Attachment E

Environmental Sustainability Progress Report

Sydney2030/Green/Global/Connected

CITY OF SYDNEY

Green Environmental Sustainability Progress Report

January to June 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.

contents

We continue to lead by example towards a vision of a GREEN, GLOBAL and CONNECTED city. To drive change in our own operations and to work proactively with businesses, the local community and all levels of government across the local government area, we are driven by ambitious targets in six key environmental focus areas.

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**.

We lead by example to drive change in our own operations and by working proactively with businesses, the local community and all levels of government across the local government area.

In 2018, the City of Sydney is continuing to secure Sydney's future prosperity and liveability as it continues towards a vision that is **GREEN, GLOBAL** and **CONNECTED**.

Message from the CEO

In March 2017 the Lord Mayor and Council strengthened the commitment to ensuring the City of Sydney is an inspiring environmental leader by endorsing the Environmental Action 2016 – 2021 Strategy and Action Plan (the Strategy).

The Strategy commits to specific environmental targets and strong actions on energy, water, climate adaptation, waste, transport and greening over the next five years and reaffirms Sustainable Sydney 2030.

In the most recent period, January to June 2018 our activity with business, community and government, continues to achieve major successes as we address the climate change risks faced by our city.

We partnered with Ausgrid to accelerate the uptake of renewable energy over the next four years, by encouraging the installation of more solar panels on residential and commercial buildings. We also partnered with Our Energy Future to help residents reduce electricity bills and their environmental footprint. We gave away trees too, and helped motivated community members get to know their local ecologies.

We also hosted the Water Sensitive Sydney Summit. It was a powerful demonstration of the value of connecting across boundaries to advocate for water management solutions. We face challenges across metropolitan Sydney as a result of growing population, aging infrastructure and a warming climate.

In our own operations we released a carbon budget for the first time. We will account for emissions across the organisation in the same way we do our finances.

Tackling climate change requires a multipronged approach. We're doing everything we can to show leadership and achieve our commitments to reducing emissions. This Green Report is a wealth of information about 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. Our environmental targets

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

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

City of Sydney Operations

Low-carbon city

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

Water sensitive city

- Annual potable water use of **180** L/m^2 of irrigated open space by end June 2021
- **Zero** increase in potable water use by end June 2021 from 2006 baseline, achieved through water efficiency and recycled water
- **Zero** increase in potable water use by 2030 from 2006 baseline, achieved through water efficiency and recycled water

Zero waste city

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

Active and connected city

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

Green and cool city

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

Local Government Area

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

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

Low-carbon city

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

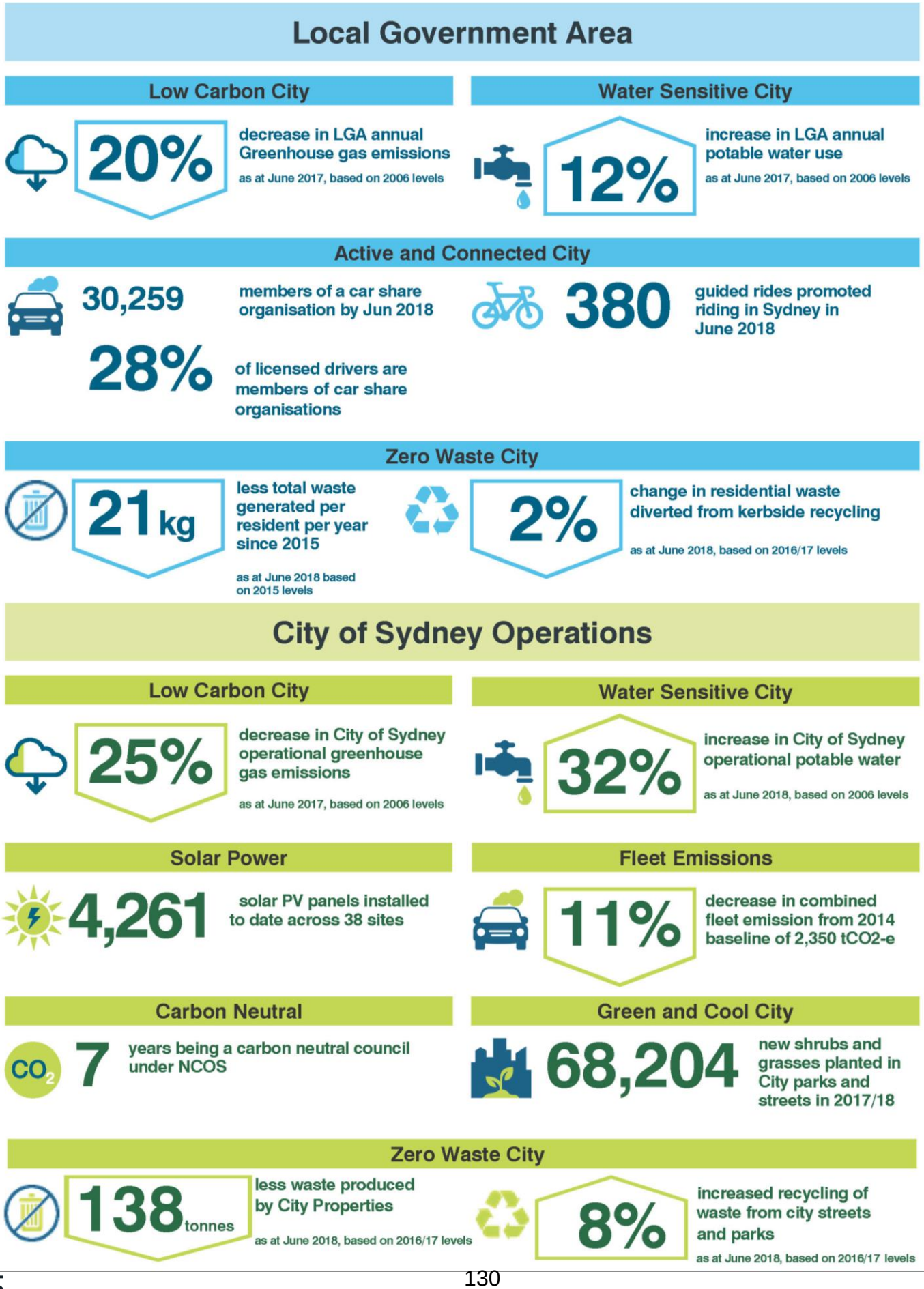
Active and connected city

- **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



Delivering to the community

BETTER BUILDINGS PARTNERSHIP

54% Commercial office space in Sydney CBD in partnership

52% GHG emissions reduction (from FY06)

5 buildings carbon neutral

36% reduction in potable water use (from FY06)

(FY2017 program performance)

SUSTAINABLE DESTINATION PARTNERSHIP

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

49% hotel rooms in Sydney involved in program

CITYSWITCH GREEN OFFICE

24% commercial office space in Sydney CBD committed to program

30 Members reduced carbon footprint by 30 tonnes GHG emissions in last year.

11 CitySwitch Sydney members are carbon neutral

(2017 program performance)

smart green apartments

70 apartment complexes involved in program

30% GHG emissions savings identified

20% Estimated 20% City residents live in participant buildings

NABERS for Apartment Buildings launched in June 2018

(Program achievements to Jan-2018)

Number of environmental performance grants

3 Matching grants

11 Ratings and assessment grants

3 Knowledge exchange grants

(Grants approved Jan-Jun 2018)

3. Sustainability at the City of Sydney

The City's commitment to environmental leadership to 2030 is demonstrated by our ambitious targets for emissions, energy, water, waste and green space, and is supported by our engagement in disclosure reporting.

Environmental Commitment

The City's Environment Policy[1] applies to all City of Sydney's operations, assets, activities and staff.

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

The Green Report is our 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.

Sydney tops global sustainability ranking

CDP-C40 ranks more than 570 cities to identify those excelling on climate disclosure. City of Sydney received the top rank alongside Cleveland, Durban, Mexico City and Paris for the 2016/17 reporting period.

CDP is a not-for-profit organisation that administers a global disclosure system along with C40 for companies and cities to share information on how they manage their environmental impacts. Disclosure is key to engagement on solutions for environmental issues worldwide. CDP hosts the most comprehensive collection of self-reported environmental data in the world. The network of investors and purchasers represent over $100 trillion, and policy makers around the globe use this data to make better-informed decisions for action on climate change.

The City recently received CDP's Infocus Report – a synopsis of how Sydney is seen globally by CDP participants as an exemplar of low carbon transition, and who puts energy efficiency as the main approach to sustainability. Importantly we are well placed to share our achievements globally through our strong data driven approach to emissions management.

From the information we disclosed about our sustainability plans, actions and achievements, CDP have highlighted that:

- Our sustainability aims are among the most ambitious in the world
- We have demonstrated that "green" can contribute to a prosperous city, with our green buildings having a higher than average occupancy rate
- Our plans for green infrastructure including green roofs and tree planting not only reduce local temperatures and energy loads from running cooling systems, they also contribute to better physical and mental health through the community
- Our data driven approach keeps us ready to weigh the advantages of newly emerging technologies to take further action on climate change

For the complete *Infocus* report visit
http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0017/303407/CDP-Cities-2017-Infocus-Report-for-the-City-of-Sydney.pdf

For more information on CDP Cities visit
https://www.cdp.net/en/cities.

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

Sustainable Procurement

The City of Sydney is committed to doing business with ethical and socially responsible suppliers. We see our suppliers as partners in our sustainability program. We take great care in selecting the companies who supply us with products and services, and expect each of them to operate in line with international, national and local standards and appropriate codes of practice. The City has recently endorsed its Sustainable Procurement Policy, and is currently reviewing the associated Sustainable Procurement Guidelines, to ensure that our sustainable procurement practices robustly align with the principles of Sustainable Sydney 2030 as well as the Sustainable Procurement guidelines ISO20400.

A part of our everyday thought process

The City Events team believes the key to success for our collective, sustainable procurement culture is simple. Take a moment to consider each purchase critically, and question if there is a more environmental and cost effective alternative (including not buying anything).

At a recent public event, the Events team reflected on the quantity of single use plastic cable ties that filled a rubbish bin, as a result of installing crowd control scrims. Each fabric took 10 cable ties, which after just a few hours were detached and disposed in general waste.

New crowd control scrim

Making a change was easy and cost effective. Initiating a conversation with the current supplier of scrims found there were other options readily available. While the initial purchase of the new scrims cost more, the return on investment was achieved through longer life of the product and reduced waste. The colour and simple design means they can be used year on year at various City events.

The Events team recognise that they have firm, continuing sustainable practices in place such as recycling of events waste and re-use of as much material as possible. Ongoing initiatives such as this one, that removed a source of our single use plastic waste stream, are supported by the team's continuing vigilance for sustainable options.

Facilities management brings positive change

In May 2018, the City welcomed Ventia as the new facilities management provider. During the tender process, Ventia demonstrated that they had the capabilities to deliver on sustainability commitments in the supply of services including building maintenance, repairs and cleaning. As a result of the new partnership, numerous quick wins with lasting impacts have been achieved that reduce landfill waste, reduce the use of toxic chemicals, save on emissions and save water.

- toilet paper and handtowels are all made from recycled paper
- light bulbs removed from sites are recycled
- all cardboard is recycled
- Ventia vehicles are not permitted to idle when stopped (saves fuel and impacts to air quality)
- cleaning products are concentrated, eco-friendly plant based products that are GECA certified
- wet areas are cleaned using an imop that requires significant less water to use than conventional systems

Working together with our suppliers and service providers delivers continuing, positive results to minimise our environmental impacts

Green villages workshop - Seed to plate workshop at Juanita Nelson community centre.

Millers Point community gardeners enjoying harvesting their fresh produce.

City spaces

Staff at our Community Centres and Out of School Hours Care (OSHC) services have implemented a wide range of environmental initiatives designed to reduce waste to landfill, reduce energy and water usage, and create welcoming green spaces.

Across our community centres, 14 environmental programs and activities were offered to increase awareness of environmental issues, increase community capacity to deal with the impacts of climate change and provide community members with new skills.

Our community centres are places of respite, particularly on very hot or rainy days. All are welcome at the centres to sit and rest, or have a cool drink of water in hot weather.

Ultimo Community Centre Offered three in-language Waste Reduction and Essential Food Tips information sessions in Mandarin and Spanish. The centre has a community garden, which is used to grow a range of salad greens and vegetables, which are used in cooking programs at the centre.

Juanita Nielsen Community Centre Offers free weekly environmental documentary film screenings, including “A Plastic Ocean”, in partnership with Films for Change. The centre also ran a “T’s to Totes” sewing class to teach community members how to turn old t-shirt into shopping bags.

The Millers Point community recently received a matching grant from the City to establish a community garden at the Abraham Mott Centre. Maintained by over 45 local residents on a roster the community garden is harvesting fresh produce for the community to enjoy.

The Reginald Murphy Centre’s indoor and outdoor gardening project group meets weekly and they make full use of the balcony and yard space to grow a variety of plants and vegetables. The community in Green Square enjoyed a seedling planting session as part of their Grandparent’s Day celebrations.

Our staffed community centres welcome bike riders, with showers, lockers and internal or external bike racks at; King George V Recreation Centre in The Rocks, Ultimo Community Centre and the Juanita Nielsen Community Centre in Woolloomooloo. During extreme weather events, our centres provide a welcoming space to get some water, or take respite from heat or rain.

Many of our community centres, libraries and community venues for hire feature environmentally sensitive design (ESD), including; natural air ventilation and fans in place of air conditioning, water saving taps and showers, sensor lighting, low energy LED lights and photovoltaic panels.

4. 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 and extended our target to net zero emissions by 2050.

These Council endorsed targets and actions are represented by a waterfall chart that outlines organisational emissions in 2016 and the anticipated results of actions that will be taken in order to achieve the 2021 target of 44% reduction.

The City has developed an 'Asset Environmental Budget' that translates operational carbon emissions targets in to a detailed plan. Our emissions targets have been allocated to relevant areas of our assets and operations.

The Asset Environmental Budget is incorporated in to the Resource Plan to promote transparency in monitoring of our 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. We are committed to leading by example in our own operations by improving energy efficiency and installing renewable energy.

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 been preparing submissions to the Australian Department of the Environment and Industry on the Trajectory for Low Energy Homes program and to the Australian Government and Energy Security Board on the National Energy Guarantee.

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.

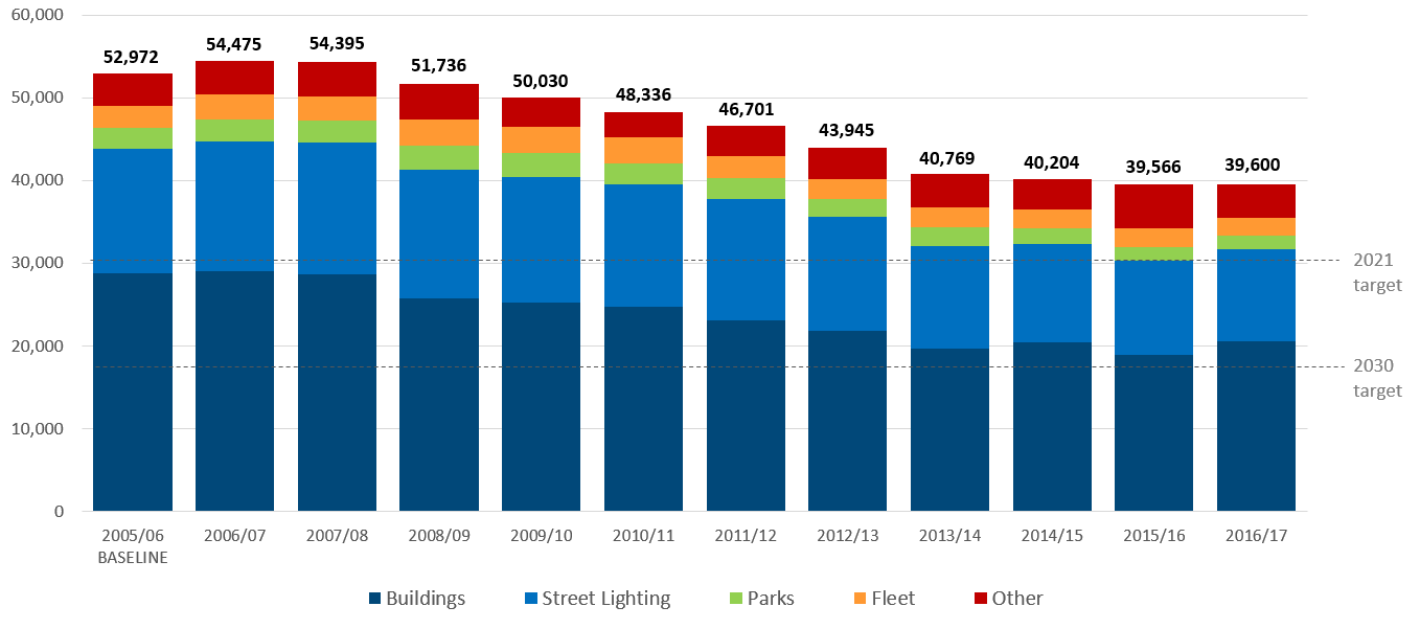
Offset

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 0.83 tCO_2-e/MWh for scope 2 and 0.12 tCO_2-e/MWh for scope 3 emissions. Greenhouse gas emissions are calculated using National Greenhouse Factors[2].

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 & refrigerants.

Energy consumption data

The table below shows energy consumption data for the organisation.

Organisation	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline	42,427	21,894	174,631
Most recent (Jun 2017)	30,371	69,940	179,277
Difference	-12,056	+48,046	+4,646
Difference (per cent)	-28%	+219%	+3%

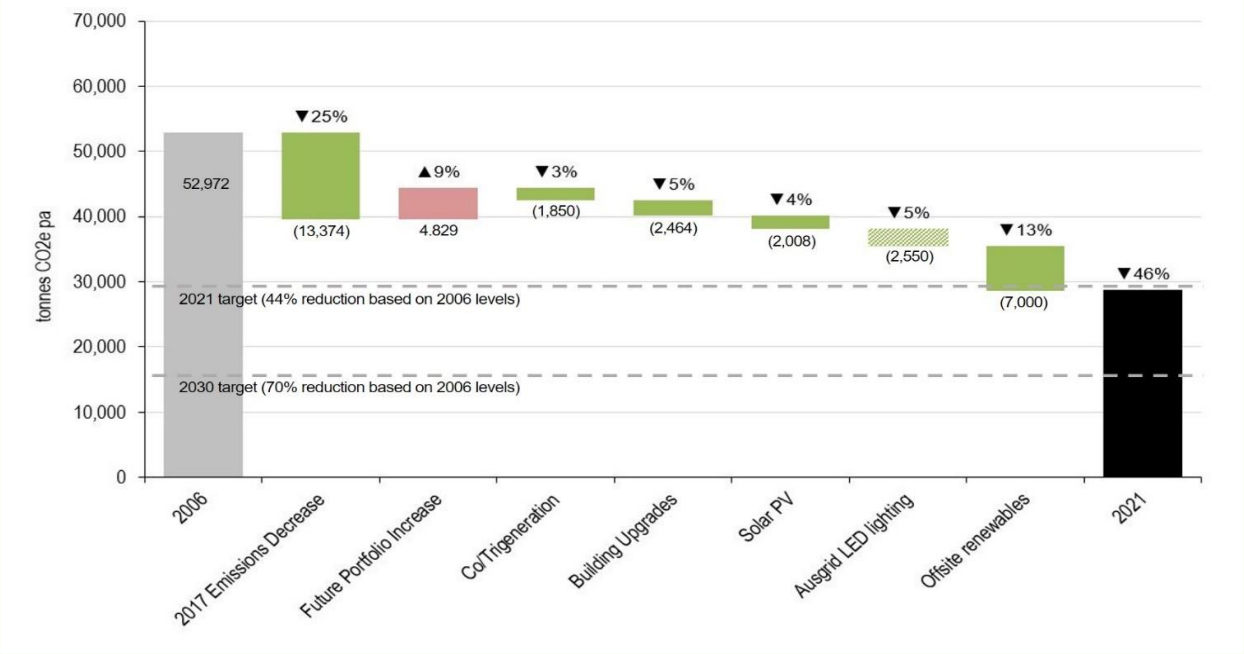
[2] https://www.environment.gov.au/climate-change/greenhouse-gas-measurement/publications/national-greenhouse-accounts-factors-aug-2016.

How we will get there

As at June 2017, the City has a verified emissions reduction of 25 per cent from the 2006 baseline. The chart below shows the initiatives that the City has undertaken and the estimated contributions of the initiatives we will implement across our operational portfolio to reach the target of reducing 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 does not allow for offsets. The waterfall chart shows the contribution of completed and planned programs towards meeting our target.

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



Completed Initiatives - 25% reduction achieved

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, and Surry Hills Community Centre.

Management improvements includes 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% reduction from the 2006 baseline and with a current forecast to a 46% reduction.

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

  Increases: Alexandria Canal Depot, Waranara Early Education Centre, 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.

  Proposed Divestments: Epsom Road Depot, Gerard Street Depot and Marian 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) reflects estimated savings from efficiency upgrades in the most resource intensive properties via the Major Properties Efficiency Project (MPEP).

– Solar Photovoltaics (PV) (-4 per cent) on City properties 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 some of these lights are owned by Ausgrid. We will advocate for Ausgrid to upgrade all its street lighting to more efficient LED bulbs. This element is striped to indicate it is not within the City's 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 integrates 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. Estimates for water and waste will be provided next year.

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					0
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

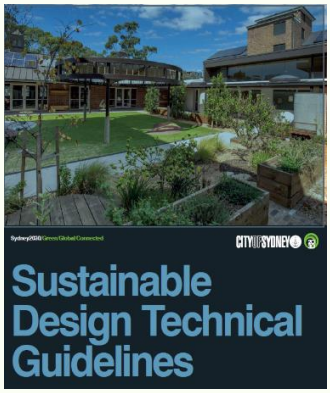
Baseline June 2006 Emissions GHG Tonnes CO2e	**52,972**	**Emission Reduction June 2021**	**46%**

Alexandra Canal Depot: PV Solar Installation

Environmental Management System (EMS)

Implementation of environmental management processes in line with ISO14001 standard to ensure all City staff are aware of their responsibilities in regards to environmental management.

Projects undertaken in the period include monitoring environmental controls for construction works and applying the Sustainable Design Technical Guidelines to capital works projects, review of environmental data management and development of the environmental budgets for emissions.



Environmental performance data for the local government area is collected and reported through the Environmental Sustainability Platform. Data is available on the Open Data Portal at http://data.cityofsydney.nsw.gov.au/

Project Update

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 that of the coal-fired plants that supply the majority of Sydney's electricity.

Project Update

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 was compiled and an application will be made in early 2018.

Project Update

Solar PV and Energy Storage

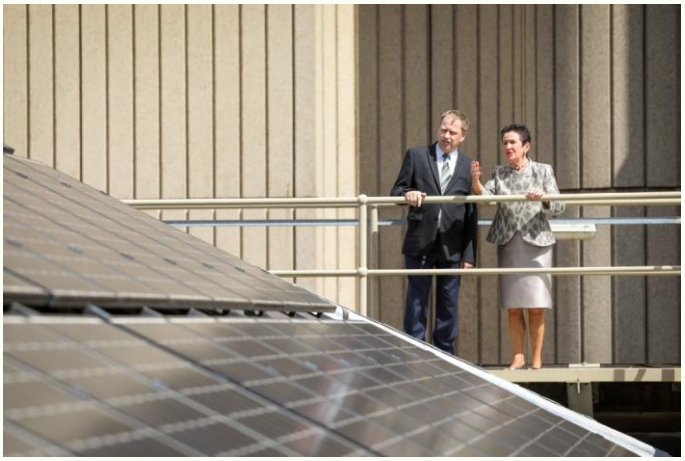
The City is installing solar PV (photovoltaic) panels at multiple Council sites including office buildings, civic halls, libraries, works depots, community centres, sporting fields and other venues.

Four major installations will be added during the 2018 calendar year. These installations will double the total installed capacity on City sites from about 800 kW to over 1600 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 constructed at the new Alexandra Canal depot. The battery facility will allow the depot to use more renewable energy onsite from the solar PV (that would otherwise be exported to the grid).

Project Update



Ausgrid Partnership

Ausgrid recently asked the City to provide financial support for their permanent demand reduction program. We will put $750,000 towards an innovative Ausgrid program to reduce demand for electricity and increase renewable generation in our local government area.

This program and our investment aligns directly with our goal to reduce emissions by 70 per cent and source half of the electricity supply in our area from renewables.

As such, the program is expected to reduce emissions on a permanent basis by up to 10,000 tonnes per year – which is the combined electricity use of around 200 households. Each project proposed for funding will be approved by the City, and, by encouraging building owners across the city to invest in renewables and energy efficiency measures, we expect to see an increase in the number of solar power installations on both residential and commercial properties.

Project Update

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. Following extensive audits at these sites energy and water saving opportunities have been identified, including improved equipment efficiency, technological changes, demand management and operational improvements. An Implementation Program has commenced and will assist in achieving the City's emission and water reduction targets.

Project Update

Fleet

The new Alexandra Canal Depot in Alexandria is a state-of-the-art, purpose-built depot which is home to the new Fleet Worksop. 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% of the City's total emissions. Having taken advantage of all currently available tools and technologies to reduce emissions, Fleet Management are now focussing on low-risk and eco-driving strategies. Low-risk driving practices almost always contribute to lower fuel or battery use and fewer emissions.

Accordingly, the City has rolled out its 'Low-risk and Eco-driving Handbook' and is providing ongoing training to staff with the aim of further reducing emissions. Low risk driving and eco driving complement each other, and contributions to one usually benefit the other.

Outcomes: Maintain fleet emissions at 2014 levels throughout 2017/18.

Status: On-going. 2017/18 fleet emissions remain below the target level.

For more information on fleet see Section 8 Active and connected city.

Project Update

SMART - Sustainability Management and Reporting Tool

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

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

Advocacy

LED streetlights

The City has upgraded the lamps in all the streetlights it owns to energy-efficient LEDs. Ausgrid own the remainder of the streetlights in our LGA - however the City pays the electricity bills and takes responsibility for the carbon generated.

We are advocating for Ausgrid to upgrade all its streetlights in the local government area to energy efficient LED lights to save energy. Ausgrid are slowly replacing failed lamps on local roads with LEDs lights. Trials have commenced for LED's on main roads.

With the assistance of Southern Sydney Regional Organisation of Councils, the City has requested Ausgrid to accelerate the rollout of LED lights, and a proposal and business plan to commence this program is anticipated from Ausgrid.

The City, through Ausgrid, is continuing to install pedestrian LEDs on all suburban poles to increase lighting and safety on footpaths.

The local government area

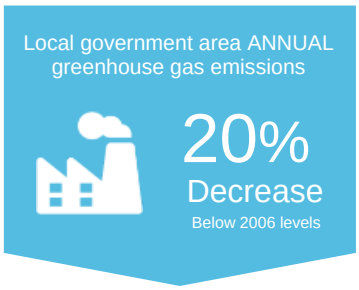
Local government area targets

Greenhouse gas emissions	– 70 per cent reduction in greenhouse gas emissions by 2030 based on 2006 levels – Net zero emissions by 2050
Renewable energy	– 50 per cent of electricity demand met by renewable sources by 2030[3]

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)[4] – the new international benchmark for reporting city emissions.

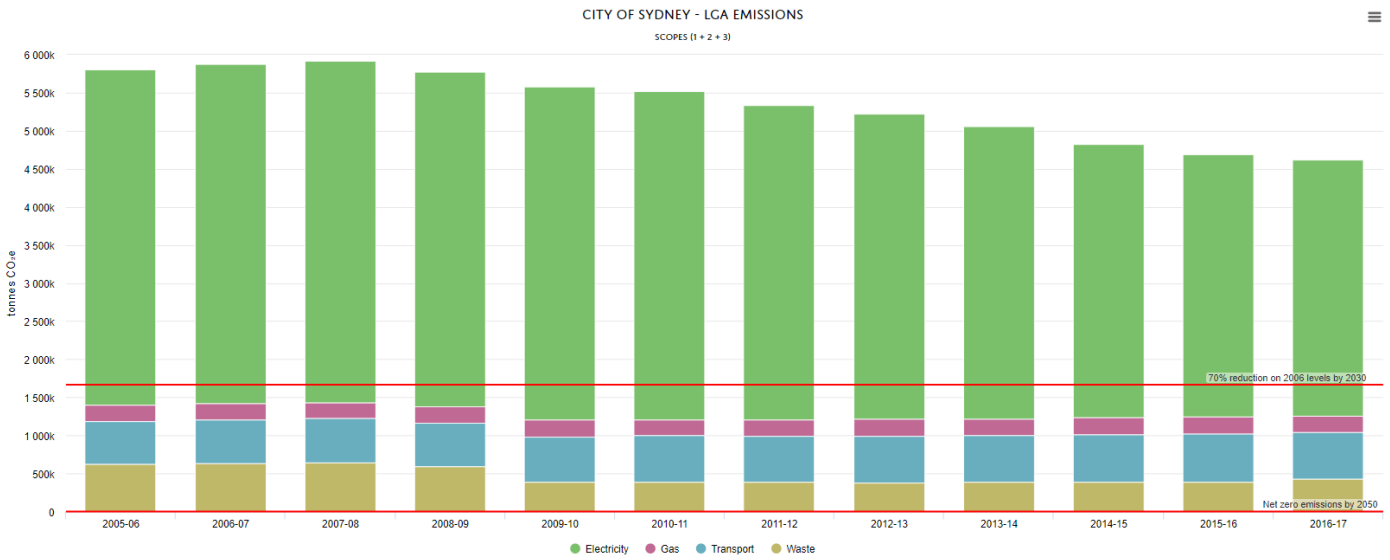
The table below shows energy consumption data for the LGA. Please note, LGA data is shown to June 2016, which is the most up to date data available.

LGA	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline	4,159,436	3,038,529	18,012,502
Most recent (to June 2017)	3,508,737	3,360,057	15,991,510
Difference	-650,699	+321,528	-2,020,989
Difference (per cent)	-16%	+11%	-11%

For more information see Appendix 1: Data Management Plan.

Energy consumption data

Chart 3: Local government area greenhouse gas emissions



[3] The renewable electricity target incorporates renewable electricity both within the grid and classified as additional to the grid.
[4] http://www.ghgprotocol.org/city-accounting

How we will get there

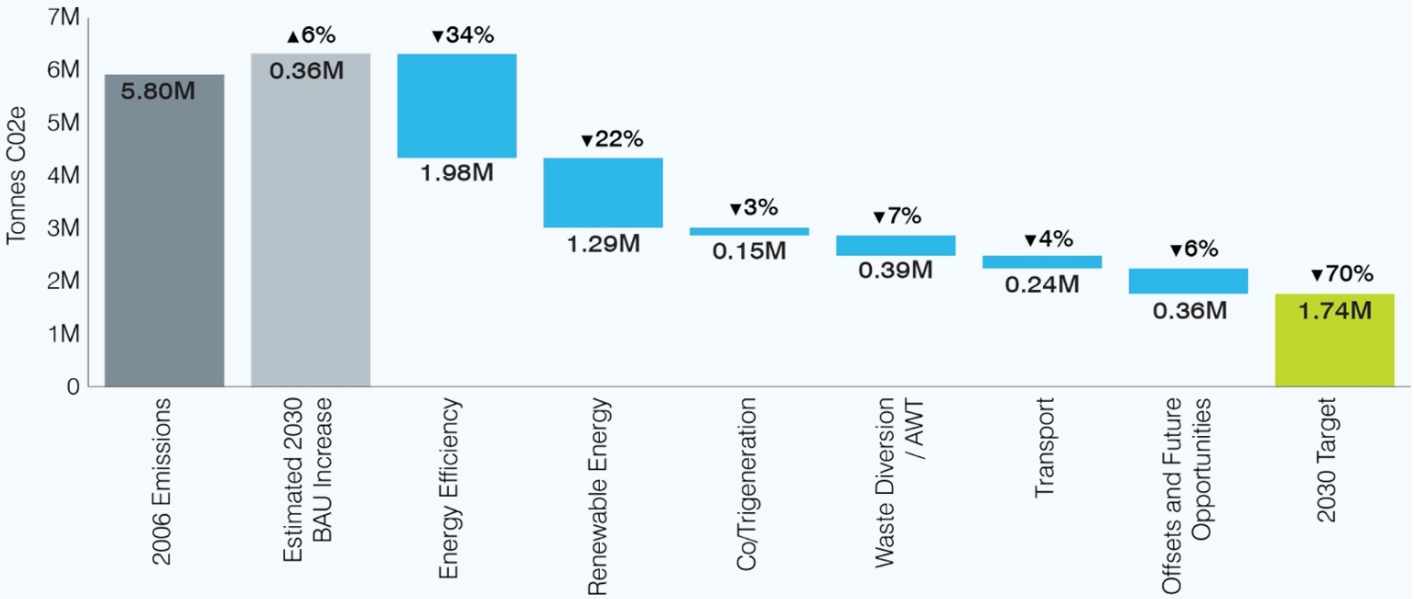
Chart 4 shows the estimated contributions of the initiatives we expect could lead to reduction of the city's emissions by 70 per cent by 2030.

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.

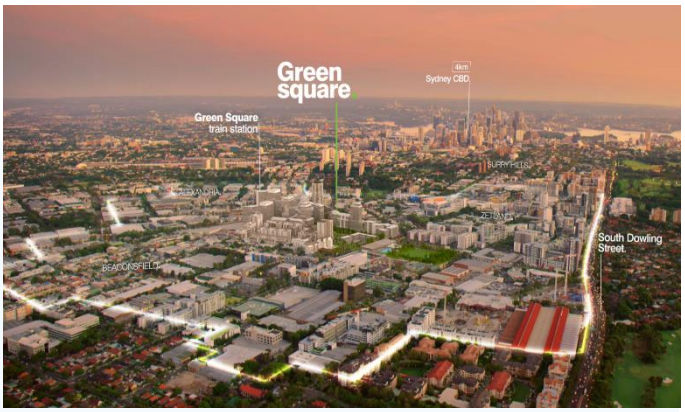
Chart 4: Local government area greenhouse gas emissions target. Estimated contribution of initiatives.



- 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 at a high level. 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 project of obtaining a Green Star Communities rating for the whole of Green Square Town Centre has commenced. The City is working with private developers in the town centre and with the Green Building Council of Australia to obtain a rating by December 2018.

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 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 competition-winning Library and Plaza. Construction is well advanced for its eye catching and functional design. There is great anticipation for the opening of this new facility in mid-2018. It is perhaps less well known that 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 to follow.

Photovoltaics on residential buildings

The City waives the development application and notification fee for applications exclusively for sustainable installations such as solar energy systems, rainwater tanks and greywater treatment systems that are less than $2 million.

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 is preparing 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

5. Water sensitive city

In February 2018, the City hosted the Water Sensitive Sydney Summit. The summit was a powerful demonstration of the value of connecting across boundaries, and working together to advocate for solutions to the challenges we face across metropolitan Sydney.

High level representatives from state and local government, businesses, developers, research institutions and peak industry associations discussed the immense challenges of water management in the context of a growing population, aging infrastructure and a warming climate, while maintaining affordability and equity for Sydney's diverse communities. Urbanisation is also exacerbating heat in Sydney's hottest parts. Waterway health is declining. And the safety, comfort and prosperity of our communities are being compromised.

The summit coincided with a review by the NSW Government into the economic and regulatory barriers to recycled water schemes and led to much broader discussion about embedding water sensitive principles into our city's long-term planning, infrastructure and operations.

While there are strategies for a water sensitive Sydney, and some leadership and collaboration at a project level, there is no overarching policy framework for widespread water wise investment. The recent wholesale price determination has stifled private investment and the innovation and change this brings.

Sydney needs a clear urban water policy framework that ensures our communities are safe, comfortable and prosperous, regardless of their address.

The summit recommendations include a policy framework to:

1. Ensure collaboration and community engagement throughout the entire planning and development process.
2. Include water at the outset of place based planning and recognize water's role in liveability and resilience.
3. Enable investment by the private and public sector for equitable and affordable water sensitive outcomes through regulatory reform.

Water is crucial to the social, economic and environmental wellbeing and survival of our city. Our city's forecast 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/m^2 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 safe-guarded 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 32 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 4 shows the first available estimated water utility data for the previous 5 year period. Chart 4 shows the increase in reported consumption resulting from the transition to the new utility data management system (SMART) as described above. In addition, Chart 4 shows an increase in potable water consumption from the 2016/17 to 2017/18 period from 489 to 568 megalitres per annum. This represents an increase of 32% for 2017/18 relative to the baseline.

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

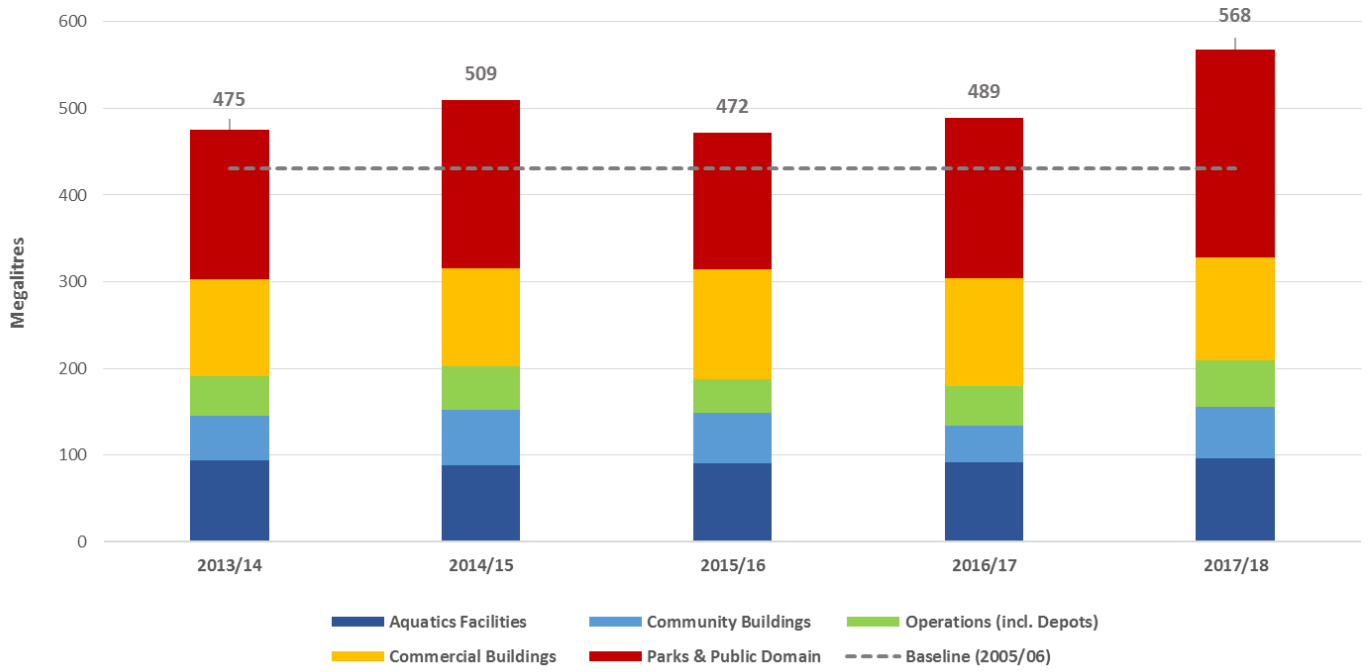
- construction works and events have required returfing of 1.7 hectares of Hyde Park
- a cross-connection at Sydney Park has led to West Connex construction works using the City's potable water supply
- hot, dry weather led to increased irrigation volumes to keep our parks and open spaces green
- repairs 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

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.

Chart 1: 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

Organisation	Baseline (ML)	Current (end 17/18) (ML)	Difference (ML)	Difference (per cent)
City of Sydney operations	431	568	137	32

Calculation

Difference = (Current - Baseline)

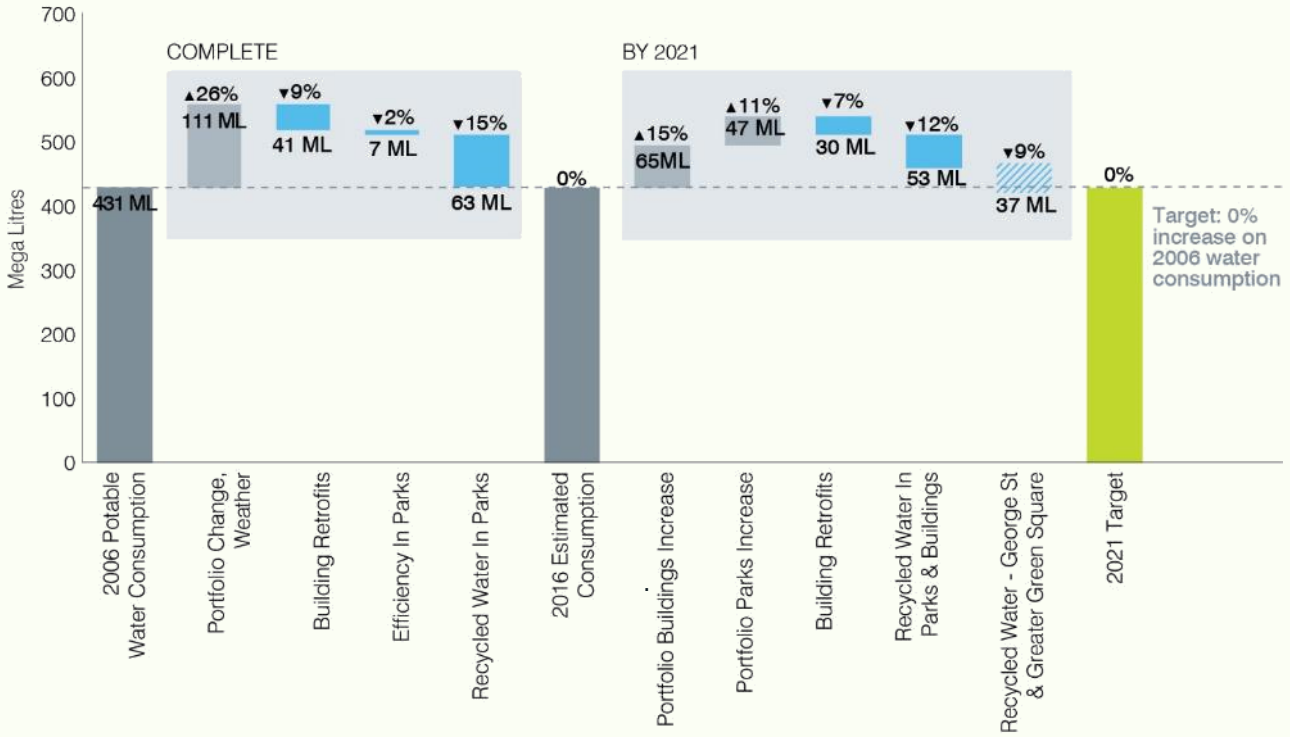
Per cent Difference = (Difference / Baseline) x 100

For more information see Appendix 1: Data Management Plan

How we will get there

Chart 6 shows the estimated contributions of the initiatives we plan to implement across our operational portfolio to meet our target to maintain our potable water use at 2006 levels. The '*Complete'* section illustrates savings from initiatives to date. This chart is based on estimated data for July to December 2016 which indicated we were on track to meet our interim target of zero increase from the 2005/06 baseline by the end of 2016. This chart will be updated in future reports once our updated water utility data is verified in the new data management system (SMART).

Chart 2 City of Sydney operations potable water use target. Estimated contribution of initiatives.



The City's existing initiatives to keep our city cool and green and our waterways clean include:

- Installing smart meters to detect and fix leaks in our parks and properties.
- Connecting our parks and buildings to alternative water supplies, such as harvested stormwater and rainwater.
- Upgrading park irrigation systems to be more efficient
- Retrofitting our high water-using properties with water efficient fixtures and fittings.
- Incorporating raingardens and swales during streetscapes and open space upgrade projects to reduce stormwater pollution discharged to our waterways.
- Sharing data on climate change, pits, pipes, GPTs and raingardens (asset infrastructure) through government initiatives such as ADAPT for all local government areas to benefit on other council's experience.
- ADAPT is a new initiative that the City participates in, with other councils and government agencies.

Key points related to achievement of the 2021 target are:

- Looking toward 2021, the City will be required to increase service delivery as the population of our local area grows. This will see an increase in water demand from our portfolio of buildings (+15 per cent) and from new parks (+11 per cent).
- Building retrofits (-7 per cent) reflects estimated savings from retrofits of the City's most resource-intensive properties.
- Recycled water in parks and buildings (-12 per cent) estimates the savings that could be achieved from identified future City stormwater harvesting schemes including Green Square Town Centre.
- Recycled water schemes along George Street and in Greater Green Square (-9 per cent) could achieve significant reduction in potable water demand for the City, but are highly dependent upon the support of the state government and the private sector.

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 m^2 against the baseline of 531,953 m^2.

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 21.

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.

Improvements to data capture and record keeping are continuing, with our focus on data reliability. Roll-out of a new centralised monitoring and control system for parks water use is almost complete. This system is critical in ensuring efficient operations of the City's irrigation, water recycling systems, water features and sports field lighting. The benefits of the new system will be improved monitoring of asset performance and better controls over key park operations. This system is already operational across a number of sites and all remaining sites will be completed later this year.

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 1

Project Update

Sydney Park Water Reuse Scheme

The City of Sydney has completed the second stage of Sydney Park's water reuse scheme.

This project was partially funded by the Australian Government's Water for the Future initiative through the National Urban Water and Desalination Plan.

The Sydney Park Water Reuse Scheme Stage II follows the successful implementation of Stage I, completed in 2010. In 2012/13 Stage I harvested and treated an estimated 50 million litres of stormwater, providing a sustainable water source for the wetlands.

Stage II expands the capacity of the wetlands to supply water for irrigation within the park, as well creating the potential to supply recycled water for future offsite reuse in the local government area.

The project includes landscape improvement works to enhance the park's eco-systems, features and recreation opportunities.

New planting, lighting, seating and picnic areas have been installed and pathways improved. Wetlands have been connected via a picturesque series of water cascades and signage has been erected providing information about the water treatment and ecological function of the wetlands.

Water harvesting is the diversion and storage of stormwater that would otherwise drain away. Once captured, the water can be treated to remove stormwater pollutants and make it suitable for re-use. The $11.3 million upgrade will allow up to around 850 million litres of stormwater to be captured and cleaned each year.

The works involve diverting stormwater via a new underground pipe into the Sydney Park wetlands from the stormwater channel that runs within the park near the corner of Euston Road and Sydney Park Road.

Water is treated using a gross pollutant trap which removes litter, coarse sediment and organic matter from stormwater via a physical screen, and a bio retention system which collects water in shallow depressions and filters it through plant roots and soil.

The project involves a water treatment facility. The facility is currently being relocated as the land it sits on is required for the WestConnex project. When relocated, water will be drawn from the wetland system for further treatment through filtration and ultra violet (UV) cleansing processes to make it suitable for reuse.

A sustainable water supply protects the wetlands from problems such as poor plant establishment, blue green algae blooms and rapid growth of unwanted, aquatic plants such as azolla, which blocks sunlight.

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 1

In September 2013, the City entered into a contract with Flow Systems for the design, construction, operation, maintenance and administration of the Green Square Water Reuse project for up to ten years.

Flow Systems is delivering the project using their wholly-owned subsidiary, Green Square Water. The project will deliver up to 320 million litres per year of recycled stormwater to the buildings and open spaces in the Green Square Town Centre, saving precious drinking water and reducing water bills for residents.

Flow Systems is a private water utility and will be licensed to operate the Green Square Water Reuse project under the Water Industry Competition Act. The Act is administered by IPART and ensures the ongoing protection of public health, consumers and the environment.

Completed works include: installation of underground storage tanks and recycled water treatment plant; stormwater harvesting infrastructure located along the future Zetland Avenue; and the first phase of the recycled water pipe network in Green Square town centre.

The recycled water treatment plant 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 will soon seek final approval from IPART to supply recycled water to the town centre.

Recycled water pipe network installation and connection to new developments in the town centre also continues in 2018 and beyond.

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 as discussed at the Water Sensitive Sydney Summit hosted by the City in February this year.

Project Update

Victoria Park Improvements

We have undertaken improvement works in Victoria Park, Camperdown to provide a better recreation space for everyone to enjoy. We are also improving the water quality of Lake Northam in the centre of the park.

Incorporation of Water Sensitive Urban Design (WSUD) has been incorporated into public open space, road and streetscape works and retrofitting the drainage network with stormwater pollutant traps are direct actions from of the Decentralised Water Master Plan to reduce pollution discharged to waterways via stormwater. Victoria Park upgrade was an excellent opportunity to incorporate WSUD at a relatively low cost and at minimal disruption to the community as stormwater improvements were integrated with the planned park upgrade.

The Victoria Park upgrade works included installation of two new stormwater pollutant traps for Lake Northam, a new recirculation system, pump and weir to improve water quality and a new bio-retention zone and wetland designed with reed plants to clean and filter stormwater runoff in the lake.

The upgrade project was launched by the Lord Mayor on 30 June 2018.

Relevant links

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

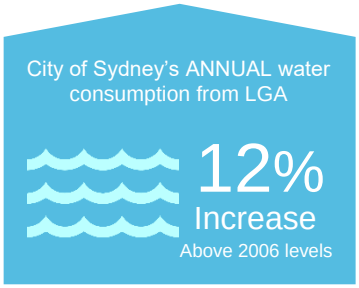
Local government area targets

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 3[5] shows annual potable water consumption across the city has grown 12% against our 2006 baseline, during which time the city's population has grown at least 40 per cent[6].



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

However, our increasing population and the need to keep our city green and cool means we need to use more water, though it does not all need to be potable water.

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 Partnership[7] programs saving over 2,000 ML (mega litres) per annum in potable water.

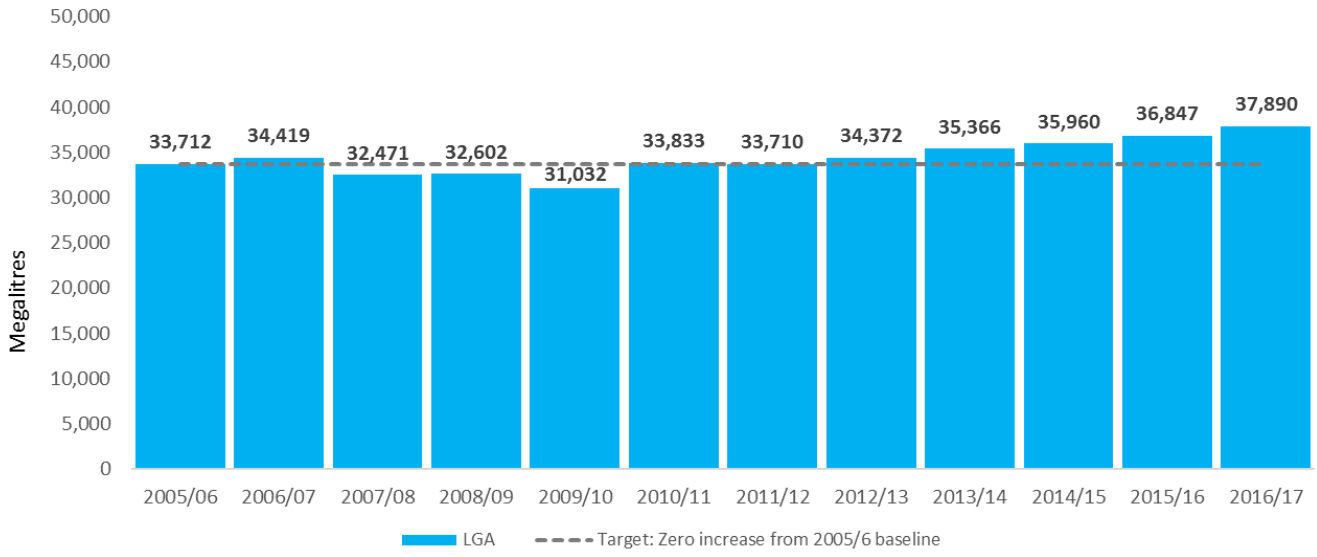
Water consumption data

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 2017 for consumption to end 2016/17.

	Baseline (ML)	Current (end 16/17) (kL)	Difference (ML)	Difference (%)
LGA	33,712	37,890	4178	12

For more information, see Appendix 1: Data Management Plan

Chart 3 Local government are potable water use.



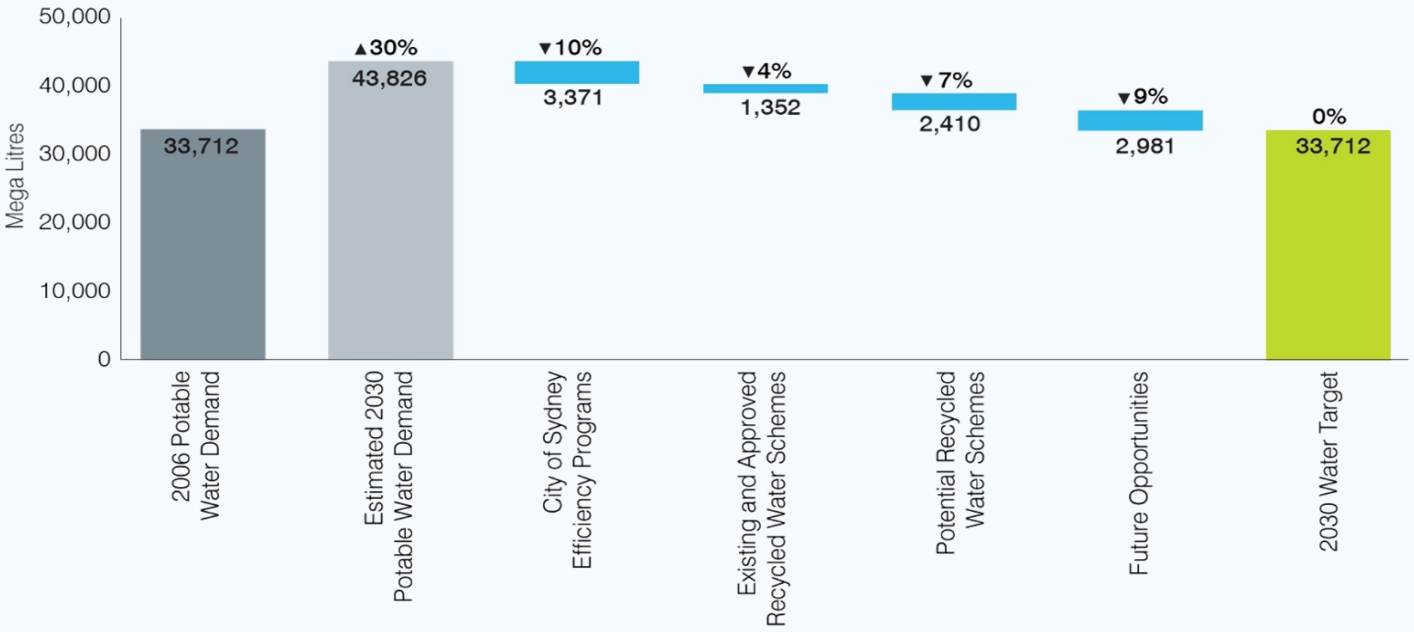
[5] All data sourced directly from Sydney Water.
6 Based on 2016/17 LGA population data for residents/workers/visitors compared to 2005/2006 baseline.

[7] See Delivering to the community on page 49.

Estimated contribution of initiatives

Chart 4 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 4 Local government area potable water use target. Estimated contribution of initiatives.



Key points are highlighted below:

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

Stormwater quality and pollution reduction

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

- Mandate WSUD in all new developments
- 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 reduce stormwater flows and pollution
- Incorporate raingardens into road renewal and other streetscape projects.

MUSIC model

The City is developing 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, which predicts the performance of stormwater quality management systems. It will help the City plan design (at a conceptual level) and report on appropriate urban stormwater management systems for our catchments.

6. 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.

Alongside the recent COP21 global agreement to limit global temperature rise to less than 2˚C, the City has committed to the Paris Pledge for Action and the Paris City Hall Declaration to achieve climate stability. Both commitments demonstrate strong global political agreement for a climate resilient economy. We are also part of the C40 Cities Climate Leadership Group.

100 Resilient Cities

Sydney was selected in a global competitive process to join 100 Resilient Cities, pioneered by the Rockefeller Foundation, commencing work in 2015. Resilient Sydney is a 100RC initiative in collaboration with the City of Sydney, the metropolitan councils of Sydney and the NSW Government. The program is designed to help cities survive, adapt and thrive in the face of increasing shocks and stresses on urban populations, economies and environments worldwide. In August 2016, the Preliminary Resilience Assessment (PRA) and City Context research paper for metropolitan Sydney were completed, with a message from the NSW Minister for Planning incorporated.

Resilient Sydney has continued to undertake broad engagement with communities, government, business, and academia and community services across metropolitan Sydney to identify solutions to the key challenges facing the city. Over 1,000 people have been involved from government, business and the communities of metropolitan Sydney.

The outcomes of engagement are informing development of the resilience strategy for metropolitan Sydney. Five directions with flagship and supporting actions are proposed. These focus on improving community and governance connections and decision making, adapting to our climate, household and business emergency preparedness and working together as one city. A group of experts also advised the process. A program of future actions will be overseen by the Steering Committee of representatives from councils, government, business and the community sectors of Sydney.

The Resilient Sydney strategy will be released in July 2018 following approval by 100 Resilient Cities and the Resilient Sydney Steering Committee.

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, 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 to setting future floodplain management works for each catchment (see project update in the next page). Review of the Alexandria Canal and Johnstons Creek Flood Study and Management Study respectively have been undertaken to include the effects of the Green Square Trunk Main and the effect of bridge raising on flood level in both catchments. Further develop options are being investigated in the Ashmore and Erskineville precincts.

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).

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 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.

Construction began: *February 2015*

Expected completion: *Early 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 nearing completion. These results will aid Sydney Water in the redesign of the lower reaches of the creeks stormwater channel.

The City is currently reviewing the Interim Floodplain Management Policy with the view to including future development related to the 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

7. 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

What are we doing

Better design to manage waste – we have updated our Guidelines for Waste Management in New Developments to ensure all new buildings in the city are designed, constructed, operated and demolished with best practice waste management principles.

Single use items – we are consulting with our events teams and property managers to remove or reduce single use items across City venues by 2020.

Waste processing – we have changed our processing contracts to increase recycling of public place waste such as waste from litter bins and illegal dumping.

Innovation – the City, through our innovations grants, is collaborating with industry, business and academia to facilitate improvements in waste data, collection and treatment.

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

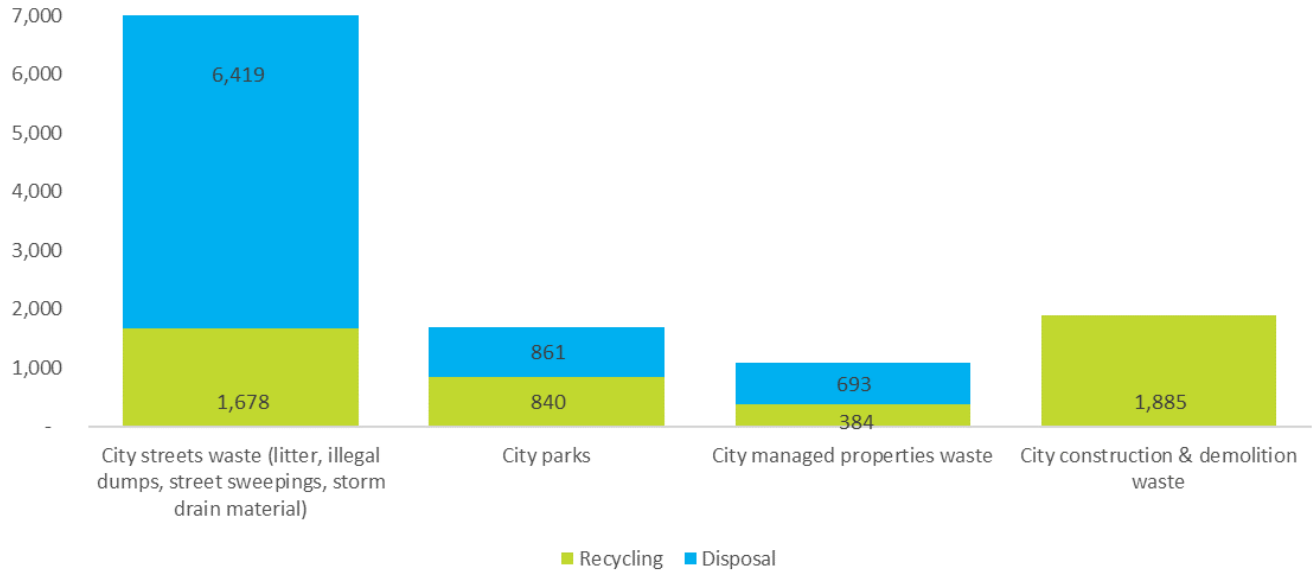
How we are tracking

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

City properties have also recorded a reduction in overall waste generation. New recycling solutions such as food waste collections and improvements to signage are planned for financial year 2018/19.

Construction and demolition waste produced by the City has reduced since 2016/17 and the diversion rates remains high at 100%. 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 5. 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%, our kerbside recycling rate for 2017/18 has dropped by 2% to 26% since 2016/17. Reasons for this reduction might include; the introduction of the container deposit scheme causing residents to seek the 10c deposit for previously recycled beverage containers, more complex packaging materials that are not currently recycled and possibly confusion about what can be recycled.

New services - in 2019 the City will be introducing new recycling services to expand the types of materials that can be separately collected. These services include e-waste, textiles and food waste collections. A new community recycling drop off facility in Alexandria will also provide residents with the opportunity to take problem waste to a Council facility year round.

Advocacy

Reducing waste from single use items

The products we buy and use today have become more complex. They are often made from different composite materials. They also may include extra packaging to ensure the product arrives in the condition intended by the manufacturer.

Unfortunately, many of these packaging items are often discarded shortly after the consumer receives or purchases the product.

Changes to packaging are evolving at a pace that is not currently matched by the recycling and reprocessing industry's ability to accept these new materials. As a result, the number and type of discarded materials without a readily available recycling solution is increasing and adding to waste disposal. The best solution is to try and avoid this waste from being generated in the first place.

PROJECT UPDATE

Electronic waste

To keep electronic waste out of landfill, the City runs quarterly e-waste drop off events.

Two e-waste recycling events took place at the Sydney Park Depot, Barwon Park Road, St. Peters on 08 March and 2 June 2018. These events attracted over 1420 drop-offs and recycled 44 tonnes of household electronic waste. The waste is reprocessed in Sydney at a local recycling facility, achieving 98 per cent recovery of all material after it is broken down for recycling.

These events remain popular with the community with about half of all participants at both of these events having used the City's e-waste drop off service before.

Next year the City will introduce a new kerbside booked collection service for electronic waste. Residents will be able to book an e-waste collection online, thus increasing convenience for residents.

Community Recycling Centre

Work continues on the planned Community Recycling Centre at the City's new Alexandria Canal to that end the City successfully applied for a grant from the NSW Environmental Trust to deliver the project. The Community Recycling Centre will accept different types of household problem waste from the City's residents and increase opportunities to recycle and appropriately dispose of these wastes.

PROGRAM UPDATE

Waste and Resource Recovery Engagement Action Plan

To meet the Waste Strategy key priorities a Waste and Resource Recovery Engagement Action Plan has been develop. This action plan will include community awareness projects and a suite of behaviour change programs to engage the community. The delivery of the projects and programs will contribute to achieving the residential waste strategy objectives and key actions such as reduction in the amount of waste produced, increase recycling and resource recovery; clean and clear streets.

Regional partnerships

Through its partnership with South Sydney Regional Organisation of Council, 195 residents participated in workshops and committed to recycling right and reducing food waste. Over 90% of participants in these workshops were from culturally and linguistically diverse communities and also in the hard to reach category.

Relevant links

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

8. 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 Q3 and Q4 2017/18 were 89 tCO_2-e more than for the same period last year due to the unavailability of B50 biodiesel, but the annual total remains below the target level.

Emissions for 2017/18 remain on track, with 460,390 thousand litres of fuel consumed by the City's fleet during Q3 and Q4 2017/18 which is a decrease of over 37 thousand litres from the same period in 2016/17. 74% 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. In addition, monitoring of engine and driver performance will enable opportunities for further emission savings, particularly through driver performance.

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 2018 with a goal of reaching all drivers within the fiscal year.

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.

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 & Bay St Depots.

In June 2018, the City of Sydney's Give yourself a lift behaviour change campaign won a Greater Sydney Commission Planning Award. The innovative campaign promoted the benefits of cycling to ease public transport congestion in Green Square and won the community collaboration category.

Partly funded by the NSW government, the campaign encouraged local residents to switch from bus to bike by highlighting how easy and quick it is to ride a bike for transport. More than 500 passengers at busy bus stops in the Green Square area were approached during March, the program also featured bus stop posters, cycling maps and social media. More than 330 people took part in guided rides, cycling courses and "try a bike" sessions. Up to 14 per cent of residents the area already use their bikes to get to work – the highest rate in Sydney.

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 17/18	Q2 17/18	Q3 17/18	Q4 17/18	Year to date	Program To date
Staff trained (#)	21	16	21	10	37	665
Distance (km)	2,678	3,886	4135	4810	11,374	39,147

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 Sydney8 from elsewhere
Car sharing	– 30 per cent of city residents who drive with an unrestricted driver's license 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.

[8] Central Sydney is the Census area defined by the Australian Bureau of Statistics that informs 2011 Journey to Work data

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.

Independent Taverner Research found 72 per cent of Sydneysiders support separated cycleways, most want the bike network built faster and agree bikes cut congestion on roads and public transport. More than 1 million people live within a 30 minute bike ride to the city centre. The research found two-thirds of people support a bike network even if it means longer car journeys in the city centre.

Dockless bikes have been in Sydney for almost a year, providing a sustainable transport option for thousands of people. Private operators are responsible for dockless bikes.

The City and five inner Sydney councils co-developed guidelines for operators and a review found dockless bikes were popular for short trips, with an average 6,600 trips per day in January and February. It also found vandalism and inappropriate use were ongoing issues.

Projects Update

- The City is ready to tender for construction of key cycling routes: Wilson and Burren, Green Square to Randwick and Bondi to CBD.
- Parking changes have been introduced in and around Wilson Street, Redfern to support improvements for people walking and riding bikes in the area.

The City continues to speak regularly with operators to stress safety, redistribution of bikes and accessibility on footpaths. The NSW Government is working on a new enforceable code of practice for bike share services.

Events & Campaigns Update

- Seven guided bike rides ran in April and May including foodie rides and rides supporting Youth Week, BioBlitz, the HeadOn Photo Festival and the Sydney Writers Festival.
- Mayor of Vancouver Gregor Robertson was taken on a cycling tour of Sydney and spoke at a lunchtime event to around 40 people in Customs House.
- The City organised and hosted a Cross Council forum of transport officers in June, attended by 35 people.
- The Sydney Rides Business Challenge has been adopted by the NSW Government's Get Healthy at Work program. The challenge will become BIKETOBER and be run state-wide in October during the Sydney Rides Festival.
- Guided market, foodie and family park rides were rolled out in November.
- 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.

	Q3 17/18	Q4 17/18	Year to date
Share the Path sessions	35	32	61
STP Tune Ups (#)	231	421	517
STP maps issued (#)	1404	1655	2559
STP bells issued (#)	265	337	572
Cycling courses (# participants)	95	34	129
Maintenance courses (# participants)	93	60	153
Balance Bike Clinic	1378	846	2224

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 0-5 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. The NSW Government expects light rail to be operating in 2019. Sections of the George St pedestrianised area were open to the community for Christmas 2017.

Liveable Green Network

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

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

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

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

Car sharing

Car sharing provides residents and businesses with access to vehicles without the need to own a car. The services deliver environmental benefits and provide greater mobility options for the community.

Three 'back to base car share providers are authorised by the City and four 'peer to peer' car share providers operate within the LGA. As of the end of May 2018 over 30,259 city residents and businesses were members of a City authorised car share organisation. Around 28% of city residents who drive (with an unrestricted drivers licence) are members.

The City installed its first car sharing parking space in 2008. Since then over 740 dedicated on-street car share parking spaces have been added to the network to meet the growing demand from residents and businesses. In addition, our local planning controls will increase the number of car sharing spaces provided in new commercial and residential developments such as Harold Park, Frasers Broadway and the Green Square Town Centre.

The City's Car Sharing Policy, adopted by Council in November 2016, provides the framework to support car sharing.

Relevant links

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

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

9. Green and cool city

Greening our city is an important component of the Sustainable Sydney 2030 vision to be green, global and connected. The City is increasing its canopy cover and the variety of tree and plant species in our city. We are also focussed on increasing and preserving local indigenous plant and animal populations in our city, through parks and streets verges.

It is globally recognised that having more trees in big cities can help tackle climate change by reducing the urban heat island effect. The health and variety of plant and animal populations within our city also enhances the quality of life for our community.

City of Sydney is creating beautiful streets and public spaces that contribute to the health and wellbeing of everyone.

A collaborative effort between the City, the community and other land managers is needed to improve our city's urban 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% in 2008, 17.1% in 2013, and preliminary analysis has found a canopy cover of 17.8% 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%.

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 4.2ha 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 4.2 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
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 Catherine Street Glebe and Primrose Ave Rosbery were completed. Work is underway at Bowman St Pyrmont, Ripon Way and Primrose Ave Rosebery and design work continues for Morehead street Waterloo and streets in Chippendale.

This planting is undertaken as part of the City's Street Tree Master Plan 2011[9], 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, 71 small parks have been completed, including 3 completed during Q3 and Q4 in 2017/18 and several more currently being planned. Upgrades have been completed at Victoria Park, Camperdown, Amy Reserve, Erskineville and Nita McCrae Reserve, Millers Point.

Under the Greening Sydney program various areas have been converted to increase the vegetated space within the City. During Q3 and Q4 2017/18 3,554 m^2 of landscaping (grass and planting installation) was completed. Major planting works were completed at Primrose Avenue, Rosebery, Wyndham Street, Redfern and Abercrombie Street, Darlington.

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	Q3 17/18	Q4 17/18	17/18 target	Year to date	Total to date
Small park upgrades (#)	2	1	3	8	71
Landscaping (grass/planting) (m^2)	805	2,749	8,000	8,145	
New shrubs and grasses planted in City parks and streets	4,529	31,559	50,000	68,204	
Raingardens (#)	N/A	N/A	trend	N/A	154
Street trees planted since 2005 (#)	75	441	700	700	12,847

Description	Q3 17/18	Q4 17/18	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

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

Photo: Kids participating in a nocturnal BioBlitz invertebrate survey at Sydney Park

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's first BioBlitz at Sydney Park and a vacant block in Alexandria was held in April 2018. It saw 300 participants involved across 26 activities over 24 hours, with 130 species were recorded. These results will form a baseline for future survey efforts and community initiatives.

Habitat creation guidelines for residents is in development aiming to be finalised for release by the end of 2018.

Maintenance of the Sydney Park wetlands continues to be a major focus of works since completion of the stormwater harvesting project, with specialist bush regeneration contractors required to assist in maintenance. 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 January, 7004 tubestock has been planted to infill bush restoration sites and improve diversity of locally native flora.

The five yearly flora and fauna formal surveys are complete with the aim to track the progress of targets outlined in the UESAP. Note data not comparable in following table as survey effort dissimilar. Provides snapshot of flora and fauna diversity in LGA only.

Survey type	2012 Baseline data	17/18 results*
Flora	365	358
Amphibians	5	4
Reptiles	11	11
Microbats	3	5
Birds	70	76

Information sharing with tertiary institutions and organisations is ongoing. The below visual allows the City to understand where and how the threatened (and City's priority) species, the Powerful Owl, moves through the landscape.

Graph highlighting the tracked locations of Powerful Owls moving through the City (Courtesy of: Lisa Harvey, The University of Sydney, in collaboration with Birdlife Australia and the Royal Botanic Garden Sydney)

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 brings people together to share knowledge and skills into a harmonious demonstration space 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.

Construction of a new community garden at Reconciliation Park, Redfern has been completed whilst Council has approved the 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	Q3 17/18	Q4 17/18	17/18 target	Year to date	Total to date
Community Gardens (#)	No new	1 new	>18	1	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 been 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 2017/18, the City received 38 new development applications which included green roofs or walls.

Currently the City has at least 136,080 m^2 of green roofs and walls. 2017/18 saw green roofs and walls of about 12,100 m^2 completed on 15 properties.

Performance	16/17 new sites	2017/18	Total to date[10]	Total area (m^2)
Green roofs in the LGA (#)	42	13	140	132,050
Green walls in the LGA (#)	3	2	42	4,020
Total green roofs and walls (#)	45	15	182	136,080

Relevant links

– Green Roofs and Walls

[10] 2012/13 was the first year of measurement.

10. Delivering to the community

Highlights

Two new sustainability plans were released in 2018, Making Sydney a Sustainable Destination and Sydney's Sustainable Office Buildings. These 5 year plans join our existing Residential Apartments Sustainability Plan in setting out how the City can work collaboratively with our community to reduce environmental impacts.

We have demonstrated that commitment to collaboration in a number of ways. In June the Sustainable Destination Partnership was launched at the Sydney Opera House bringing together 40 organisations from the city's accommodation and entertainment sector committed to reducing their environmental impact under a three year Memorandum of Understanding.

Over the last six months the City's Smart Green Apartments program, CitySwitch and the Better Buildings Partnership have been instrumental in supporting the development and launch of three new tools by the National Australian Built Environment Ratings System (NABERS). Namely:

- NABERS for apartment buildings,
- NABERS Waste, and
- NABERS Co-Assess for commercial office owners and tenants.

A City of Sydney grant part funded the development of Good Environmental Choice Australia's accreditation standard for commercial waste service providers. The March launch of this Standard was supported by the Better Buildings Partnership.

BUSINESS SECTOR - PROGRAM UPDATE

CitySwitch Green Office NATIONAL

The 2017 CitySwitch annual program report, published in December, announced that signatories across Australia evidenced a combined saving of 666,745 tonnes of emissions savings from energy efficiency, renewable energy and carbon offsets - more than double the previous year.

New CitySwitch resources and toolkits were made available online including the CitySwitch waste tool. The 'Choose. Reuse' coffee cup behaviour change campaign toolkit elements and waste resources have accounted for 37% of total website downloads since Q1, and the CitySwitch ebook that was published by content partner the Fifth Estate - "Healthy Offices: Why Wellness is the New Green" was one of the top 5 articles read on The Fifth Estate for 2017.

In March the CitySwitch National Steering Committee and program managers from partner councils met in Sydney for annual conferences, to collaborate in program planning, knowledge sharing, forecasting and technical training. Partner councils have committed to a three year extension of the program to 2021.

Performance	Q3 17/18	Q4 17/18	Year to date	Program to date
Signatories (#)	12	4	17	596
Tenancies (#)	33	7	51	868
Office floor Space - NLA (m2)	216,186	20,056	349,425	3,844,258
Percentage of all Australian office space[11]	15.24	15.32	12.32	15.32
Average NABERS Energy rating (stars)	-	4.7	4.7	4.7

Figures are net change

Relevant links

CitySwitch Green Office

BUSINESS SECTOR - PROGRAM UPDATE

CitySwitch Green Office SYDNEY

CitySwitch Sydney has supported signatories in their use of the new CitySwitch waste tool. Businesses have been able to measure their office waste generation and recycling, establish a baseline and then develop a waste action plan that seeks to reduce that impact.

The program has driven further engagement on waste using the coffee cup behaviour change toolkit and tenant waste guide to address a range of waste problems within the office. CitySwitch continues to work with program members to measure and rate their performance in energy via NABERS Energy accredited and indicative ratings.

CitySwitch signatories attended a CitySwitch/BBP event addressing reduction of waste from strip out and defits.

CitySwitch Sydney conducted a mid-tier building campaign, providing tenancy sustainability resources and materials, and promoting grants to building managers representing over 200 buildings in Sydney.

Performance	Q3 17/18	Q4 17/18	Year to date	Program to date
Signatories (#)	1	0	3	122
Tenancies (#)	1	-1	5	144
Office floor space NLA (m2)	3,900	-3,163	7,849	1,055,983
Office floor space as proportion of Sydney (%)[12]	20.84	20.78	20.78	20.78
Average NABERS energy rating (stars)	-	4.6	4.6	4.6

[11] Based on 25.1 million NLA m^2 total per Property Council of Australia, Office Market Report 2016

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

BUSINESS SECTOR - PROGRAM UPDATE

Better Buildings Partnership

After announcing that its members had collectively reduced their carbon emissions by 52 per cent in the year ending 30 June 2017, from their financial year 2006 baseline, the Partnership has gone on to release a series of Best Practice tools and reports onto an updated website that positions the site as the "home of best practice".

The Partnership released the BBP Tenant Engagement: Foundation Report, which outlines a suite of evidence-based principles and approaches that building owners, managers and the City can use to better engage office based tenants in the challenge to achieve net zero buildings. It also completed the consultation phase of a tenant engagement initiative which seeks to create a whole building challenge that is a time bound, social, easy, and impactful race to net zero.

The Partnership released the second version of the BBP Stripout Waste Guidelines. The new version is the industry how-to guide for tenants, contractors and building managers on minimising waste from office refurbishments. The Partnership also released the BBP Cooling Tower Guidelines. In addition, the partnership conducted a masterclass on the principles of the guidelines and the intricacies of implementing a best practice cooling tower water efficiency program.

Members commenced using a new tool developed by the Partnership to identify cost effective pathways to net zero buildings.

The Partnership supported the launch by Good Environmental Choice Australia of the accreditation standard for commercial waste service providers. The development of this standard has been part-funded by a City of Sydney grant. The Partnership also supported the Office of Environment and Heritage on their development and release of the new National Australian Built Environment Ratings Systems (NABERS) tool for Waste.

Performance	Q3 17/18	Q4 17/18	Year to date	Program to date
Commercial office building floor space participating in Sydney CBD (per cent)	-	-	54	54
Members – Partners (#) Associate (#) Supporting (#)	 +1 same +2	 same same same	 15 5 5	 15 5 5
NABERS energy rating (stars)[13]	-	-	4.6	4.6

Relevant links

– Better Buildings Partnership

COMMUNITY & BUSINESS - PROGRAM UPDATE

Environmental Grants

Environmental initiatives are supported by three grants and sponsorship programs at the City of Sydney: Environmental Performance Grants, Matching Grants, and Knowledge Exchange Sponsorships.

Environmental Performance – Innovation: for feasibility and demonstration projects which seek to prove the feasibility of new technologies and processes that are currently not implemented in the local market, but have the potential to achieve greenhouse gas emission reductions and resource efficiencies at scale.

Environmental Performance –Building Operations: to help lower the costs of implementing building operation efficiency measures, such as water monitoring to track water consumption and quickly address costly leaks or equipment failures.

Environmental Performance - Ratings and Assessments: to undertake building performance ratings and assessments to enable a building or facility owner to implement opportunities to improve environmental performance;

Knowledge Exchange: to support projects that encourage the exchange of ideas and knowledge, support show-casing of local expertise and encourage dialogue on local and global issues.

Matching: for grassroots and local projects that align with City strategies by matching contributions towards a project.

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

In the second half of 2017/18, 14 Environmental Performance Grants were approved by Council.

This includes support for 11 Ratings and Assessments projects to assist building owners and managers better understand their environmental impact and to identify opportunities for improvement and 3 Knowledge Exchange projects to:

- support the World Wide Fund for Nature to run a series of workshops aimed at leveraging the way new and innovative technologies could be used to achieve the Sustainable Development Goals and sustainable cities
- sponsor environmental category awards at both the Tourism Accommodation Australia (NSW) and Strata Communities Australia (NSW) annual awards ceremonies to reward and promote recognition of environmental achievements in these sectors

Through the matching grant program funds were provided to 3 projects. Makerspace & Co Foundation for their Joynton Avenue Tree Recycling Project, MCentral for a Roof Garden Revitalisation Project and Millers Point Community Garden Group for a community garden.

Relevant links

– Environmental Performance Grants
– Knowledge Exchange Sponsorships
– Matching Grants

[13] Average NABERS ratings reported from December 2016 figures.

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 February and May with focus on outcomes from Smart Green Apartments input into NABERS tool development and advocacy to increase sustainability focus on apartment buildings at a Federal policy level, specifically input into the National Construction Code review.

Two Leadership Network workshops were held in Q3 and Q4, with 73 participants representing 73 buildings from the Smart Green Apartments alumni. Workshop topics focused on waste and recycling, prioritising and budgeting for sustainability upgrades and getting buildings NABERS ready.

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. 5 sessions were delivered this year. Part 1 was repeated due to high demand (75 attended part 1 and 50 attended parts 2, 3 4 & 5).

Our Energy Future conducted 42 Home Energy Assessments for residents.

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

- Deakin Universities International Research Forum on Multi-Owned Properties
- Strata Community Australia Owners Day conference
- Strata Community Australia - Owners Day annual conference
- Facilities Management Australia National Conference
- Griffith University Strata Title Conference (with the NABERS team)
- Strata in Conversation event hosted my Kelly & Partners focusing on NABERS with 110 strata managers in attendance.
- Smart Green Apartments was also featured in a presentation to the C40 Private Building Efficiency Network in Singapore to promote best practice in accelerating environmental upgrades in the residential sector.

NABERS for apartment buildings launch event

Photo: Building representatives at the NABERS launch in June

The new National Australian Built Environment Ratings System for apartment buildings tool launched in June 2018. The City co-hosted an event with 130 strata industry stakeholders with the NABERS team; the Lord Mayor presented awards to Owners Corporations who assisted with development of the tool.

The City has supported three cross-sector consultation workshops, provided strata training for NABERS staff and provided significant input and engagement to inform tool development. The City hosted a NABERS workshop for greater Sydney Councils with 18 Councils represented. NABERS ratings will be integrated into programs going forward and the City will continue to advocate for mandatory disclosure once the tool is tested in the market.

The Smart Green Apartments program is demonstrating the technical and engagement approaches required to achieve retrofits and upgrades in the strata sector. 30% emissions reduction opportunities have been identified with 50% implementation of projects being undertaken over a 12-18 month period. Total cost savings of $715 966 have been identified for this tranche of buildings. Over $250 000 of water savings have been achieved through water upgrades undertaken in 1698 apartments in the program.

8 tonnes of textiles have been diverted from landfill through the waste component of the program with improvements to recycling underway with new behaviour change programs.

Relevant links

– Residential Apartment Sustainability Plan: 2015

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 Q3 and Q4, five Green Villages talks were delivered at Sydney Park. Topics included edible green walls, small space balcony gardening, worm farming basics and composting basics. The talks were attended by 159 participants. Talks were delivered by City Farm with support from the Sustainability Programs Team. Evaluation surveys indicated that 100 per cent of respondents rated the workshop they attended as excellent, very good or good. Follow-up surveys of participants who attended a talk indicated that 98 per cent of respondents have undertaken one or more new actions since attending the talk.

Two pop-up workshops were also delivered to support events delivered by the Safe City and City Space teams.

The City's Green Villages website and e-news continues to resonate with time-poor residents. The website has had 63,397 visits in this period. The interactive worm farming video tutorial: 'How to start a worm farm in 4 steps' continues successfully with 222,826 views since its launch.

Performance	Q3 17/18	Q4 17/18	Year to date	2017/18 target
Workshops and forums (#)	2	3	11	8
Participants (#)	60	99	280	240
Participants implementing (per cent)	97	100	92	85
Green Villages website sessions (#)	34,112	29,285	111,518	110,000
e-news subscribers (# current)	12,501	12,540	12,540	14,000
e-news open rate (per cent)	32.8	30.0	29.4	28

Relevant links

- Green Villages

Photo: Green Villages workshop at City Farm

11. Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Scope 3 GREENHOUSE GAS emissions: All the other indirect emissions that are "a consequence of the activities of the institution, but occur from sources not owned or controlled by the institution" such as commuting, air travel for university activities, waste disposal; embodied emissions from extraction, production, and transportation of purchased goods; outsourced activities; contractor owned- vehicles; and line loss from electricity transmission and distribution".

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

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

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

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

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

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

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

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

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

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

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

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

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

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

12. Appendix 1: Data management plan

Low-carbon city

City of Sydney (Operations)		
Data type	**Current Status**	**Forward Plan**
Electricity	Reporting underway from SMART. Electricity currently is reported quarterly in arrears. Data provided by electricity retailers. Daily monitoring occurring at all large electricity using sites (over 100,000 kWh per annum).	Continue to implement and monitor data through Sustainability Management and Reporting Tool (SMART)
Natural gas	Gas data is reported quarterly in arrears. Additionally gas account data (usage) may be estimated in cases where the gas retailer cannot read meters.	Continue to implement and monitor data through Sustainability Management and Reporting Tool (SMART)
Other sources	Emissions sources including flights, taxis, contractor fuel, onsite fuel usage, and refrigerants are added to SMART quarterly. Events data is estimated on previous years' performance.	Improvement plan priorities include improving contractor reporting templates and consistency in recording staff travel data.
Co/Tri generation and renewable energy	The City is working to improve the measurement and reporting of, trigeneration and solar power generation. Data is estimated based on system size.	Improvement plan being developed to improve metering and incorporate data into SMART.
Asset Environmental Budget (Emissions)	Asset Environmental Budget (emissions) has been developed based using baseline data from the NCOS report. Estimations for portfolio increases has been based on existing portfolio performance, Project projects for co/trigeneration, MPEP, Solar Photovoltalics program programs have been based on estimations for each program. In addition Ausgrid lighting roll out program has been estimated based on the anticipated delivery program.	The Asset Environmental Budget will be reviewed annually.

Local Government Area (LGA)		
Data type	**Current Status**	**Forward Plan**
Electricity	CCAP City - reported through the Environmental Sustainability Platform. The electricity distributor has provided community-wide high-voltage electricity data for City of Sydney local government area at a high level. Due to confidentiality clauses, a breakdown of the high-voltage data by source has not been provided and hence is not included in the City's community inventory.	Continue to monitor and report electricity data. 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.
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 *Operations Waste Databases Audit July 2017*,	City parks, streets, public place and stormwater waste tonnages to be reviewed for incorporation into SMART.
e-waste	City runs e-waste drop off events tonnage collected is included in the report and also included in the corporate report.	

Active and connected city

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

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

13. 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	
CO_2	Carbon dioxide
GWh	Gigawatt hours
Kg	Kilogram
kL	Kilolitres
kWp	Kilowatt peak
LED	Light Emitting Diode
LGA	Local Government Area
m^2	Square meters
ML	Megalitres
MWh	Megawatt hour
MWe	Megawatt equivalent
t	Tonne
tCO_2-e	Tonnes of carbon dioxide equivalent

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

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CITY OF SYDNEY 2030

Sydney2030/Green/Global/Connected

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