

Attachment E

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



Green Environmental Sustainability Progress Report

July to December 2018

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.

Green Smart Streets

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

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

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

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

Message from the CEO

The City continues to strengthen its commitment as an environmental leader. In the most recent period, July to December 2018, our activity with business, community and government, continues to address the climate change risks faced by our city.

In September, the Lord Mayor announced Sydney joined forces with more than 100 city leaders from around the world committing to strong action on climate change as part of the Global Climate Action Summit. Around 4,500 delegates from cities including Sydney, London, Milan, Montreal, New York, Paris, Tel Aviv, Tokyo and Washington D.C. called on national governments to redouble their climate action commitments. The City signed up to six agreements, including commitments to make all local buildings net zero by 2050 and reduce waste going to landfill.

The City has invited 100 apartment buildings and 300 houses to join its first food scraps collection trial in mid-2019. The trial is part of the City's Leave Nothing to Waste action plan, which has a target of diverting more than 90 per cent of waste from landfill by 2030. Food scraps make up one third of the red lid bins in the local area. Food waste collected in the trial will be turned into nutrient-rich fertiliser that can be used to grow plants and improve soil. The trial will also test the best way to collect food waste from different building types.

The Bureau of Meteorology and CSIRO released the [State of the Climate 2018](#) report, which highlights key findings including that Australia's climate has warmed just over 1°C since 1910, leading to an increase in the frequency of extreme heat events. The report highlights the need for Australia to plan for and adapt to some level of climate change.

This Green Report provides an update on our programs, initiatives and achievements and I encourage everyone to read and distribute it 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



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



Water sensitive city

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



Zero waste city

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



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
- **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. Highlights

Local Government Area

Low Carbon City



Water Sensitive City



Active and Connected City



Zero Waste City



City of Sydney Operations

Low Carbon City



Water Sensitive City



Solar Power



Fleet Emissions



Carbon Neutral



Green and Cool City



Zero Waste City



Delivering to the community

Better Buildings Partnership

 **59%** Commercial office space in Sydney CBD in partnership

 **51%** GHG emissions reduction (from FY06)

 **77** buildings with carbon neutral commitments

 **31%** reduction in potable water use (from FY06)

Sustainable Destination Partnership

 **40** Program launched in June 2018 with 40 members from the entertainment and accommodation sector

 **48%** hotel rooms in Sydney involved in program

CitySwitch Green Office

 **21%** commercial office space in Sydney CBD committed to program

 **36,310** tonnes CO₂-e GHG emissions reduction in 2018
(2018 program performance)

 **10** CitySwitch Sydney members are carbon neutral

Smart Green Apartments

 **133** apartment buildings in the program.

32 NABERS ratings for apartment buildings
(Program achievements to Dec 2018)

\$1.5 million Owners Corporations saving over \$1.5M/year

 **211** ML potable water saved per year

Number of environmental performance grants

7 Matching grants

41 Ratings and assessment grants

5 Innovation grants

(Grants approved Jul-Dec 2018)



3. Low Carbon City



What our cities do individually and together to address climate change can set the agenda for communities and governments everywhere, promoting innovation and solutions to achieving a net zero future.

In *Sustainable Sydney 2030*, we set a 2030 target to reduce emissions both across the city and in our operations by 70 per cent below 2006 levels. In our Environmental Action 2016-2021 Strategy and Action Plan, we have strengthened our renewable energy targets for both our own operations and in our local government area, extending our target to net zero emissions by 2050. These Council endorsed targets and actions are represented by a waterfall chart that outlines organisational emissions and the anticipated results of actions that will be taken in order to achieve the 2021 target of 44% reduction. (See Chart 2)

The City's 'Asset Environmental Budget' (AEB) translates operational carbon emissions targets into a detailed plan. The AEB is incorporated into the Resource Plan to promote transparency in monitoring of our emissions performance, timely decision making at a strategic level allowing the organisation to stay on track, and visibility of successful reduction measures.

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 reporting period the City has prepared submissions to the Australian Department of the Environment and Industry on the National Construction Code and to the Australian Government and Energy Security Board on the National Energy Guarantee.

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 National Carbon Offset Standard (NCOS).

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 to generate clean and cost-effective energy locally where and when it is required.

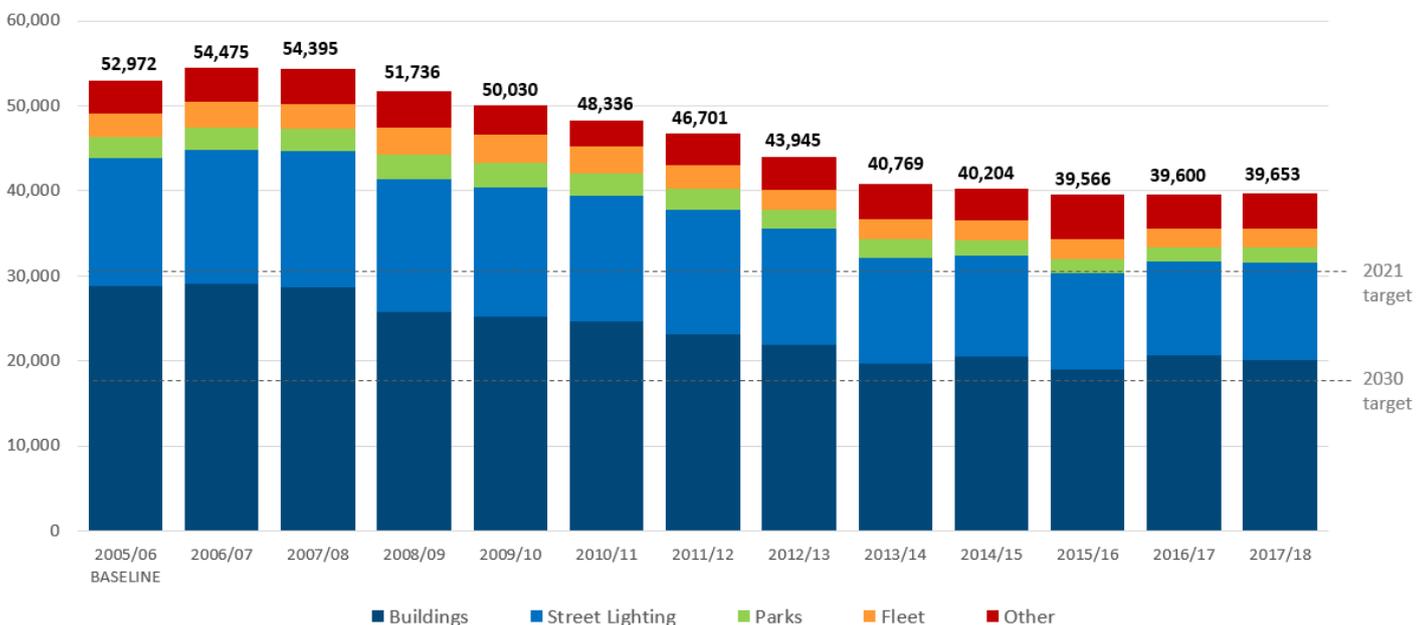
Offset

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

Relevant links

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

Chart 1: City of Sydney operations greenhouse gas emissions





Our operational targets



Greenhouse gas emissions

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



Renewable energy

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

How we are tracking

Annual greenhouse gas emissions

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

Emissions from grid electricity are calculated based on the emissions factors, for NSW, currently 0.82 tCO₂-e/MWh for scope 2 and 0.10 tCO₂-e/MWh for scope 3 emissions. Greenhouse gas emissions are calculated using National Greenhouse Factors³.

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 remained stable due to renewable energy in the grid resulting in lower emissions. The City will focus on new opportunities to improve energy efficiency and the 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 2017)	30,371	69,934	179,270
Most recent (Jun 2018)	31,245	75,144	187,626
Difference (baseline)	-11,182 (-26%)	+53,250 (+243%)	+12,995 (+7%)
Difference (last year)	+ 874 (+3%)	+5,210 (+7%)	+8,357 (+4%)

³ <http://www.environment.gov.au/climate-change/climate-science-data/greenhouse-gas-measurement/publications/national-greenhouse-accounts-factors-july-2018>

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.



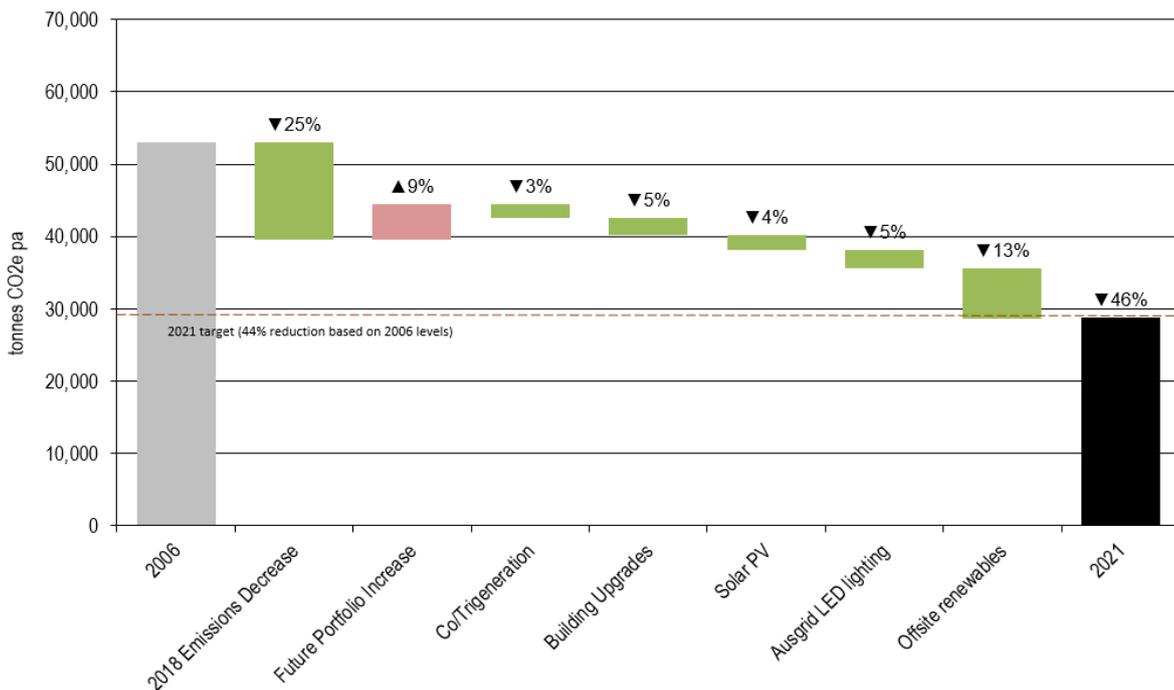


How we will get there

As at June 2018, the City has a verified emissions reduction of 25 per cent from the 2006 baseline. The chart below indicates the estimated contributions of initiatives to reduce our emissions by at least 44 per cent by 2021. We will maintain our certified carbon neutral status each year through the purchase of verified offsets for those emissions we cannot eliminate, as we have since 2007.

The City's greenhouse gas emissions vary due to a range of factors such as the buying and selling of buildings and assets, how we manage our assets, climatic influences, changes to services, and other factors. It should be noted that irrespective of portfolio changes, the City's emissions targets are absolute and do not allow for offsets.

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



Portfolio change (+3 per cent) includes changes to the City's property portfolio over time. Major additional facilities include Ian Thorpe Aquatic Centre, 343 George Street Sydney, Surry Hills Community Centre and Alexandria Canal Depot.

Management improvements include emissions reductions achieved outside of the major efficiency initiatives. This includes solar installed to date, improved energy measurement and monitoring, behaviour changes and small works.

Other influences on emissions include annual weather changes.

Initiatives to be completed by 2021

The 2021 emissions target remains at 44 per cent reduction from the 2006 baseline and with a current forecast to a 46 per cent reduction.

– Future portfolio increase (+9 per cent) assumes the expansion of the City's property portfolio for community and operational purposes.

Increases: Green Square Community and Cultural Precinct, Green Square Library and Plaza, Gunyama Park Aquatic and Recreation Centre, Perry Park Recreation Centre and Green Square Water Reuse.

Increases through Developers Contributions to the City: Greenland Tower Creative Hub, Darling Library, and 178-186 George Street.

Depot.

- Co/Trigeneration (-3 per cent) - reductions will be accomplished through the operation of co/trigeneration facilities at Town Hall House, Cook and Phillip Park Aquatic Centre, Ian Thorpe Aquatic Centre and Gunyama Park Aquatic and Recreation Centre.
- Building upgrades (-5 per cent) reflect estimated savings from efficiency upgrades in the most resource intensive properties via the Major Properties Efficiency Project (MPEP).
- Solar Photovoltaics (PV) (-4 per cent) on City properties that can deliver 15 per cent of electricity demand if battery storage provides a cost effective solution and the City can take advantage of virtual net metering between our sites.
- Ausgrid LED lighting (-5 per cent) - The City pays for the electricity used by all street lighting in the local government area, however most of these lights are owned by Ausgrid. The City has made an agreement with Ausgrid to upgrade its street lighting to more efficient LED lights. Ausgrid has commenced an accelerated roll out of energy efficient LED lights. Between December 2018 and June 2019, Ausgrid expects to replace about 3500 street lights it owns on residential streets in the City. This element is striped to indicate it is not within the City's direct control.
- Off-site renewables (-13 per cent) can be purchased by the City through the GreenPower scheme or directly from a renewable project such as Power Purchase Agreement (PPA) and integrated into the City's retail contract renewal in 2019.



Gunyama Park Aquatic and Recreation Centre: artist's impression

Operational Emissions Target

Similar in format to a financial budget, the following table provides annual Asset Portfolio carbon emission estimates to reach the City's stated 2021 target. The budget will be reviewed annually.

GHG Tonnes CO2e	2017/18	2018/19	2019/20	2020/21	TOTAL
	Property Emissions Portfolio				
Carried forward Portfolio Balance	22,507	22,087	21,333	19,684	22,507
Add					
Net Portfolio Changes	157	520	646	3,261	4,584
Reduction Emissions Projects					
Co/Trigeneration Installations	(500)	(450)	(450)	(450)	(1,850)
Building Upgrades	0	(133)	(1,163)	(1,168)	(2,464)
Solar PV Installations	(77)	(691)	(682)	(558)	(2,008)
Total Property Emissions at End of Period	22,087	21,333	19,684	20,769	20,769
Street and Parks Lighting Emissions					
Carried forward Portfolio Balance	12,736	12,816	12,899	12,131	12,736
Add					
New Street Lights	80	83	82	0	245
Reduction of Emissions					
Ausgrid LED Street Lighting Program	0	0	(850)	(1,700)	(2,550)
Total Street and Parks Lighting Emissions at End of Period	12,816	12,899	12,131	10,431	10,431
Other Emissions					
Contractor Fuel	1,256	1,256	1,256	1,256	1,256
Organisational Fleet	2,417	2,417	2,417	2,417	2,417
Corporate Emissions (Events, Business Travel, Paper)	944	944	944	944	944
Total Other Emissions	4,617	4,617	4,617	4,617	4,617
Reduction of Emissions					
Offsite Renewables	0	0	0	(7,000)	(7,000)
Total OffSite Emissions	0	0	0	(7,000)	(7,000)
Total Emissions at End of Period	39,520	38,849	36,432	28,817	28,817

Baseline June 2006 Emissions GHG Tonnes CO2e

52,972

Emission Reduction June 2021

46%



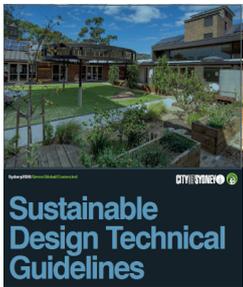


Solar Exports under National Carbon Offset Standard



The City of Sydney has been certified as carbon neutral under the National Carbon Offset Standard program since 2011. Over this period the City has installed around a megawatt of solar panels to its sites. Where these solar systems export clean power back to the grid, the City to date was unable to claim these savings as a reduction against its carbon footprint. However a recent determination by the administrators of NCOS now makes it possible to claim the emissions savings from onsite solar exported to the grid where appropriately metered. This ruling is a welcome response to a recommendation made by the City and other NCOS participants and may result in larger solar installations which cost-effectively contribute to the City’s renewable energy and emissions targets.

Environmental Management System (EMS)



The City continues to improve its environmental management processes, in line with the ISO14001 standard and to ensure all City staff are aware of their environmental management responsibilities. The City recently developed the [Sustainable Design Technical Guidelines](#) and have made them available on the City of Sydney Website.

Fleet

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

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

Building upgrades

The City has committed to delivering a Major Properties Efficiency Project (MPEP) that includes energy and water improvement projects at thirteen of its sites, which account for almost 80 per cent of the City’s total energy and water consumption. An Implementation Program has commenced which includes LED lighting upgrades, high efficiency equipment improvements, rainwater tanks and HVAC optimisation. These initiatives will contribute to achieving the City’s emission and water reduction targets.

Project Updates

Solar PV and Energy Storage

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

Five major installations will be added during the 2019 financial year. These installations will increase the total installed capacity on City sites from about 1100 kW to over 1800 kW.

The City is also host to a first major energy 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 renewable energy onsite from the solar PV (that would otherwise be exported to the grid).

Trigeneration

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

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

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

Cogeneration at Ian Thorpe Aquatic Centre

Construction commenced in December 2017 and is approximately 50 per cent complete. The cogeneration unit is in place along with the associated radiators.

Cogeneration at Cook + Phillip Park Aquatic Centre

A preferred option was adopted by stakeholders to replace all aged heat pumps and the chiller and install a cogeneration unit. DA documentation has been approved and contractor proposals are currently being reviewed.

Sydney maintains “Leadership” global sustainability ranking

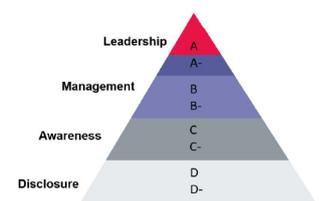
CDP-C40 ranks more than 570 cities to identify those excelling on climate disclosure. CDP is a not-for-profit organisation that provides the global platform for cities and companies to measure, manage and disclose their environmental data.

The City’s 2017/18 disclosure has been scored by CDP, and Sydney again retained its “Leadership” status as a result of robust and transparent reporting, and demonstrated progress made against ambitious and achievable goals.

Responses in the Leadership band mean that those cities are recognised for having strategic, holistic plans in place to ensure the actions they are taking will reduce climate impacts and vulnerabilities of the citizens, businesses and organisations residing in their city.

Score	Scoring band
A	Leadership

Scoring measures progress towards environmental stewardship





Declaration and Events: C40 Cities

In September 2018 the City attended the Global Climate Action Summit (GCAS). This is a significant meeting that brings together state, tribal and local government leaders, businesses and individuals to share how climate change is being addressed in support of the Paris Agreement.

In the lead up to GCAS, the Lord Mayor signed onto the following declarations which demonstrate our continuing resolve to confront climate change:

- C40 Renewable Energy Commitment
- C40 Net Zero Carbon Buildings
- C40 Advancing Towards Zero Waste
- C40 Achieving an Equitable Low Carbon Transformation
- Edmonton Declaration
- Powering Past Coal Alliance.

Other important discussions in which we shared knowledge and best practices on climate change include the Carbon Neutral Cities Alliance and C40 assemblies.

In 2018 the City became a Founding Member of the Business Renewables Centre Australia – an advisory service which seeks to make it easier for businesses to enter into power purchase agreements with new large scale renewable energy projects. <https://businessrenewables.org.au>

The City also became a member of the Open Cities Alliance, a peak body group advocating for decentralised, clean and efficient technologies including renewable energy, transport and water recycling. www.opencities.net.au

Advocacy

LED streetlights

Sydney plans to be the first City in Australia to replace all of its public lighting portfolio with energy-efficient LEDs. The City is partnering with Ausgrid (our local electricity utility) to fast track the upgrade of utility-owned street lights in the next two years.

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

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

When both stages are complete, the City will have reduced emissions by about 3,400 tonnes a year. The City will also save over \$1 million a year in operational savings, thanks to reductions in light bulb failures (LEDs last over 10 years) and in electricity use.

The Ausgrid upgrade program complements an initiative by the City to replace our own street light fittings with LEDs. Sydney was the first Australian city to install energy-efficient LED street lights on a large scale. As part of a \$7 million project, we replaced over 6000 City-owned street and park lights between 2012 and 2016. This reduced emissions by over 2000 tonnes a year and reduced operational costs by about \$800,000 a year.

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

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



The local government area

Local government area targets



Greenhouse gas emissions

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



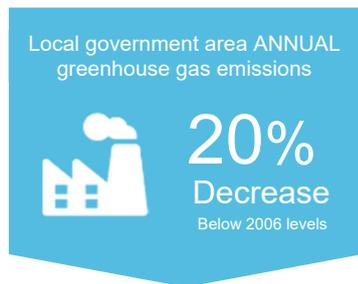
Renewable energy

- 50 per cent of electricity demand met by renewable sources by 2030⁴

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 2016-17 emissions have reduced by 20 per cent since the 2006 baseline.



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

The table below shows energy consumption data for the LGA. Please note, LGA data is shown to June 2017, which is the most up to date data available. The City is advocating to Ausgrid to provide this data much sooner after the financial year.

LGA	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline	4,159,436	3,038,529	18,012,502
Most recent (to June 2017)	3,508,737	3,522,010	16,153,464
Difference	-650,699	+483,481	-1,859,053
Difference (per cent)	-16%	+16%	-10%

Energy consumption data

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



How we will get there

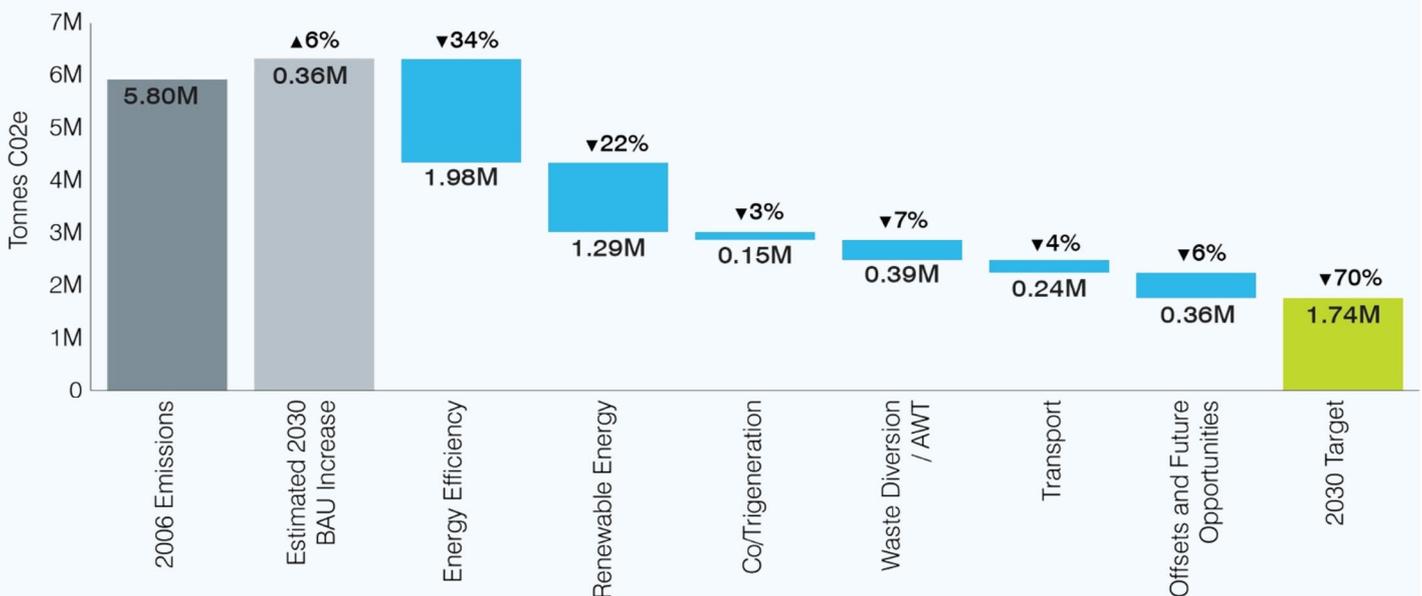
Chart 4 shows the estimated contributions of the initiatives we expect could lead to reduction of the city’s emissions by 70 per cent by 2030.

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

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

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

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



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

High Voltage Electricity Data

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



Project Update

Green Square Town Centre

The Green Square Town Centre (the town centre) is a 14 hectare precinct that will be a major retail, cultural and commercial centre only 3.5km from Sydney's CBD. The town centre will transform South Sydney's oldest industrial area into a new and vibrant neighbourhood, including over 7,000 new residents. It is imperative that urban renewal projects can demonstrate leadership in sustainability.

Green Star Communities Rating

The process of obtaining a Green Star Communities rating for the whole of Green Square Town Centre is in its final stage of completion. The City is working with private developers in the town centre and with the Green Building Council of Australia to obtain a rating in early 2019.

There is strong alignment between the Sustainable Sydney 2030 strategy (SS2030) and the five Green Star Communities categories; Governance, Liveability, Economic Prosperity, Environment, and Innovation. Pursuing a Green Star Communities rating provides an opportunity to refine actions and policies to lead to better sustainability outcomes for Green Square and the City of Sydney as a whole.

Green Star Building Rating for Library and Plaza

A major project in the Green Square Town Centre which will grow its green credentials is the award winning Library and Plaza. The brand new Green Square Library was officially opened in October 2018. The innovative underground library is located in the plaza in the heart of Green Square, next to the train station. The Library and Plaza is pursuing its own Green Star Building rating. The lead construction contractor John Holland is progressing submissions to the Green Building Council of Australia for assessment of a five star rating under their Green Star Public Building Design and As-Built certification tool.

The Green Square Town Centre is an innovative precinct, which can serve as a model for other urban renewal communities.

Advocacy

Standards for urban renewal precincts

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

Advocacy

Increase the building code targets

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

Relevant links

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



4. Water sensitive city



In August 2018, the Green Square Town Centre Water Reuse project was completed and switched on. Recycled water can now be delivered to residential customers and council properties, such as Green Square Library, for use in toilet flushing, clothes washing, cooling towers and landscape and parks irrigation.

Green Square Water Reuse - Stage 1 switched on!

Practical completion of works was achieved in August 2018 and the recycled water plant is now capable of delivering up to 4000 kL per month. The works entailed underground storage tanks and recycled water treatment plant; stormwater harvesting infrastructure located along Zetland Avenue; and the first phase of the recycled water pipe network in Green Square town centre.

The City owns the recycled water treatment plant, which is located in the Green Infrastructure Centre, a restored heritage building on the former South Sydney Hospital site. Commissioning of the treatment plant is complete with verification of recycled water quality underway. Green Square Water has obtained sign-off by the Minister and final approval from IPART to supply recycled water to the town centre. The recycled water network will provide non-potable water council facilities and parks in the area such as, the new Green Square Library, Matron Ruby Park and the Joynton Avenue Creative Centre.

The recycled water pipe network is being progressively installed and connected to new developments in the town centre as they are constructed in 2019 and beyond. Recycled water provides a non-potable water supply that is essential to meet the demands of our growing city and provide a fit for purpose sustainable supply to keep our city green and cool.

In October 2018, children from the Waranara Early Education Centre joined the Lord Mayor in learning about recycled water as part of Water Week activities at Green Square recycled water treatment plant.





Advocacy

Recycled Water Pricing

Water pricing and policy plays a critical role in ensuring that recycled water can be delivered. The City has been advocating on the Independent Pricing and Regulatory Tribunal's (IPART) draft decisions on water pricing policy and for a broad NSW water industry review for the past three years. The NSW government has undertaken this review, which the City was involved in, and the report of the findings and recommendations are yet to be published. The Metropolitan Water Plan 2017 notes current pricing and regulatory settings can bias investment towards traditional service models even when alternatives, including water recycling are cheaper. The City continues to prepare submissions to IPART advocating for change in the pricing framework and to conduct a holistic review; including that IPART determine pricing that is clear, relevant and predictable, which encourages diversification of local water supply and will result in more resilient communities.

Water is crucial to the social, economic and environmental wellbeing and survival of our city. Our city's forecasted population growth to 2030 will increase the use of our green public spaces, placing pressure on these spaces to remain green and our waterways to stay clean.

Our operational targets



Water consumption

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

The City is transforming to be a water sensitive city that is resilient, cool, green and productive. Our water management approach to meet these targets 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
- 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

Our approach will drought-proof our city to ensure we can use water when it is hot and dry. Our waterway health will be improved and non-potable water supplies will be safeguarded for use in the next century and beyond.

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.



City of Sydney Operations

How we are tracking

Annual water consumption

As at June 2018, the City operations potable water use increased by 27 per cent from the 2006 baseline. This increase is due to the following;

- Transitioning to a new utilities management system (SMART) uncovered previously unaccounted for accounts and meters. This represents about half the total increase from the 2006 baseline.
- Water leaks and high consumption at multiple sites. These sites are under investigation to reduce/eliminate the high consumption.
- Changes to City's portfolio (buildings and parks) and high consumption tenant sites.

The upgrading of utilities data platform and better-quality data management has resulted in an increase of 37 megalitres per annum (MLpa) on average from 2013/14 to 2016/17.



While the water utility data in SMART is still being verified and updated, Chart 5 shows the first available estimated water utility data for the previous five year period. Chart 5 shows the increase in reported consumption resulting from the transition to the new utility data management system (SMART) as described above. In addition, Chart 5 shows an increase in potable water consumption from the 2016/17 to 2017/18 period from 489 to 550 megalitres per annum. This represents an increase of 27% for 2017/18 relative to the baseline.

The primary reasons for the increase in potable water consumption for the 2017/18 period compared to 2016/17 include:

- construction works and public events have required reurfing of 1.7 hectares of Hyde Park
- excess water use at Sydney Park due to possible connection of a nearby project, the City is in the process of verifying the usage
- hot, dry weather led to increased irrigation volumes to keep our parks and open spaces green
- repairs to Prince Alfred Park Pool required emptying and refilling the pool
- a major leak at a public toilet (13A Refinery Drive) was identified and has since been rectified

Many of the anomalies have now been rectified and it is expected that water consumption will reduce significantly in the next reporting period.

We have established a working group to continue to improve our data management and reporting processes. The priorities for this working group include:

- timely review of water consumption data to identify and rectify anomalies such as leaks
- continual review of water data categorisation to ensure we only pay and report on the City's operational footprint
- development of a comprehensive metering and monitoring program to provide more granular and regular data at sites.

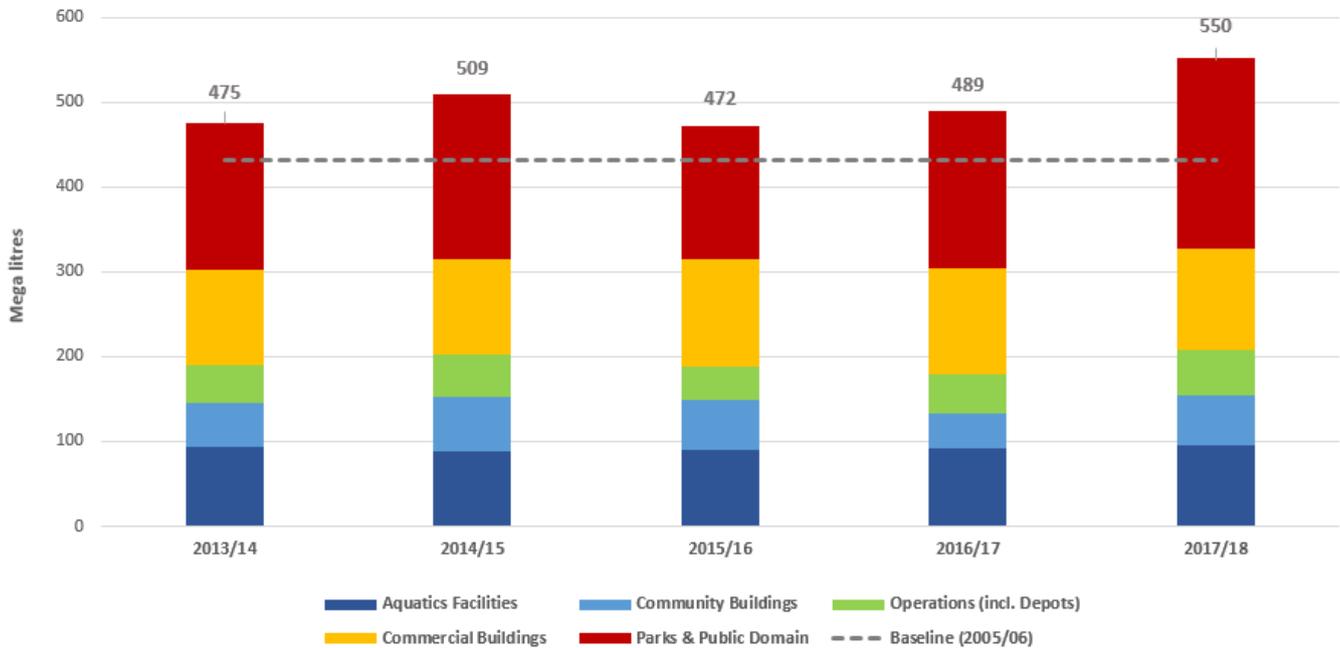
In addition to this program of works, updates to the Parks Water Saving Action Plan will further identify efficiency measures, development of alternative water sources, improved management practices, new technologies and improvements to monitoring and reporting.

How we will get there

The City is currently using the updated water data to revise the range and magnitude of actions to achieve stated targets. A new waterfall chart will be available in future Green Reports.



Chart 5: City of Sydney operations potable water use



- All data sourced directly from Sydney Water and contained within and reported from the new data management system SMART.
- Parks and Public Domain - Includes parks, reserves, playgrounds, street closures, garden beds and nature strips. Also included are water features that are in the public domain.
- Commercial buildings- Includes 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.
- Operations - Includes depots and workshops.
- 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.
- 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.
- Note - A number of City buildings are used for multiple purposes – for example Customs House is used for office and retail, along with library and exhibition uses. In allocating each property to one of the above categories, the dominant water user was the determining factor. Over time the categorisation of a property may change depending on the use.

Water consumption data

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

Organisation	Baseline (ML)	Current (end 17/18) (ML)	Difference (ML)	Difference (per cent)
City of Sydney operations	431	550	119	27

Calculation

Difference = (Current - Baseline)
 Per cent Difference = (Difference / Baseline) x 100



Project Update

Water Consumption in Parks

Since 2006, the area of parks and open spaces requiring irrigation in the Local Government Area (LGA) has increased by 54 per cent.

These include 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 total irrigated area as of June 2018 is 816,538 m² against the baseline of 531,953 m².

The City's target for water usage in city parks is 180L per square metre of irrigated space by the end of 2021. In the 2017-2018 financial year, City parks and open spaces used an estimated 294 L per square metre of irrigated space. Water use was higher this year due to low annual rainfall and the establishment of significant areas of new turf and plants, particularly in Hyde Park North. In addition, reported water consumption has increased as a result of transitioning to our new data management platform (SMART) as described on page 18.

Water use in the City's parks from July to October 2018 decreased by 7 per cent when compared to the same quarter in the previous year.

The 2012 Parks Water Saving Action Plan is currently being updated. In 2012 the Plan outlined a range of actions to contribute to achieving the City's sustainable water targets. These included efficiency measures, development of alternative water sources, improved management practices, new technologies and improvements to monitoring and reporting.

The updated Plan will review and document the achievements to date and set an action plan for the next three years to 2021.

Two key initiatives, which will form part of the Water Savings Action Plan, are already underway as part of the City's Environmental Action 2016-2021. These are connection of parks to alternative water sources to reduce reliance on drinking water and improvements to water efficiency through implementation of efficient systems and management practices.

Audits of our highest water using parks will commence this year to identify further efficiency improvements and set site specific benchmarks and targets.

Improvements to data capture and record keeping continue, with our focus on data reliability. Roll-out of a new centralised monitoring and control system for parks water use is complete for irrigation systems, water features and sports field lighting. Integration of stormwater recycling systems is being developed. The benefits of the new system will be improved monitoring of asset performance and better controls over key park operations.

Financial Year	Actual potable water use (kL)	Irrigated area (m ²)	Increase in irrigated area from baseline (%)	Irrigation intensity (L potable water/m ² irrigated area)
2006	132,946	531,953	-	250
2014	171,967	808,479	52.0	213
2015	194,217	808,479	52.0	240
2016	157,788	810,538	52.4	195
2017	184,830	810,538	52.4	228
2018	240,327	816,538	53.5	294

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



Project Update

Harold Park

The City of Sydney recently completed Harold Park, a new 3.8-hectare open space. The park was built with an extensive stormwater harvesting and treatment scheme to supply the irrigation needs of the park and nearby sports fields with recycled water. The scheme also improves the quality of the stormwater entering the Johnston's Creek Canal.

Harold Park is in Forest Lodge, near Glebe and Annandale. The City of Sydney and the Central Sydney Planning Committee shared planning control of this urban renewal project and Mirvac developed the site. The developer was required to dedicate more than one-third of the privately-owned site to the City for a public park – 3.8 hectares of previously private space has now become public open space. The park includes new trees, shrubs and landscaping, open lawn areas, custom-built playground, cycling and walking paths, and is a wildlife corridor.

The project included the installation of a stormwater harvesting and treatment scheme. Stormwater is taken from an underground Sydney Water drain to a Gross Pollutant Trap, which removes litter, coarse sediment and organic matter from the stormwater. From there, the water is transferred to a treatment system which uses a screen filter and ultraviolet (UV) disinfection to treat the water to a quality that is suitable for irrigation. The system also includes a number of raingardens that capture and clean water runoff from the park.

The treated water is used to irrigate the lawn area at Harold Park and the nearby sporting fields at Jubilee Oval and Federal Park.

Since the stormwater harvesting and treatment system started operation in mid-June 2018, it has met about 67 per cent of the irrigation demands, saving over 11,000 litres of water each day.

Project Update

Johnston's Creek Wetland

Johnston's Creek Wetland is a key element of the Johnston Creek Parklands that were once an important part of the estuarine system that flows into Rozelle Bay. The City is committed to improving water quality entering the harbour. The City is partnering with Sydney Water to develop a freshwater wetland in Johnston Park near the Crescent. Johnston's Creek Wetland will treat the stormwater from the 1.8 hectare residential catchment in a 1150 m² constructed wetland.

Constructed wetlands are considered to be a key treatment process in stormwater management. They provide treatment for the removal of nitrogen, phosphorus, suspended solids and heavy metals from stormwater, as well as providing other benefits such as habitat creation and aesthetic value. The wetland will remove pollutants via a gross pollutant trap connected to the stormwater drain before the water enters the wetland system. The wetland will have native aquatic plants that remove nutrients from the water as it flows through the system before being discharged into the creek system.

The Johnston's Creek Wetland was identified through the Johnston's Creek Master Plan 2013. It will improve the water quality entering the Johnston Creek canal and will complement the canal naturalisation work currently being undertaken by Sydney Water. The wetland will be an important habitat stepping stone for aquatic birds and other native animals and improve the ecological value of the park and green corridor.

The Johnston's Creek Wetland will be constructed in 2019.



Project Update

CBD Recycled Water Scheme

As part of the construction of the Sydney Light Rail project, recycled water pipelines are being installed along George Street between Circular Quay and Central. Significant sections of recycled water pipeline have been installed and construction continues.

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

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

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

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

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

By replacing potable water with recycled water, this project has the potential to provide a valuable contribution to the City's target of zero increase in potable water use by 2021 from 2006 baseline.

Project Update

Green Square Water Reuse - Stage 2

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

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

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

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

Relevant links

- [Decentralised Water Master Plan: 2012-2030](#)
- [Towards 2030: Water Management](#)
- [City of Sydney's plans for decentralised water \(video\)](#)
- [Sydney Park wetlands](#)





Local government area targets



Water consumption

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



Stormwater quality

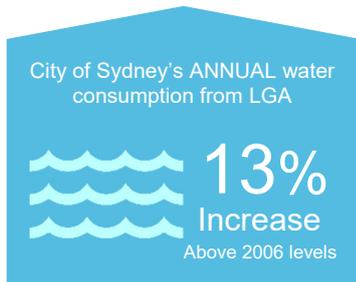
- 50 per cent reduction in the annual solid pollution load discharged to waterways via stormwater by 2030
- 15 per cent reduction in annual nutrient load discharged to waterways via stormwater by 2030



The local government area

How are we tracking?

Chart 6⁶ shows annual potable water consumption across the city has grown 13% against our 2006 baseline, during which time the city's population has grown at least increase of 1% on impacted by a dry,



40 per cent⁷. This is an 2016/17 data, which is hot year.

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

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

The removal of state government-imposed water restrictions and increased growth in the local area have resulted in annual consumption rising above the baseline in recent years. This is despite great success in the City's Smart Green Business and the Better Buildings Partnership⁸ programs saving over 2,000 ML (mega litres) per annum in potable water.

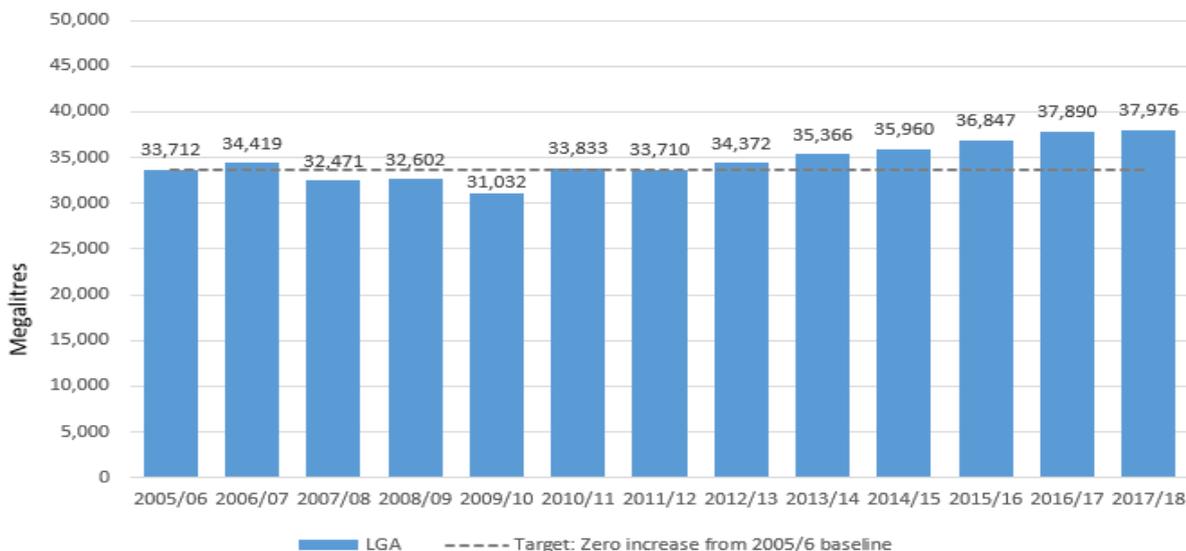
Water consumption data

This table shows water consumption data for the local government area. Data for the local government (LGA) is based on actual data received from Sydney Water in October 2018 for consumption to end 2017/18.

	Baseline (ML)	Current (end 17/18) (ML)	Difference (ML)	Difference (%)
LGA	33,712	37,976	4264	13

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

Chart 6 Local government area potable water use.



⁶ All data sourced directly from Sydney Water.

⁷ Based on 2016/17 LGA population data for residents/workers/visitors compared to 2005/2006 baseline.

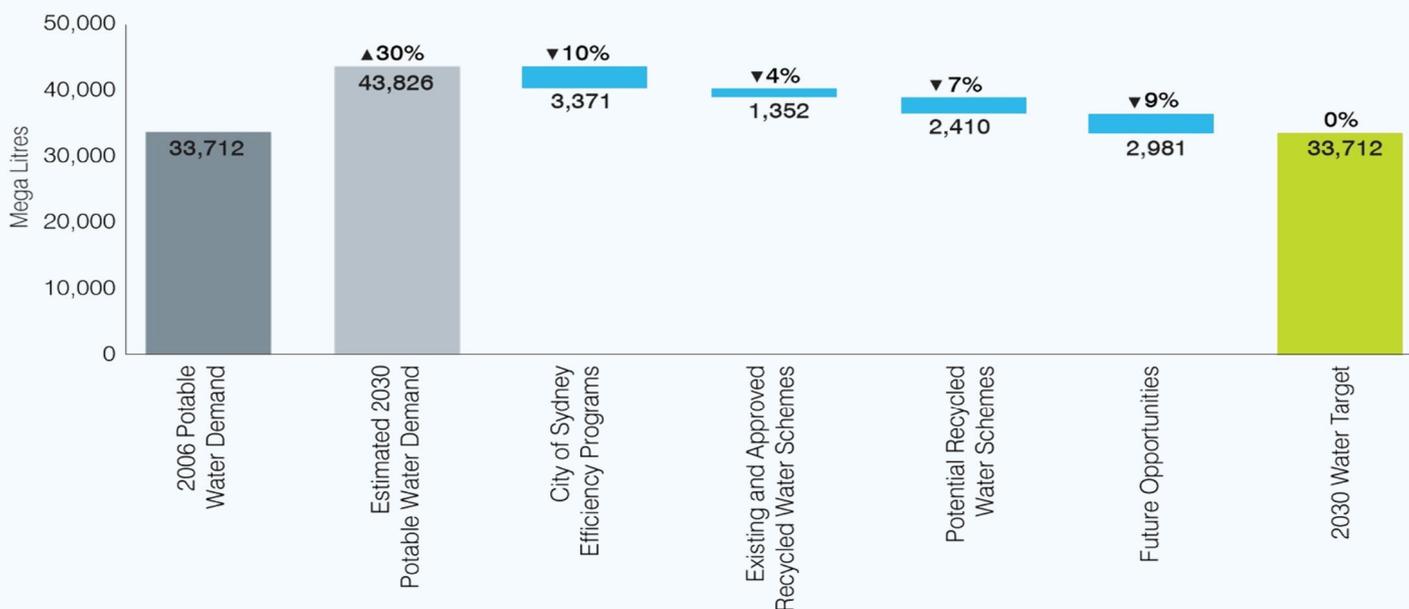
⁸ See Delivering to the community on page 49.



Estimated contribution of initiatives

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

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



Key points are highlighted below:

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

Stormwater quality and pollution reduction

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

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

MUSIC model

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

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



5. Climate resilient city



The best available scientific evidence tells us that greenhouse gas emissions from human activity, particularly our use of energy from fossil fuels, are contributing to climate change and the change is occurring faster than initially predicted.

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 strategy, titled “Adaption for Climate Change: A long term strategy for the City of Sydney” can be downloaded from our website. This strategy looks to 2070 to assess, and adapt to, the risks

posed by climate change for the city. It focusses on near-term climate adaptation outcomes and actions.

The City is progressing priority actions of the Climate Adaptation Strategy to address impacts including urban heat island effects through the urban canopy planting program and intense storm impacts through floodplain and stormwater management.

100 Resilient Cities

In 2015 Sydney won a place in the 100 Resilient Cities initiative pioneered by the Rockefeller Foundation. 100 Resilient Cities provides technical support and resources for cities to develop strategies to survive, adapt and thrive in the face of the challenges of the 21st century.

100 Resilient Cities (100RC) describes urban resilience as the capacity of individuals, communities, businesses, institutions and systems within a city to survive, adapt and thrive no matter what kinds of chronic stresses and acute shocks they face.

Resilient Sydney is a collaboration with all 33 councils of metropolitan Sydney and the NSW Government. Every council in metropolitan Sydney has nominated a Resilience Ambassador to support the program and ensure their part of the city is represented and engaged.



A Steering Committee is established including representatives from each of the planning districts of metropolitan Sydney, NSW Government, business and the community sector. The Resilient Sydney Office is hosted by the City of Sydney.

The Resilient Sydney Strategy was launched on 24 July 2018. The strategy includes five directions and 35 actions (including five flagship actions) to strengthen our capacity to prepare for, respond to and recover from disaster, whilst ensuring all our communities can access opportunities to thrive. The strategy aims to effect change across the systems of our city to achieve these objectives.

The five directions are:

- People centred – we include communities in decision making for growth and equity
- Live with our climate – we adapt to sustain our quality of life and environment
- Connect for strength – every Sydneysider will feel they belong in our community and city
- Get ready – we know how to prepare, respond and recover
- One city – we are one city

We are beginning to implement the flagship actions. All 33 councils of metropolitan Sydney will continue to work together with other levels of government, business and communities to deliver the strategy and embed resilience across the systems of our city.

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 12,847 new street trees since 2005 and installed 8,145 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 flooding. The NSW Government Flood Prone Land Policy assists in determining if development on floodplains is appropriate and sustainable. The Floodplain Development Manual 2005, developed by the NSW Government requires preparation of a Flood Study and a Floodplain Risk Management Study and development and implementation of a Floodplain Risk Management Plan. The City has

completed flood studies and floodplain risk management studies for all catchments located within the LGA. Council approved the last of the studies on the 15 August 2016.

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

Stormwater management – The City has made significant investments in stormwater management infrastructure to mitigate local flooding and improve stormwater water quality for receiving waterbodies (see project update in the next page).

The City continued to assess their stormwater assets with the use of CCTV and implement maintenance and renewal works where appropriate.

C40 Cities Climate Leadership Group

Created and led by cities, the C40 Cities Climate Leadership Group (C40) represents more than 80 global cities, 500 million people and one-quarter of the global economy. C40 focusses on driving urban action to reduce emissions and climate risks, while increasing the health, wellbeing and economic opportunities of cities.



Project Update

Green Square Stormwater Drain

Green Square sits on a floodplain and was once a network of swamps, wetlands and creeks.

Green Square locals will tell you that hazardous flooding has been a constant challenge of living in the area with floodwaters reaching 2.3m in Joynton Avenue during storms in April 2015.

The City of Sydney in partnership with Sydney Water formed an alliance with CIMIC, Seymour White Constructions, WSP and RPS Mandis Roberts (the DG Alliance) to build a 2.4km stormwater drain from Link Road in Zetland to the Alexandra Canal that will carry floodwaters from South Sydney into Botany Bay.

We're helping to fund this estimated \$150 million project because without it, flood risks would prevent development going ahead.

The drain route from Link Road to Alexandra Canal was chosen to minimise impact on residents, businesses and the environment. Micro-tunnelling construction technique was chosen to further minimise adverse impact by using a tunnelling machine to install pipes underground without disturbing the surface.

Sheas Creek Channel was widened as part of this project in conjunction with widening Huntley Street Bridge. A shared cycleway has been built along the Sheas Creek Channel. The shared path along the Sheas Creek Channel will provide important recreational and commuting links between the Cooks River, Sydney Airport and recreational destinations such as Sydney Park, Perry Park and Centennial Park to the existing cycleway network into the city.

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

Construction began: *February 2015*

Expected completion: *Late 2019*

Project Update

Floodplain management

The City of Sydney local government area comprises eight drainage catchment areas: Alexandra Canal, Blackwattle Bay, Centennial Park, City area, Darling Harbour, Johnston's Creek, Rushcutters Bay and Woolloomooloo.

The City finalised all Flood Studies and Floodplain Risk Management Studies in August 2016 with the aid of NSW and Federal Government grants. The Green Square Stormwater Drain, Ashmore Trunk Drain and Joynton Avenue Trunk Drain are three significant projects that have all been instigated as a result of these studies. Sydney Water is working in partnership with the City on several of these projects as they do own a large proportion of the trunk drainage in the City.

Alongside a series of major flood mitigation projects, the City is presently completing a structural and serviceability assessment of the City's 190 kilometres length of pipes, 9204 pits and 2997 junction pits.

Investigation of raising the Johnston's Creek bridges to minimise localised flooding along the creek is completed. These results will aid Sydney Water in the redesign of the lower reaches of the creeks stormwater channel and in particular the replacement of a concrete bridge near the Tram Sheds development.

The City is currently reviewing the Interim Floodplain Management Policy with the view to including future Light Rail and Metro developments.

Relevant links

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



6. Zero waste city

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

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

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

- **Promote innovation to avoid waste** – advocate for and assist the city's businesses and community to facilitate innovation and reduce waste
- **Improve recycling outcomes** – optimise the use of existing City services, reduce contamination and explore new services
- **Sustainable design** – increased focus on planning for waste in new developments
- **Clean and clear streets** – maximise amenity improvements and efficiency of waste and recycling
- **Better data management** – improve monitoring, reporting and verification of data
- **Future treatment solutions** – secure long term solution for the treatment of non-recyclable waste using alternative waste treatment technology

City of Sydney Operations

National Tree Day Single use plastic free event

The City has been running community events to support National Tree Day since 1996. This year, to coincide with Plastic Free July City staff arranged for all food and beverages to be single use plastic free. Staff hired reusable cups and provided water in reusable containers. Fruit and snacks were provided in cardboard boxes and re-usable containers. Staff also washed and re-used gloves from previous National Tree Day events.





Avoiding and Reducing Waste

The City has a commitment to continuous improvement when it comes to reducing waste across all of our operations and venues, including events.

The temporary nature of events can often increase our reliance on single use items. Single use items are typically products and packaging that we dispose of after one use. In many instances, these items are not recycled because the type of material used isn't recyclable and/or can't be collected separately.

The City has developed guidelines to assist staff and event managers to find more sustainable alternatives to single use items and will be delivering information sessions in early 2019.

Waste avoidance and reuse at our Childcare Centres

City staff at our childcare centres have been leading by example in the war on waste by collecting soft plastic bags from parents to use for nappy disposal.



In November 2018, in conjunction with National Recycling Week, Broughton Street Kindergarten held a swap for women's clothing and accessories. A great way to recycle rags of all sorts, the staff arranged for community members to donate up to five pieces of pre-loved clothing, bags, scarves and accessories earlier in the month and organised the swap which took place a few weeks later.

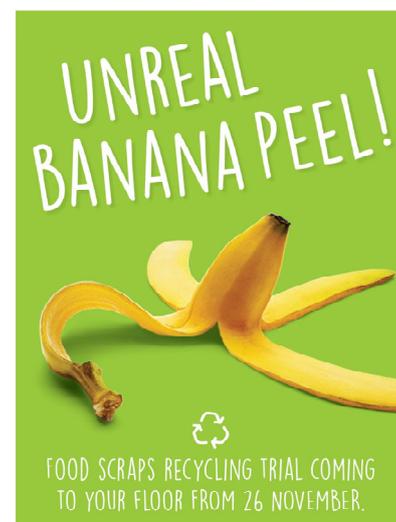


Improving Recycling

As part of working towards our 2021 70 per cent diversion from landfill target the City has developed a waste improvement program for the properties it manages. The program includes a trial of food waste collection services at appropriate buildings, education campaigns and improvements to signage. The outcomes from the trial inform the waste improvement changes to be rolled out to the rest of the portfolio.

Food Scraps Collection Trial

The Town Hall House food scraps waste trial began in November. New bins for food scraps were placed in every kitchen and staff were encouraged to place all food waste in these bins, including fruit and vegetable scraps, tea bags, coffee grounds and leftovers. Education regarding the new service consisted of two lunchtime information sessions, posters on each floor and online communications through emails and newsletters.



In one month of the trial more than 940 kilos of food scraps were collected. Although the trial is still in its infancy the initial results suggest that the new collection could increase landfill diversion by a minimum of 6 per cent. The scraps were sent to a facility that convert the waste into a renewable fuel source, and in to fertiliser for commercial agriculture.

The trial has also been extended to one of the City's commercial properties, Pittsway Arcade. Most of the waste generated at this property is from the basement food court, the majority of which is food waste. City and facilities staff engaged with all vendors in this food court to propose a food waste collection, with all agreeing to participate. The collections commenced in November and over 1.3 tonnes of food scraps were collected during the first five weeks of the trial.

The trial has also been extended to one of the City's commercial properties, Pittsway Arcade. Most of the waste generated at this property is from the basement food court, the majority of which is food waste. City and facilities staff engaged with all vendors in this food court to propose a food waste collection, with all agreeing to participate. The collections commenced in November and over 1.3 tonnes of food scraps were collected during the first five weeks of the trial.



Our operational targets



Recycling and resource recovery

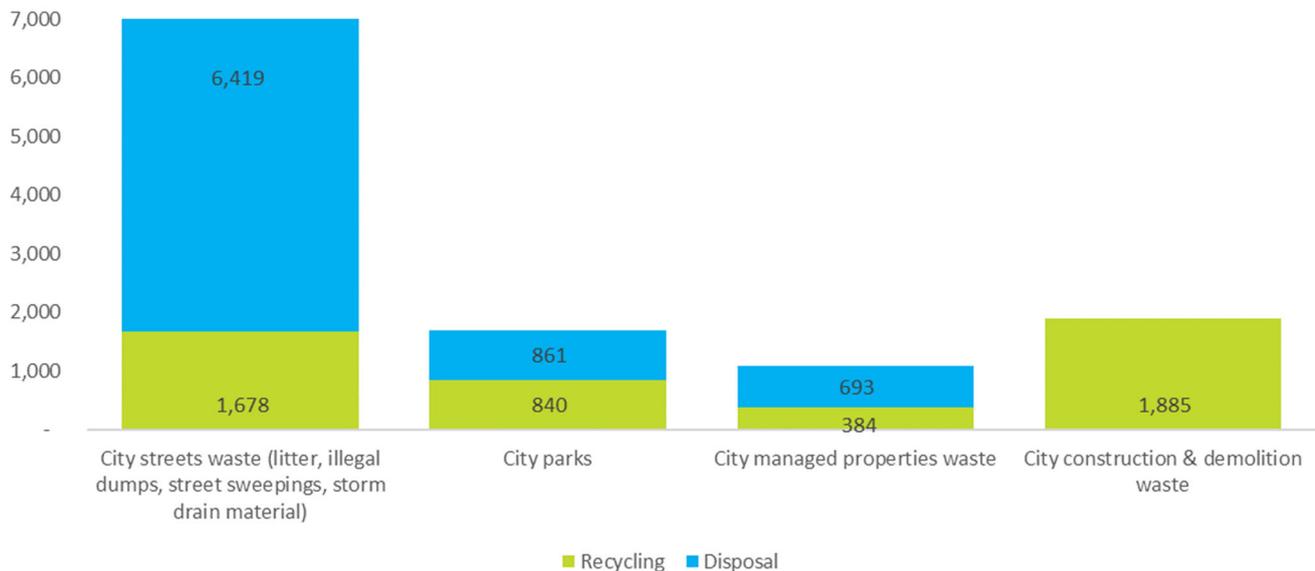
- 50 per cent resource recovery of waste from City parks, streets and public places by end June 2021
- 70 per cent resource recovery of waste from City managed properties by end June 2021
- 80 per cent resource recovery of construction and demolition waste generated and managed by City operations by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

How we are tracking

Recycling of waste from City parks, streets and public places has increased from 18 per cent to 26 per cent between 2016/17 and 2017/18, coupled with a reduction of 1,203 tonnes generated. The increased recycling rate was the result of changes to waste processing contracts that divert organic waste from public litter and stormwater material from landfill.

Construction and demolition waste produced by the City reduced by 2,000 tonnes between 2016/17 and 2017/18 with the diversion rate remaining high at 100 per cent. The City is working on improving data collection for major projects and we are actively seeking to increase the recycled content of our construction materials.

Chart 8. City of Sydney operations waste disposal and resource recovery in tonnes (totals Jul-17 to Jun-18)



- 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 5 aquatic centres).
- City streets, public place and stormwater waste is not separated for disposal. Separate tonnages are based on waste audit estimates.



Local government area targets



Recycling and Resource recovery

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



The local government area

How we are tracking

Waste minimisation – since 2015 the per capita annual waste generation rate of our residents has reduced by 21kgs, from 324kgs to 303kgs. This means that each of our residents is producing less waste (by weight) each year. The cause of this reduction is likely to be a combination of factors including; light weighting of products through the manufacturing process, home composting, the introduction of the container deposit scheme and more residents taking up waste avoidance initiatives.

Recycling – while our overall waste diversion from landfill remains high at 67 per cent, our source separated kerbside recycling rate for 2017/18 was 28 per cent. The City's target is to achieve 35 per cent recycling from source separated collections by 2021. To achieve this, the City is introducing new services and initiatives in 2019 to target individual waste streams currently going into the red bin. The new initiatives include e-waste collections, food waste collection trials and textiles collections.

Project Update

Improving Recycling

Residential Food Scraps Collection Trial

In the City of Sydney, food waste makes up about 35 per cent of the general waste we collect from our red lid bins. As part of our Leave Nothing to Waste Strategy and Action Plan the City is trialling new ways to separate waste and increase our recycling. In 2019 the City will provide a food scraps collection service for up to 100 apartments and 300 single-occupancy houses. Participants will be provided with bins, kitchen caddies and compostable liner bags to get them started. The City issued a call for expressions of interest from residents over a two month period starting in early November and closing on 31 December 2018.

We received expressions of interest from more than 1000 single occupancy houses and 200 apartment buildings, representing approximately 18 per cent of the City's total residents. The food scraps collected as part of the trial will be turned into nutrient rich fertiliser that can be used to grow plants and improve our soil. The results of the trial will shape food scraps collections across our local government area in the future.



Advocacy

Circular economy

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

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

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

Promoting Innovation

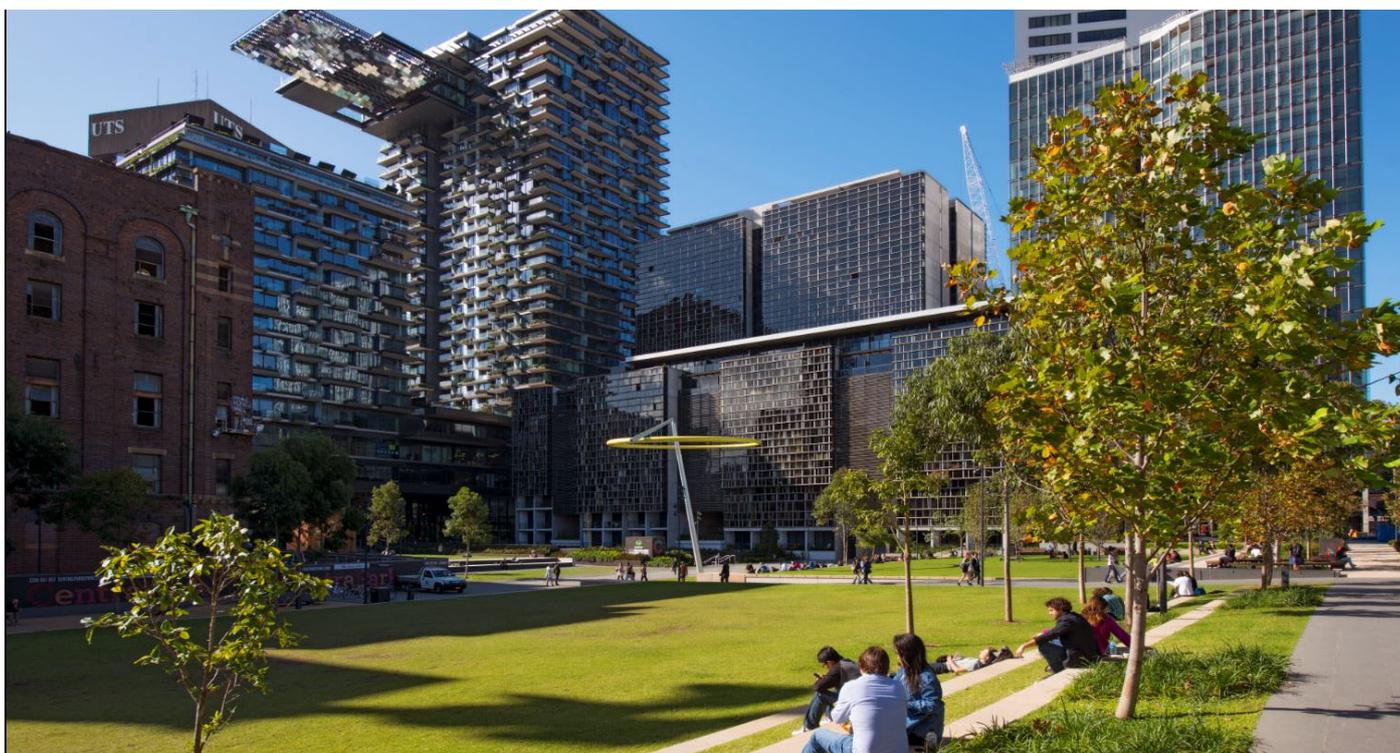
Environmental initiatives are supported by a number of grants and sponsorships from the City of Sydney. The innovation fund aims to support the development or implementation of new technologies or processes that are currently not being used in the local market, but have the potential to reduce emissions, water or waste and/or improve efficiencies that could be applied across our area.

Central Park Precinct Organics Management Feasibility Study

The City co-funded a feasibility study of vacuum collection and on-site organic waste treatment to generate energy and produce a nutrient rich fertiliser at the Central Park Precinct in Chippendale, City of Sydney. The study focused on capture and treatment of food waste from residential apartments and commercial retailers, used cooking oil, fats and grease and sewage sludge. The potential energy generation from on-site treatment of organics was estimated to be between 11 per cent and 19 per cent of the total demand from the Central Park apartments.

Relevant links

- [Leave Nothing to Waste, City of Sydney Waste Strategy](#)





7. Active and connected city

The City is 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 is a leader in the logistics industry and 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 vehicle fleet has continued to reduce its size, balancing vehicle numbers with the demands placed on providing essential services to our residents, workers and visitors.

The combined fleet emissions for Q1 and Q2 2018/19 were 54 tCO₂-e less than the same period last year, and the annual total remains below the target level.

Emissions for 2018/19 remain on track, with 440,495 litres of fuel consumed by the City's fleet during Q1 and Q2 2018/19 which is a decrease of over 23,000 litres from the same period in 2017/18. 73 per cent of fuel consumed was

blended sustainable bio-diesel. 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.

Research is being undertaken into how our current Ausfleet systems can be better utilised to collect and communicate more accurate fuel use information. An improved system of monitoring vehicle use will better support fact-based decision making on sustainable asset management and renewal.

Additionally, the City has begun a project for concept development of vehicle telemetry which will enable opportunities for further emission savings, particularly through driver performance, vehicle control and route planning.

The City's Low-risk and Eco-driving handbook continues to be rolled out to the City's drivers. To date, the majority of drivers have received and read the handbook as part of the fleet authorisation process.

The handbook remains a key tool in implementing the eco-driving strategy supported by ongoing awareness training and in-cabin driver training. By promoting and improving safer driving behaviour and skills, the City expects to achieve lower vehicle emissions in the future. Eco-driver mentoring aligned to safe, low-risk driving will be stepped up through 2019 with a goal of reaching all drivers.

The City's Fleet Policy and Fleet Procedure are currently under review. Once finalised, the Crash Management Strategy and Eco-driving Strategy will also be revised, aligning with the Low-risk and Eco-driving handbook.

Our Operational Targets



Fleet emissions

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



Active transport

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

City staff plan their travel using a simple transport hierarchy:

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

To support the use of active transport, staff are encouraged to use the City of Sydney’s bicycle fleet in preference to fleet cars and taxis. The bike fleet includes a range of bikes suited to various operational requirements, including a cargo bike, some electric assist bikes and bikes with additional carrying capacity. Before using the fleet, staff members take part in a cycling confidence course and are provided with personal protective equipment, and are encouraged to build their cycling skills with regular group rides.

The bike fleet is housed in our end-of-trip facility provided for people who walk or ride to work, or who are exercising during work hours. The Pitstop includes 150 bike parking spaces, 150 lockers, en-suite 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.

More than 2,000 people were involved in consultation of the City’s draft cycling strategy (2018 – 2030).

We received strong community and stakeholder endorsement for the bike network and supporting people to ride. All submissions were reviewed and updates to the final strategy include prioritising areas of demand growth for riding support, increasing the proportion of women riding, and further detail on how the city will make riding safer.

As part of the strategy we are working to substantially complete 11 regional routes to link the inner city, homes, schools, businesses and other destinations. The strategy was endorsed by Council in November 2018.

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	Q1 18/19	Q2 18/19	Year to date	Program To date
Staff trained (#)	10	18	28	693
Distance (km)	4259	2,041	6,300	45,447



The local government area

Local government area targets

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

Walking

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

The City is developing new automated pedestrian counters to provide 24/7 data about where, when and how people are walking. The new smart counters will replace manual counts conducted twice per year across 100 sites. The Smart Mobility project received \$340k matched cash funding from the Federal Government Smart Cities program, run by the Department of Industry, Innovation and Science.

The City continues to work to ensure that our built environment is designed to encourage residents and commuters to undertake short trips on foot. Improvements are taking place in many forms, from new pedestrian islands, better footpath paving and wider footpaths, to new shared zones and walking links. Major projects during 2017 included upgrades of Missenden Road, Camperdown, Foveaux Street, Surry Hills and Argyle

Street in Millers Point. 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.

The City is rolling out an \$8 million Legible Sydney Wayfinding System, designed to help people get around Sydney with pedestrian-friendly maps, information pylons, new signs and digital technology.

The overall rollout of signage comprises over 600 signs throughout the whole LGA and includes a network of 2100 braille and tactile street signs that have been installed at all signalised pedestrian crossings throughout the City.

Since 2016 signage installation has been completed in Haymarket, Pyrmont, Surry Hills, Redfern, Kings Cross, Darlinghurst and Woolloomooloo as well as some signage at Green Square. Newtown and Glebe are due for completion in November this year.

More than 30 new recruits signed up for the City's walking tourism ambassador program early this year.



Cycling

The new Draft Cycling Strategy and Action plan will guide projects and programs to help more people to ride bikes in Sydney. It prioritises connecting the bike network, supporting business and people to ride and leading by example. Consultation will run until August and feedback included in the final strategy to go back to council later this year.

Dockless bikes have been in Sydney for 18 months, providing a sustainable transport option for thousands of people. As at December 2018, there are two private operators who are responsible for operations and delivery – Lime and MoBike. Mobike reported that Sydney is one of their most active markets in the world with a turn-over rate of up to six trips per bike per day in the busiest areas. Since Mobike launched around a year ago, they’ve recorded more than half a million rides.

The City continues to speak regularly with operators to stress safety, redistribution of bikes and accessibility on footpaths.

In November, the City started trialling new share bike parking spots next to regular bike racks, making it safe and easy to park dockless bikes while keeping the pavement clutter free.

In September the NSW Government introduced the Impounding Amendment Bill (Shared Bicycles and Other Devices) to parliament. The City has been briefed by the Office of Local Government on the new impounding law amendments. The amendments seek to place the onus on operators to respond quickly to bikes causing an obstruction or safety hazard and to move bikes left in one location for more than seven days. The City also has the ability to issue ‘removal notices’ as well as fines when operators have not complied with the requirements of the Impounding Act.

The City’s parks contractor City Wide started an e-cargo bike trial for maintenance in Hyde Park with social entrepreneurial organisation Good Cycles. The project was inspired by City Wide’s work with Good Cycles in Melbourne where long term unemployed or disadvantaged members of the community are employed in cleansing and waste operations using e-cargo bikes.

Project Updates

- Construction has started on Green Square to Randwick cycleway
- Following extensive community support, the City is investigating options to accelerate the completion of the bike network

	Q1 18/19	Q2 18/19	Year to date
Share the Path sessions	36	24	60
STP Tune Ups (#)	351	305	656
STP maps issued (#)	970	819	1789
STP bells issued (#)	341	160	501
Cycling courses (# participants)	44	43	87
Maintenance courses (# participants)	58	28	86
Balance Bike Clinic	999	470	1469



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 in the City, and increase capacity on rail lines serving the City Centre. The City is actively engaged in planning route and station location options, including arguing the case for stations at Pyrmont and Zetland in Stage 1 (ideally by 2028).

The City made representations to the Australian Government to ensure the national importance of improved connections between the City Centre, Green Square and Southern Sydney was reflected in the national infrastructure priority list.

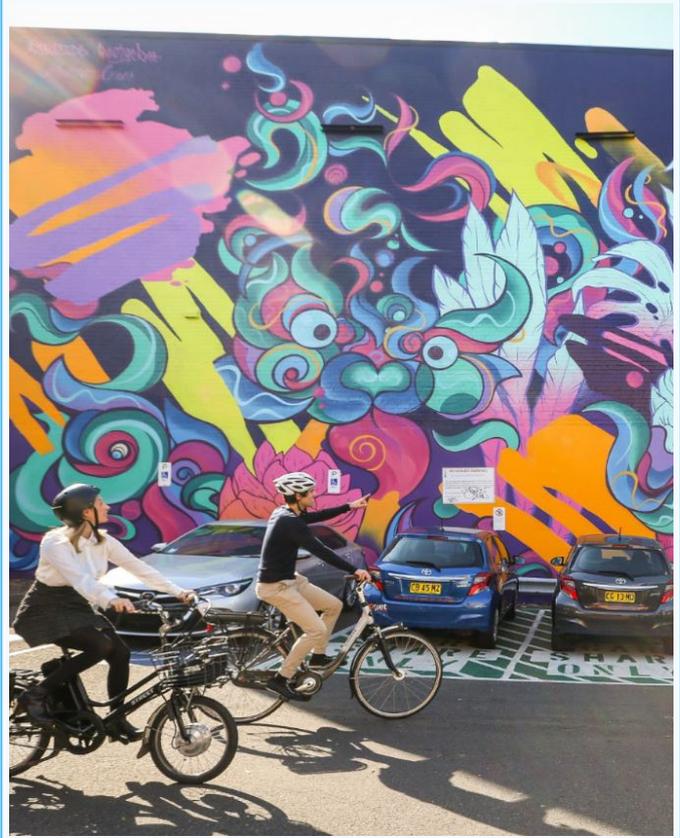
City Access and Transport addresses transport and land use integration by providing strategic transport advice and advocacy on major developments in the city.

Consistent with the Sydney City Centre Access Strategy, the City works with the CBD Coordination Office to address the roadspace and kerbspace issues arising from the construction of light rail and the transformation of George Street.

The City has continued to work closely with Transport for NSW on the CBD and South East Light Rail. The Light Rail will travel from Circular Quay along George Street to Central Station and on to Moore Park, then to Kingsford via Anzac Parade and Randwick via Alison Road and High Street.

Events & Campaigns Update

- The City delivered the 8th annual Sydney Rides Festival, which saw a record attendance of 22,937 people at 32 events between 6 and 27 October.
- Events produced by the City included The Big Adventure (4,000 participants) and Light the City (10,000 participants)
- 184 people took part in 12 guided rides. The guided rides feature a variety of themes including chocolate, night riding, urban safari as well helping people ride to events (e.g. Light the City guided rides)
- The City hosted talks by Mark Wagenbuur, Cycling Ambassador for the Dutch Cycling Embassy and Modacity (an urban mobility consultancy). Over 200 people attended the events, learning about planning Dutch public space, cycling initiatives which market riding as a transport option.
- We also continued our basic and intermediate bike maintenance courses and our popular balance bike clinics for kids, which take place at Sydney Park Cycling Centre.





Liveable Green Network

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

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

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

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

Car sharing

Over 52,000 City of Sydney residents and businesses are members of a City authorised car share organisation. Around 31 per cent of city residents who drive (with an unrestricted drivers licence) are members.

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

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

The City installed its first car sharing parking space in 2008. Since then over 780 dedicated on-street car share parking spaces have been added to the network. In addition, our local planning controls will increase the number of car sharing spaces provided in new commercial and residential developments.

Relevant links

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

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



8. Green and cool city

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

Australia's climate has warmed just over 1°C since 1910 due to climate change, and may be as high as 4°C hotter than surrounding areas in metropolitan Sydney by the end of the century due to the urban heat island effect. (Bureau of Meteorology and CSIRO [State of the Climate 2018 report](#))

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

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

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

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



City of Sydney Operations

What we are doing

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

- Planted thousands of new street trees since 2005 and installed landscaping and additional plants throughout the city's streets and parks
- Provided annual floral displays and hanging baskets in areas with no landscaping or planting through the City's Living Colour program
- Planted thousands of native plants and increased habitat across our bush restoration sites since 2015
- Upgraded 71 small parks since 2008 and installed 154 raingardens

How we are tracking

The City's canopy cover was 15.5 per cent in 2008, 17.1 per cent in 2013, and preliminary analysis has found a canopy cover of 17.8 per cent in 2017. Whilst the City is one of the few councils in Sydney that has managed to increase canopy cover over this time, we need the rate of canopy cover growth to increase more quickly to meet the urban canopy target of 23 per cent by 2030.

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



Our operational targets



Urban canopy

- 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.

The in-road tree planting projects at Bowman Street Pyrmont, Morehead Street Waterloo, Ripon Way and Primrose Avenue Rosebery and streets in Chippendale. Design work continues for more streets in Glebe and Rosebery.

This planting is undertaken as part of the City's Street Tree Master Plan 2011¹⁰, which is a blueprint for street tree plantings across the City of Sydney.

The City is continuing to deliver a number of small parks upgrades within the LGA. Since 2008, 73 small parks have been completed, including two completed during Q1 and Q2 in 2018/19 and several more currently being planned. Upgrades have been completed at Kirsova 2 Playground, Erskineville and Kimberley Grove Reserve, Rosebery. Minor improvements were also delivered in Prince Alfred Park and the Western Block, Camperdown.

Under the Greening Sydney program various areas have been converted to increase the vegetated space within the City. During Q1 and Q2 in 2018/19 3,554 m² of landscaping (grass and planting installation) was completed. Major planting works were completed at Hyde Park South, CBD, Turruwul Park, Rosebery, Dr H J Foley Rest Park, Glebe, and Town Hall House.

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. 154 raingardens have been installed to date.

Description	Q1 18/19	Q2 18/19	18/19 target	Year to date	Total to date
Small park upgrades (#)	2	0	3	2	73
Landscaping (grass/planting) (m ²)	611	2,396	8,000	3,007	
New shrubs and grasses planted in City parks and streets	18,824	13,550	50,000	32,374	
Raingardens (#)	N/A	N/A	trend	N/A	154
Street trees planted since 2005 (#)	253	0	700	700	13,100

Description	Q1 18/19	Q2 18/19	2030 target	Year to date	Total to date
Canopy cover (on current) (%)*	N/A	N/A	23.5	2.3	17.8

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

* Canopy cover is measured every five years. 2013 data was made available in 2016, with new measurement undertaken in late 2017, and the data shown in the table above.

Relevant links

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





Photo: Peregrine falcon on the 36th floor of the UTS building, submitted via the wildlife watch online reporting tool

Urban Ecology

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

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

The City continued its delivery of the Spring Urban Ecology workshop series, with five workshops and tours seeing participation of 90 community members. The City also continued promotion of the Annual Backyard Bird Count in partnership with Birdlife Australia.

A Sydney Park community bird monitoring program will commence in 2019 to harness the growing interest in the wetland and its birdlife.

A new wildlife watch reporting tool has been developed with the GIS team for a more user friendly experience. An online map will be published on the City website to raise awareness about local biodiversity. To date, there have been 302 reports of uncommon and priority fauna sightings in the LGA.

The first bush regeneration contract for the City has been awarded to National Trust of Australia that will include a schedule of rates component. They will commence work in the northern bush restoration sites with support to be provided to the southern sites when needed. The City is also continuing to upgrade parks to improve and extend bush restoration sites and improve the diversity and habitat value of existing bush restoration sites. Since June, 4770 tubestock has been planted to infill bush

restoration sites and improve diversity of locally native flora.

The first baseline invertebrate survey for the City will commence in 2019, to be completed in 2020. This will provide the City with information on the diversity of invertebrates with key data on butterflies, cicadas, spiders and bees. It is anticipated that recommendations on how to improve the diversity will be identified, to ensure the City can effectively maintain its efforts to improve the biodiversity of the LGA.



Photo: Community members on a spotlighting walk in Sydney Park, learning about the importance of urban wetlands.

Relevant links

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



Community Empowerment

Community gardens and community planting

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

The City continues to support and implement community gardens in the local government area, with 21 gardens, two community footpath verge gardens and one community composting group in place at the end of June 2018.

Planning is underway for the construction of a new, Twelve Fine Oranges, Kings Cross Community Garden at Lawrence Hargraves Reserve, Elizabeth Bay.

The City supports five Bushcare groups who play a vital role in restoring bushland areas by undertaking weeding, litter removal and tubestock planting.

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

Relevant links

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

Performance	Q1 18/19	Q2 18/19	18/19 target	Year to date	Total to date
Community Gardens (#)	No new	No new	>18	No New	21
Landcare groups (#)	No new	No New	trend	No new	5
Community footpath verge gardens (#)	No new	-1	trend	No new	2
Community composting groups (#)	No new	No new	trend	No new	1

Photo: Millers Point Group Volunteer Coordinators enjoying their harvest

Photo: Friends of Orphan School Creek Bushcare & Pyrmont Ultimo Landcare volunteers take a break after planting numerous native seedlings.



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

Significant development is occurring in the City and has resulted in a jump in the number of green roofs and walls. In 2018/19, the City received 30 new development applications which included green roofs or walls.

Currently the City has at least 151,107 m² of green roofs and walls. 2018 saw green roofs and walls of about 15,017 m² completed on 10 properties.

Performance	17/18 new sites	18/19 new sites	Total to date ¹¹	Total area (m ²)
Green roofs in the LGA (#)	13	10	150	147,067
Green walls in the LGA (#)	2	1	43	4,040
Total green roofs and walls (#)	15	10	192	151,107

Relevant links

- [Green Roofs and Walls](#)

¹¹ 2012/13 was the first year of measurement.



9. Delivering to the Community



Highlights

Sydney's business and commercial office property industries are already leaders in built environment performance, and now the City of Sydney is working with the sector to increase its ambition and urgency, and move towards a carbon positive future. CitySwitch and Better Buildings Partnership members were given a pathway and mandate for accelerated action on renewable energy and net zero emissions, in August, at the Towards Carbon Positive event.

Eighteen organisations and buildings within these programs are certified as carbon neutral; 77 Better Buildings Partnership Sydney buildings have net zero commitments.

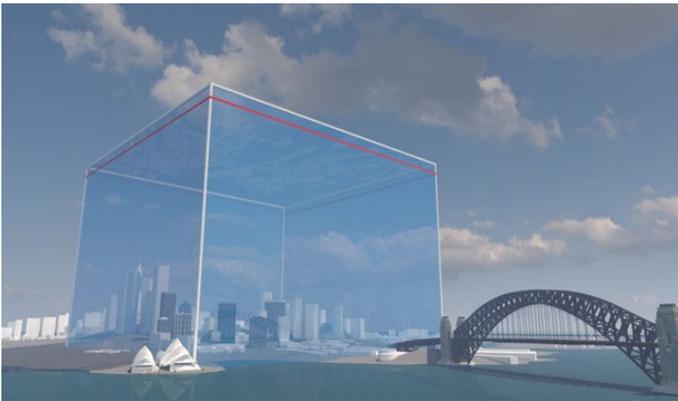
The environmental grant programs provide significant incentives to facilitate action and catalyse the solutions

required to deliver Sustainable Sydney 2030. Interest in these programs has significantly increased in this period with 47 Environmental Performance Grants approved by Council and a further 43 applications received¹².

The City has supported the early implementation of the NABERS ratings tool for residential apartments with 26 ratings being certified. This is a key tool for the sector which will enable apartment owners to benchmark their buildings' performance, and help them identify opportunities to improve their environmental performance.

Sydney has been ranked 9 out of 50 city destinations by the Global Destination Sustainability Index (GDSI). Business Events Sydney includes the GDSI ranking and City's sustainability information in their bids seeking to host major events and conferences in the city. The top 10 ranking makes Sydney more competitive in satisfying the growing demand from travellers to visit sustainable cities for business and leisure and helps ensure Sydney is promoted as a sustainable city globally.

¹² Recommendations for the 47 grants received will be presented to Council early in 2019



Business Sector - Program Update
CitySwitch Green Office NATIONAL

Members' program commitments were updated this year to include new stretch targets for 5 star National Australian Built Environment Rating System (NABERS) Energy without GreenPower, 100 per cent renewable energy purchase by 2021 and a timed, costed and resourced commitment for carbon neutrality or net zero emissions well in advance of 2050. Over 200 commitments have been made already.

In 2018, CitySwitch signatories across Australia achieved a reduction of 86,979 tonnes of emissions from energy efficiency improvements, and a further 624,087 tonnes of emissions were abated through the purchase of carbon offsets.

State and national awards were held in November. National award winners included Catholic Church Insurance, the fourteen partners of the Melbourne Renewable Energy Project, Steensen Varming and First State Super. Waste projects and staff engagement dominated the projects and achievements.

The program now represents over 900 offices and 15 per cent of the office floor space across Australia.

Performance - Cumulative	Q1 18/19	Q2 18/19
Signatories (#)	595	603
Tenancies (#)	871	902
Office floor Space - NLA (m2)	3,857,490	3,911,350
Percentage of all Australian office space ¹⁴	15.40	15.60
Average NABERS Energy rating (stars)	-	4.4

Relevant links

[CitySwitch Green Office](#)

¹⁴ Based on 25.1 million NLA m2 total per Property Council of Australia, Office Market Report 2016

Business Sector - Program Update
CitySwitch Green Office SYDNEY

In 2018, CitySwitch Sydney signatories achieved a reduction of 36,310 tonnes of emissions from energy efficiency improvements. This represents an average reduction of 26.4 per cent from their baselines since joining the program, and a total annual energy saving, through reduced energy costs, to members of over \$10 Million.

NSW New Signatory of the Year was awarded to Stylecraft Australia (Sydney); NSW Partnership of the Year to Fujitsu Australia (Ryde) and the NSW Office of Environment and Heritage (Sydney); NSW Signatory of the Year Under 2000sqm to Steensen Varming (Sydney); and NSW Signatory of the Year over 2000sqm to Commonwealth Bank of Australia. Judges noted the growing number of projects involving staff engagement, wellbeing, health and productivity alongside ambitious emissions reductions via energy and waste reduction results, demonstrating the industry's maturity and leadership.

The annual NSW and National awards event was held in November with attendees from local and national signatories. Two other events were held; Towards Carbon Positive; and Greening Your Travel.

Performance - Cumulative	Q1 18/19	Q2 18/19
Signatories (#)	126	130
Tenancies (#)	148	152
Office floor space NLA (m2)	1,065,151	1,072,318
Office floor space as proportion of Sydney (%) ¹⁵	20.96	21.10
Average NABERS energy rating (stars)	-	4.7

¹⁵ Based on 5.1 million NLA m² total per Property Council of Australia, Office Market Report 2016



Business Sector - Program Update Better Buildings Partnership

The Partnership announced that in the 2018 financial year, it reduced total carbon emissions by 51 per cent since 2006. This reduction is despite growth in commercial floor space of 25 per cent. The Partnership also reduced its consumption of potable water by 31 per cent over the same period which equates to a saving of 964 mega litres in the 2018 financial year compared with what would have been consumed with no efficiency improvement. The Partnership reported its operational waste data for the first time in the 2018 financial year. Their Sydney office buildings generated 17,351 tonnes of waste of which 48 per cent was recycled.

The Partnership co-hosted the "Towards Carbon Positive" event in partnership with CitySwitch and launched the Net Zero Pathways Tool to help building owners better visualise possible pathways towards net zero emission buildings. Eight of twelve members have now publicly announced net zero commitments, for dates well in advance of 2050. Two members have signed power purchase agreements which will ensure that over 50 per cent of their electricity demand comes from renewable sources.

The Partnership continues to support and encourage the use of the new National Australian Built Environment Ratings Systems (NABERS) tool for Waste, with more than 80 office buildings now rated since its launch in July.

Performance	Q1 18/19	Q2 18/19	Year to date	Program to date
Commercial office building floor space participating in Sydney CBD (per cent)	-	-	59	59
Members – Partners (#)	-2	same	13	13
Associate (#)	-2	same	3	3
Supporting (#)	same	same	5	5
NABERS energy rating (stars) ¹⁶	-	-	4.6	4.6

Relevant links

[Better Buildings Partnership](#)

¹⁶ Average NABERS ratings reported from December 2017 figures.

Business Sector - Program Update Making Sydney a Sustainable Destination Plan

Pictured: Sustainable Destination Partnership Chair Amanda Visser and Deputy Chair John Hughes at the Sydney Opera House launch of the Partnership

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

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

- Sydney ranked 9th on the Global Destination Sustainability Index in 2018, up from 15th place in previous year
- 20 accommodation and entertainment buildings received grant funding to support their first third party environmental performance rating or energy audit
- engagement with corporate and government travel buyers to include environmental rating requirements in their accommodation RFPs, including presenting to over 400 travel buyers and tourism industry stakeholders at CAPA-ACTE's 2018 Global Summit and Corporate Lodging Forum
- endorsement by Better Buildings Partnership members to work with their preferred accommodation providers to benchmark and improve on performance through environmental ratings
- amendments to the City's Employee Travel Policy that now requires staff to preference hotels with a third party certified sustainability rating

Sustainable Destination Partnership

A key action of the Making Sydney a Sustainable Destination Plan is the Sustainable Destination Partnership (SDP), launched in June 2018. The Partnership is a leading collaboration of property owners, managers and key influencers in Sydney's accommodation and entertainment sector. At a launch event at the Sydney Opera House the 40 members of the Partnership committed to supporting the goals of Sustainable Sydney 2030.



The Partnership is governed by a Leadership Panel and three Technical Working Groups – Data, Environment and Engagement. In September, the Leadership Panel endorsed the Partnership's inaugural Annual Work Plan.

A key focus of the Partnership's work is understanding the current environmental impact of the 55 properties in the Partnership. Energy, water and waste data collection has commenced, as have workshops with the Partners to understand their sustainability capability. Understanding this current state of play will help the Partnership set targets and an annual reporting framework to measure the success of its collective action.

Food waste was identified as a priority issue for the Partnership and work has commenced to understand current practices in managing food waste and opportunities to reduce the amount of food waste going to landfill. The Partnership has also commenced work on identifying opportunities to use its collective purchasing power to achieve sustainable outcomes from its supply chain.

Performance	18/19 year to date	Program to date
SDP participation in Sydney LGA Hotel rooms (%)	48	48
Entertainment & cultural venues (%)	17	17
SDP Members – Partners (#)	28	28
Associate (#)	12	12

Relevant links

- [Sustainable Destination Partnership](#)

COMMUNITY & BUSINESS - PROGRAM UPDATE

Environmental Grants

Environmental initiatives are supported by the following five grant programs:

- Environmental Performance: Innovation
- Environmental Performance: Building Operations
- Environmental Performance: Ratings and Assessments
- Knowledge Exchange
- Matching

These programs facilitate action and catalyse the solutions that will be required to deliver Sustainable Sydney 2030.

In the first half of 2018/19, 55 grants were approved by Council: 47 Environmental Performance grants; 7 Matching grants and 1 Venue hire support.

This includes support for 41 Ratings and Assessments projects to assist building owners and managers better understand their environmental impact and to identify opportunities for improvement, 1 Building Operations project to assist building owners track water consumption through the installation of a water monitoring system, and 5 Innovation projects to develop:

- a pilot project at University of Technology Sydney to test the feasibility of using digital technology to create a closed-loop system to recycle and reuse expanded polystyrene;
- a feasibility study at Macquarie University to develop and test a prototype game to inform and motivate commercial tenants in the local area to achieve net zero building emissions.
- a feasibility study with Enova Community Ltd to explore the viability of a community owned solar garden;
- a demonstration project to retrofit an embedded solar energy network into a strata complex of 18 townhouses;
- a feasibility study at University of Technology Sydney examining the heat stress of climate exposed workers in the local area.

Through the matching grant program, funds were provided to 7 projects including expanding community food waste recycling activities, engaging the less mobile and socially isolated into existing community gardens and rewarding innovation in tackling food waste.

Relevant links

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



RESIDENTIAL SECTOR

Residential Apartment Sustainability Plan

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

The City has continued to collaborate with 18 stakeholders from the NSW State Government, industry and community organisations to reduce the environmental impact of apartment buildings through our Residential Apartments Sustainability Reference Group. This group met in August and November to discuss opportunities and collaboration around improving sustainability in the strata sector; particular focus has been on the implications of changes to the National Construction Code in the residential sector and early NABERS rating uptake.

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 the following means. The City directly supports 26 Smart Green Apartment alumni buildings to undertake their first NABERS rating. Six of these buildings are now rated and the average energy star rating is 3.9. The average water star rating is 3.1. The ratings are on a scale from 0 stars (poor) to 6 stars (excellent).

Two Leadership Network workshops were held in Q1 and Q2, with 54 participants representing 50 buildings from the Smart Green Apartments alumni. Workshop topics focused on incorporating efficiency upgrades into Capital Works Fund Plans and water efficiency.

The City has designed an 8-part Building Manager Training series with the NABERS team and Green Strata. The training program is intended to provide a national platform for the professional development of residential building managers utilising NABERS as the core framework for improved building performance and governance. Three sessions were delivered in this period attended by 40 - 55 managers: Managing water in a NABERS world; The War on Waste in apartment buildings; Solar and Electric vehicles.

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

- FMA Residential Strata Information and Awards Evening
- Strata Community Australia Annual Awards Night (City sponsored Environment and Engagement Award)
- Your Strata Property podcast interview
- Sky News television interview on sustainable living (Real Estate Channel)
- University of NSW solar for strata forum.

Relevant links

[Residential Apartment Sustainability Plan: 2015](#)

Smart Green Apartments launch event



Photo: Award recipients at the program launch and awards event

The 2018 intake of Smart Green Apartments commenced, with successful applicants welcomed at a launch event at Customs House in November. Thirteen sites out of 30 applications have been selected for this intake that represent 3,048 apartments, 6,096 residents, 47 buildings and 42 strata plans. Ten awards of excellence were presented to representatives from the previous year's program in recognition of their outstanding achievements.

Engagement has now commenced at all new sites to undertake NABERS ratings and identify environmental improvement opportunities.

Building owners from the 2016 and 2017 intakes to the program have now implemented energy efficiency projects that will avoid 8,387 tonnes of carbon emissions per year and will save owners corporations a total of \$1.12 million per year. Awards to outgoing buildings were presented at the 2018 program launch.

Through the City's partnership with Sydney Water 2,226 individual apartments have had their water fixtures and fittings retrofitted within 10 buildings. These upgrades will achieve water savings of 212 mega-litres per annum and cost savings to owners of \$400,000 per annum in reduced water bills.

During the period a new water learning hub was made available to building owners which provides webinars and scenario-based learning activities. This resource has improved participant engagement with the program's online data portal, which has now been nominated as one of the primary benefits of participation in the Smart Green Apartments program.

All building owners have continued to implement waste improvement initiatives in their buildings and a new behaviour change campaign was rolled out throughout Q1 to divert recyclables from landfill. This campaign has resulted in an improvement in overall recycling rates, the introduction of charity textile collection bins and greater awareness of available City services to divert items from landfill.



RESIDENTIAL SECTOR - PROGRAM UPDATE

Green Villages

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

In Q1 and Q2, four Green Villages talks were delivered at City Farm to 69 participants. Topics included composting and worm farming, urban wildlife and small space gardening. Evaluation surveys indicated that 100 per cent of respondents rated the workshop they attended as excellent, very good or good. Follow-up surveys of participants who attended a talk indicated that 76 per cent of respondents have undertaken one or more new actions since attending the talk.

Two new case studies were released that highlight the energy, water and waste efficiencies championed by the building and strata manager at Summit Apartments and Regis Towers through their work with Smart Green Apartments.

Performance	Q1 18/19	Q2 18/19	Year to date	2018/19 target
Workshops and forums (#)	2	2	4	8
Participants (#)	29	40	69	240
Participants implementing (per cent)	60	93	76	85
Participant satisfaction (% rating as excellent, very good or good)	100	100	100	90

Relevant links

- [City of Sydney Environmental News](#)



10. Glossary

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

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

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

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

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

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

Canopy cover: The proportion of land area occupied by the tree's crown or canopy, or combined canopies, when visualised from directly above. It is often expressed as a percentage 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 to achieve climate stability, limiting global temperature rise to less than 2°C.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

11. Appendix 1: Data management plan



Low-carbon city

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

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



Water sensitive city

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

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



Zero waste city

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

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

Active and connected city

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

Local Government Area (LGA)		
Data type	Current Status	Forward Plan
Car sharing	Car share operators provide monthly usage and membership data to the City. Issues with reviewing data due to operator's capacity to 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 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.	Archiving and analysis to be improved through inclusion in CCAP 2.0 Environmental Sustainability Platform
Environmental Grants	Program data collated in SmartyGrants platform and in program manager spreadsheets. Information recorded as prompted by phases of grant process (application to acquittal).	Ease of analysis to be improved through inclusion in Programs CRM database

12. Appendix 2: Environment Policy

environment policy

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

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

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

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

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

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

our commitments

Objective 2.1

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

City now

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

City in 2030

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

Objective 2.2

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

City now

- City focused on diverting residential waste from landfill.

City in 2030

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

Objective 2.3

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

City now

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

City in 2030

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

Objective 2.4

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

City now

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

City in 2030

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

Objective 2.5

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

City now

- A commitment to strategic environmental initiatives

City in 2030

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

Objective 2.6

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

City now

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

City in 2030

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



Monica Barone
Chief Executive Officer April 2015



LEGEND

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

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

Please direct any questions about this report to:

Mary Watt

Manager Environmental Projects

mwatt@cityofsydney.nsw.gov.au

+61 2 92659713



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