

ATTACHMENT E

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**ENVIRONMENTAL SUSTAINABILITY
PROGRESS REPORT**



Sydney2030/Green/Global/Connected



Green Environmental Sustainability Progress

Report

January to June 2017

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

city of villages

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The City is achieving the vision of Sydney as a city with leading environmental performance, socially responsible and a strong economy, a city that connects people to each other and the rest of the world. The City of Sydney is committed to securing Sydney's future, its prosperity and liveability with an ongoing commitment to Sustainable Sydney 2030.

The City has committed to ambitious targets and strong actions across six key environmental focus areas, set out in the **ENVIRONMENTAL ACTION 2016-2021 STRATEGY AND ACTION PLAN**. The City is leading by example to drive change in its own operations and working proactively with businesses, the local community and all levels of government across the local government area.

Since 2008, **SUSTAINABLE SYDNEY 2030** has articulated the collective vision of residents and visitors, workers and businesses. The City recognises the importance of an enduring, balanced approach which takes into account the City's economy, ecology, society and culture. We are addressing each with bold ideas and good governance.

In 2017, 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 Environmental Action 2016 – 2021 Strategy and Action Plan 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.

The sixth biennial C40 Mayors Summit in Mexico City in December 2016 considered new research that highlighted the urgent need for action on climate change and the sheer scale of the challenge we all face, especially city leaders.

The next four years are crucial and will determine whether the world meets the ambition of the Paris Agreement to limit global temperature rise to less than 2°C, and to drive efforts to limit the temperature increase even further to 1.5°C. Incremental steps are no longer adequate – we need to dramatically increase action. It is incumbent on wealthy cities like ours, which have the resources and capabilities to accelerate action, to do twice as much in half the time.

The City of Sydney is committed to working with our communities, suppliers, partners and stakeholders to secure Sydney's future, prosperity, equity and liveability. We recognise the importance of an enduring, balanced approach which takes into account the city's economy, ecology, society and culture.

We are working with bold ideas and good governance to ensure better outcomes now and in the future, for everyone.

The Green Report outlines programs that the City is implementing and how we are tracking towards the environmental targets.



Monica Barone
Chief Executive Officer.

1. Highlights

LEAVE NOTHING TO WASTE
 OUR STRATEGY FOR MANAGING SYDNEY'S RESOURCES TO 2030

ZERO WASTE CITY

DRAFT WASTE STRATEGY RELEASED FOR CONSULTATION ON 27 JUNE 2017

CAR SHARING

34,288 members of a car share organisation by Jun 2017

6% increase since Nov 2016

CARBON NEUTRAL

6 years being a Carbon Neutral council under NCOS

E-WASTE

49 TONNES of household e-waste recycled at 2 events

Over **1,700** drop-offs

WATER

154 RAINGARDENS installed to date

WASTE

68% of residential waste collected from LGA recycled

CYCLING

16 guided rides promoted riding in Sydney in May and June 2017

SOLAR POWER

3,358 solar PV panels installed to date across **35** sites

FLEET EMISSIONS

7% decrease on last year fleet emissions

TREE PLANTING

405 TREES PLANTED FROM JAN-JUN 2017

DELIVERING TO THE **COMMUNITY**
 from January to June 2017

38 small businesses recruited

19 implemented water recommendations

\$1,960 average cost saving per year

smart green business

NUMBER OF ENVIRONMENTAL PERFORMANCE GRANTS

- 4 INNOVATION
- 3 RATINGS & ASSESMENTS
- 3 BUILDING OPERATIONS
- 3 KNOWLEDGE EXCHANGE

BETTER BUILDINGS PARTNERSHIP

8,000 TONNES of office waste recovered to date

100 TONNES of furniture to charities and offshore schools

32% INCREASE in recycling rate to date

SMART GREEN APARTMENTS

\$100,000 potential savings identified from first participant building under the **Waterfix** program

ADVOCACY

City of Sydney's advocacy contributed to the redesign of the NABERS Waste tool



2. Environmental Strategy 2016-2021

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

In March 2017, the Council of the City of Sydney endorsed the *Environmental Action 2016 – 2021 Strategy and Action Plan* (the strategy). This strategy combines the insights and data from these documents. It outlines our progress to date, and approach to achieving our bold *Sustainable Sydney 2030* targets across six themes:



Low-carbon city

We have set ambitious targets for emissions reduction for both our own operations and for the LGA. To achieve deep reductions we will identify energy efficiency opportunities, optimise use of renewable energy and energy storage, and generate low-carbon energy locally.



Water sensitive city

To build resilience to the predicted impacts of climate change, we need to keep our city cool and green. We aim to minimise use of potable water through efficiency and by capturing alternative water sources to recycle for non-potable purposes. Stormwater management will improve the health of our waterways.



Climate resilient city

Our city will experience more heatwaves, extreme storms and flash flooding events as a result of climate change. We need to respond to these changes by collaborating with other agencies to respond effectively in emergencies and protect vulnerable members of the community. Long term planning for infrastructure needs to take into account future climate predictions.



Zero waste city

We see the city's waste as a valuable resource and will work with the city's residents and businesses to divert waste away from landfill and encourage more re-use, recycling and energy recovery.



Active and connected city

The City aims to promote the most sustainable modes of transport for residents, workers and visitors to reduce emissions and improve air quality and local amenity. We are improving walking and cycling infrastructure and working with the state government to enhance public transport.



Green and cool city

We are increasing the canopy cover across the city and preserving and increasing native plant and animal habitats. Greening the city reduces the urban heat island effect, improves local air quality and enhances the liveability of the urban environment.

The strategy and action plan details how we will deliver against targets set for our own operations and how we will influence and collaborate with others to contribute towards the achievement of targets for the local government area from 2016 to 2021.

During this five year period, the action plan will be reviewed and adjusted as technology progresses, regulatory reforms occur, we continue to learn and stakeholder feedback is continuously incorporated.

3. Our future targets

The following are targets from Environmental Action 2016-2021.

City of Sydney Operations



Low-carbon city

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



Active and connected city

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



Green and cool city

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



Water sensitive city

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

Zero waste city



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



Local Government Area

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

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



Low-carbon city

- **70** per cent reduction in greenhouse gas emissions by 2030 based on 2006 levels
- Net **zero** emissions by 2050
- **50** per cent of electricity demand met by renewable sources by 2030



Water sensitive city

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



Zero waste city

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



Active and connected city

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



Green and cool city

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

4. 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.

Environmental Commitment

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

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

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

Sustainable Procurement

The City of Sydney is committed to doing business with ethical and socially responsible suppliers. The City sees 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's Procurement team have developed processes that allow suppliers to identify as Aboriginal or Torres Strait Islander. Procurement can use this data to report on expenditure with these suppliers as well as develop databases. These databases can be shared with our buyers for consideration when requesting quotes for services and works.

CASE STUDY

Rubbish robots

The City of Sydney is focussed on optimising waste management at its four childcare centres as well as taking the opportunity to educate children and families about ways to reduce, reuse and recycle their waste at home.

At Broughton Street Kindergarten in Glebe, children help to recycle organic waste material in the centre's wormfarm and compost bin; colour coded pedal bins help the children sort recycling from landfill waste; and educators guide the children on waste reduction strategies, for example packing "nude" lunches in reusable containers rather than single use packaging.

The Kindergarten saves unwanted items from landfill by giving new life to items donated by families and neighbours - reusing and repurposing items such as old toys and furniture, and by regularly collecting used packaging materials for transformation by the children into amazing new creations during craft activities. The centre plans to extend this community education work by hosting a clothing swap rack later this year – allowing families to swap second-hand clothing.



Collection of packaging materials contributed by families for craft at the centre.



Showing off "a robot man" made from recycled packaging materials.

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



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.

Ultimo Community Centre removed an old, unsafe climbing wall and have instead created a lush green wall in the centre's courtyard. The courtyard also features community garden boxes, worm farms and water tanks. The community who use the centre, staff, and the children attending Ultimo Children's Program have been growing a range of salad greens and vegetables, which are used in cooking programs run at the centre. Pyrmont Community Centre also has community garden beds used by staff, community and children attending the centre, and the Cliff Noble Centre in Alexandria recently installed their own, small green wall to provide a green outdoor space for the community who use the centre to sit and enjoy the sunshine.

Our 13 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.

At Redfern Community Centre, Children's Program and City Spaces staff work together to look after a hive of stingless native bees in the trees outside the centre, while at Pine Street Creative Arts Centre all of the clay used in pottery programs is reclaimed and used to make a range of new projects.

The recently reopened East Sydney Community and Arts Centre in Darlinghurst, has been transformed into a beautiful, sustainable, light-filled community and arts centre. It features multipurpose spaces for rehearsals, creative use and community hire, and a playful, interactive artwork – S(W)ING. Room ventilators and voids promote airflow and eliminate the need for air conditioning. Photovoltaic panels on the roof generate electricity. Rain is collected to water the surrounding plants and used to flush toilets. Lifts, ramps, an accessible toilet and technology for the hearing impaired make it a space everyone can enjoy. The neighbouring reserve has been upgraded with fun new play equipment for young people, including a spiral slippery dip and rope-climbing tunnel. It also has more grass, new seating and energy-efficient lighting.



5. Low-carbon city



Cities contribute around 70 per cent of the world's carbon emissions and can play a significant role in creating 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.

Our ambitious plans across the city and our own operations will help us to use less energy and improve energy efficiency, comfort and productivity.

ADVOCACY

Energy market reform

Under the current National Electricity Rules, full network charges are still payable if a building with solar photovoltaic panels or trigeneration sends surplus power to the building next door. This fails to reward the savings a building has made by not using the long-distance electricity network of poles and wires.

The City, the Property Council of Australia (POA) and the Total Environment Centre (TEC) proposed regulatory changes to the National Electricity Rules to improve financial returns for local generators. Unfortunately the Australian Energy Market Commission rejected this proposal. This is highly disappointing as the rule change would have had a positive effect on the uptake of building and district-scale renewable energy generation across Australia.



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, 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 has committed \$2 million each year to install renewable energy onto our properties, to generate clean energy locally where and when it is required.

Offset

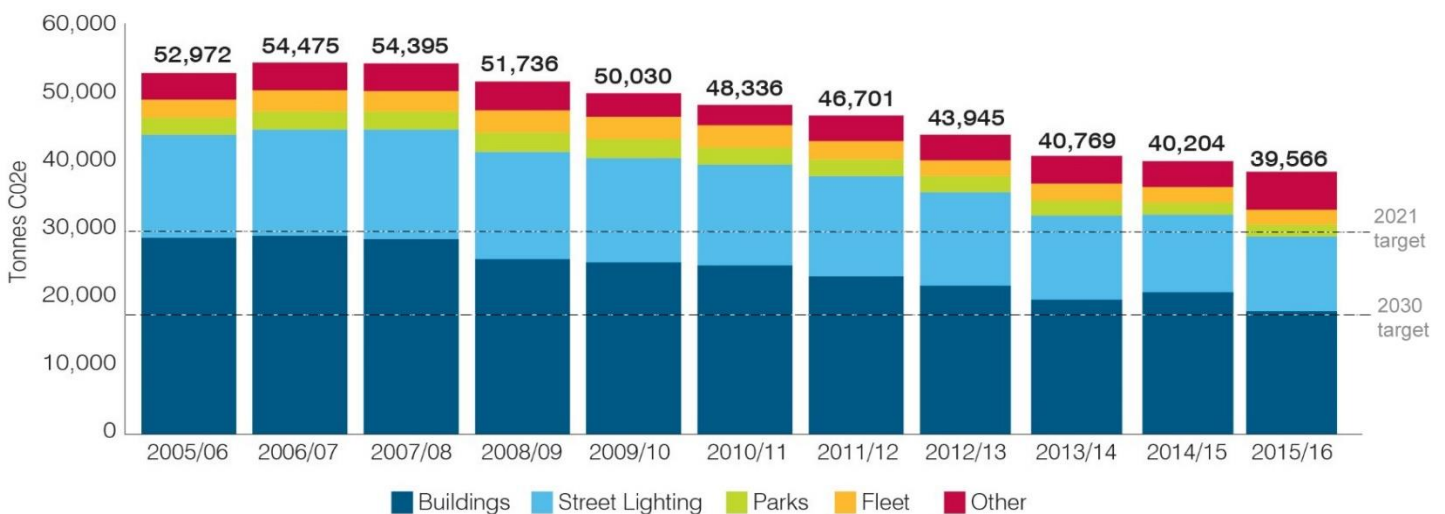
The City reduces its carbon liability by avoiding and reducing emissions and using offsets for emissions that can't be avoided.

The last independent audit took place in November 2016 for submission to NCOS for the FY2015/16 period. The emissions total for the City's operations was 39,566 tCO₂-e. Chart 1 tracks our actual annual operational emissions by category.

Relevant links

- [Carbon Neutral Program](#)
- [NCOS Public Disclosure Summaries](#)
- [Auditors Assurance Statements](#)
- [Offsets certificates](#)

Chart 1. City of Sydney operations greenhouse gas emissions
Ch





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 1² tracks annual greenhouse gas emissions by category to the Sustainable Sydney 2030 target of a 70 per cent emission reduction against the 2005/06 baseline and tracks identified projects the City is progressing over the short term for its own operations. As at December 2016, the City's reported emissions have fallen 26 per cent below 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 0.84 tCO₂-e/MWh for scope 2 and 0.12 tCO₂-e/MWh for scope 3 emissions. Greenhouse gas emissions are calculated using National Greenhouse Factors³.



Changes from last reporting period

Results can be attributed to a number of influences:

- Seasonality of property data.
- Seasonality of street lighting data.
- Emissions reported to the end of December 2016 are estimated at 26% below 2005/06 levels.
- Renewable electricity generated from solar PV is 3% to December 2016. The renewable target is expected to be achieved over the next few years by installing more solar power on assets currently under construction such as the Green Square Aquatic Centre.

² This chart has been updated since the previous report to include 2015/16 annual emissions. Installing trigeneration to Town Hall House is likely to be the next biggest emissions saving. The upgrade of street lighting owned by Ausgrid would also significantly reduce the City's emissions.

Energy consumption data

The table below shows energy consumption data for the organisation. The City organisational data is up to June 2016. The most recent data that has been independently verified.

Organisation	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline	42,427	21,894	174,631
Most recent (Jun 2016)	31,084	33,967	145,871
Difference ⁴	-11,343	+12,073	-28,760
Difference (per cent)	-27 per cent	+55 per cent	-16 per cent

The table below describes the sources for the annual operations greenhouse gas emissions data⁵.

Title	Source
Buildings, parks and street lighting	STEvE (the <i>System for Tracking Everything Environmental</i>).
Fleet	Fleet Services (converted from Shell and Park Fuels fuel consumption data).
Other GHG	Sourced from most recent Carbon Inventory. All data annual and averaged across quarters for reporting purposes.

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

³ <https://www.environment.gov.au/climate-change/greenhouse-gas-measurement/publications/national-greenhouse-accounts-factors-aug-2016>.

⁴ Calculation: Difference = (Most recent - Baseline)

Difference (per cent) = (Difference / Baseline) x 100

⁵ Based on most recent estimated data.

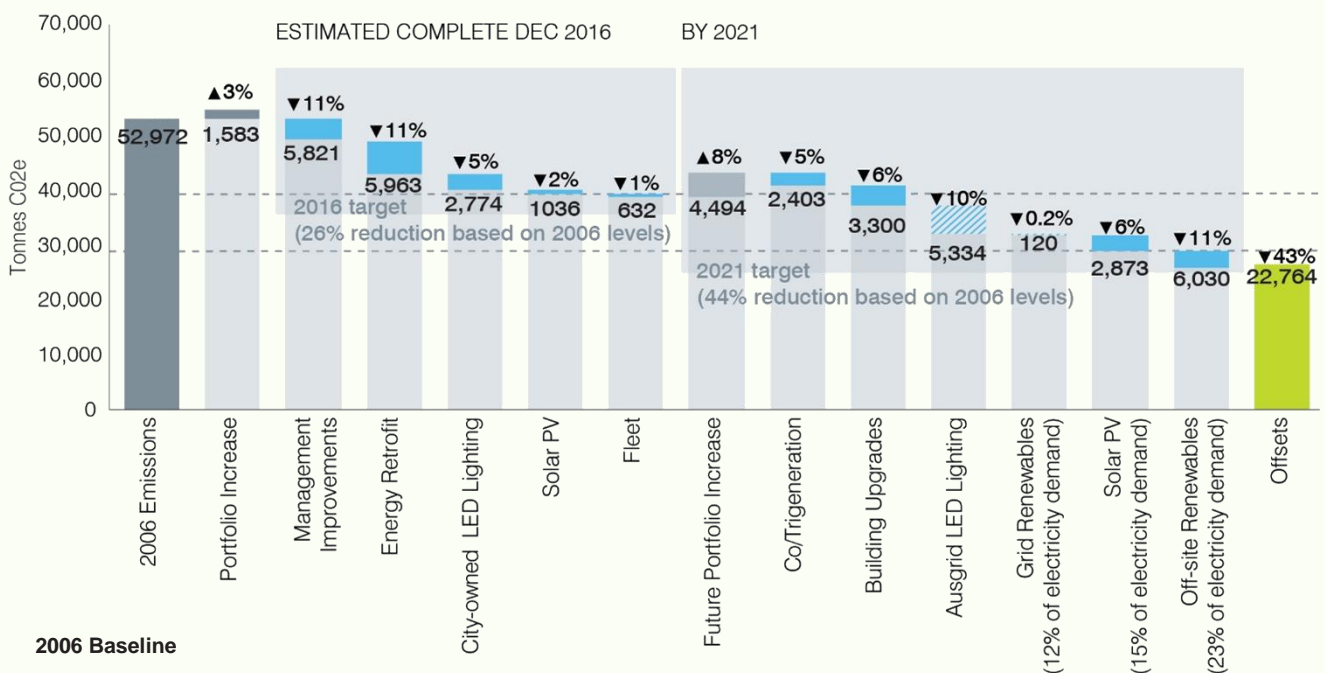


How we will get there

Chart 2⁶ indicates reductions of the Council's operational emissions against the 2005/06 baseline. It also shows the initiatives the City has undertaken to date to achieve an estimated 26 per cent emissions reduction by Dec 2016 (pending verification), and the estimated contributions of the initiatives we will implement across our operational portfolio to reduce our emissions by at least 44 per cent by 2021 and by 70 per cent by 2030. We will maintain our certified carbon neutral status each year through the purchase of verified offsets for those emissions we cannot eliminate, as we have since 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. To assess this variation, the "Portfolio Change" and "Management Improvement" components have been included in this graph. It should be noted that irrespective of portfolio changes, the City's emissions targets are absolute. 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.



2006 Baseline

- 2006 emissions: Independently verified greenhouse gas emissions inventory including emissions from energy, waste and transport

Complete

- Portfolio change (+3 per cent) includes removal of some assets e.g. Lawson Square and Domain Parking Station; and addition of others including: Ian Thorpe Aquatic Centre, 343 George Street, Mountain Street, Surry Hills Community Centre
- Management improvements (-11 per cent) shows emissions reductions achieved outside of the major efficiency initiatives. This includes improved energy measurement and monitoring, behaviour changes, small works, and the influence of annual weather changes

By 2021

- Future portfolio (+8 per cent) increase assumes the construction of new childcare centres, Green Square sites, pedestrian lighting and other projects
- Co/Trigeneration (-5 per cent) - reductions will be accomplished through the operation of co/trigeneration facilities at Town Hall House Cook and Phillip Park Aquatic Centre and Ian Thorpe Aquatic Centre

- Building upgrades (-6 per cent) reflects estimated savings from efficiency upgrades in the most resource intensive properties
- Ausgrid LED lighting (-10 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 shown as striped to indicate it is not within the City's control
- The contribution of grid renewables (-0.2 per cent) is calculated on the assumption that the current government's Renewable Energy Target of 33,000 gigawatt hours by 2020 will be achieved
- Solar PV (-6 per cent) on our own properties can deliver 15 per cent of electricity demand if battery storage provides a cost effective solution and the City can take advantage of virtual net metering between our sites
- Off-site renewables (-11 per cent) can be purchased by the City through the GreenPower scheme or directly from a renewable project

⁶ The waterfall chart is updated as new information becomes available.



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:

The design of the cogeneration system is being finalised and a development application will be lodged shortly.

Cogeneration at Cook + Phillip Park Aquatic Centre:

The project incorporates a cogeneration unit and redesign of other energy services, such the boiler and heat pumps. Design is progressing well.

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 lamps to save energy. Ausgrid are slowly replacing failed lamps on local roads with LEDs. Trials have commenced for LED's on main roads. With the assistance of SSROC the City has requested Ausgrid to accelerate the rollout of LED lamps, and a proposal to commence this program is forthcoming from Ausgrid.

PROJECT UPDATE

Solar Photovoltaic (PV) Installation

In July 2012 Council awarded a tender to install solar photovoltaic panels to multiple sites that it owns including properties, sports fields, town halls, libraries, Council depots, and community centres.

The project has passed the halfway mark, with around 3,358 panels installed across 35 sites so far, including the heritage listed Sydney Town Hall.

When complete, this multi-million dollar installation is expected to produce almost two GWh (gigawatt hours) of clean renewable energy, saving around 1,700 tCO₂-e annually. The output of the panels will be reviewed regularly.

Period	Panels installed	Peak capacity (kW)	Energy production ⁷ (MWh p.a.)	Emission savings ⁸ (tCO ₂ -e)
Project to date	3,358	814	1,188	1,176
Total contract (target)	N/A	1,244	1,816	1,798

The installation of the panels is funded using budget previously allocated to purchasing Green Power. The City also remains carbon neutral through the purchase of carbon offsets. Further installations are underway, however the City is running out of sites that are both suitable for solar and with sufficient demand for the energy produced. This is required to minimise exports to the grid at rates that are uneconomic.

The City is working with the industry, government, the property sector and clean energy proponents to propose changes to the National Electricity Rules to recognise the value of local generation, which could go part way to overcoming the 'export to the grid' barrier. This extends across Australia and is not just limited to the City of Sydney. Other options are sharing energy with tenants, private energy networks, and storage solutions.

⁷ Cumulative energy production based on capacity
⁸ Projected emissions savings based on estimated cumulative energy production



Solar PV installations

No.	Location	Status
1	343 George Street	Installed
2	Abraham Mott Gymnasium	Installed
3	Alexandria Canal Depot	Installation Pending
4	Alexandria Child Care Centre	Installed
5	Alexandria Park Changing Rooms	Installed
6	Alexandria Town Hall	Installed
7	Andrew Boy Charlton Pool	Installed
8	Bay Street Depot	Installation Pending
9	Bourke Street Depot	Installed
10	East Sydney Early Learning Centre	Installed
11	Epsom Road Depot	Installed
12	Erskineville Oval	Installed
13	Erskineville State Emergency Services	Installed
14	Erskineville Town Hall	Installed
15	Events Depot	Installation Pending
16	Flinders Street Bicycle Hub	Installation Pending
17	Glebe Town Hall	Installed
18	Green Living Centre (Harry Burland)	Installed
19	Green Square Community and Creative Centre	Installation Pending
20	Green Square Infrastructure Centre	Installation Pending
21	Heffron Hall (East Sydney Community Centre)	Installed
22	Green Square Child Care Centre	Installation Pending
23	Huntley Street Early Learning Centre	Installed
24	Juanita Nielsen Community Centre	Installation Pending
25	King George V Recreation Centre	Installed
26	Mountain St (Wilcox Mofflin)	Installation Pending
27	Paddington Town Hall	Installed
28	Perry Park Basketball Centre	Installation Pending

cont.

No.	Location	Status
29	Pine Street Creative Arts Centre	Installed
30	Pirrama Park	Installed
31	Redfern Community Centre	Installed
32	Redfern Oval Grandstand	Installed
33	Redfern Town Hall	Installed
34	Surry Hills Library and Community Centre	Installed
35	Sydney Park CARES Facility (Sydney Park Cycling Centre)	Installed
36	Sydney Park Nursery	Installed
37	Sydney Park Pavilion	Installed
38	Sydney Town Hall	Installed
39	The Crescent Child Care	Installed
40	Tote Building	Installed
41	Ultimo Community Centre	Installed
42	Victoria Park Pool	Installed
43	Waterloo Library	Installed

Solar hot water installations

No.	Location	Status
1	Abraham Mott Hall	Installed
2	Alexandria Child Care Centre	Installed
3	Bourke Street Depot	Installed
4	Jane Evans Day Centre	Installed
5	Juanita Nelson Community Centre	Installed
6	King George V Recreation Centre	Installed
7	Kings Cross Neighbourhood Service Centre and Library	Installed
8	Pyrmont Community Centre	Installed
9	Redfern Community Centre	Installed
10	Rosebery Child Care Centre	Installed
11	State Emergency Service Facility	Installed
12	Ultimo Community Centre	Installed
13	East Sydney Early Learning Centre	Installed



PROJECT UPDATE

Building upgrades

The City has committed to delivering energy and water improvement projects at fourteen of its sites, which account for almost 80 per cent of the City's total energy and water consumption. In partnership with the NSW Office of Environment and Heritage (OEH) Energy Efficient Government program, the City has completed extensive (Level 2) energy audits at seven of these sites. Energy and water audits at the remaining seven sites are currently underway and will be completed early FY2017/18. These detailed audits have identified energy and water opportunities such as improved equipment efficiency, technological changes, demand management and operational improvements. These identified projects will be consolidated to develop a program of implementation for delivery to assist in achieving the City's emission and water reduction targets.

PROJECT UPDATE

SMART - Sustainability Management and Reporting Tool

SMART is a Software as a Service Solution that will manage, monitor and report on utilities and other sustainability metrics for all assets owned and/or managed by City of Sydney. It will provide City asset managers and staff with improved visibility on electricity, gas, and water consumption, and waste generation.

SMART will also facilitate the delivery of actions and targets outlined in the City's Environmental Action 2016-2021. Currently the platform is in configuration stage and is scheduled to be fully operational by end 2017.

PROJECT UPDATE

Environmental Management System (EMS)

Description: Implement environmental management processes to ensure all City staff are aware of their responsibilities in regards to environmental management.

Outcomes: Priority projects delivered in 2016/17 include strengthening environmental controls for construction works, the development of Sustainable Design Technical Guidelines for capital works projects, review of environmental data management and implementation of the Environmental Sustainability Platform.

PROJECT UPDATE

ESP - Environmental Sustainability Platform

The Environmental Sustainability Platform is a holistic solution that collects, stores, transforms and reports environmental performance data for our local government area and for sustainability programs managed by the City. It enables a more responsive, data-driven approach to policy assessment across the city and provides greater reporting flexibility, including satisfying local and international reporting obligations.

The project includes an Open Data Portal where data is made public for the benefit of the wider community. The portal has datasets related to City's carbon emissions inventory, energy and water usage. Currently the City is under the process of uploading more datasets. The portal can be accessed at <http://data.cityofsydney.nsw.gov.au/>.

PROJECT UPDATE

Fleet

Description: Fleet emissions contribute approximately seven per cent of the City's total emissions. Having taken advantage of all currently available tools and technologies, 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.

The City has rolled out its new '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. 2016/17 fleet emissions were 2,116 tCO₂-e which beat the target by 234 tCO₂-e. Completion by end 2017.

For more information on fleet see Section 9 – Active and connected city.

CASE STUDY



Tesla POWERPACK trial at Alexandria Depot

Transgrid is partnering with the City of Sydney to install a 500 kWh Tesla Powerpack at the City's Alexandria depot. Transgrid will use the Powerpack batteries to test the capability of battery technology to assist electricity grid demand management, relieving stress on the network during times of peak demand. With 480 kilowatts of photovoltaic energy capacity at the site, the installation will allow the City to save grid supplied electricity at the site – potentially making the depot carbon neutral.



The local government area

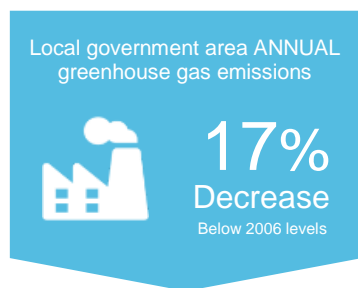
Local government area targets

	Greenhouse gas emissions	<ul style="list-style-type: none"> - 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 ⁹

How the local government area is tracking

Annual greenhouse gas emissions

Chart 3 tracks actual emissions from the local government area. By mid-2015 (latest available data), emissions had reduced by 17 per cent.



The City recently updated the way we report emissions in order to become compliant with the highest standard offered by the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)¹⁰ – the new international benchmark for reporting city emissions.

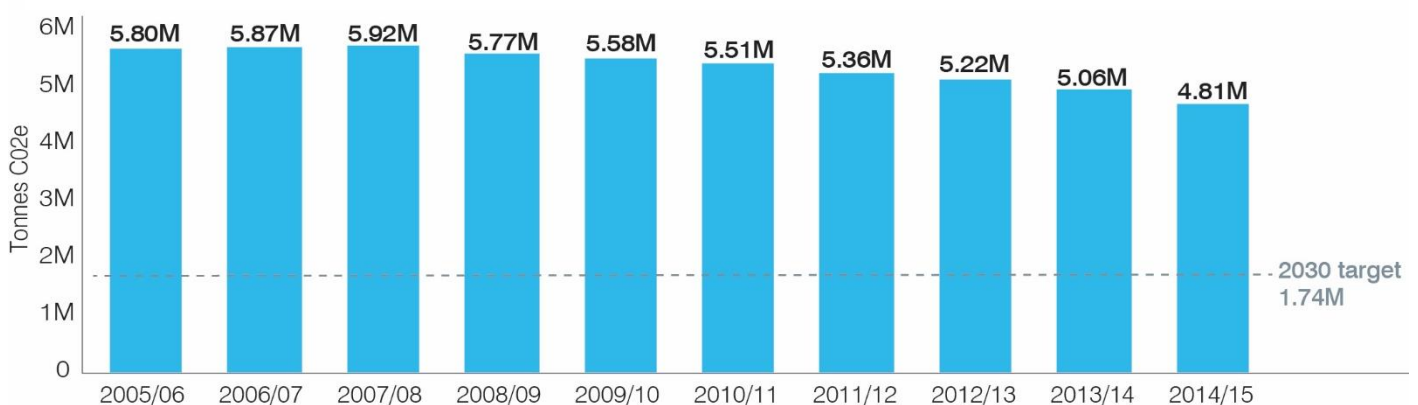
Energy consumption data

The table below shows energy consumption data for the LGA. Please note, LGA data is shown to June 2015, which is the most up to date data available¹¹.

LGA	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline	4,159,436	3,038,529	18,012,502
Most recent (to June 2015)	3,618,538	3,510,162	16,536,901
Difference	-540,898	+471,633	-1,475,600
Difference (per cent)	-13per cent	+16per cent	-9per cent

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

Chart 3: Local government area greenhouse gas emissions



⁹ The renewable electricity target incorporates renewable electricity both within the grid and classified as additional to the grid.

¹⁰ <http://www.ghgprotocol.org/city-accounting>

¹¹ Calculation: Difference = (Baseline – Most recent)
Difference (per cent) = (Difference / Baseline) x 100



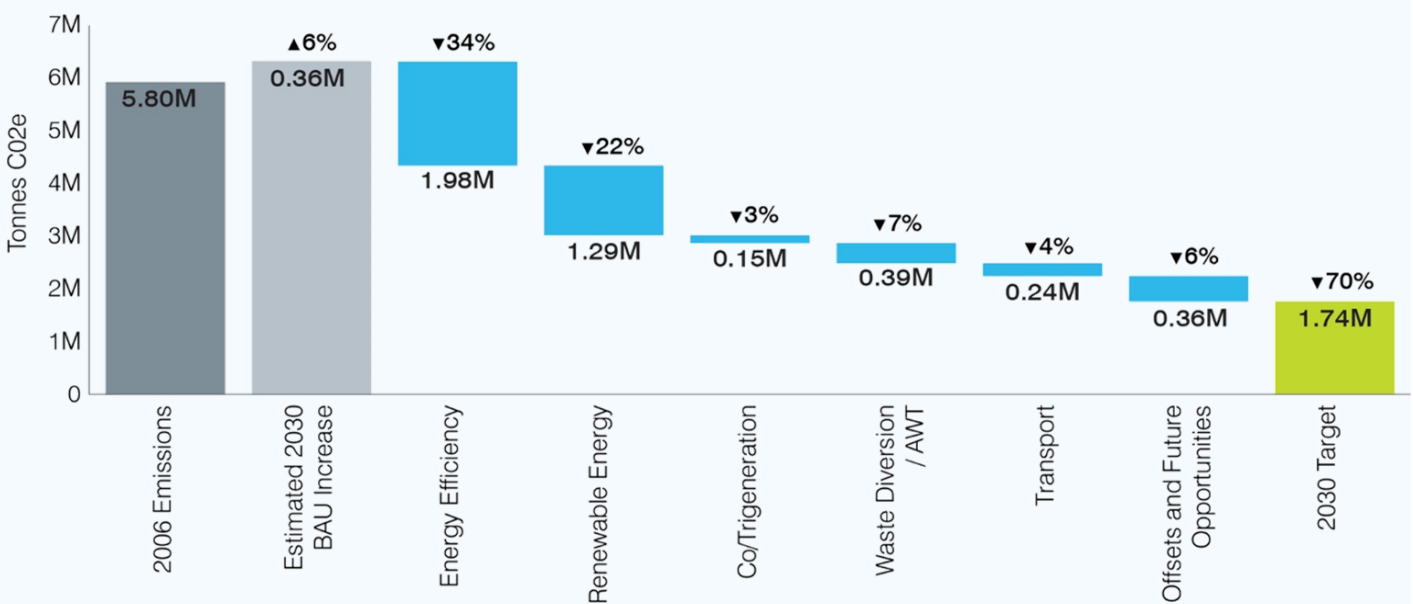
How we will get there

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.

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) includes 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 emissions



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

In the last 6 months the agreement has been finalised between City of Sydney and the Green Building Council of Australia to pursue a Green Star Communities rating for the whole of the Green Square Town Centre.

Pursuing a Green Star Communities rating provides an opportunity to recognise existing commitments and initiatives, such as Australia's largest residential stormwater harvesting and treatment scheme. It also provides an opportunity to further refine actions to lead to better sustainability outcomes for Green Square and the City of Sydney as a whole. The City will continue to work with private developers in the town centre to achieve the Green Star Communities rating. There is strong alignment between the Sustainable Sydney 2030 strategy (SS2030) and the five Green Star Communities categories Governance, Livability, Economic Prosperity, Environment, and Innovation.

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.

POWERED BY LOW CARBON RENEWABLE ENERGY

A private electricity distribution system will enable solar power and electricity from a cogeneration unit to be shared between several community buildings at Green Square. This private distribution system will reduce the community's reliance on grid power and lower the carbon footprint of these community buildings.

ADVOCACY

High environmental 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.

ADVOCACY

Increase BASIX 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 been updated, so it 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.

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](#)



6. Water sensitive city

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/m² of irrigated open space by end June 2021

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

- Using less water through changes in behaviour and using water efficient fixtures and fittings
- Capturing alternative water sources to recycle and use for non-potable purposes
- Reducing stormwater pollution, minimising local flood risk, enhancing greening and urban cooling through retrofitting the stormwater management network with raingardens, wetlands, swales and gross pollutant traps

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



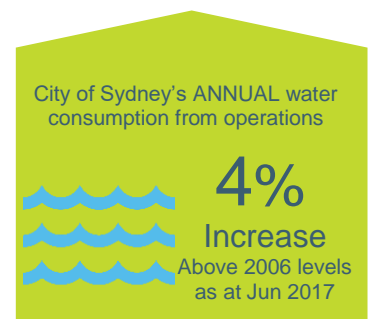
City of Sydney Operations

How we are tracking

Annual water consumption

Chart 5¹² shows annual water consumption by category. The 2016/17 period shows total water consumption

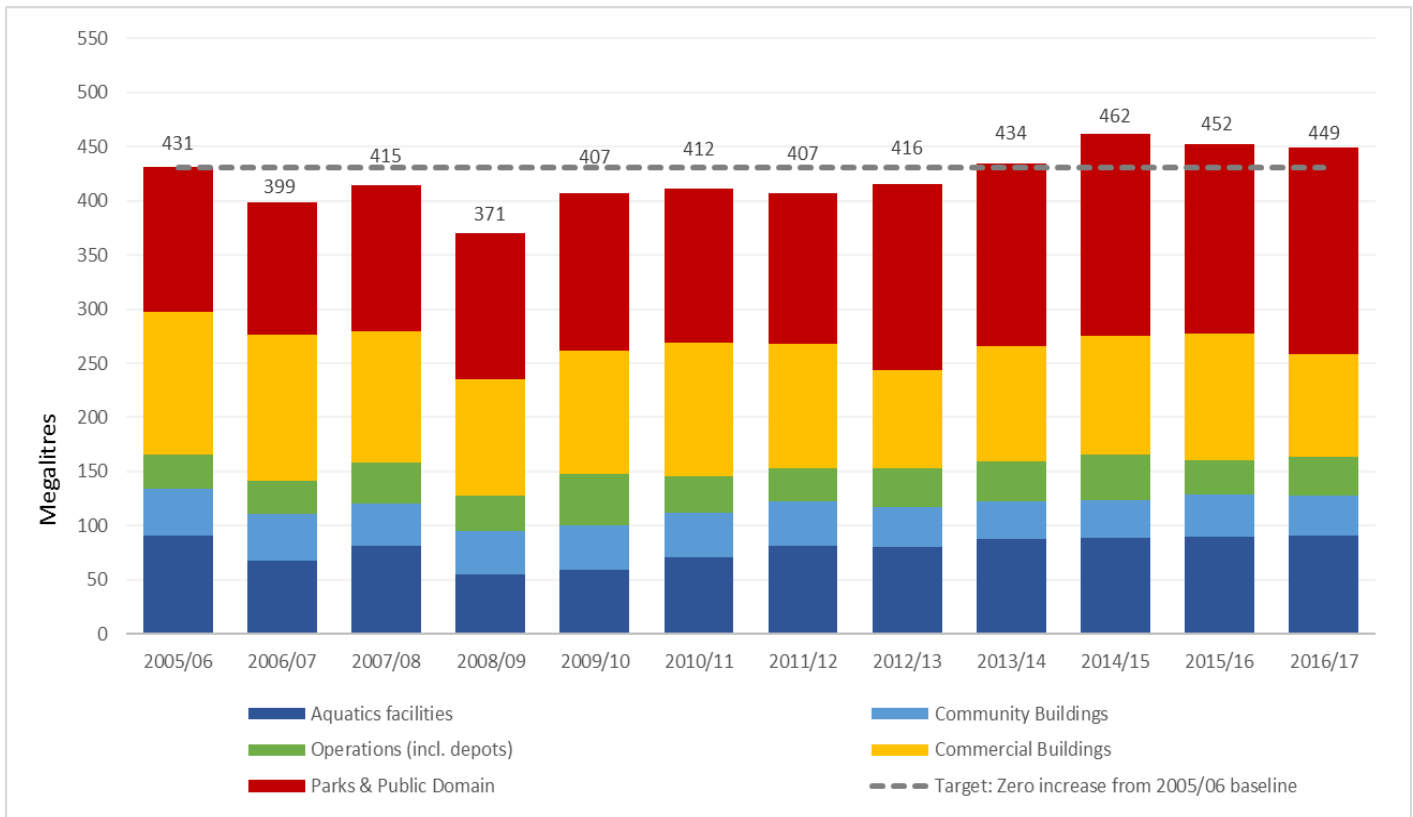
above the City's target of zero increase from the 2005/06 baseline by 2021 at 449 megalitres per annum (MLpa). This represents a 4% increase for FY2016/17 relative to the baseline, noting that data for the previous two quarters is estimated. Chart 5 also indicates a decrease in the City's total water consumption since the 2014/15 reporting period. This is expected since the 2014/15 leak at the Epsom Road Depot was rectified and the increased consumption associated with wetland establishment during the Sydney Park upgrade during this period has now normalised.



¹² Water data for the period Jan-Mar 17 is 7% estimated and Apr-Jun is 89% estimates. 2016/17 data will be updated in the next report to reflect actual data.



Chart 5: City of Sydney operations potable water use



- All data sourced directly from Sydney Water and contained within and reported from the STEVe system.
- 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 2016/17) (ML)	Difference (kL)	Difference (per cent)
City of Sydney operations	431	449	18	4

Calculation

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

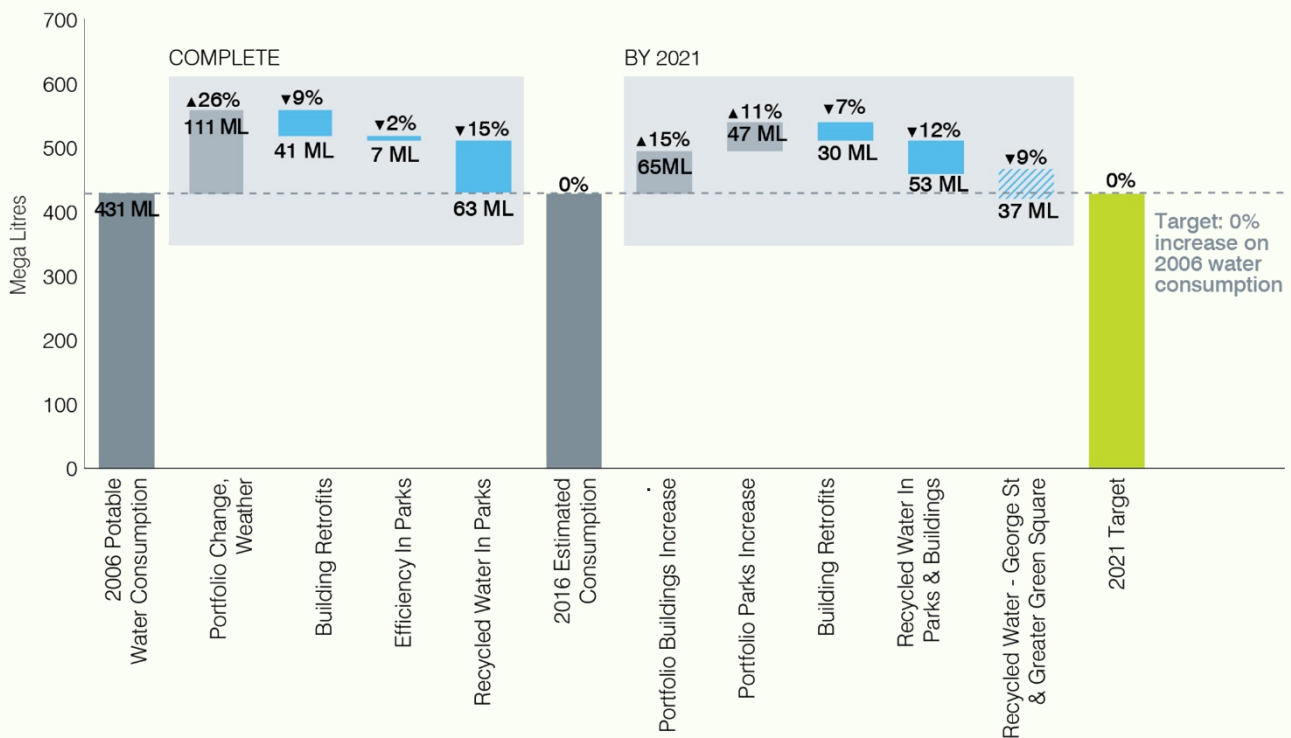
For more information see [Appendix 1: Data Management Plan](#)



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. However we have now received actual data for July to December 2016 which indicates a 3% increase in the City's operational water consumption between the baseline and December 2016, with annual consumption to end December 2016 at 445 mega litres. This chart has not been updated to reflect actual data for 2016 due to the short timeframe between receiving actual data and preparing this report.

Chart 6 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.

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 52 per cent.

These include 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 2017 is 810,538 m² against the baseline of 531,953 m².

The City's target for water usage in city parks of 180 L per square metre of irrigated space by the end of 2021. Between July 2016 and June 2017 City parks and open spaces used an estimated 201 L per square metre of irrigated space. Recent reductions in water consumption has reduced since the completion of establishment periods of newly constructed parks including Sydney Park. Consumption figures have also been affected by improvements to the data monitoring process which identified new meters previously excluded from the reports.

The 2012 Parks Water Saving Action Plan outlined nine actions to contribute to achieving the City's sustainable

water targets. These include staff training, new technologies and improvements to reporting.

The 2012 Parks Water Savings Action Plan has been reviewed and a new four year action plan to support Environmental Action 2016-2021 is being developed.

Improvements to data capture and record keeping are continuing, with our focus on data reliability. A contract to manage harvested stormwater systems and track overall system performance was established in September 2015. A project has commenced to deliver a new centralised monitoring and control system for parks water use. The implementation of this system will be 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 real time energy and water consumption tracking, monitoring of asset performance and better controls over key park operations. Implementation of this system will begin in early 2017 with completion in June 2017.

On-going training and specifications that establish the City's targets are providing greater efficiency in water use. As new technologies and systems become available, the City will explore each option for future alternate water supply.

A report has been submitted exploring options for improvements in water monitoring and efficiency for ten key water use sites with key recommendations now in implementation.

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	166,025	808,479	52.0	205
2015	185,679	808,479	52.0	230
2016	173,230	810,538*	52.4	214
2017	162,602	810,538	52.4	201

This table has been updated to reflect the addition of previously unallocated water meters as described for chart 5.

*As per June 2016.



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

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 as 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. As well, the City can use 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 scheme will be owned and operated by a private water utility and the City will provide space for recycled water infrastructure.

Negotiations with a potential private water utility to supply recycled water to the Greater Green Square area are progressing well and are expected to be concluded in July 2017.

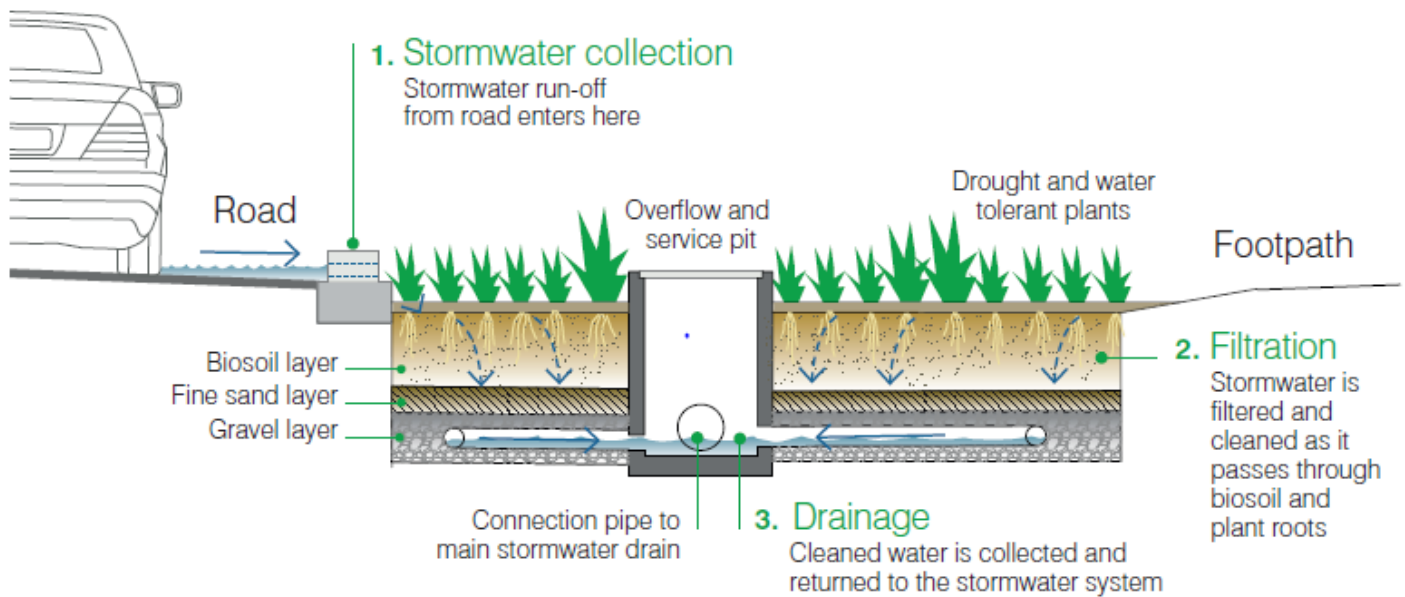
PROJECT UPDATE

Harold Park Stormwater Harvesting Scheme

The Johnston's Creek Masterplan identified opportunities to treat and harvest stormwater from the Toxteth catchment to provide a non-potable water source for irrigation of the new public park at Harold Park. A separate water re-use study identified opportunities to harvest additional stormwater from the Wigram Catchment to extend the recycled water network to Jubilee Oval and Federal Park North. This will contribute to the City's water consumption and stormwater quality targets by providing an alternative water source to maintain our parks and reduce pollution entering Rozelle Bay.

The new water reuse scheme includes a treatment system at Harold Park, underground storage tanks in Harold Park and Jubilee Oval, a rising main and electrical connections from Harold Park to Jubilee Oval and Federal Park North and new irrigation systems in Harold Park and Federal Park North. The water reuse scheme is now fully operational.

The new public park in Harold Park also includes a series of open spaces and areas of habitat linked by the existing cliff line, paths connecting neighbourhoods and parklands, playgrounds, picnic areas and open grass spaces, historical interpretations and art opportunities, lighting and park furniture.



PROJECT UPDATE

Raingardens

Raingardens are one of the simplest forms of water sensitive urban design (WSUD). The City continues to install raingardens to improve water quality and flow.

Raingardens allow stormwater run-off to be collected and absorbed, watering the plants and improving the water quality by a process of filtration through a special soil (bio-filtration media). This process removes key pollutants (suspended solids, heavy metals and high concentrations of nutrients such as phosphorous and nitrogen) prior to the water entering into the main storm water system, which ultimately discharges into our waterways and bays.

Raingardens also retain water within the landscape and help keep the city green and cool – mitigating the impacts of the urban heat island effect.

A total of 154 raingardens have been installed to date and we continue to install them where viable as part of all infrastructure projects the City undertakes.

PROJECT UPDATE

Victoria Park Improvements

We are undertaking 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) 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 presents an excellent opportunity to incorporate WSUD at a relatively low cost and at minimal disruption to the community as works can be integrated with planned upgrade works.

The Victoria Park upgrade works include 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.

Construction commenced in January 2017 and is expected to finish in early 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

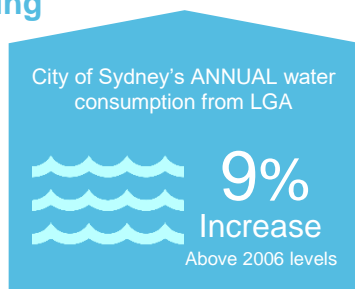
– 15 per cent reduction in annual nutrient load discharged to waterways via stormwater by 2030



The local government area

How are we tracking

Chart 7¹³ shows annual potable water consumption across the city against our 2006 baseline, during which time the city’s population has grown at least 11 per cent.



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 slightly above the baseline in recent years. This is despite great success in the City’s Smart Green Business and the Better Buildings Partnership¹⁴ programs saving over 2,000 ML (mega litres) per annum in potable water.

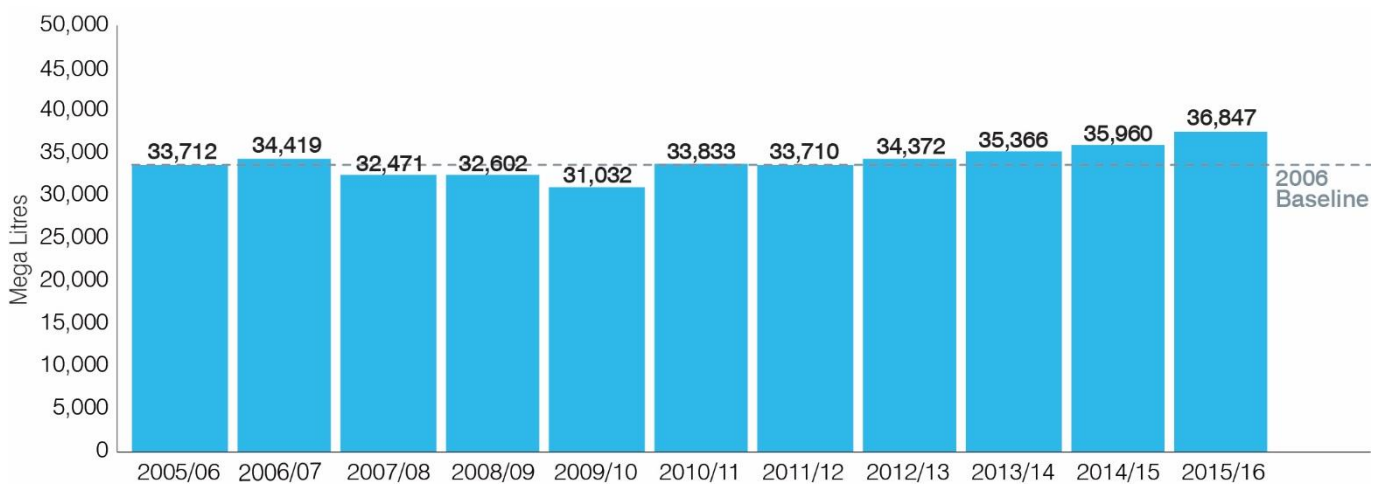
Water consumption data

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 2016 for consumption to end 2015/16. This is the most current actual data available due to the time lag in data being received from Sydney Water¹⁵.

	Baseline (ML)	Current (end 2015/16) (kL)	Difference (ML)	Difference (%)
LGA	33,712	36,847	3,135	9

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

Chart 7 Local government area potable water use.



¹³ All data sourced directly from Sydney Water.
¹⁴ See Delivering to the community on page 49.

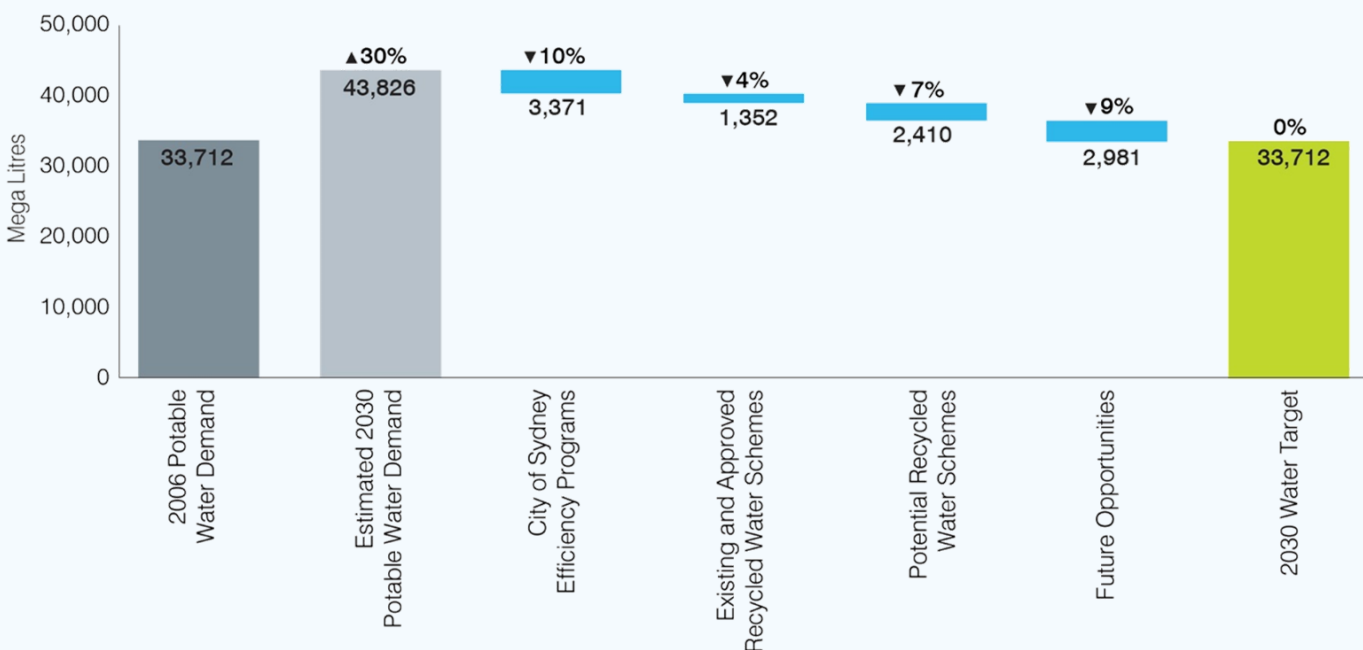
¹⁵ Calculation: Difference = (Current - Baseline)
 Per cent Difference = (Difference / Baseline) x 100



Estimated contribution of initiatives

Chart 8 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 8 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, as well as private water recycling schemes, based on these schemes operating 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 most likely exceed 2006 levels by around nine per cent. The City will need to work with Sydney Water, as well as other government entities and the private sector to identify opportunities for water conservation, recycling and alternative water supply to safeguard potable water supply and meet the predicted increased demand on water supplies

Assumptions for chart 8:

- All percentages are in relation to the 2006 baseline figure
- 2006 potable water demand: Actual 2005/06 water consumption sourced from Sydney Water
- Predicted 2030 potable water demand: Growth in water demand across the City was forecast in GHD's 2012 Recycled Water Plan, prepared for the City of Sydney. Growth in potable water demand was based on projected urban development to accommodate the forecasted growth in population to 2030 in the City's Capacity Study (2010)
- City of Sydney efficiency programs: Estimated measurable results from City-run efficiency programs with residents and business
- Existing & approved recycled water schemes: Existing and approved City-run stormwater harvesting schemes, and private utility schemes (assumed to be operating at maximum capacity)
- Potential recycled water schemes: Estimated contribution of potential recycled water schemes using recycled water within buildings and open space. Potential schemes include Sydney Park off site reuse, George St precinct, Greater Green Square, Central to Eveleigh precinct
- Future opportunities: Residual required to achieve 2030 target (City estimate 2016). Further efficiency programs or additional recycled water schemes



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 10 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 new 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 is aimed at ensuring the ongoing protection of public health, consumers and the environment.

Completed works include the underground storage tanks in the former South Sydney Hospital site and first phase of the recycled water pipe network. The second half of this year will see recycled water treatment plant and pump station installed in the Green Infrastructure Centre, a restored heritage building on the former South Sydney Hospital site, the off-take and harvesting infrastructure completed and the next phase of the recycled water pipe network linking the new developments.

Final commissioning will take place early next year.



CASE STUDY

At the recent Woolloomooliv' Biannual Festival City staff worked with [Sydney Water](#) to make tap water available to community members attending the event through Sydney Water's portable refill stations. These units enable people to fill up their reusable water bottles for free with high-quality tap water. By offering this resource at community events we are helping to reduce landfill waste and increase awareness of the importance of using reusable bottles over disposable.

People attending the event consumed 202 litres of tap water. This resulted in savings over disposable bottles of;

- 4kg of plastic waste saved from landfill
- 505L of water saved from associated activities related to manufacturing plastic bottles
- \$303 saved from plastic water purchases
- 236kWh of energy saved
- 337 bottles of water (600ml) that weren't purchased.

ADVOCACY

Water pricing

The Independent Pricing and Regulatory Tribunal (IPART) recently determined wholesale prices for Sydney Water Corporation and Hunter Water Corporation. The City is concerned that these prices will make water recycling more expensive and threaten our ability to secure our water supply to ensure more resilient, productive and liveable cities of the future.

We urge the Government to commence the recently announced review to investigate regulatory and pricing reforms to facilitate cost-effective water recycling. Wider reform is urgently needed to secure the future of the recycled water sector.



7. 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 predicted¹⁶.

Climate Adaptation Strategy

The Council endorsed the Climate Adaptation Strategy in 2015 to help us prioritise and plan actions needed 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 December 2014 to take part in 100 Resilient Cities, pioneered by the Rockefeller Foundation. 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 become resilient and deal with future shocks and stresses.

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. Over 600 representatives from government, business and the community of metropolitan Sydney were consulted in preparing the documents. Advice was sought from an independent group of experts and the documents were approved by the Steering Committee.

In November 2016, the City hosted a meeting between mayors and general managers from across Sydney's metropolitan councils to discuss resilience with Michael Berkowitz, President of 100 Resilient Cities and the Resilient Sydney team, led by Chief Resilience Officer Beck Dawson. A CityTalk Sydney public event on resilience was held at Sydney Town Hall and attended by 750 people. The event titled "Is Sydney Ready?" covered the key challenges and opportunities for resilience in Sydney.

Resilient Sydney undertook broad engagement with communities, government, business, academia and community services across metropolitan Sydney to identify solutions to the key challenges facing metropolitan Sydney. The outcomes of engagement are being used to develop the Metropolitan Resilience Strategy for Sydney, which will be completed in 2017.

¹⁶ National Aeronautics and Space Administration (NASA) <http://climate.nasa.gov/causes/>



Stakeholder event held in Customs House in March 2017.

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 11,742 new street trees since 2005 and installed 57,752 square metres of landscaping throughout the city's streets since 2008 (see [Section 10, 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).

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

In the future, the only thing that will flood Green Square's new town centre is sunlight. 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 United Group Infrastructure, Seymour White Constructions, Parsons Brinckerhoff 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 \$130 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 has been 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: *August 2018*



PROJECT UPDATE

Floodplain management

The City of Sydney local government area comprises of eight drainage catchment areas in: 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 recently 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.

Relevant links

- [Adapting for climate change – a long term strategy for the City of Sydney: 2015-2070](#)
- [C40 Cities Climate Leadership Group](#)
- [Preliminary Resilience Assessment](#)
- [Resilient Sydney: City Context Report](#)
- [Green Square Stormwater Drain map](#)
- [Interim Floodplain Management Policy](#)



8. Zero waste city

The City has released a new draft waste strategy for public consultation. *Leave Nothing to Waste* – our strategy for managing Sydney’s resources to 2030 - details waste management actions to achieve the City’s zero waste target by 2030, with a focus on waste avoidance and treating waste as an opportunity to reuse, repurpose or recover for energy valuable resources.

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

The City is responsible for collecting and managing waste generated at City-managed assets, parks and public spaces, well as waste from more than 115,000 households in the local government area. By 2030, this roughly 65,000 tonnes of household waste and 11,000 tonnes from City-managed assets, parks and public spaces is forecast to grow to more than 100,000 tonnes of waste per year.

Businesses in the local government area are responsible for collecting their own commercial and industrial waste and produce around 700,000 tonnes of waste annually, of which it is estimated that around 50% is recycled presently. This waste stream is estimated to grow to 800,000 tonnes each year by 2030.

More than 1.2 million tonnes of construction and demolition waste is produced in the city each year. Of this, the City estimates we are responsible for around 400,000 tonnes, either directly through ongoing maintenance or indirectly through major contracts. However, these figure can be highly variable over time depending on the amount of development that is happening in the city.¹⁷

Sustainable Sydney 2030 set the objective that waste from the city be managed as a valuable resource and the environmental impacts of its generation and disposal be minimised. Action plans and targets detailed in the new Waste Strategy will continue the City’s focus on improved management of waste within its own operations, as well as supporting the city’s residents and businesses to encourage waste re-use, recycling and recovery of energy from the waste we generate.

City of Sydney Operations

What are we doing

- Separating recyclables from our buildings by source; including paper, cardboard, plastic containers and printer cartridges
- Composting green waste collected from our parks for re-use on site
- Sending construction and demolition waste from City of Sydney managed infrastructure and maintenance projects to a local recycling centre for reuse, recovery and reprocessing

¹⁷ City of Sydney data (unpublished) Edge Environment (2016) *Commercial waste data review*, Sydney.



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

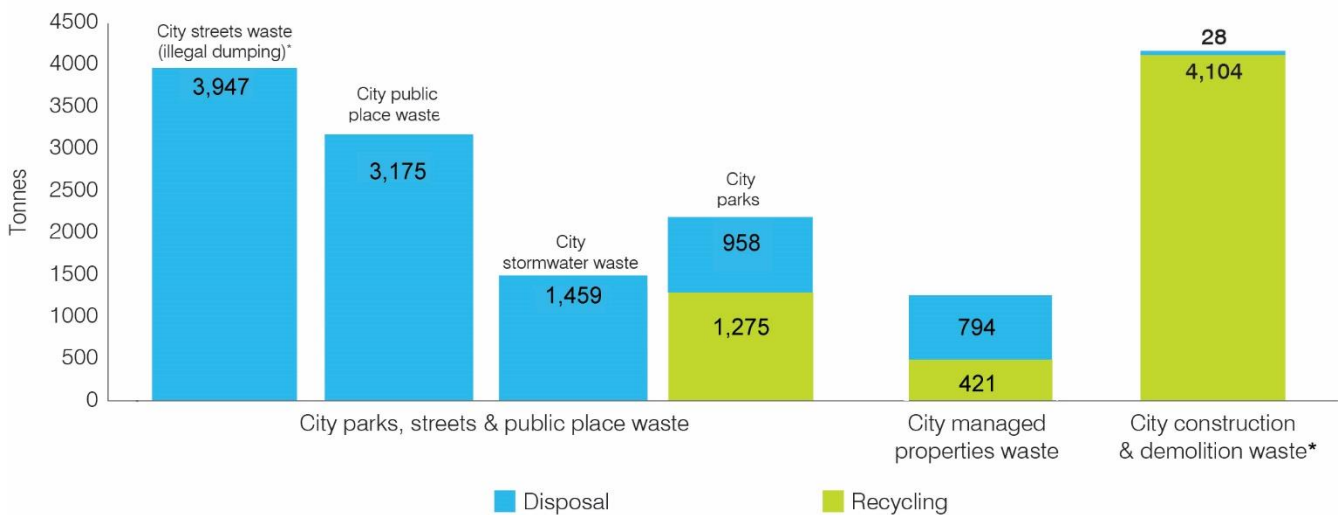
How are we tracking

The City is continuing to investigate options for improved recycling of waste from public place litter bins, illegally dumped waste on City streets and material removed from City stormwater drains. Detailed measurement of these streams was drawn into City waste reporting in late 2016 after an organisation wide review of the way recycling and landfill diversion performance data is collected, reported and verified.

Work on improving accuracy and transparency of reporting is continuing in response to this review, particularly in respect to contractor data.

Chart 9 below shows the current management of City of Sydney waste streams identified for improved tracking and management.

Chart 9. City of Sydney operations waste disposal and resource recovery (totals Jul-16 to Jun-17)



- City construction and demolition waste data includes City of Sydney managed maintenance projects and excludes waste generated by third party contractors and major projects, this data will be recorded and reported in future waste data reporting.
- 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).
- City managed properties waste is based on 8 months of data (Oct 2016 to May 2017), extrapolated to reflect one full year. The City has recently changed waste contractor for managed properties and the data reporting is only available for the previous months; however this data is considered to be a more accurate representation of the actual tonnages managed by the City.

* Data from 2015/16



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

City of Sydney Waste Strategy

Leave Nothing to Waste – our strategy for managing Sydney's resources to 2030 was released for consultation on 27 June 2017. It will be on public exhibition on Sydney Your Say until 22nd August 2017.

The new strategy sets targets, priorities and actions for waste management to achieve the vision for the City of Sydney to be "Zero Waste" by 2030, and will help us respond more effectively to the increasing demand for resources as our residential, worker and visitor populations continue to grow.

The strategy focuses on waste management in four key areas: City buildings, public spaces, residents and businesses - encouraging waste avoidance, recycling, promoting innovation in the way waste and materials are managed, and demonstrating leadership in sustainable waste management. The strategy also includes the City's advocacy position on broader reaching initiatives required beyond our local government area boundary.

New recycling initiatives proposed in the Strategy include the introduction of separate e-waste, textiles and food waste collections for city residents over the next two to three years. 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.

To achieve a zero waste target by 2030, and in line with international best practice, a waste to energy facility in NSW is required to manage the non-recyclable part of the City's waste streams that would otherwise go to landfill. The City is still investigating the most appropriate and available solutions to managing this residual waste stream in the long term.

ADVOCACY

Land allocation for waste management in metropolitan region

The Sydney metropolitan area has very limited space currently allocated for treatment of waste. As the city grows, we will need more waste treatment facilities, and these need to be in reasonable proximity to where the waste is generated so that value can be recovered from the waste stream. Otherwise, transferring waste to facilities outside the metropolitan area places significant logistical and financial burdens on councils.



PROJECT UPDATE

Electronic waste

To keep electronic waste out of landfill, the City runs quarterly e-waste collections. Sims Recycling Solutions reprocess this waste in Sydney, achieving 98 per cent recovery of all material after it is broken down for recycling.

The City held two e-waste recycling events at the Sydney Park Depot, Barwon Park Road, St. Peters on 11 March and 3 June. These events attracted over 1700 drop-offs and recycled 49 tonnes of household electronic waste. It was encouraging to see that about half of all participants at both these events had not used the City's drop off e-waste recycling service before.

Next year these events will be complemented by the new Community Recycling Centre that is currently under construction within the City's new Alexandria Canal Depot on Bourke Road. The Community Recycling Centre will have the capacity to accept different types of hazardous household waste from the City's residents.

	Jul – Dec 2016	Jan – Jun 2017	FY 2016- 17 totals
Residents	1,556	1,704	3,260
E-waste (tonnes)	44	49	93

PROGRAM UPDATE

Waste Management Local Approvals Policy

The City's draft Waste Management Local Approvals Policy has been developed to replace the current Waste Policy adopted in 2013. The draft Waste Policy sets out who is responsible for the management of waste and clarifies which activities do not require the City's approval.

The draft policy details waste collection times and zones. This includes the CBD's new night-time commercial waste collection zone, new waste collection times along the light rail corridor and protocols for grease trap waste collection and skip bins.

The policy is available for public consultation on Sydney Your Say until 14 August 2017.

Relevant links

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



9. 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 reduced its size balancing vehicle numbers with the demands placed on providing essential services to our residents, workers and visitors.

The combined fleet emissions for 2016/17 were 234 tonnes better than the target of 2,350 tCO₂-e.

Emissions for 2016/17 continue to be on track as the reduction achieved was 44 tCO₂-e better than the same period in the previous year. 1,010 thousand litres of fuel was consumed by the City's fleet during 2016/17 falling 59 thousand litres from the same period in 2015/16. 76 per cent of this 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 made into a data collection system through the use of telemetry. An improved system of monitoring vehicle use will better support fact-based decision making on sustainable asset management and renewal as well as monitoring engine and driver performance, enabling opportunities for further emission savings particularly through driver performance.

Research and experience demonstrates that eco-driving goes hand-in-hand with low-risk, safer driving. The City's *Low-risk and Eco-driving* handbook was introduced in September 2016 and continues to be rolled out to the City's drivers as an ongoing program. The handbook is a key tool in implementing the eco-driving strategy and is supported by ongoing awareness training and in-cabin driver training. By promoting and improving safer driving behaviour and skills we expect to achieve considerably lower vehicle emissions in the future. Eco-driver mentoring allied to safe, low-risk driving will be stepped up through 2017/18 with a goal of reaching all drivers within the fiscal year.

The City's *Eco-driving Strategy 2015-2017* is currently under review. As part of the revision the performance of the City's 'clean' fleet over the past five years will be analysed to determine where improvements can be made both in the operation of current vehicles and in the purchase of new vehicles.



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 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 March 2017, the City held its annual Sydney Rides Business Challenge. A record 4,465 people from 359 organisations took part, making this the largest event of its kind in the world. The challenge provides a fun and engaging way to talk about active transport and encourage new bike riders. The challenge is also run within the City, with 156 staff members taking part, 28 of whom were new riders.





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 2016/17	Q2 2016/17	Q3 2016/17	Q4 2016/17	Year to date	Program to date
Staff trained (#)	23	33	14	15	85	628
Distance(km)	1,615	1,975	3,219	3,352	10,161	27,773



The local government area

Local government area targets

 Walking	– 33 per cent of trips to work during the AM peak undertaken by walking by 2030, by city residents
 Cycling	– 10 per cent of total trips made in the city are undertaken by bicycle by 2030
 Public transport	– 80 per cent of trips to work during the AM peak are undertaken by public transport by 2030, by city residents and those travelling to Central Sydney ¹⁸ 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

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 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 2016 included a redesign of Thomas Street to create a pedestrian-friendly zone in Chinatown and the opening of Quarry Park in Ultimo which provides a pedestrian link to Wentworth Park and Darling Harbour.

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 new town centre, creating traffic free plazas for dining, relaxing and connecting to local shops and transport.

In December 2016 the City began the roll-out of new wayfinding signage, including 10 pylons, 47 flags and 27 finger signs. The first phase covered the northern end of the city centre, with signs and pylons installed from Circular Quay to King Street, as well as outside key landmarks like Town Hall. Phase 2 of the rollout completes the Haymarket area and Pyrmont by June 2017. This phase also includes partial signage installation at Green Square.

The information pylons and directional signs are part of the City's Legible Sydney Wayfinding System that also includes a network of 2100 braille and tactile street signs that have

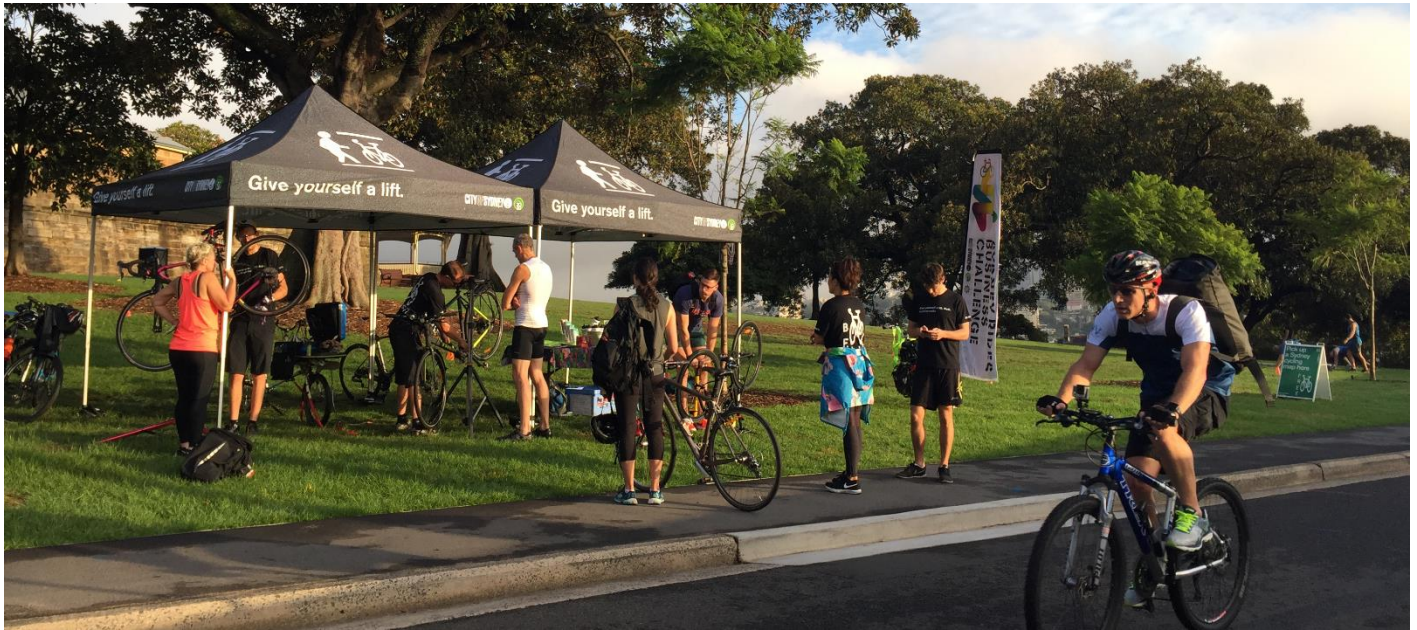
been installed at all signalised pedestrian crossings throughout the City.

This is one of the first steps in the rollout of the \$8 million Legible Sydney Wayfinding System, which will 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.



¹⁸ Central Sydney is the Census area defined by the Australian Bureau of Statistics that informs 2011 Journey to Work data



Cycling

Counts from March 2017, while down slightly from October (2%), were up 5% from on a year ago. The telephone-based biennial National Cycling Participation Survey was conducted in March/April for the Australian Bicycle Council to track progress towards national cycling targets.

The results found inner Sydney residents are riding bikes at double the rate of greater Sydney.

The City promotes safe and courteous cycling with regular information sessions at locations of well-used shared paths.

PROJECTS UPDATE

- Construction has commenced on new bike links in Green Square, connecting the growing local population with shops, facilities and on to Central Station.
- Community consultation for the Wilson and Burren Walking and Cycling Improvements closed in January after an intensive six week digital and face-to-face engagement program. The project was approved at the May council meeting.
- Consultation for the Bondi to City Centre walking and cycling improvements was held between April and May. The project was approved at the June council meeting.

EVENTS & CAMPAIGNS UPDATE

- In June 2017 the City delivered a third phase of the *Give Yourself a Lift* campaign. The campaign highlighted the cost savings and travel times of active transport options.
- The *Family Riding* campaign was rolled out in January to coincide with school holidays. The tagline "Time to Ride" targeted parents to encourage them to ride with their children. Balance Bike Clinics were held each week day for three weeks and were attended by 515 children.
- A *Walk to School Day* event was held at Plunkett Street Primary School in March. City staff joined in the regular Breakfast Club to provide fruit and other giveaways.
- Sixteen guided rides were held in May and June to showcase how easy it is to ride in Sydney. The recreational rides included market rides (two routes), a chocolate ride and foodie ride. Guided rides were also run weekly in June from Green Square and Forest Lodge to the city centre as part of the Give Yourself a Lift campaign.
- We also continued our basic and intermediate bike maintenance courses and our popular balance bike clinics for kids, which take place at the Sydney Park Cycling Centre.

	Q3 2016/17	Q4 2016/17	Year to date
Share the Path sessions	27	39	124
STP Tune Ups (#)	169	296	947
STP maps issued (#)	520	1066	2456
STP bells issued (#)	169	312	998
Cycling courses (# participants)	76	44	203
Maintenance courses (# participants)	147	133	474
Balance Bike Clinic	794	759	3,517



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.

Consistent with the City's representations to the NSW and Australian Governments, the proposed West Metro announced in late 2016 would support the growth of both Sydney and Parramatta, and provide much-needed additional capacity on rail lines serving the City.

The proposed transit connection between the City Centre, Green Square Southern Sydney was identified as a key infrastructure priority by the Australian Government in late 2016.

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. All construction zones for this project are now underway, with the first due to be open in the fourth quarter of 2017. The NSW Government expects light rail to be operating in 2019.





Car sharing

Car sharing schemes allow people to drive when they need to, without the hassle and cost of car ownership. As of the end of November 2017 34,288 city residents and businesses were members of a City authorised car share organisation.

A single car share vehicle can take up to ten cars off the road, and cater for up to twenty car share members. This takes pressure off limited inner city street parking, and increases the use of walking, cycling and public transport.

The City has provided approximately 704 on-street car share parking spaces. In addition, our new 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.

A revised Car Sharing Policy was adopted by Council in November 2016, following extensive public comment on an earlier Draft. The updated Policy provides the framework to support the continued growth in car sharing, while allowing for increased competition from operators to ensure the best outcomes for members, City residents and businesses.

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.

In 2015 the City completed a major audit of all LGN infrastructure to identify defects and areas for improvement. A delivery program has been developed to co-ordinate delivery of the various elements within the LGN routes and linkages.

In 2016/17 the City has delivered the following LGN Improvements:

- Continuing the three year follow programs for lighting, furniture and pedestrian ramps
- Missenden Road – Longdown Street to Marsden Street – Works have commenced on site.
- Foveaux Street – Mary Street to Crown Street – Works have commenced on site.
- Quay Street – Ultimo - Planning and design work has commenced.
- Argyle Street - Improvement works are well progress and will be completed in early 2017.
- Ongoing liaison with Sydney Light Rail on Devonshire Street streetscape design.

Refer to Section 10 of this report for greening improvements to the LGN.

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](#)



10. 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 throughout the city's streets
- Provided annual floral displays and hanging baskets in areas with no landscaping or planting through the City's Living Colour program
- Planted 20,527 plants across bush restoration sites since 2015
- Upgraded 63 small parks since 2008 and installed 154 raingardens

How we are tracking



Measurement of canopy cover for the city is planned for 2017. When last measured in 2008, our city had 15 per cent of its area covered by urban canopy. Of this, 42 per cent of our canopy cover was from private properties, 32 per cent from street trees and 26 per cent from parks.

Progress against our fauna targets will be measured formally every five years through a comprehensive survey. The next measurement is planned for 2017. Bush restoration sites¹⁹ in the city have increased to 11.6ha, from the baseline of 4.2ha in 2012.


¹⁹ Sites managed by Landcare groups or bush regeneration specialists.



Our operational targets

 Urban canopy	<ul style="list-style-type: none"> – The average total canopy cover is increased by 50 per cent by 2030 (from 15 to 23 per cent), and increased by 75 per cent by 2050 (to 27 per cent), from a 2008 baseline – Plant 700 street trees each year until 2021 – Tree species diversity will not consist of more than 40 per cent for any particular plant family, 30 per cent for any genus or 10 per cent for any one species by 2021
 Urban ecology	<ul style="list-style-type: none"> – Habitat sites in the city are protected and the area of bush restoration sites is increased by 100 per cent by 2023 from a 2012 baseline of 4.2 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	<ul style="list-style-type: none"> – Plant 50,000 new trees and shrubs in City parks and street gardens each year until 2021

Local government area target

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

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

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

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

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

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

Relevant links

- [Greening Sydney Plan: 2012](#)



Urban canopy

The City of Sydney recognises that 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 Cowper Wharf Rd Woolloomooloo and Jennings Street Alexandria were recently completed, and design work continues for other projects including Bowman St Pyrmont and Ripon Way Rosebery. This planting is undertaken as part of the City's Street Tree Master Plan 2011²⁰, 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, 63 small parks have been completed, including 13 completed during 2015/16 and several more currently being planned.

Under the Greening Sydney program a number of areas have been converted to increase the vegetated space within the City. During 2016/17 18,462 m² of landscaping (grass and planting installation) was completed.

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. Raingardens retain water within the landscape and help keep the city green and cool – mitigating the impacts of the urban heat island effect. A total of 154 raingardens have been installed to date.

	Q3 2016/17	Q4 2016/17	2016/17 target	Year to date	Total to date
Small park upgrades (#)	0	2	3	6	65
Landscaping (grass/planting) (m ²)	11,798	820	8,000	18,462	78,833
Raingardens (#)	N/A	N/A	trend	N/A	154
Street trees planted since 2005 (#)	43	362	700	716	12,147

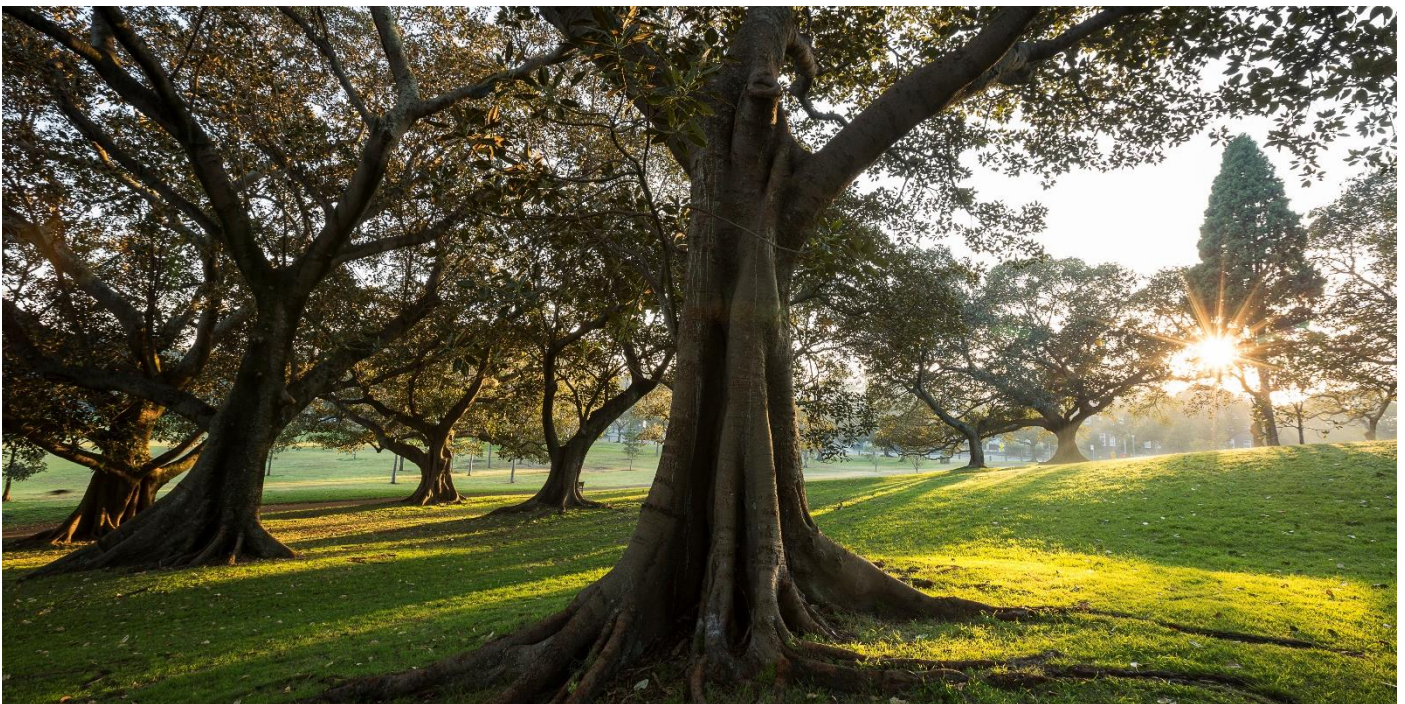
	Q3 2016/17	Q4 2016/17	2030 target	Year to date	Total to date
Canopy cover (on current) (%)*	N/A	N/A	23.5	1.6	17.1

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

* Canopy cover is measured every five years. 2013 data was made available in 2016, with new measurement planned for mid-2017.

Relevant links

- [City of Sydney Street Trees](#)
- [Sydney's Green Streets](#)



²⁰ <http://www.cityofsydney.nsw.gov.au/live/trees/tree-policies>



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.

Conservation Volunteers Australia completed their 3 year tender managing volunteers at Sydney Park. Over this period they worked with a total of 1387 volunteers since the program began in June 2014, 35% of which were local City of Sydney residents. This equated to 6489 volunteer hours and included 9488 plantings and 1076 bags of weeds collected across Sydney Park's bush restoration sites.

A total of 1945 plants have been planted across the bush restoration sites across January – June 2017.

Maintenance of the Sydney Park wetlands has been a major focus of works since completion of the stormwater harvesting project, with best practice bush restoration approaches being used and specialist contractors required to assist in maintenance. The area of bush restoration sites managed by bush regeneration has not increased since December 2016.

The UESAP stipulates that surveys will be undertaken five yearly after the baseline surveys to track the progress of targets outlined in the UESAP. Formal bird, microbat and flora survey were completed by consultants in this reporting period. All surveys only looked at

selected sites rather than the entire LGA to provide a snapshot of progress. The bird survey recorded 76 birds compared to the baseline of 70 species. While this indicates an increase in birds recorded, nine wetland bird species were absent from the survey. The microbat survey confirmed five microbat species in the LGA, compared to three species in the baseline survey. The five species are comparable to urban areas across Sydney. Species that are common in other parts of Sydney are rare or absent in the City. This is attributed to the limited number of tree hollows as well as the highly fragmented nature of urban bushland. While diversity of microbats has reportedly increased, abundance and distribution have not been reviewed for both the fauna surveys; this will be assessed in the ten yearly review.

The flora survey reviewed 12 sites to track the progress against the UESAP targets. It is important to emphasise that it was only 12 sites rather than LGA wide. 358 indigenous species were recorded in this survey, of which 268 were locally indigenous. The total compares very well to 365 indigenous species recorded for the whole LGA in 2012. Notably, vegetation representative of three likely original vegetation communities have been established as per UESAP target.

Additional surveys in the 17/18 FY will be undertaken to provide an overall progress report against the baseline data identified in the UESAP.

Relevant links

- [Urban Ecology Strategic Action Plan 2014](#)
- [Urban Forest Strategy: 2013](#)



Community Empowerment

Community gardens and community planting

The City recognises that community gardening offers residents the opportunity to grow and harvest their own produce and help reduce household waste through community composting. Community gardens also create more green patches bursting with vegetables, plants and flowers, across our city.

The City continues to support and implement community gardens in the local government area, with 19 in place at the end of June 2017.

The City also supports a number of other planting programs and gardens across the LGA including; five Bushcare groups, three community footpath verge gardens and one community composting group.

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

The community gardens policy and guidelines were endorsed by Council in February 2016. The City organised a Community Gardens Forum on the 6 May for the Community garden coordinators, with an external facilitator, guest speakers from the City, opportunity for Q&A and networking with other group coordinators. The event was very successful and receiving a lot of positive feedback from the garden groups.

Relevant links

- [City of Sydney Community Gardens](#)

Performance	Q3 2016/17	Q4 2016/17	2016/17 target	Year to date	Total to date
Community Gardens (#)	No new	1 new 1 group closed	>18	1	19
Landcare groups (#)	No new	No New	trend	No new	5
Community footpath verge gardens (#)	No new	No new	trend	No new	3
Community composting groups (#)	No new	No new	trend	No new	1





Green roofs and walls

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

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

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

Significant development is occurring in the City and has resulted in a jump in the number of green roofs and walls. Since 2012, 186 development applications that incorporate green roof or walls have been reviewed. During 2016/17, the City received 44 new development applications which included green roofs and walls.

Currently the City has at least 123,966 m² of green roofs and walls. This period saw about 2,300 m² of green roofs completed in the Barangaroo and Sydney Convention Centre developments.

Performance	2015/16 new sites	2016/17	Total to date ²¹	Total area (m ²)
Green roofs in the LGA (#)	36	42	127	120,500
Green walls in the LGA (#)	5	3	39	3,466
Total green roofs and walls (#)	41	45	166	123,966

Relevant links

- [Green Roofs and Walls](#)

²¹ 2012/13 was the first year of measurement.



11. Delivering to the community



Highlights

Through a collaboration with Sydney Water, the City is offering apartment buildings access to the Waterfix program, which is designed to reduce water use within individual units at no upfront costs to building owners; with the significant water and associated energy savings paying for the installation fees over future years. Initial estimates for the first participant Museum Towers suggest that they will save more than \$100,000.

In June the BBP evidenced a 50-60% resource recovery from office deficit projects. This is a 32% increase in recycling rate from the baseline.

Adoption of the BBP Stripout Waste Guidelines resulted in approximately 8,000 tonnes of waste diverted from office refurbishment projects. In addition, members of the BBP managed to rehome 100 tonnes of furniture to charities and offshore schools.

The City has engaged 38 small businesses who were introduced by the City's Health & Building Officers who provide sustainability advice during food business inspections. Out of these businesses, 19 have implemented water recommendations and their businesses achieved an average cost saving of \$1,960 per year.



BUSINESS SECTOR - PROGRAM UPDATE

Smart Green Business Program

During Quarters 3 & 4, the Smart Green Business (SGB) Program recruited 31 medium and large businesses across the accommodation and entertainment sector, of which 45 have so far implemented identified water efficiency and/or waste recommendations. The average operating cost savings made by these 45 businesses is

SYDNEY CRICKET AND SPORTS GROUND TRUST

Sydney Cricket and Sports Ground Trust has implemented water recommendations identified through a SGB audit. Resulting in yearly savings of 41 mega litres of potable water and 86 tonnes of greenhouse gas emissions from reduced hot water consumption. This will see them enjoy reduced operating costs estimated to be \$141,000 per annum.

\$8,900 per year.

The program also engaged 38 smaller businesses through the City's Health and Building Officers who have been providing sustainability advice during food business inspections. Out of the businesses engaged, 19 implemented water recommendations and achieved an average cost savings of \$1,960 per year.

Smart Green Business Program	Q3 2016/17	Q4 2016/17	Year to date	Program to date ²²
Businesses Recruited	17	14	82	345
Businesses Implementing	21	24	75	327
Potable water savings implemented (ML per year)	18	37	143	969
Waste diverted from landfill (Tonnes per year)	523	752	2,489	9,690
Energy savings implemented (MwH per year)	24	382	839	7,310
Greenhouse gas emissions saved (tCO ₂ -e per year)	602	964	3,142	13,958

Relevant links

- [Smart Green Business](#)

²² Program commenced in 2013/2014



BUSINESS SECTOR - PROGRAM UPDATE

Better Buildings Partnership

In Quarters 3 & 4 the Partnership developed a checklist and guideline to assist building owners and developers to comply with the energy efficiency provisions in the National Construction Code for new build and major refurbishments. It also launched a new leasing standard which sets a minimum definition of green leasing for tenant and landlords to collaborate for better sustainability and performance outcomes.

The Partnership worked to transition its best practice guidelines into industry standards, featuring its leasing work in a national event tour with the Property Council of Australia and federal government Department of Environment and Energy's Commercial Building Disclosure Program. The Partnership also provided input into a review of the federal government's green lease schedule and continued to work with the Office of Environment and Heritage on the development of a new National Australian Built Environment Ratings Systems (NABERS) tool for Waste. It also worked with Good Environmental Choice Australia (GECA) to establish a draft accreditation standard for commercial waste service providers. It continued to help industry to improve resource recovery from office deficit, evidencing an average 60% recovery (from a 20% baseline) and over 8,000 tonnes of waste diverted to date.

The Partnership began work on a new best practice guideline to improve the collection and use of performance data in office buildings.

Performance	Q3 2016/17	Q4 2016/17	Year to date	Program to date
Commercial office building floor space participating in Sydney CBD (per cent)	-	-	49	49
Members – Partners (#)	+1	same	15	15
Associate (#)	same	same	5	5
Supporting (#)	+2	same	5	5
NABERS energy rating (stars) ²³	-	-	4.5	4.5

Relevant links

- [Better Buildings Partnership](#)

²³ Average NABERS ratings reported from December 2016 figures.



CITY SWITCH

GREEN OFFICE



BUSINESS SECTOR - PROGRAM UPDATE

CitySwitch Green Office NATIONAL

Data on the office waste generated by building occupants is limited. To address this, CitySwitch program managers nationally have supported signatories to use the new CitySwitch waste tools. Signatories representing over 20% of the program's floor area now have an understanding of their office waste generation and recycling rates, and are now developing waste action plans that seek to reduce their impact.

To extend their reach, CitySwitch's new resources and toolkits have been promoted online, with office waste achieving 2,840 downloads and renewables 2,193. Both were published as eBooks by communications partner The Fifth Estate.

In March the CitySwitch National Steering Committee and program managers from partner councils met in Sydney for their annual conference, to collaborate in program planning, knowledge sharing, forecasting and technical training, and to participate in a national dialogue about Net Zero 2050 and how to accelerate action in the office sector.

Performance	Q3 2016/17	Q4 2016/17	Year to date	Program to date
Signatories (#)	-	3	7	579
Tenancies (#)	4	14	56	816
Office floor Space - NLA (m2)	3,890	41540	395,962	3,484,733
Percentage of all Australian office space ²⁴	13	14	14	14
Average NABERS Energy rating (stars)	4.1	4.4	4.4	4.4

Relevant links

- [CitySwitch Green Office](#)

²⁴ Based on 25.1 million NLA m² total per Property Council of Australia, Office Market Report 2016



BUSINESS SECTOR - PROGRAM UPDATE

CitySwitch Green Office SYDNEY

The City has now supported 26 signatories in their use of the CitySwitch waste tool to measure their office waste generation and recycling and to set a baseline and is working to engage occupants with a disposable coffee cup avoidance campaign that can be used by signatories to engage with their staff, and start a broader waste conversation.

The City continued to work with Signatories to measure and rate their energy performance using the NABERS Energy rating tool, with 150 current ratings and supported a project trial of a pilot NABERS combined energy rating.

CitySwitch Sydney co-hosted an event highlighting options for the instalment and procurement of renewable energy and an event launching the waste behaviour change campaign.

The program manager has assisted signatories to develop sustainability actions and measurement and reporting plans, and projects including establishing a Green Team Terms of Reference document, problem waste projects, benchmarking and demonstrating policy impacts.

Performance	Q3 2016/17	Q4 2016/17	Year to date	Program to date
Signatories (#)	2	3	3	119
Tenancies (#)	2	4	5	139
Office floor space (NLA -m2)	6,727	5,769	-9,253	1,048,134
Office floor space as proportion of Sydney (per cent) ²⁵	204	205	20.6	20.6
Average NABERS energy rating (stars)	-	4.6	4.6	4.6

²⁵ Based on 5.1 million NLA m² total per Property Council of Australia, Office Market Report 2016



BUSINESS SECTOR - PROGRAM UPDATE

Environmental Upgrade Finance

The City's environmental upgrade finance scheme is part of the NSW Government's Environmental Upgrade Agreements (EUA) mechanism, which allows councils to enter into agreements with property owners and finance providers to fund works to improve the energy, water or environmental efficiency of their building.

Environmental upgrade finance allows the cost of an upgrade to be shared with the tenant, such that tenants can enjoy the benefits of an environmental upgrade in the short-term and operating cost savings in the long-term.

St James Hall, in Philip Street, paid out in full their Environmental Upgrade Finance in May, having used the finance mechanism to install replacement chillers, variable speed drives, a new building management system and a lighting upgrade to reduce energy costs and emissions. The EUA enabled tenant contributions to support the efficiency projects which are saving approximately 141 tonnes greenhouse gas emissions per year.

In June, the Australian Institute of Refrigeration, Air conditioning and Heating (AIRAH), supported by City of Sydney funding, delivered an industry forum helping mid-tier building owners, managers and environmental service providers understand the benefits of making commercial buildings more energy and water efficient through financial mechanisms such as Environmental Upgrade Finance.

During the period 366 visits were made to the service web pages.

Performance	Q3 2016/17	Q4 2016/17	Program to date
EUA applications received (#)	0	0	7
EUAs signed (#)	0	0	4
Total funds advanced for all signed EUAs (\$M)	0	0	30.4
Estimated emission reductions from signed EUAs (tonnes p.a.)			9,469

Relevant links

- [Environmental Upgrade Finance](#)

COMMUNITY & BUSINESS - PROGRAM UPDATE

Environmental Grants

Environmental initiatives are supported by a number of grants and sponsorships from the City of Sydney. The three grant programs facilitate action and help catalyse the solutions that will be required to deliver Sustainable Sydney 2030. The grants approved by Council for Quarter 3 and 4 2016/17 were:

Environmental Performance - Innovation: funding is available 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 that have the potential to achieve greenhouse gas emission reductions and resource efficiencies at scale;

- *Edge Environment Pty Ltd: Demonstration of Engineered Timber recovery in commercial buildings*
- *Energy Action (Australia) Pty Ltd: Multi-tenant NABERS ratings using embedded networks*
- *Investment Advantaged Software Pty Limited: Electric Vehicle Recharging in residential strata buildings*
- *University Of Technology Sydney: Central Park Precinct Organics Management Feasibility Study*

Environmental Performance - Building Operations: in which funding is available to help lower the costs of implementing building operation efficiency measures, such as water monitoring to track water consumption and quickly identify and address costly leaks or equipment failures;

- *Strata Plan 46581: Cooling tower water sub-metering, 447 Kent St, Sydney*
- *Strata Plan 5263: Residential apartment water monitoring Dolphin Square, Cleveland St, Chippendale*
- *Strata Plan No. 5739: Residential apartment water monitoring, The Point Apartments, Point Street, Pyrmont*

Environmental Performance - Ratings and Assessments: in which funding is available to undertake building performance ratings and assessments to enable a building or facility owner understand and implement opportunities to improve environmental performance;

- *Strata Plan 46581: Level 2 energy audit, 447 Kent Street, Sydney*
- *Strata Plan 87087: Residential apartment water and energy assessment, 6 Defries Avenue, Zetland*
- *The Owners Dp 1067958: Residential apartment energy assessment Bullecourt Apartments, Pyrmont Street, Ultimo*

The City's Environmental Performance Grants has supported 10 projects in the second half of 2016/17.

Knowledge Exchange grants:

- *Australian Institute of Refrigeration, Air Conditioning and Heating: Sydney Forum - Mid-tier Commercial Buildings*
- *Good Environmental Choice Australia: Waste Services Standard*
- *Strata Community Australia (NSW): Strata Owners Environment Award 2017*

Relevant links

- [Environmental Grants](#)



RESIDENTIAL SECTOR

Residential Apartment Sustainability Plan

The Residential Apartment Sustainability Plan (RASP) was adopted by Council in August 2015 and contains 30 actions to drive demand for better performing buildings within 10 years.

The City continues to collaborate with 18 state government, industry and community stakeholders through our reference group which meets quarterly. This group is working with the City to support sustainability upgrades, policy change and support initiatives to reduce the environmental impact of residential apartment buildings.

The Smart Green Apartments Leadership Network is hosted quarterly by the City and is a forum for apartment owners and their building managers to meet and share their learnings on improving operational performance and undertaking efficiency upgrades in strata buildings. The February meeting focused on monitoring energy and water consumption (38 attendees / 26 buildings represented) and the May meeting focused on Energy Savings Scheme (25 attendees/14 buildings represented). The City is supporting a Sydney Water trial of a new performance contract service for high water-use buildings that will remove upfront costs for Owners Corporations. Case studies have been published on the City's [Smart Blocks](#)²⁶ website and the [Green Strata](#)²⁷ website.

The City continued to promote sustainability services through speaking slots at the International Residential Energy Efficiency Conference in February, NSW Strata Communities Australia Owner's Day Conference in March and the Strata Community Australia Annual Conference in June. The City also delivered a Master Class as part of the Green Cities Conference in March on accelerating net-zero high rise residential buildings.

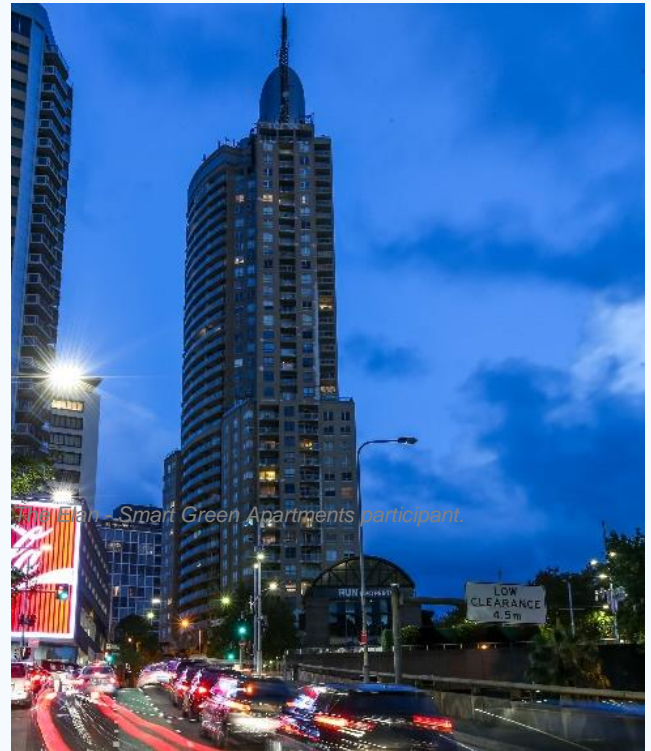
The City is also supporting the residential apartment sector to identify opportunities to improve the environmental performance of buildings through City grant funding (see above for details).

Following consultation with key stakeholder groups, the 'Accelerating Net-Zero High-Rise Residential Buildings' report has been finalised and is available on the City website.

Relevant links

- [Residential Apartment Sustainability Plan: 2015](#)

January to June 2017



The Smart Green Apartments Program

The Smart Green Apartments program is working with 20 large apartment buildings housing over 6,000 city residents to reduce energy and water consumption and improve waste management. Audits for all 20 buildings are complete, with average cost savings of over \$57,000 per building per annum identified, a 35% average reduction in energy. Average electricity savings of 30% per building have been identified. Combined electricity and gas megawatt hour savings of 26% per building have been identified, equating to a 28% reduction in tonnes of greenhouse gas emissions. Most retrofitting opportunities in large apartment buildings include the installation of variable speed drives, lighting upgrades, heating ventilation and cooling HVAC retrofits and installation of solar PV.

Two Owners Corporations (Museum towers and Capitol Terrace) have passed resolutions to undertake Waterfix; retrofitting water fixtures and fittings in all apartments. This will result in significant water and associated energy savings. Waste audits have been undertaken and sustainable transport plan provided for keen buildings.

²⁶ <http://smartblocks.com.au/>

²⁷ <http://greenstrata.com.au/>



bright ideas for a sustainable Sydney



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.

During Quarter 3 and 4 2016/17, five Green Villages workshops were delivered at Sydney Park and Waterloo Library, with 121 attendees. Workshop topics included worm farming, composting, edible green walls and gardening in small spaces. Green Villages engagements were delivered at various events including SecondHand Saturday, Green Day at Ultimo TAFE, orientation week activities at three universities, Alexandria Sunday Funday, Erko and Ashmore Neighbour Days, Green Square Community Brunch and Carers Day Out. The City's Green Villages website and e-news continues to resonate with time-poor residents. The website has had over 85,000 visits in this time period. The interactive worm farming video tutorial: *'How to start a worm farm in 4 steps'* has continued to be successful with 90,572 views since its launch.

Performance	Q3 2016/17	Q4 2016/17	Year to date	2016/17 target
Workshops and forums (#)	2	3	9	8
Participants (#)	63	69	253	240
Participants implementing (per cent)	100	91.5	96	85
Green Villages website sessions (#)	32,599	37,737	160,118	110,000
e-news subscribers (# current)	12,556	12,501	12,501	14,000
e-news open rate (per cent)	27.13	24.77	25.78	28



Green Living Centre

The Green Living Centre is a sustainability 'drop-in' information and education hub located on King St, Newtown. The centre is a partnership between the City of Sydney and Inner West Councils and commenced in 2002 with the former Marrickville Council.

The current shared services agreement ended in June 2017 and the City of Sydney is not renewing this partnership; Inner West Council will determine the future of the Centre from July onward.

The City has offered the shopfront for another year to assist in this transition period. The City's resources are focused on more targeted sector based programs and partnerships as detailed in this report.

Relevant links

- [Green Living Centre](#)

Relevant links

- [Green Villages](#)

12. Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Paris Pledge for Action: At COP21 in Paris (December 2015), a group of global cities, regions, companies and investors committed 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 sewerpipes.

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

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

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

13. Appendix 1: Data management plan




Low-carbon city

	City of Sydney (Operations)		Local Government Area (LGA)	
	Current Status	Forward Plan	Current Status	Forward Plan
Greenhouse gas emissions from electricity	Reporting underway from STEvE. 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).	Implement improved Sustainability Management and Reporting Tool (SMART)	CCAP 2.0 reported through the Environmental Sustainability Platform	Continue to monitor and report.
Greenhouse gas emissions from 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.	Implement improved Sustainability Management and Reporting Tool (SMART)	CCAP 2.0 reported through the Environmental Sustainability Platform	Continue to monitor and report
Greenhouse gas emissions from other sources	Emissions sources including flights, taxis, contractor fuel, onsite fuel usage, events and refrigerants are added to STEvE quarterly.	In place	CCAP 2.0 reported through the Environmental Sustainability Platform	Continue to monitor and report
Installed co/tri generation and renewable energy	The City is working to improve the measurement and reporting of, trigeneration and solar power generation.	In place	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)		Local Government Area (LGA)	
	Current Status	Forward Plan	Current Status	Forward Plan
Water	Currently reporting potable water consumption by category quarterly in arrears through STEvE.	Further details to be defined as part of the SMART system to replace STEvE. Non-potable meters to be installed as part of the Centralised and Monitoring Control System for Irrigation, Water Recycling, Sportsfield Lighting and Water Features project. This will enable data capture on non-potable water use.	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.	Further details to be defined by the SMART system to replace STEvE.



Zero waste city

	City of Sydney (Operations)		Local Government Area (LGA)	
	Current Status	Forward Plan	Current Status	Forward Plan
Waste	Limited organisational waste reporting available. Commercial waste and recycling from 65 City of Sydney properties is reported quarterly.	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.	LGA residential waste data available and reported in the Corporate Plan.	LGA commercial waste data capture to be improved and verified.



Green and cool city

	City of Sydney (Operations)		Local Government Area (LGA)	
	Current Status	Forward Plan	Current Status	Forward Plan
Green and cool city	Organisational reporting currently not centralised.	All data collected for this report to be collated through Performance Planning system.	Canopy cover measured sporadically.	Canopy cover to be measured more consistently.

14. Appendix 2: Environmental Policy

environment policy

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

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

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

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

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

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

our commitments

Objective 2.1

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

City now

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

City in 2030

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

Objective 2.2

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

City now

- City focused on diverting residential waste from landfill.

City in 2030

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

Objective 2.3

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

City now

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

City in 2030

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

Objective 2.4

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

City now

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

City in 2030

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

Objective 2.5

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

City now

- A commitment to strategic environmental initiatives

City in 2030

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

Objective 2.6

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

City now

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

City in 2030

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



Monica Barone
Chief Executive Officer April 2015



LEGEND

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

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

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