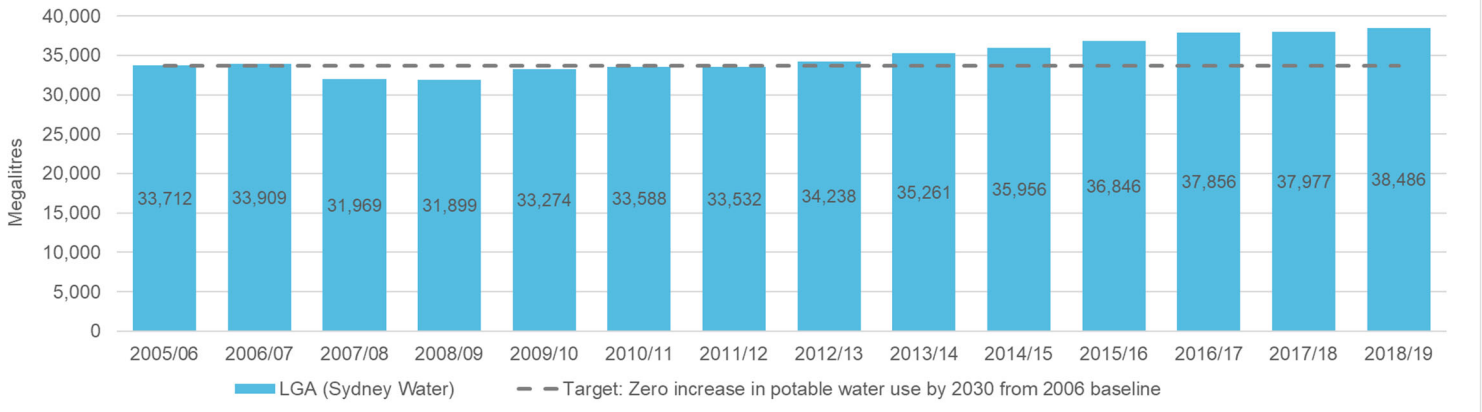
Water consumption data

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 for consumption to end 2018/19. Data for 2019/20 will be available from Sydney Water by late 2020 and will be included in the next report.

	Baseline (ML)	Current (end 18/19) (ML)	Difference (ML)	Difference (%)
LGA	33,712	38,486	4,774	14

For more information, see Appendix 1: Data management plan

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



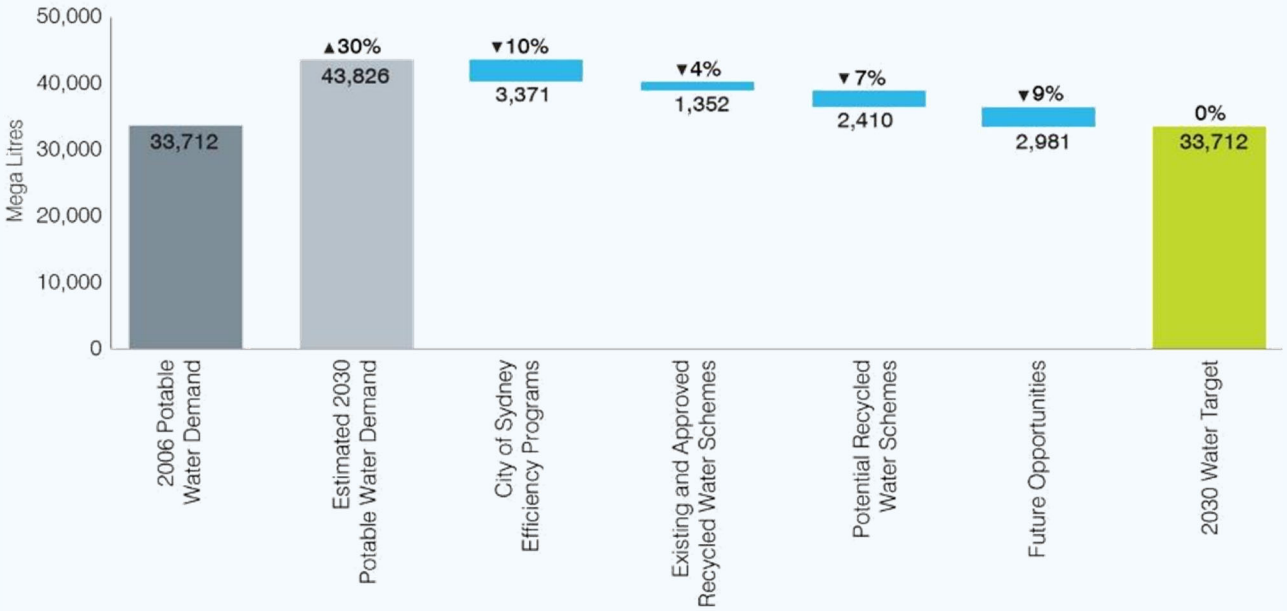
[7] All data sourced directly from Sydney Water.

8 Based on 2018/19 LGA residential population compared to 2005/2006 baseline

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 improvements

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. With the continued urbanisation and densification of Sydney, our natural landscape continues to be altered leading to increased stormwater run-off (with increased impervious surfaces) and declining waterway health due to high concentrations of nutrients, sediments and other pollutants such as litter entering our stormwater network and ultimately the Cooks River and Sydney Harbour.

The City is committed to improving waterway health by reducing stormwater pollution entering downstream waterways. We're achieving this by installing and maintaining stormwater treatment systems (such as raingardens, wetlands and swales) in our stormwater network, and using water sensitive urban design (WSUD) and management approaches, including:

- Mandating WSUD in new developments where appropriate
- Installing gross pollutant traps (GPTs) in the stormwater network to remove litter and large solids from stormwater
- Installing raingardens, swales and wetlands in public open spaces to slow down and filter pollution from stormwater flows.
- Incorporating raingardens into road renewal and streetscape upgrade projects.

What we've already done

We've installed 249 raingardens in the City of Sydney local area since 2005. These gardens treat stormwater, protect local waterways and green our city streets. There are also 48 council owned gross pollutant traps (GPTs) in the stormwater network that, together with the 26 GPTs within Council's LGA owned by others, collect up to 700 tonnes of litter each year when fully operational.

The City has begun a program of repair and upgrade to the City's GPTs with an aim to restore and maintain peak performance. This program will take place over several years. The City has also reviewed the maintenance schedules of its GPTs, to optimise their cleaning regime, and established a program for regular inspection to maintain optimal performance.

We're working with our Sydney Harbour and Cooks River partners to create a management program that will achieve support for the coordinated management and ecologically sustainable development of Sydney.

MUSIC model

MUSIC[9] is a water quality decision support tool that helps the City estimate stormwater pollutant generation and simulate the performance of our stormwater treatment systems (such as our stormwater harvesting schemes, GPTs, and raingardens) within our stormwater catchments.

This water quality tool allows the City to make catchment management decisions that balance cost, runoff frequency and water quality improvements. So the City can, for example, select the optimal locations for new stormwater treatment systems that best contribute to our Sustainable Sydney 2030 water quality targets.

The City now has MUSIC Link that improves efficiency for both developers and the City in meeting water quality targets. It allows for quicker confirmation that water quality infrastructure, installed as part of a development application, meets the City's MUSIC modelling settings and pollutant removal targets.

Rushcutters bay living seawall project.

The City worked with the Sydney Institute of Marine Science (SIMS) over the course of 2 years to deliver the living seawall of 90 habitat panels that runs along two 12-metre stretches of the Rushcutters Bay foreshore, providing local marine life with nooks and crevices to live in and encouraging more seaweed and animal species to return.

The panels were installed by the SIMS in June 2020, with support from the City of Sydney, following the success of projects in other locations across Sydney Harbour. SIMS will continue to monitor the microhabitats of each panel for remainder of the year.

[9] MUSIC stands for Model for Urban Stormwater Improvement Conceptualisation.

4. Climate resilient city

Climate Emergency Response

In an emergency, we must all act. Our leaders must rise to unite the community and drive the vision of a zero-carbon economy. We must speed up our responses in areas where we can have positive impacts on reducing the detrimental effects of climate change.

In 2019 we joined 85 other councils to declare a climate emergency. Our Climate Emergency Response, endorsed by Council in February 2020, contains the how we will take swift and meaningful action on climate change, to ensure the future sustainability of the City of Sydney, its communities, economy and environment. In this Green Report, we summarise the actions we have taken in the last four months in each of the four focus areas of the Climate Emergency Response.

Lead by example

Action in this area is about ensuring consideration of the climate emergency is incorporated into the City's decision-making processes and operational activities. Recent work has included developing increased requirements for environmental and social performance in tender documentation to ensure that the City's purchasing decisions have the best possible environmental outcomes.

We have also been communicating more frequently with our staff about the climate emergency and encouraging them to identify ways their area of the organisation can respond.

Support climate emergency priorities through planning

The City is currently reviewing its key planning controls – the Local Environmental Plan and the Development Control Plan. As part of this review, we are looking at how we can use planning controls to increase tree canopy and vegetation on private property, protect bushland, maximise opportunities on onsite renewable energy generation and increase resilience to flooding. We're also developing a performance standards pathway for net zero energy buildings.

Work with and prepare our communities

As part of our switchover to using 100% renewable electricity for our operations on 1 July 2020 (see the project updated in Low Carbon City) we have been sharing information with our residents and business to assist them to make the switch too. Our renewable energy help centre has tools and information to assist all members of the community, from large business to renters in apartment buildings.

Build momentum and advocate

We know we need to work together with other councils to take climate action at scale. The City is a founding member of Climate Emergency Australia – a national network of governments and section partners, to provide the climate leadership Australia needs. In its first year the network will focus on shared advocacy priorities and developing climate action tools for councils

Community Recovery Plan (Covid-19)

The City's Community Recovery Plan outlines the way the City will manage the economic and social recovery through to the end of 2021. The Plan has four recovery goals, including that 'Recovery is a catalyst for a green and sustainable future'. As we move into the recovery phase we must seize the opportunity to build back greener.

A low-carbon recovery could not only initiate the significant emissions reductions needed to halt climate change but also create more jobs and economic growth than a high-carbon recovery would. We will boost our recovery and climate-proof our city by accelerating the uptake of renewables, the transition to a circular economy and the use of new technologies. Our actions will support the growth of jobs and new industries.

Resilient Sydney

Through its research and strategy development, Resilient Sydney identified the top eight shocks likely to impact metropolitan Sydney, published in 2016. Four years later in 2020, all eight have now occurred, with Covid-19 an example of a large-scale pandemic shock. The Resilient Sydney Strategy was released in 2018 with a vision for Sydney as a metropolis that is connected, inclusive and resilient.

The strategy has five directions and 35 collaborative actions and is in implementation. In February 2020, the City of Sydney agreed to invest in continuing the 'Resilient Sydney Platform' under Action 13. The award-winning data tool provides a standardised environmental footprint of metropolitan Sydney, and each local government area across the city, through data and reports. Over 180 users from Sydney councils are now accessing the platform, using the information to develop plans and strategies supporting actions to better live with the climate and act for the climate emergency.

In May 2020, the NSW Government established Resilience NSW - a new body to oversee the government's disaster preparedness and recovery arrangements. Resilience planning work, methodologies and networks created by the Resilient Sydney program will be shared with Resilience NSW.

The work of the Resilient Sydney Program, its Steering Committee, state government and business partners and all the 33 contributing and engaged Councils of our city over the last four and a half years has enabled us to act together in the multiple crises of the last 12 months, including drought, bushfires, floods and a pandemic.

Supporting Sydney during Covid-19

The Covid-19 pandemic provided an opportunity for the Resilient Sydney program to translate the strategy into action, by connecting Councils together to share practical resources and expertise, collecting data on impacts and undertaking advocacy to the state government.

The Resilient Sydney Office worked with councils to prepare, adapt and respond to the multiple shock events Sydney has faced in 2020. From March, the program hosted monthly events with senior leaders from all 33 local governments of metropolitan Sydney to identify common issues impacting their organisations and communities. Many of these were then formerly raised with relevant State Government Departments and a number of legislation and process changes followed.

The Office shared template documents with Councils including emergency management pandemic sub-plans, Business Continuity Plans, recovery plans, and draft communications to employees and communities. This has enabled all 33 councils of Sydney to more efficiently respond to the crisis.

Bushfire recovery response

The Local Government Bushfire Recovery Support Group was established in January 2020 by the Office of Local Government NSW in partnership with City of Sydney Resilient Sydney Office to assist council disaster recovery and support operations in local communities. The main function of the Group is to connect local councils who need support after the bushfires with councils who have resources to offer in assistance.

The group has been working to maintain a database of services and resources being offered to councils in need by councils who are able to assist; and aiding in matching these offers and requests of resources between councils. As a part of this group, the City has also aided councils in need.

Eleven staff members from the City Services attended the Southern Highlands to help with clean-up efforts. The team removed damaged and fallen trees and replaced and repaired road signage for communities in need. A group of 15 staff and eight vehicles from City Greening and Leisure, City Infrastructure and Traffic Operations and Cleansing and Waste also took part in a two-week deployment to help with bushfire recovery in Wingecarribee Shire near Bowral. The City team worked with staff from Wingecarribee Shire Council to help the community start their recovery and clean up. They worked to remove and chip more than 500 burnt trees and replace around 1,000 metal marker posts.

The group continues to work with Office of Local Government to match aid requests from affected councils with councils with resources to offer. Forty-four NSW councils have offered help using the Recovery email recovery@cityofsydney.nsw.gov.au inbox, and 19 councils have asked for aid, while there was approx. 556 offers of support from external agencies.

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.

The following provides an update of the trends and climate observations as at June 2020. 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°C [10]of global heating above pre-industrial levels. In 2019, Australia experienced an annual national mean temperature 1.52 C above average[11]. 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

Australia endured average maximum temperatures beyond previous records and had its hottest day on record of 41.88 C[12], averaged over the country, on 18 December 2019. The most extreme heat occurred in western Sydney, with Penrith experiencing 48.9 C on 4 January 2020. Penrith’s temperature was a new record high value for any metropolitan area in Australia. Such temperatures are dangerously hot, and place extreme thermal stress on humans and the environment.

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 reading 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 rain[13].

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.

Bushfire

The 2019–20 bushfires in New South Wales (NSW) have been unprecedented in their extent and intensity across multiple Australian states. 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 May 2020, the NSW Fire and the Environment 2019–20 Summary was published by the NSW Department of Industry and Environment, which details the first

[10] http://www.bom.gov.au/climate/current/annual/aus/#tabs=Global
[11] http://www.bom.gov.au/climate/current/annual/aus/
[12] http://www.bom.gov.au/climate/current/statements/
[13] http://www.bom.gov.au/climate/current/annual/aus/

assessment of the effects of the fires on NSW biodiversity and landscape values. The report includes a post-fire analysis of indicators from the Biodiversity Indicator Program, and is a companion document to the first NSW Biodiversity Outlook Report.

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

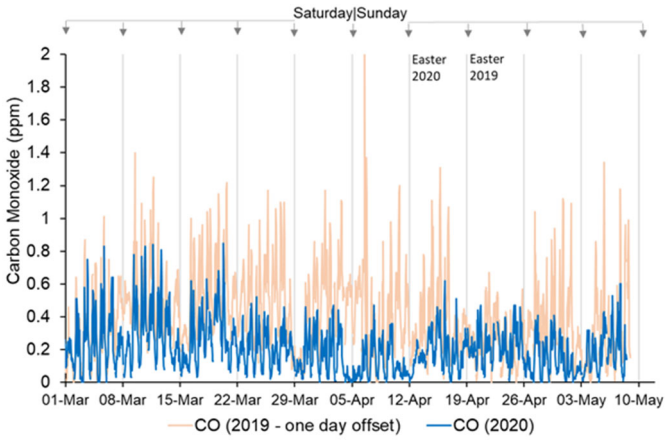
From March of this quarter, in many places around the world, there were stories about visible air quality improvements as a result of reductions in traffic and in industry, while Covid-19 restrictions were in place.

Similarly, there were significantly less people travelling across Sydney in this period. While it is difficult to draw definite conclusions from initial observations, the Department of Planning, Industry and Environment reports falls in carbon monoxide (CO), an air pollutant associated with emissions from motor vehicles, since mid-March 2020, compared to 2019. Assessing trend changes in air quality would require detailed analysis of long-term data that takes in to account complex interactions between air pollutant emissions and daily and seasonal weather conditions.

The Climate and Atmospheric Science branch of the NSW Department of Planning, Industry and Environment publishes seasonal analyses of factors affecting major air pollution episodes in New South Wales.

The reports may be viewed online or downloaded at https://www.environment.nsw.gov.au/topics/air/air-pollution-episodes.

As an example, the graph below shows hourly CO levels monitored at Bradfield Highway roadside monitoring station from 1 March to 11 May 2020, compared to the same period in 2019.



Tool to assess risk from climate change

The City was 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 was led by DPIE and has resulted in an online tool, which models the impact of climate change on real assets and also models options to mitigate the impacts.

The success of the Sydney Pilot Project has led to DPI funding a new project: XDI NSW. Many more state government agencies, and potentially all local governments in NSW, will have access to the tool to enable better decision making about climate risk to assets.

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 flood studies and floodplain risk management studies for all catchments located within the LGA. A flood implementation plan has been prepared setting future floodplain management works for each catchment.

The 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 Alexandra Canal and Blackwattle Bay flood studies are being reviewed to include the new rainfall revision by Australian Rainfall and Runoff (ARR) 2019.

Stormwater management – The City has made significant investments in stormwater management infrastructure to mitigate local flooding and to improve stormwater quality for receiving waterbodies.

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.

Relevant links

- Climate Emergency Response
- Community Recovery Plan
- Adapting for climate change – a long term strategy for the City of Sydney: 2015-2070
- Resilient Sydney Strategy

5. 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:

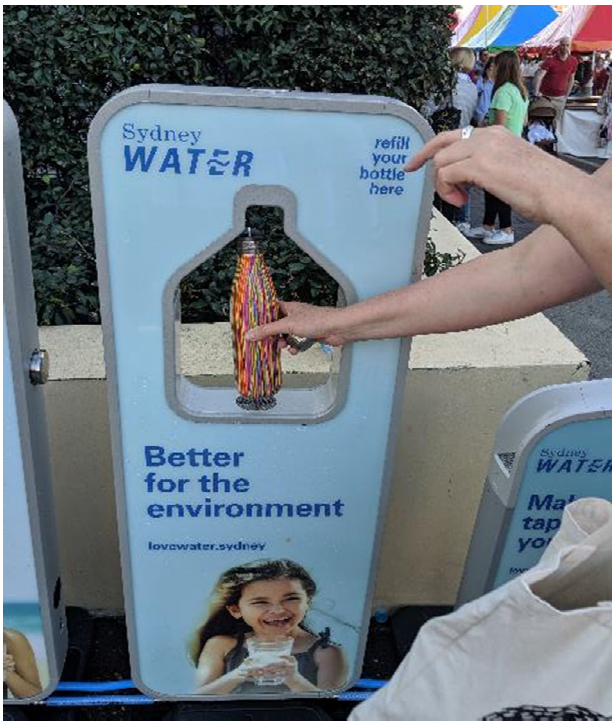
- promote innovation to avoid waste
- improve recycling outcomes
- sustainable design
- clean and clear streets
- better data management
- future treatment solutions

City of Sydney Operations

Delivering best practice sustainable events

The City's Major Events and Festivals (MAJEV) team have continued to improve environmental stewardship and ensure the City's major events are planned and delivered in compliance with the ISO 20121 Sustainable Event Framework.

Sustainability initiatives were implemented in Sydney Christmas 2019 and Sydney New Year's Eve (NYE) 2019 and Sydney Lunar Festival (SLF) in 2020:



- Hydration stations were provided for attendees to support the elimination of single use plastic water bottles.
- Single use plastic water bottles, straws, utensils, ponchos, flyers, giveaways and polystyrene food containers were eliminated from City managed sites.
- The purchase of longer lasting, reusable scrims has now eliminated the use of plastic cable ties (used for crowd control barriers and site fencing).
- Reusable stillages for production were acquired to reduce the use of plastic wrap for securing transit/storage pallets.
- Closed Loop waste solutions were engaged for Lunar Lanes to provide waste management, recycling bins, general waste bins, organic food waste bins and staff

for SLF & NYE. A reported 63.6% of waste generated by SLF 2020 and 62.5% of waste generated by NYE 2019 was diverted from landfill, exceeding the 50% resource recovery recycling target for City Parks and Public Places.

- Online inductions for staffing and reduction in printed communications and marketing collateral.
- Costumes were donated to community groups and schools or sent to Community Reuse Centres.

The MAJEV's sustainability journey has developed though a cross-functional change management project with the Sustainability Strategy team. From which the City's Sustainable event guidelines have developed and are now be available for all event managers.

The MAJEV team undertook sustainability training in June to support the release of the Sustainable Event Guidelines and build capability within the team.

MAJEV have progressed the implementation plan, establishing sustainable event delivery key performance indicators (KPIs) for the 2020/21 event season and embedding key sustainability requirements into procurement documentation. These improvements will help drive sustainable solutions from our event supply chain.

Key event suppliers will be expected to demonstrate how environmental impacts are minimised in their operations by maintaining environmentally responsible policies and practices. The City has outlined general environmental minimum requirements for suppliers. Supply, services and waste management requirements and operational resource use requirements have also been outlined.

The MAJEV team will continue to systemise processes and improve their sustainable event management capacity in collaboration with the City's Sustainability Strategy team.

Food scrap recycling

This year the expansion of the food scrap collection service continued.

Key buildings including Town Hall House and Pittsway Arcade (food retailer) continued their successful food collection services and Customs House, Alexandra Canal Depot, Sydney Town Hall, and the City's owned and operated child care centres have successfully commenced food scrap collections. In some instances, this is an extension of existing onsite composting. The Child Care team plan to further integrate the value of recycling, separating food scraps and composting in the children's education.

The separation of food scraps from the general waste stream remains a key initiative in achieving our 70% diversion of waste from landfill target, for City Properties.

Innovation grants

Closed loop coffee program

In 2019 the City funded a feasibility study to implement a scalable, zero waste and closed-loop coffee delivery service, using ten workplaces as local delivery nodes and engaging over two-hundred workplace employees with the project. To communicate the benefits of closed-loop coffee to a wider audience, Kua developed an online impact calculator, hosted at https://kuacoffee.co/. The initiative is run by a social enterprise that is striving to deliver a net positive impact on society and the environment.

Waste diversion verification

In March, City staff visited the Western Sydney waste facility that receives and processes much of the City's construction and demolition (C&D) waste materials. The purpose of the visit was to verify resource recovery standards, and waste to landfill minimisation, for our civil infrastructure works program.

This site features large waste sorting sheds, conveyor belts with human and mechanical separation processes, and shredding and crushing equipment to process timber, concrete, bricks and other masonry materials. Metals that

may be included in mixed C&D waste loads are also separated and readily recycled. The site does include a landfill operation.

At the facility entry weighbridge visual inspection, weighing of loads and image capture are undertaken. These are critical components of validating that waste loads are accurately recorded and proceed to the logical part of the waste facility for processing.

The site visit enabled the City to be confident that close to 100 per cent (by weight) of our civil infrastructure C&D waste stream is diverted away from landfill. Some waste materials, for example packaging materials, excavated pipework (plastic conduit) and short off-cuts (from newly installed drainage pipes) are not currently recoverable. The City will continue to monitor this waste stream to ensure separation and waste recovery rates are maintained to this standard or better.

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

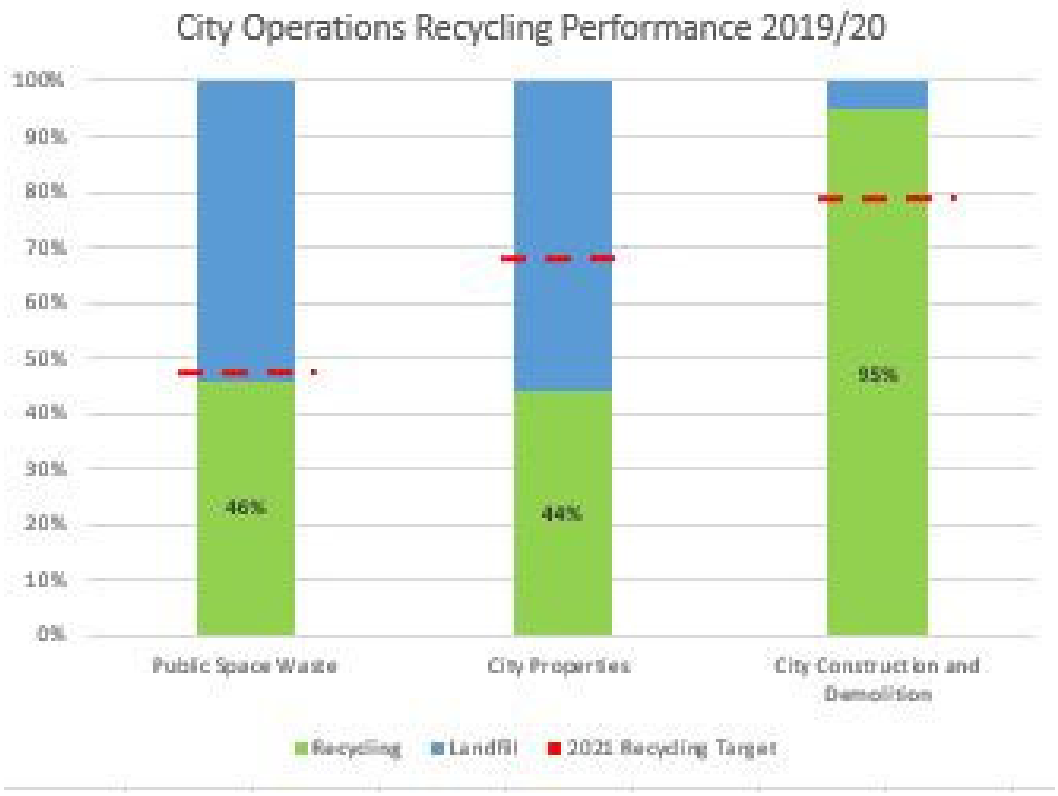
How we are tracking

Recycling of waste from City parks, streets and public places has increased from 42 per cent to 46 per cent between 2018/19 and 2019/20, closing the gap on our 2021 target of 50 per cent diversion from landfill. The City is continuing to look at additional changes to our operations to reach the 2021 target and beyond.

City properties waste has achieved an increase in recycling from 33 per cent in 2018/19 to 44 per cent in 2019/20. Following the success of the food waste trial in Town Hall House the City has continued to expand food waste collections across other community buildings and depots in 2020.

Construction and demolition waste produced by the City continues to achieve high diversion rates and through increased validation of performance the City's confidence in our reporting for this sector is improving. As a result of increased auditing we have adjusted the overall diversion rate down from 100 per cent to 95 per cent. We will continue to work closely with our contractors to improve diversion and the quality of waste data reporting.

Chart 8. City of Sydney operations waste disposal and resource recovery in tonnes (totals Jul-19 to Jun-20)



- City streets, public place and stormwater waste is not separated for disposal. Separate tonnages are based on waste audit estimates. Waste data includes Q4 estimated accrual data.
- 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). Waste data includes June 2020 estimated accrual data.
- City Construction and Demolition includes estimates based on data provided by City managed works

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

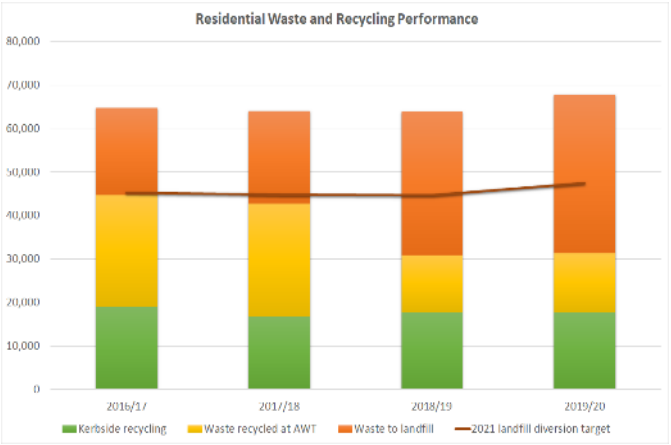
The local government area

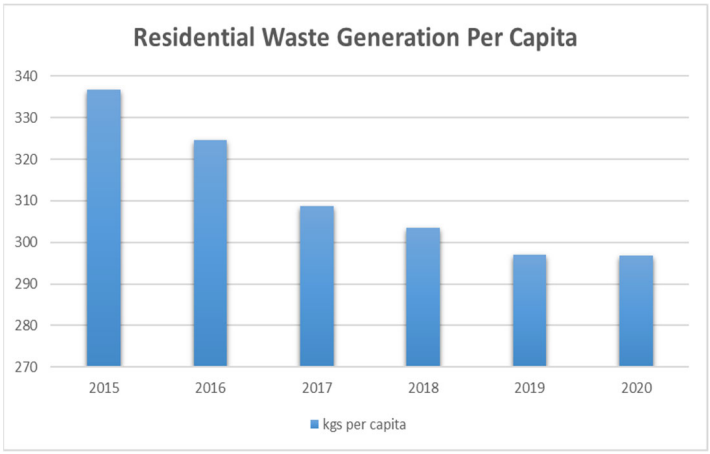
How we are tracking

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 City's target is to achieve 15% reduction per capita by 2030. 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. In the last 24 months the rate of reduction has slowed.

The City is developing targeted waste avoidance programs to achieve greater reduction in waste generation.

Recycling – as a result of recent EPA regulation changes the residential waste diversion from landfill has fallen to 45 per cent, while our source separated kerbside recycling rate has increased slightly to 27 per cent compared to this time last year. The City is working on delivering enhanced community engagement programs to further increase recycling rates and reduce contamination.





Residential Resource Recovery Updates

Food scraps recycling collection trial

The City's Foods scraps recycling trial has been running for over 11 months. The service is now available to more than 7,300 households across 88 apartment buildings and 320 houses.

Through the trial the City has so far:

- Diverted 200 tonnes of food scraps from landfill which is about 80 small waste trucks full.
- Avoided the equivalent of 339 tonnes of CO_2, the same as taking 81 cars off the road permanently.
- Saved 195m^3 of landfill space, equal to 812 large wheelie bins (240L).
- Generated 49,313kWh of energy, enough to power 8.2 average households in the LGA for a year.
- Created 6,014kg of fertiliser to nourish soil in gardens and parks.

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.

Feedback about the trial coming in from participating households and apartment building managers and champions continues to be overwhelmingly positive.

Survey results

Results of a survey of trial participants conducted in April indicated that:

- 93% of participants are extremely likely to continue using the service.
- 97% of apartment building managers or champions are happy to very happy with the way the service is running in their building.
- 61% of apartment building managers or champions think the trial has increased the sense of community in their apartment buildings.

Clean stream

Contamination of the food scraps recycling bins continues to be very low and is estimated at less than 5 per cent by weight. Spot checks were conducted by the food scraps processing facility showing residents are doing a great job putting the correct items in their green kitchen caddy compostable liner bags as part of the trial (see photo below).

Trial expansion

A preliminary evaluation of the results of the first seven months of the trial indicated early project success with the trial delivering good recovery and participation rates, low contamination, high customer satisfaction, and multiple environmental benefits.

In April it was decided to expand the trial to the next phase. Phase II will involve extending the trial for a further 12 months from September 2020 to provide the food scraps service to an additional 700 houses and 150 apartment buildings. At this scale, the service will over time be made available to more than 20,000 households across the City.

Return and Earn comes to Kings Cross

The City is contributing to the NSW Return and Earn container deposit scheme by partnering with TOMRA Cleanaway and installed a reverse vending machine (RVM) at Kings Cross Car Park in March 2020.

RVMs are automated kiosks that accept empty and uncrushed glass, plastic, steel and aluminium beverage containers from the public in return for a 10-cent refund as part of the NSW Container Deposit Scheme to reduce litter and increase recycling.

So far, the public has recycled 327,681 containers through the RVM, with the machine being used on average 90 times each day.

Educating the community on waste avoidance

The City is stepping up our waste avoidance and reduction efforts by increasing education and direct engagement with the community. Over the coming months, there will be more opportunities for residents to meet face to face with our new educators to learn, be coached and supported towards a waste-less lifestyle.

In February 2020, the waste avoidance education staff attended a social housing forum in Surry Hills, hosted by the Lord Mayor, and engaged with local residents about waste reduction.

Summer on the Green

In March 2020, staff engaged with residents about plastic waste recovery at a stall at the Summer on the Green event in Waterloo Green Park, attended by approximately 500 residents and run by Counterpoint Community.

In partnership with Defy Design, a group that turns plastic waste into new products, resource recovery outreach officers engaged with 166 residents, many of whom brought empty plastic bottles from home that were shredded, moulded and created into new useable items.

Food scraps recycling information sessions

Throughout February and early March, waste avoidance education staff provided food waste reduction and recycling education at information session stalls across 8 participating apartment buildings participating in the trial and guided over 200 residents through the foods scraps recycling trial process.

In May and June, due to Covid-19 restrictions, the information sessions were delivered virtually to a further 7 apartment buildings participating in the trial.

Relevant links

- *Leave Nothing to Waste*, City of Sydney Waste Strategy
- Waste Management Local Approvals Policy

Advocacy

NSW 20 Year Waste Strategy

The anticipated NSW Government 20-Year Waste Strategy is designed to be a whole-of-government initiative to provide a long-term strategic direction for communities, industry and all levels of government to work together to build resilient services and markets for waste resources. The strategy is not expected to be finalised until 2021.

The City is advocating that the Draft 20 Year Waste Strategy provides the regulatory and investment certainty to support the delivery of a comprehensive plan that delivers long term environmental benefits and is underpinned by a strong economic foundation.

The City believes regulatory action and investment is most required in the following ways:

- Invest in commercialising innovation that will deliver alternatives that are better from a resource management perspective
- Create clear procurement pathways for business and governments to stimulate demand for sustainable goods and services
- Create a regulatory framework that shares the responsibility for end of life materials across manufacturers, retailers and consumers
- Mandate data transparency supports industry to improve existing service levels, innovate for better environmental outcomes and provide consumers with confidence in their procurement decisions
- Balance the cost of using sustainable materials by imposing tariffs on those products and services that have not been designed to adhere to circular economy principles and have a high environmental cost at end of life
- Develop and implement a strategic plan for waste and recycling at a metropolitan level that identifies and secures land for existing and future waste treatment capacity requirements

6. 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 Q3 and Q4 2019/20 are on track to be 273 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.

Procurement of new heavy vehicles

Fleet Services has recently incorporated industry best practice standards into all heavy vehicle and major plant procurement documents, ensuring vehicles are procured with the following major criteria:

- Wherever possible, Fleet Services will procure vehicles and plant with international best practice emission standards to ensure the City's impact on climate change is reduced.
- Fleet Services are also seeking the safest available vehicles, with particular regard to pedestrians, bike riders and other vulnerable road users.

Our Operational Targets

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

Telematics

The City has installed 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.

Electric vehicle news

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.

This project was developed on the back of the City recently integrating 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.

Additionally, the Electric vehicle charge points for the City's electric fleet have now been upgraded from type 1 to type 2. The upgrade has aligned 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 completed and are now available for use across multiple depots and Town Hall House Car Park.

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 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.

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.

Bike Fleet	19/20 Q3	19/20 Q4	Year to date	Program to date
Staff trained #	18	0	60	788
Distance (km)	2,073	0	8,003	57,038

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	– 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 have been installed across our local area.

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.

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

We have developed an Active Travel Toolkit for schools to support schools to build an active travel culture.

We continue to offer a number of cycling courses to increase the capability of riders, including courses for first time riders and 1-on-1 tuition.

Project updates

- Construction began on Lawson Street cycleway in Redfern.
- Construction began on Miller and Saunders Streets in Pyrmont, Chalmers Street and to fill gaps on Liverpool Street.

	Q3	Q4	Year to date
Share the Path sessions	20	21	81
STP Tune Ups (#)	211	181	1,046
STP maps issued (#)	684	480	2,935
STP bells issued (#)	216	170	805
Cycling courses (# participants)	37	99	332
Maintenance courses (# participants)	32	0	119
Balance Bike Clinic	502	0	2,010

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 included a submission 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 is now in operation.

Pop up cycleways and Covid-19 response

- The City has developed 6 new pop up cycleways in collaboration with Transport for NSW.
- These cycleways total 7.5km, representing nearly a 50% increase in separated cycleways over the existing network.
- These pop-up measures will encourage more riders to undertake short trips by bike, freeing up space on public transport and parking for people who cannot travel by bike.
- A second phase of pop up cycleways is under consideration.
- To support the large increase in riding during the Covid-19 pandemic, the City introduced free 1-on-1 cycling courses throughout April and May 2020.
- The frequency of our Cycling in the City course has been doubled to facilitate more riders.

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
- Fiztroy 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 66,000 City of Sydney residents and businesses are members of a car share organisation. Around 45 per cent of city residents who drive (with an unrestricted drivers licence) are members.

The City supports car sharing as part of Council's strategy to make the City of Sydney sustainable.

Car sharing enables multiple households and businesses to share the use of a vehicle. This reduces the number of cars parked on the street, as well as reducing overhead costs for those who rarely need a car (or a second car). As each journey is paid for at the time it is taken, drivers have an incentive to consider cheaper ways of travelling, which results in less car trips. This in turn reduces congestion, greenhouse gas emissions and air pollution. The key support provided by the City is the installation of clearly marked on-street parking spaces in strategic locations dedicated to specific car sharing vehicles. These enable residents to quickly find a vehicle and return it after use. The City installed its first car sharing parking space in 2008. Since then almost 850 dedicated on-street car share parking spaces have been added to the network.

A new car sharing operator commenced operations at the beginning of this year, bringing the total to four operators in the City.

While the pandemic reduced car sharing during the more stringent lockdown measures in March and April, usage is increasing again.

Relevant links

- Connecting our city: 2012
- Walking Strategy and Action Plan: 2014
- Cycle Strategy and Action Plan: 2007-2017
- Liveable Green Network

7. 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.

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.

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 18.1 per cent in 2019 and 19.1% in 2020. 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.

Photo: Crete Reserve Playground

Our operational targets

Urban canopy	– 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	– 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	– Plant 50,000 new trees and shrubs in City parks and street gardens each year until 2021

Local government area target

Urban canopy	– 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

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.

In-road tree planting projects were completed within Rosebery including Rosebery Avenue, Crewe Place, Cressy Street, Morley Avenue and Hayes Road. Several of these streets were delivered in a funding partnership with the NSW Government 5 Million Trees Grant. Works are also 70% complete at Reserve Street, Beaconsfield.

Design and consultation work continues for streets in Glebe, Ultimo and Pyrmont. A wider greening precinct approach is well underway in the eastern area around Danks Street Waterloo, with over 90 street trees planted and extensive street gardens installed.

This planting is undertaken as part of the City's Street Tree Master Plan 2011[14], 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 m^2 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	Q3 19/20	Q4 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 (#)	135	404	700	800	14,692

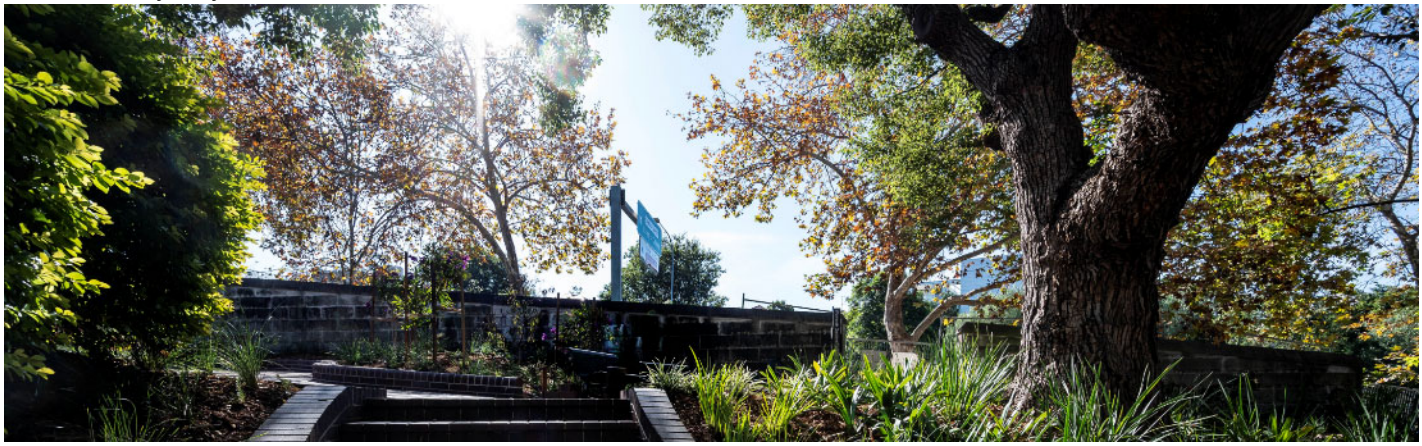
Description	Q3 19/20	Q4 19/20	2030 target	Year to date	Total to date
Canopy cover (on current) (%)*	N/A	N/A	23.5	N/A	19.1

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 two to five years. 2013 data was made available in 2016, with new measurement undertaken in early 2020, and the data shown in the table above.**

Relevant links

- City of Sydney Street Trees
- Sydney's Green Streets
- Urban Forest Strategy 2013



[14] http://www.cityofsydney.nsw.gov.au/live/trees/tree-policies

Photo: Zebra blue butterfly (Leptotes plinius) recorded during the summer invertebrate surveys

Focal Group	Total species recorded
Butterflies	14
Bees	14
Spiders	12
Cicadas	5

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.

Bush restoration works continue to be implemented under the new bush regeneration contract. The City has targeted efforts at several bush restoration areas across the City. A total of 8759 native tubestock were planted across a number of sites in the north and south of the LGA to improve the structure and diversity of the bush restoration sites. Efforts in 2020 have been largely focused on renewing the Prince Alfred Park pool roof, with a program of improvements being carried out across 2020.

A total of 762m of habitat fencing has also been installed across many of the sites to enable plants to establish as many of the parks are being well loved particularly during Covid-19.

The baseline invertebrate survey has been completed by the University of Sydney. Four focal groups were targeted of which we observed the following:

In total 45 distinct species were observed across the 19 sites surveyed. The most abundant group overall with 40 observations of 14 species, were the native bees. These new records of invertebrates across the LGA are central to identifying place-based baselines for what could and should be expected to be found at sites, with the possible absences of key groups pointing to opportunities for what could be encouraged there through active management. Management and approaches to ongoing monitoring have been identified in the report with the aim of improving the City's invertebrate diversity and population.

The urban biodiversity corridor project is underway as part of the Local Strategic Planning Statement review work. It will assess the current linkages identified in the UESAP to determine their feasibility and to identify possible future opportunities for enhancing connectivity across the LGA.

Relevant links

– Urban Ecology Strategic Action Plan 2014

Community empowerment

Community gardens and community planting

The City of Sydney supports community gardens, verge gardens, community composting and urban Landcare groups within our City. Community gardens offer the opportunity for local residents to grow and harvest their own organic produce, convert food waste into valuable compost for soil fertilisation and connect socially with members of their local community which enhances community health and wellbeing.

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 in development.

In addition to the new garden at Frances Newton Reserve, Darlinghurst which commenced earlier this year, stage 2 of the Kings Cross Community Garden in Lawrence Hargraves Reserve is progressing and a new garden in Elger Street Glebe is being established. Bourke Street Community garden in Woolloomooloo is the first garden within the city now hosting chickens.

Our volunteer urban landcare groups provide an invaluable role in planting and restoring native vegetation, weeding and litter removal which in turn supports the development of nature corridors and improved biodiversity within the city.

Community planting events happen throughout the year to assist existing urban landcare groups, community groups and schools in urban greening projects. The City is looking to establish two new groups within the coming year.

Photo: Bourke Street Community Garden, Woolloomooloo

Relevant links

- City of Sydney Community Gardens
- City of Sydney Community Composting
- City of Sydney Bushcare

Performance	Q3 19/20	Q4 19/20	19/20 target	Year to date	Total to date
Community Gardens (#)	No new	No new	>18	No new	20
Landcare groups (#)	No new	No new	trend	No new	5
Community footpath verge gardens (#)	No new	No new	trend	No new	2
Community composting groups (#)	No new	No new	trend	No new	0

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 2020 the City approved 19 developments featuring green roofs or green walls.

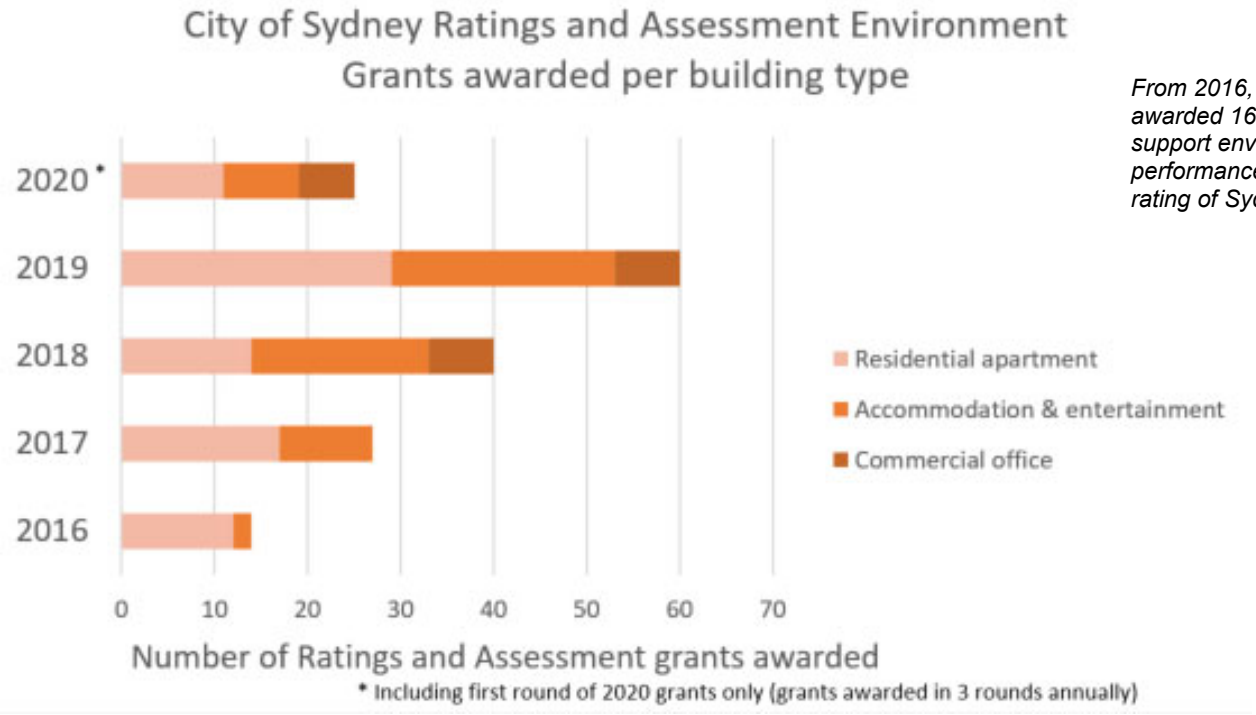
Performance	2018 new sites	2019 new sites	2020 new sites	Total to date[1]
Green roofs in the LGA (#)	11	5	15	171
Green walls in the LGA (#)	1	3	8	54
Total green roofs and walls (#)	12	8	19	221

Relevant links

– Green Roofs and Walls

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

8. Delivering to the Community



From 2016, the City has awarded 166 grants to support environmental performance assessment and rating of Sydney buildings.

Highlights

During this period we have worked with our local residents and business communities to understand and provide the support they need in order to catalyse improved environmental performance while recovering from the impacts of the Covid-19 pandemic.

Our program stakeholders have told us that sustainability and improving environmental performance remains a core goal with many spending the last few months developing key projects to improve resource efficiency, as well as environmental certification and reporting, and development of strategy to drive sustainability.

This priority is also evidenced through consultation that the City conducted in March 2019 and again in May 2020, where the community's concern for climate change impacts increased in rank from fourth to second place. The City's community recovery plan addresses this concern with the explicit goal of 'Recovery is a catalyst for a green and sustainable future'.

In March the City finalised an evaluation of our Environmental Ratings and Assessment grant program. The evaluation found the grants program is a cost-effective mechanism to improve energy and water efficiency and increase knowledge and uptake of credible environmental performance certification of buildings, comparing well to similar programs in other jurisdictions. Between 2016 and 2020, the City awarded over $1.4 Million through a total of 167 Environmental grants for rating or assessing building environmental performance. The City's funding unlocked over $4.4 million in resource efficiency investment from grant recipients with an estimated 4,960 tonnes of carbon emissions now being saved per annum as a result. The program has enabled 69 buildings to complete an environmental performance rating, with the majority of grant recipients stating that this work was dependent on grant funding.

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 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.

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

The 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 supported the pilot of the Better Buildings Cup with eight buildings in Sydney participating during this period.

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

During the year the Partnership has focussed on defining practical solutions for industry adoption of a Circular Economy. This included an analysis of the barriers and opportunities in transitioning members' buildings and portfolios towards a circular economy where waste is considered a resource. In addition, the partnership updated its National Construction Code (NCC) Section J Compliance checklist, a tool designed to help building owners comply with the NCC energy efficiency requirements.

The partnership also identified barriers to increase energy demand flexibility and developed an energy demand management protocol which supports building owners to curtail energy demand during peak times.

Relevant links

Better Buildings Partnership

CITY SWITCH GREEN OFFICE

CitySwitch Green Office NATIONAL

In 2019 the CitySwitch annual program report announced that 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.

The CitySwitch annual conference was held as an online event in May, with the national Program Managers and the National Steering Committee participating in an online collaborative forum to contribute to program and campaign planning, share knowledge and insights, and partake in technical training.

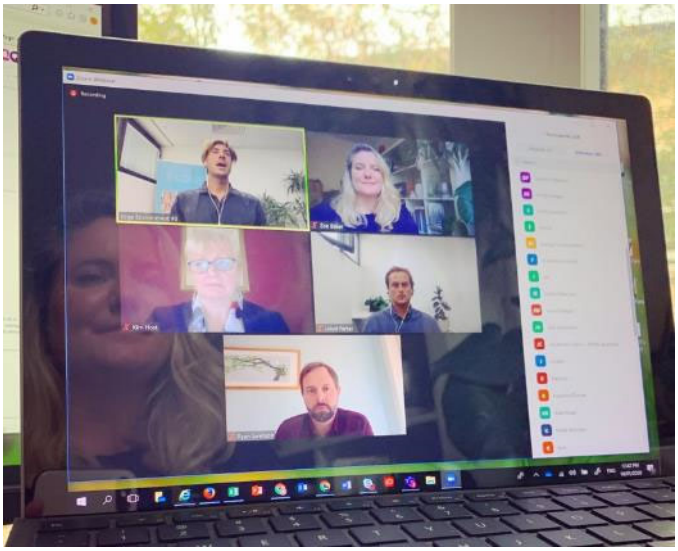
CitySwitch continued to support the pilot of the Better Buildings Cup by delivering the 'Bring Your Best Self' campaign as part of the final season of the Cup, with digital resources including factsheets, posters and social media assets.

The program interviewed 113 CitySwitch signatories to determine their priorities and needs at the start of the Covid-19 pandemic, and determined that sustainability remains a priority for many members, with certifications and reporting, strategy and efficiency as key projects.

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 20 per cent of the office floor space across Australia.

Performance - Cumulative	Q3 19/20	Q4 19/20
Signatories (#)	623	634
Tenancies (#)	1,534	1,547
Office floor Space - NLA (m2)	5,014,938	5,105,216
Percentage of all Australian office space[15]	20.0	20.3
Average NABERS Energy rating (stars)	4.5	-

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



Waste webinar panel presentation - "Don't waste the opportunity"

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.

The program continued engagement work on a range of topics with members, businesses and building managers through the Better Buildings Cup, as organisations and office building managers responded to Covid-19 impacts. The program supported signatories carrying out sustainability, health and wellbeing and CSR staff engagement programs to maintain staff connection while working remotely, and presented on a panel webinar with waste experts exploring the waste improvement opportunities during office occupancy changes.

Performance - Cumulative	Q3 19/20	Q4 19/20
Signatories (#)	140	144
Tenancies (#)	167	223
Office floor space NLA (m2)	1,370,063	1,370,063
Office floor space as proportion of Sydney (%)[16]	26.9	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:

- Thirteen accommodation and entertainment buildings to date have 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

In November 2019, the Sustainable Destination Partnership (SDP) released its first progress report highlighting 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.

The Covid-19 pandemic has severely impacted many members. However recent engagement has indicated a strong interest to leverage the partnership to support a sustainable tourism recovery.

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

[16] Based on 5.1 million NLA m^2 total per Property Council of Australia, Office Market Report 2016

Announcing our new electricity contract powering the City with renewable energy, continuing to engage with our community on the importance of climate action

Community and Business – Program update

Renewable Energy Program

To address increasing community concern around the impacts of climate change, and deliver on Goal 8 in the City's Climate Emergency Response – "Help the community access onsite and offsite renewables, including 100 per cent GreenPower" – the City has continued efforts to engage the community about renewable electricity.

Highlights of activity delivered over the past 6 months include:

- Addition of resources about providing guidance on Power Purchase Agreements (PPAs), for a beginner and intermediate business audience, to the City's Renewable Energy Help Centre – an online knowledge base designed to help people in their transition to procuring renewable electricity
- Digital content explaining the Climate Emergency for a general public audience was distributed following Council's adoption of the Climate Emergency Response Plan; the objective was to encourage climate action within individuals and businesses.
- Two videos exploring the City's own 100% renewable electricity deal. These include a call to action to adopt GreenPower, and include messaging on the benefits of a green recovery in line with advocacy actions in the City's community recovery plan from the Covid-19 pandemic.
- Two further articles and videos were produced and partnered with venue signage, internal communications, and affiliate marketing to raise awareness of the City's renewable electricity deal.
- A significant refresh of the sustainability and climate action content presented on the City's corporate website. Key outcomes of this refresh include a new focus on community action; a new dedicated section on the climate emergency; an expanded water section; and a 'hub' for City programs and grants. Sustainability content is now more visible on the site having been repositioned higher in the navigation.

Relevant links

– Renewable Energy Help Centre

Building Tune-up Program

The tune-up program seeks to support building owners improve their energy efficiency and reduce utility costs through low cost upgrades and tuning of their energy systems. During the 2019/20 year the City evaluated the effectiveness of the program. The evaluation found that 16 buildings were provided with tune-up services (efficiency implementation support or access to a sophisticated data analytics system) which resulted in identified total carbon savings of 21,231 tonnes CO2-e, at a city investment of $13.5 per Tonne CO2-e. Onsite assessments have been on hold due to building access restrictions in the initial stages of Covid-19 government response. However online consultations between assessors and building owners has been implemented, and interest in the program is strong.

Relevant links

– Building Tune Up

Sydney Water Partnership

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. Results to date have been higher than our targets, although implemented savings have been impacted by building access restrictions imposed in response to the Covid-19 pandemic. Another key outcome was the delivery of a water efficiency sector study in the Accommodation and Entertainment sector in collaboration with the Sustainable Destination Partnership.

Performance	Results to date	Program Target
Non-residential participants (#)	31	50
Savings identified (kL per day)	442	-
Savings achieved (kL per day)	49	150

Love Food Sydney Pilot

Love Food Sydney, funded by the Department of Planning, Industry and Environment (DPIE) will build the capacity of residents, businesses and tertiary institutions to avoid food waste. The program launched in February with an event attended by more than 70 stakeholders and potential business participants at Town Hall House. Since launch, 14 businesses and 100 residents have registered for the program. However engagement methods had to be reassessed due to restrictions in response to the Covid-19 pandemic. Face to face business support for the project was put on hold and an e-learning module is being developed to support an alternate delivery once food and beverage businesses resume activity, and outreach to the residential community has also been impacted. The program worked closely with DPIE to use social media as an alternate method to maintain momentum.

Performance	Program Targets	Performance to Jun-20
Residential participants (#)	3,434	100
Business participants (#)	167	14
Businesses in tertiary institutions	20	-

Environmental Grants

In the first half of 2020 the City awarded 34 Environmental Grants to facilitate action and catalyse solutions required to achieve the targets set by Sustainable Sydney 2030.

Through the City's Environmental Grants supported 16 Ratings and Assessments projects to assist building owners and managers better understand their environmental impact and to identify opportunities for improvement, 5 Building Operations projects to determine baseline electricity consumption, and 13 Innovation projects to:

1. Subscribe Sydney businesses to a world-positive coffee service, with six tonnes of ethical coffee distributed to these workplaces with zero-waste (Bugisu Project Limited).
2. Measure energy consumption and reduce household costs by moving a select group of households across the City of Sydney to clean energy. (Enosi Australia Pty Ltd)
3. Develop a subscription based, peer-to-peer toy exchange platform, to encourage reuse and recycling of children's toys. (Flipp Pty Ltd).
4. Investigate the installation of mechanical battery flywheels to power buildings with solar energy, reducing electricity grid use, carbon emissions. (Leon Energy Pty Ltd).
5. Explore architectural applications for recycled plastic milk and juice bottle waste sourced from commercial buildings across the City of Sydney. (Spark & Burnish Pty Ltd).
6. Research the use of small, inexpensive and portable multi-factor air quality sensors to improve the building energy consumption and environmental comfort levels of office staff at the University of Technology, Sydney. (University of Technology Sydney).
7. Reduce concrete slurry from building sites contaminating waterways and the urban environment by introducing a filtering system to building sites. (Clean Barrow Pty Ltd).
8. Investigate the potential of industrial rooftop spaces for solar installations by bringing together the landlord and their tenants, and highlighting the benefits to both parties and the environment. (Deltaq Pty Limited).
9. Investigate the development of a backend search engine for hospitality booking systems to present accommodation sector environmental performance data in a user friendly manner for consumers to promote sustainably informed choices (Joan Products And Services Pty. Ltd.).
10. Measure the impact of incorporating a green roof with solar PV installations by comparing two similar sites, located side by side, on Hickson Road - Barangaroo. (Lendlease (Millers Point) Pty Limited).
11. Build a community-driven roadmap of solar energy solutions in Ultimo to increase uptake of solar installation. (Pingala - Community Renewables for Sydney Inc).
12. Develop new technologies to collect data and monitor the health of urban native bee hives, with information to be shared with the wider beekeeping community to ensure a diverse and healthy urban eco-system. (Pocket City Farms).
13. Measure impact of replacing food truck single use disposable cutlery and crockery with re-usables, which are collected, washed and re-used. (Ruzi Group Pty Ltd).

No projects were funded through the Knowledge Exchange program or through the Matching grant program, in the January to June 2020 period.

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 February and May to discuss opportunities and collaboration around improving sustainability in the strata sector; particular focus has been on upcoming legislative changes to the Strata Schemes Management Act (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 83 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 apartment buildings in Sydney have been awarded with the highest 6 star NABERS energy rating; one with and one without GreenPower. These are the first apartment buildings nationally to receive a 6 star rating.

Two Leadership Network events were held with 233 participants representing buildings from the Smart Green Apartments alumni. Topics covered included enhancing building performance using NABERS and fire safety in apartment buildings.

The City hosted a webinar on the topic ‘Safe and harmonious apartment living during Covid-19' in April. The webinar was presented by strata lawyer Amanda Farmer, Founder of Your Strata Property.

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

- Your Strata Property webinar streamed live on Facebook
- NABERS National Steering Committee

Relevant links

Residential Apartment Sustainability Plan: 2015

Smart Green Apartments

The Moore Park Gardens Strata Committee recently approved the installation of solar panels

Smart Green Apartments is the City’s flagship retrofit program for apartment communities. To date, direct engagement has occurred with 141 strata plans, 172 buildings and 27,182 residents in 13,876 apartments.

Energy efficiency projects have been implemented in the 2016, 2017 and 2018 intake years, avoiding 17,267 tonnes CO-2 per year and saving participating owners corporations a total of $2.48 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 555ML per annum and cost savings to owners of $1.02 million per annum in reduced water bills.

Owners’ corporations from all intakes have continued to implement waste improvement initiatives in their buildings. Seven Smart Green Apartments buildings are participating in the City’s food waste collection trial.

Green Villages

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

Two Green Villages talks, attended by 74 participants, were delivered at Sydney Park on the topics; Worm farming and composting basics, Composting and worm farming and Small space gardening. Follow-up surveys of participants indicated that 91 per cent of respondents have undertaken one or more new actions since attending the talk.

Performance	Q3 19/20	Q4 19/20	Year to date	2019/20 target
Workshops and forums (#)	2	0	7	8
Participants (#)	74	0	221	240
Participants implementing (per cent)	91	0	91	85

Relevant links

- City of Sydney Environmental News

Green Villages community education – vertical gardening workshop

9. 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 or 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 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 at 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 sewer pipes.

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.

10. Appendix 1: Data management plan

Low-carbon city

City of Sydney (Operations)		
Data type	**Current Status**	**Forward Plan**
Electricity	Reporting underway from SMART. Electricity currently is reported quarterly in arrears. Data provided by electricity retailers. Daily monitoring occurring at all large electricity using sites (over 100,000 kWh per annum).	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	Emissions sources including flights, taxis, contractor fuel, onsite fuel usage, and refrigerants are added to SMART quarterly. Events data is estimated on previous years' performance.	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)	Asset Environmental Budget (emissions) has been developed based using baseline data from the NCOS report. Estimations for portfolio increases has been based on existing portfolio performance, Project projects for co/trigeneration, MPEP, Solar Photovoltalics 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.	The Asset Environmental Budget will be reviewed annually.

Local Government Area (LGA)		
Data type	**Current Status**	**Forward Plan**
Electricity	CCAP City - reported through the Environmental Sustainability Platform. 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.	Continue to monitor and report electricity data.
Natural gas	CCAP City 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 estimates from 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 *Operations Waste Databases Audit July 2017*.	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 plots 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.

Green and cool city

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

11. 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

Sydney2030/Green/Global/Connected

LEGEND	
CO_2	Carbon dioxide
GWh	Gigawatt hours
Kg	Kilogram
kL	Kilolitres
kWp	Kilowatt peak
LED	Light Emitting Diode
LGA	Local Government Area
m^2	Square meters
ML	Megalitres
MWh	Megawatt hour
MWe	Megawatt equivalent
t	Tonne
tCO_2-e	Tonnes of carbon dioxide equivalent

This report is published biannually for January to June and July to December by the City of Sydney at:

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

Please direct any questions about this report to:
Mary Watt
Manager Environmental Projects
ems@cityofsydney.nsw.gov.au
+61 2 92659713

CITY OF SYDNEY

2030

Sydney2030/Green/Global/Connected

Sydney YourSay.com.au

Help shape the future of Sydney.
Have your say at
SydneyYourSay.com.au