

ATTACHMENT E

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**ENVIRONMENTAL SUSTAINABILITY
PROGRESS REPORT**



Sydney2030/Green/Global/Connected



Green Environmental Sustainability Progress

Report

July to December 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

Goals

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The City is achieving the vision of Sydney as a city with leading environmental performance, which is socially responsible and has a strong economy 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 Strategy).

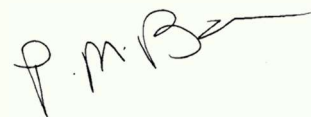
The Strategy commits to specific environmental targets and strong actions on energy, water, climate adaptation, waste, transport and greening over the next five years and reaffirms Sustainable Sydney 2030.

The sixth biennial C40 Mayors Summit in Mexico City in December 2016 considered the Deadline 2020 report that presents a detailed picture of what C40 cities need to do to stop accelerating climate change and to turn the COP21 Paris Agreement from aspiration into reality.

The overriding and deeply significant findings of the report are that the next four years will determine whether the world meets the ambition of the Paris Agreement and that 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 Green Report outlines the programs that the City is implementing and provides an update on the delivery of these projects.



Monica Barone
Chief Executive Officer

Recognition for sustainability leadership

- Top performer in our region for **2017 CDP-C40 Reporting**
- Highest scoring organisation in the **Fujitsu Oceania ICT Sustainability Benchmark Survey**



1. Our environmental targets

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

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

City of Sydney Operations



Low-carbon city

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



Active and connected city

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



Green and cool city

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



Water sensitive city

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



Zero waste city

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



Local Government Area

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

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



Low-carbon city

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



Water sensitive city

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



Zero waste city

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



Active and connected city

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



Green and cool city

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

2. 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 is currently reviewing its Sustainable Procurement Policy, and associated Sustainable Procurement Guidelines to ensure that our sustainable procurement practices robustly align with the principles of Sustainable Sydney 2030 as well as the recently introduced Sustainable Procurement guidelines ISO20400.

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

C40
CITIES

CDP-C40 REPORTING

CDP-C40 Reporting Top Rated City

The City of Sydney has been ranked the top rated city in CDP-C40 Reporting in our region. In 2017 over 500 cities across 89 countries disclosed climate related data to CDP. The City of Sydney was selected due to its high quality response to the CDP-C40 questionnaire, and its commitment to demonstrating climate leadership.

As an official reporting partner of the Global Covenant of Mayors, and key partner of C40, we provide information via CDP, and we are instrumental in informing much of the support C40 provides to its member cities. For more information on CDP Cities visit <https://www.cdp.net/en/cities>.

EVENT

Screening of Disposable Lifestyle Documentary

The Juanita Nielson Centre screened the environmental documentary 'A Plastic Ocean'. This feature-length film highlights the consequences on a global level of disposable lifestyle. The centre has already hosted seven screenings to a full house with more to come. They also held a number of workshops aimed at further raising awareness around reducing plastic and using environmentally safe alternatives for at home use. Participants learned to sew their own tote bags and make their own cleaning products and cosmetics.





The community in Green Square enjoyed a seedling planting session as part of their Grandparent's Day celebrations.



Maintained by over 45 local residents at Millers Point the community garden is harvesting fresh produce for the community to enjoy.

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.

Pymont Community Centre has community garden beds used by staff, community and children attending the centre.

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. They recently held a workshop on small space and balcony gardening, with participants encouraged to take seedlings home to start their own garden. Staff are currently working on the installation of an automated irrigation system and are looking forward to the installation of solar photovoltaic panels to increase energy efficiency.

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

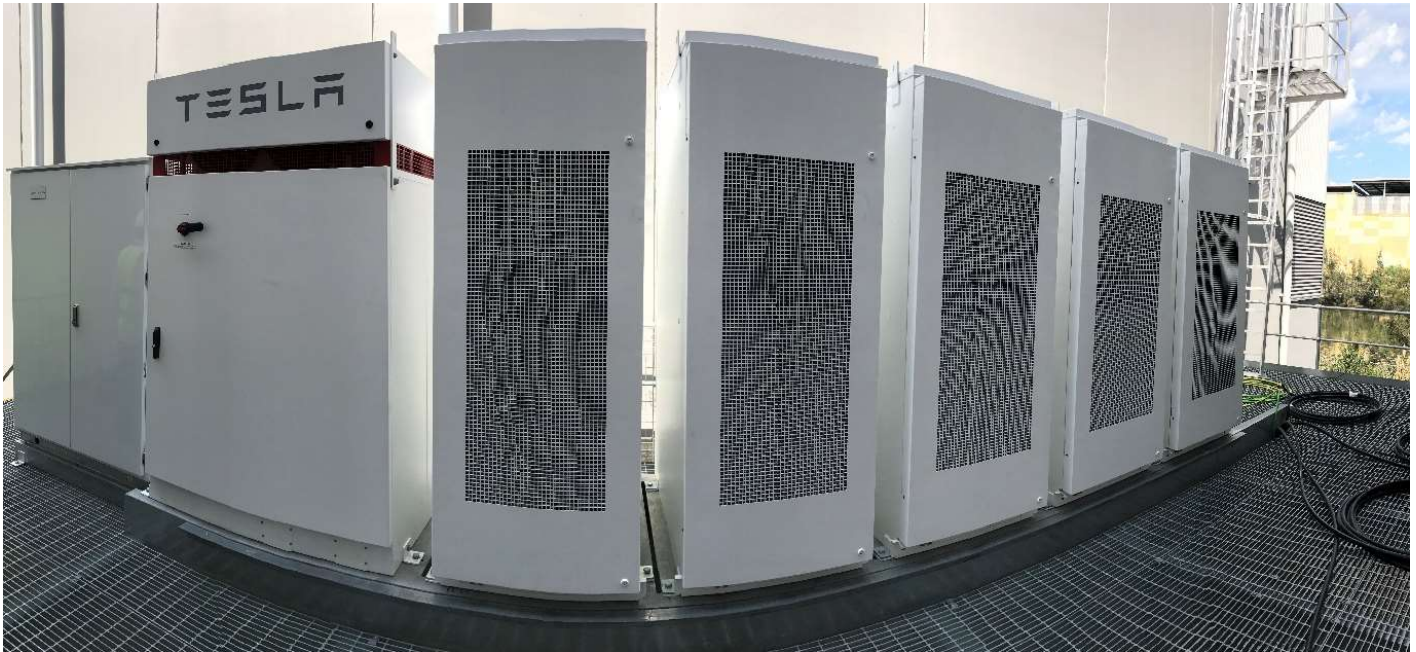
The Reginald Murphy Centre's indoor and outdoor gardening project group meets weekly and they make full use of the balcony and yard space to grow a variety of plants and vegetables. The community in Green Square enjoyed a seedling planting session as part of their Grandparent's Day celebrations.

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

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



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

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

CASE STUDY

Tesla POWERPACK trial 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.

Advocacy

The City has numerous successful partnerships and programs to deliver on our targets. We are committed to leading by example in our own operations by improving energy efficiency and installing renewable energy.

However substantially more action and policy is required by the NSW and Australian governments to meet the City's target for net zero emissions by 2050 – a target which aligns with Australia's commitment to the Paris Agreement and the NSW government state-wide target.

Major policy areas that need to reflect a trajectory to net zero are the national construction code, BASIX, minimum appliance standards, renewable energy and emissions.



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 is rolling out solar PV to sites it owns to generate clean and cost-effective energy locally where and when it is required.

Offset

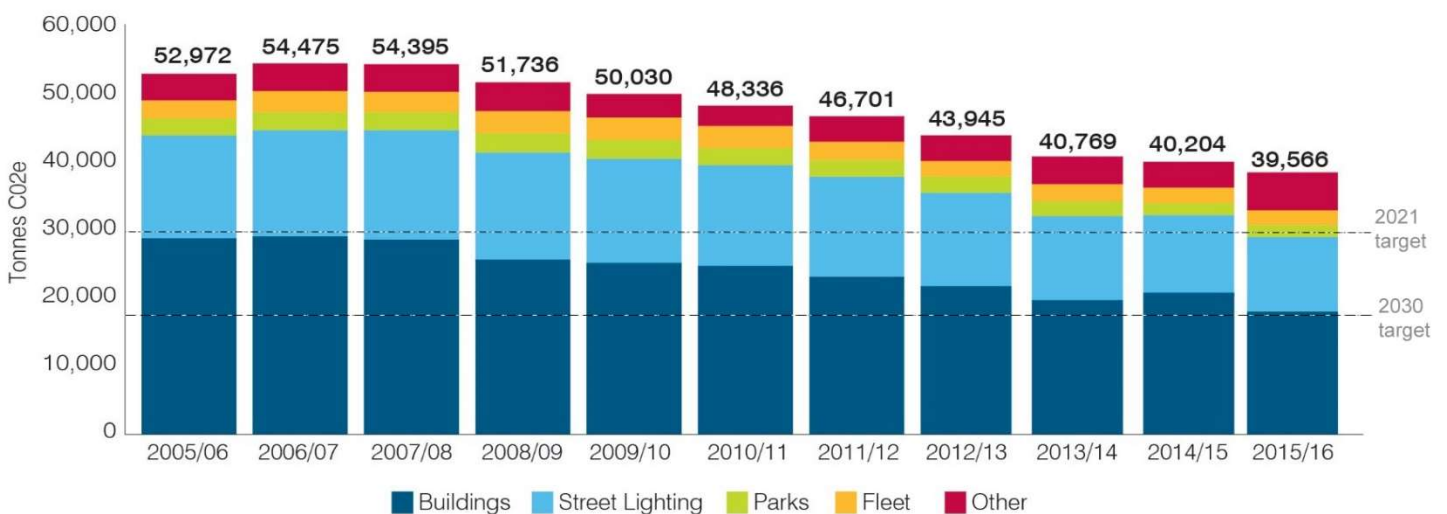
The City reduces its carbon liability by avoiding and reducing emissions and using offsets for emissions that can't be avoided.

Chart 1 tracks our actual annual operational emissions by category. The 2016/17 inventory is awaiting assessment under NCOS and will be reported in future green reports.

Relevant links

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

Chart 1. City of Sydney operations greenhouse gas emissions





Our operational targets



Greenhouse gas emissions

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



Renewable energy

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

How we are tracking

Annual greenhouse gas emissions

Chart 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.

The City organisational data is up to June 2016. The most recent data for 2016/17 is in the process of being independently verified and will be reported in future green reports.

Chart 2 incorporates projects currently in progress and their proposed effects. It is anticipated that, as projects currently in progress begin to deliver scoped benefits, overall emissions will reduce accordingly.

Emissions from grid electricity are calculated based on the emissions factors, for NSW, currently 0.83 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.

Energy consumption data

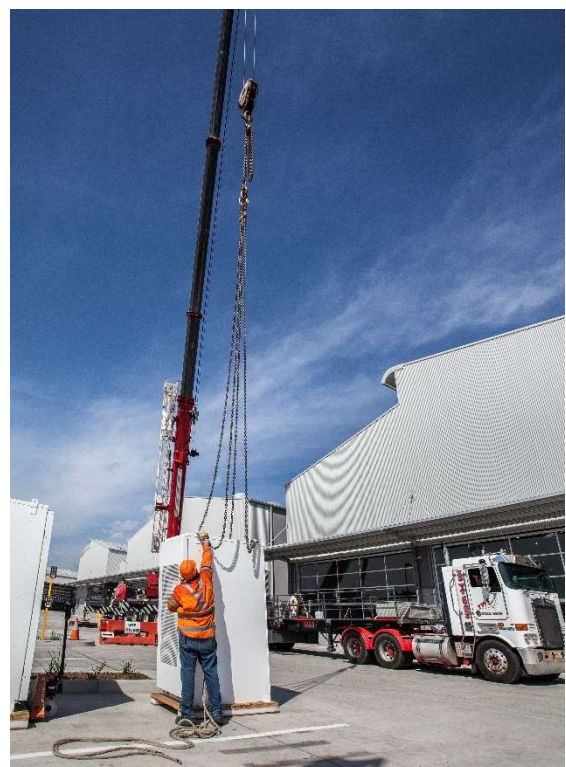
The table below shows energy consumption data for the organisation.

Organisation	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline	42,427	21,894	174,631
Most recent (Jun 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

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.

The table below describes the sources for the annual operations greenhouse gas emissions data⁵. For more information, see Appendix 1: Data Management Plan.

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.



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.

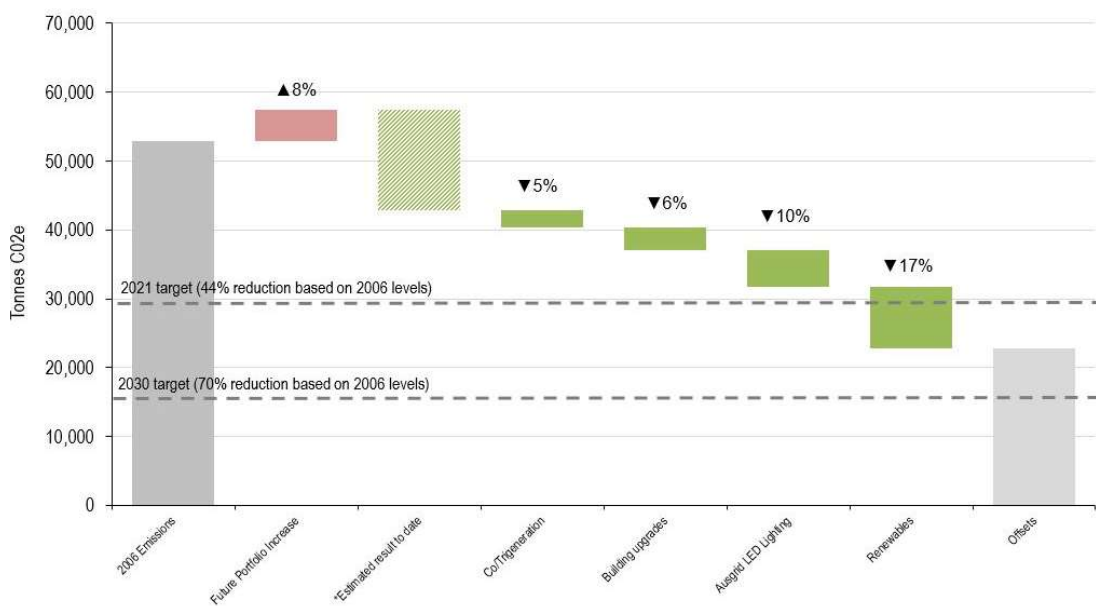


How we will get there

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 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.



* The City is moving to a new system to manage, monitor and report on utilities and other sustainability metrics for all assets owned or managed by the City. The energy data is currently being verified and updated data will be provided in future green reports.

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. Ausgrid are currently developing a business plan to accelerate the replacement of non LED street lighting, subject to the City’s approval. 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



PROJECT UPDATE

ICT Sustainability Benchmark Survey

In July/August 2017 the City participated in a free ICT Sustainability diagnostic survey, run by Fujitsu Oceania's Sustainability team, on our ICT Sustainability practices. The assessment is a light touch analysis of our ICT Sustainability Profile which is benchmarked against Fujitsu's database of over 3,500 other organisations across all industry sectors. It provided a rapid assessment of our strengths and opportunities to save money and improve our sustainability profile. It included a benchmark of our ICT Sustainability readiness and maturity. City ICT & Sustainability managers were interviewed.

Overall, the City out-scored all other organisations and scored very well across five pillars of the survey - Equipment Lifecycle, End User Computing, Enterprise & Data Centre, Technology Enablement & Metrics.

Key findings include;

- Metrics - extremely strong performance in this area boosted by robust organisation wide reporting practices. On par with industry best practices.
- End-User Computing - A score of 65.4 and distribution across the pillars reflects a well-managed end user environment.
- Enterprise and Data Centre - we outsource hosting of our primary data centre environment in a 4.5 star NABERS Energy for Data Centre rating.
- Technology Enablement - Outstanding corporate setting with expertise, policy and direction.

PROJECT UPDATE

Trigeneration

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

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

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

PROJECT UPDATE

Cogeneration at Ian Thorpe Aquatic Centre:

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

Cogeneration at Cook + Phillip Park Aquatic Centre:

A preferred option was adopted by stakeholders (replace all aged heat pumps and the chiller and install a cogeneration unit). DA documentation was compiled and an application will be made in early 2018.

PROJECT UPDATE

Solar PV and Energy Storage

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

Four major installations will be added during the 2017-18 financial year. These installations will double the total installed capacity on City sites from about 800 kW to over 1600 kW.

The City is also about to host its first major energy storage facility.

In collaboration with TransGrid, a 500 kWh Lithium Ion battery system is being constructed at the new Alexandra Canal depot. The battery facility will allow the depot to harness more renewable energy from the solar PV.

The City is also working with industry, government, the property sector and clean energy proponents to bring about changes to the National Electricity Market to better recognise the value of local generation, which could go part way to overcoming the 'export to the grid' barrier, where the rates for exporting energy to grid are uneconomical. This is an issue across most of Australia.





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 all sites. These detailed audits have identified energy and water opportunities such as improved equipment efficiency, technological changes, demand management and operational improvements. A program for implementation is currently being developed 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. The platform is currently being configured and verification of data is under way. It is scheduled to be fully operational by March 2018.

PROJECT UPDATE

Environmental Management System (EMS)

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

Priority projects for 2017/18 include monitoring environmental controls for construction works, the continuing implementation of Sustainable Design Technical Guidelines for capital works projects, review of environmental data management and development of the environmental budgets for emissions and water usage.

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

PROJECT UPDATE

Fleet

The new Alexandria Canal Depot in Alexandria is a state-of-the-art, purpose-built depot which will be home to a new Fleet Workshop. Construction will be completed in 2018.

Fleet emissions continue to contribute approximately 7% of the City's total emissions. Having taken advantage of all currently available tools and technologies to reduce emissions, Fleet Management are now focussing on low-risk and eco-driving strategies. Low-risk driving practices almost always contribute to lower fuel or battery use and fewer emissions.

Accordingly, the City has rolled out its 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. 2017/18 fleet emissions are currently lower than they were for the same period last year and are scheduled to be maintained for the remainder of the year.

For more information on fleet see Section 7 Active and connected city.

ADVOCACY

LED streetlights

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



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

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



The local government area

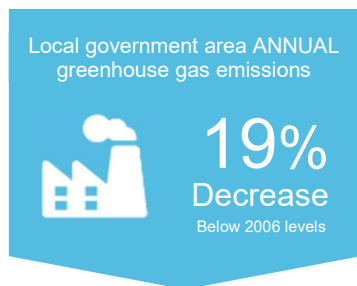
Local government area targets

	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	<ul style="list-style-type: none"> - 50 per cent of electricity demand met by renewable sources by 2030⁷

How the local government area is tracking

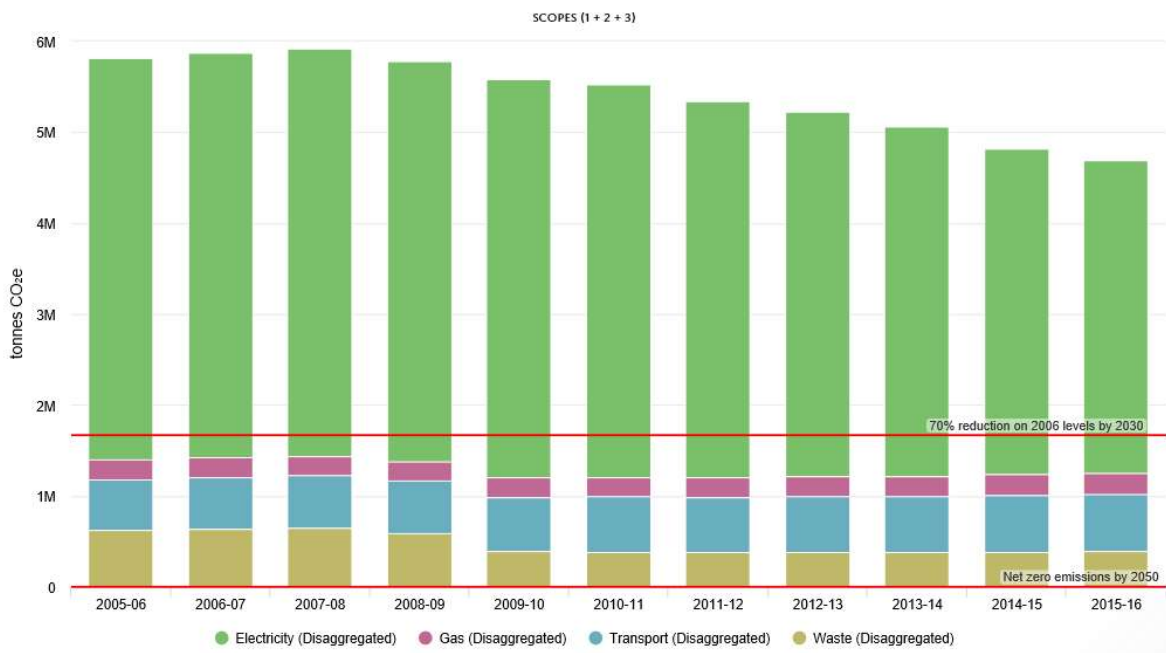
Annual greenhouse gas emissions

Chart 3 tracks actual emissions from the local government area. Note that 2015-16 result is estimated (City is awaiting gas consumption data). By mid-2016 (latest available full set of data), emissions had reduced by 19 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)⁸ – the new international benchmark for reporting city emissions.

Chart 3: Local government area greenhouse gas emissions



⁷ The renewable electricity target incorporates renewable electricity both within the grid and classified as additional to the grid.

⁸ <http://www.ghgprotocol.org/city-accounting>

⁹ Calculation: Difference = (Baseline – Most recent)
Difference (per cent) = (Difference / Baseline) x 100

Energy consumption data

The table below shows energy consumption data for the LGA. Please note, LGA data is shown to June 2016, which is the most up to date data available⁹.

LGA	Electricity (MWh)	Natural gas (GJ)	Total energy (GJ)
Baseline	4,159,436	3,038,529	18,012,502
Most recent (to June 2016)	3,586,034	3,565,542	16,475,264
Difference	-573,402	+527,013	-1,537,235
Difference (per cent)	-14 per cent	+17 per cent	-9 per cent

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



How we will get there

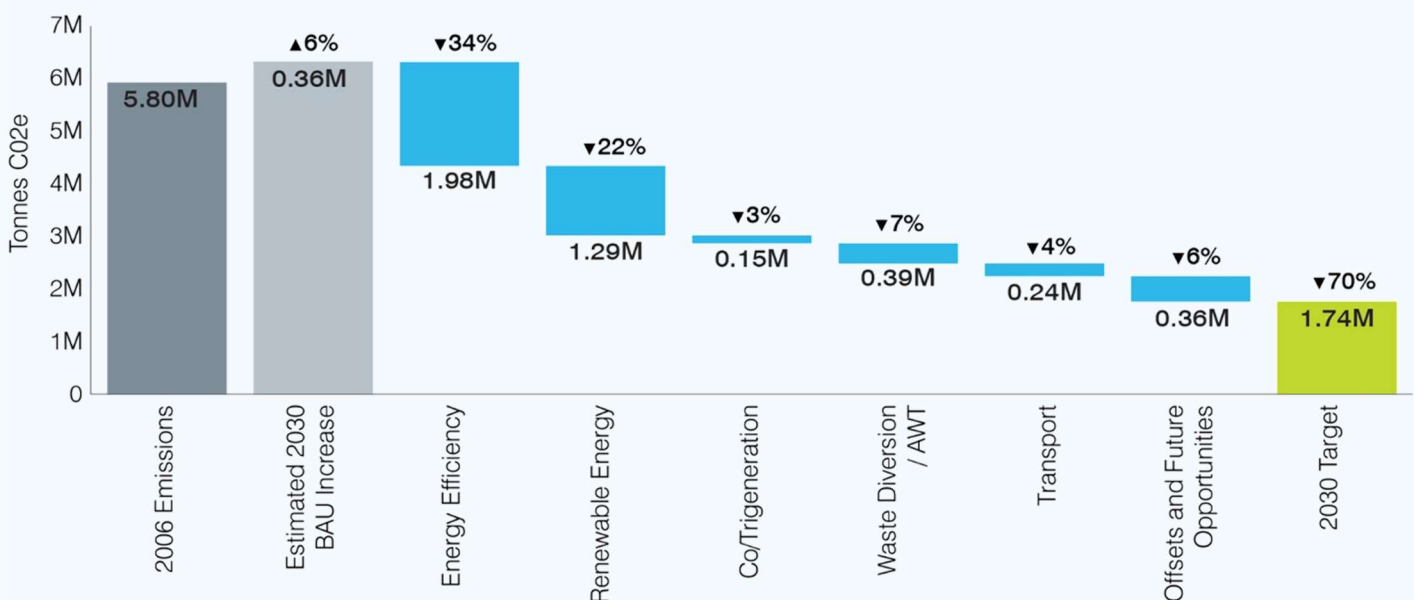
Chart 4 shows the estimated contributions of the initiatives we expect could lead to reduction of the city's emissions by 70 per cent by 2030.

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

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

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

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



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

High Voltage Electricity Data

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



PROJECT UPDATE

Green Square Town Centre

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

Green Star Communities Rating

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

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

Green Star Building Rating for Library and Plaza

A major project in the Green Square Town Centre which will grow its green credentials is the competition-winning Library and Plaza. Construction is well advanced for its eye catching and functional design. There is great anticipation for the opening of this new facility in mid-2018. It is perhaps less well known that the Library and Plaza is pursuing its own Green Star Building rating. The lead construction contractor John Holland is progressing submissions to the Green Building Council of Australia for assessment of a five star rating under their Green Star Public Building Design and As-Built certification tool.

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

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](#)



4. 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

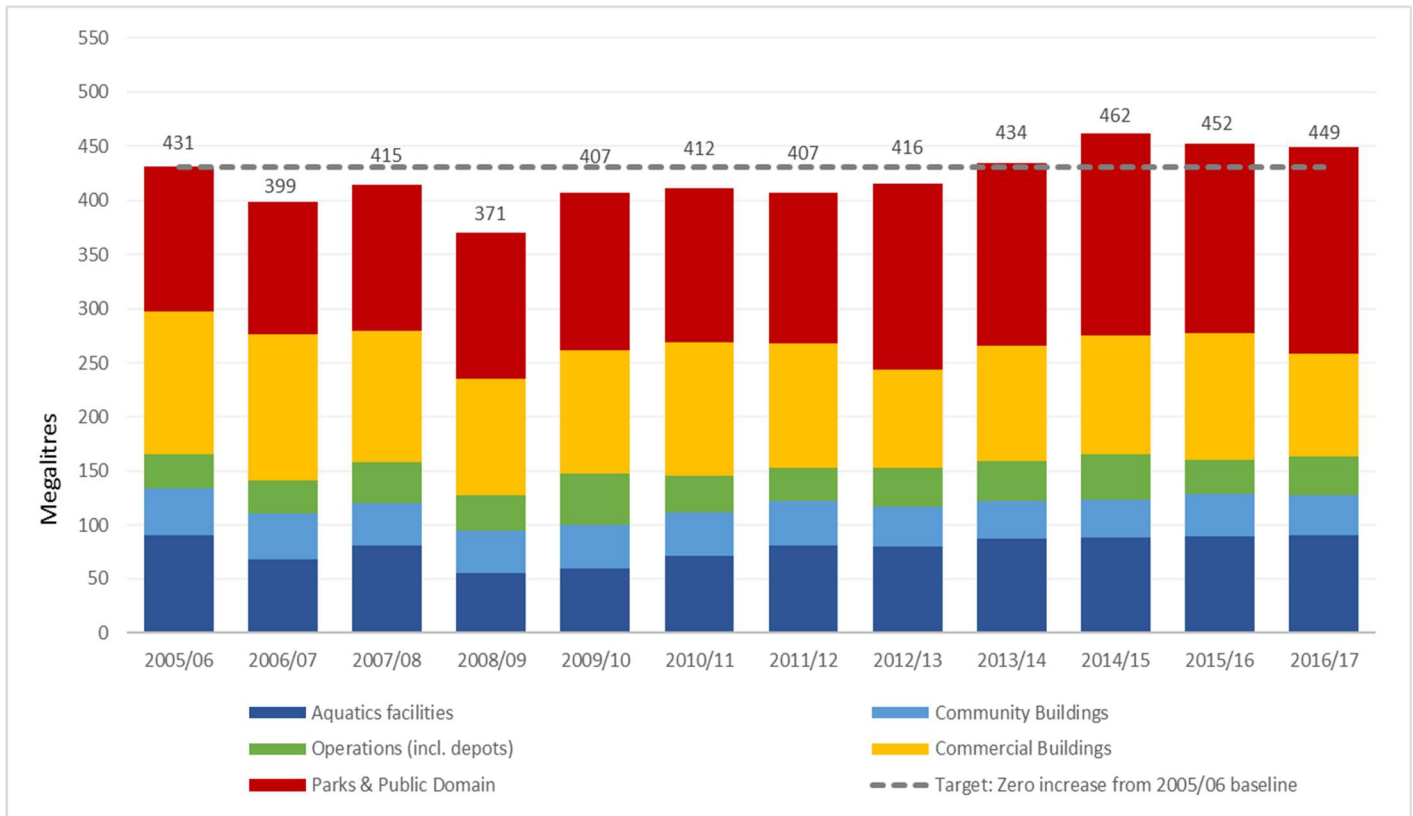
The City is moving to a new system to manage, monitor and report on utilities and other sustainability metrics for all assets owned and/or managed by City of Sydney. The water utility data is currently being verified and updated data will be provided in future green reports.

Chart 5¹⁰ shows current estimates from our existing data management platform (STeVe) for annual water consumption by category. The 2016/17 period shows estimated 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.

¹⁰ 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 (ML)	Difference (per cent)
City of Sydney operations	431	449	18	4

Calculation

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

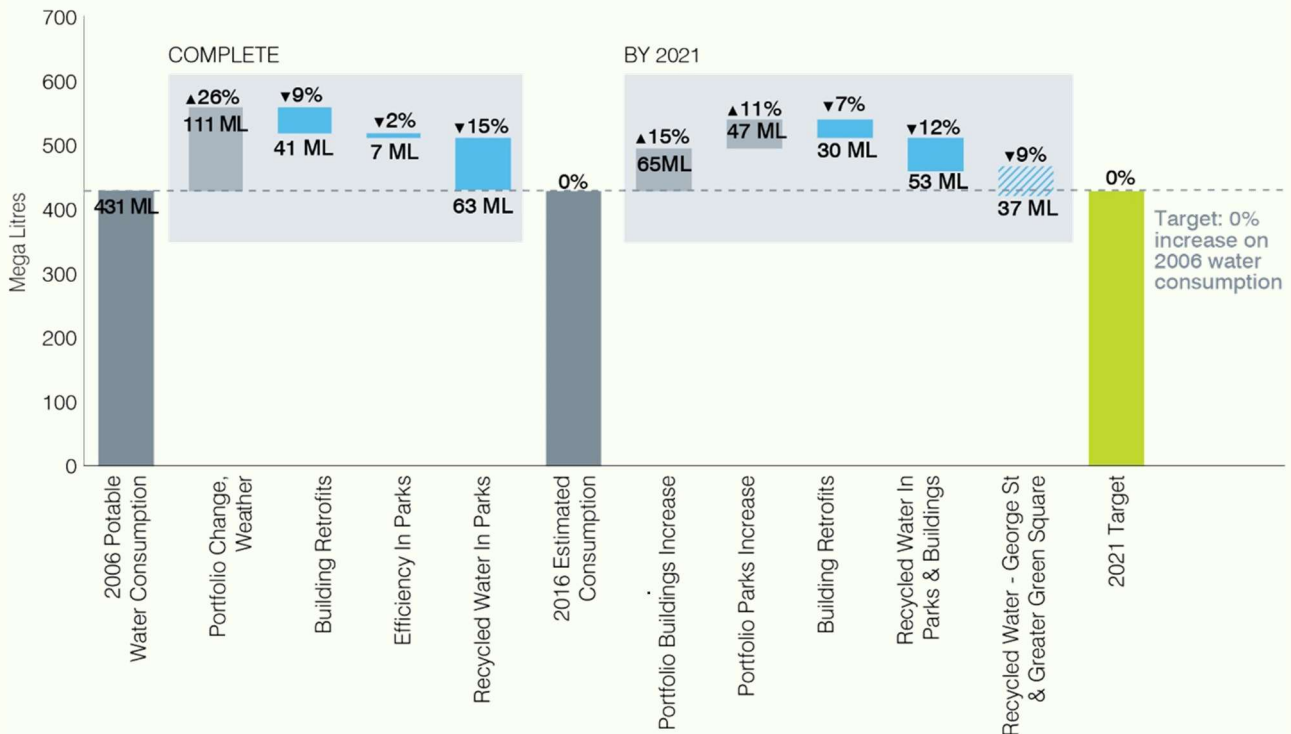
For more information see [Appendix 1: Data Management Plan](#)



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. This chart will be updated in future reports once our water utility data is updated and verified in the new data management system.

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

The City's target for water usage in city parks is 180L per square metre of irrigated space by the end of 2021. In the 2016-2017 financial year, City parks and open spaces used an estimated 201L per square metre of irrigated space. Current estimates are provided from our existing data management platform (STeVe) for water usage. The City is moving to a new system to report water usage and data is currently being verified. Updated water usage data will be provided in the June 2018 Green Report.

The 2012 Parks Water Saving Action Plan is currently being reviewed. In 2012 it outlined nine actions to

contribute to achieving the City's sustainable water targets. These include staff training, new technologies and improvements to reporting.

A four year action plan to support Environmental Action 2016-2021 has also been developed.

Improvements to data capture and record keeping are continuing, with our focus on data reliability. 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 began early 2017 with completion in June 2018.

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 provide estimated water usage numbers as described for chart 5.



PROJECT UPDATE

Sydney Park Water Reuse Scheme

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

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

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

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

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

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

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

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

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

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

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





PROJECT UPDATE

CBD Recycled Water Scheme

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

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

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

The recycled water pipelines would be used to deliver recycled water to buildings and parks in the CBD. The scheme would require approval and a license under the Water Industry Competition Act.

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

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

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

PROJECT UPDATE

Green Square Water Reuse - Stage 1

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

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

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

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

The recycled water treatment plant is located in the Green Infrastructure Centre, a restored heritage building on the former South Sydney Hospital site; the first quarter of this year sees the treatment plant undergo commissioning. Green Square Water will then seek final approval from IPART and the Minister to supply recycled water to the town centre.

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



PROJECT UPDATE

Green Square Water Reuse - Stage 2

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

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

Redevelopment also allows private water utilities to offer water services across an entire precinct, improving commercial viability. 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.

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

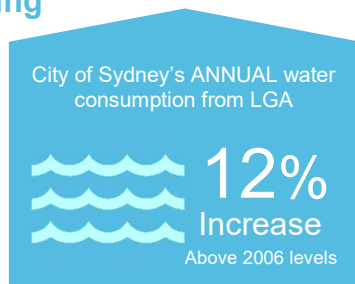
– 15 per cent reduction in annual nutrient load discharged to waterways via stormwater by 2030



The local government area

How are we tracking

Chart 7¹¹ shows annual potable water consumption across the city has grown 12% against our 2006 baseline, during which time the city’s population has grown at least 25 per cent¹².



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

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

The removal of state government-imposed water restrictions and increased growth in the local area have resulted in annual consumption rising above the baseline in recent years. This is despite great success in the City’s Smart Green Business and the Better Buildings Partnership¹³ programs saving over 2,000 ML (mega litres) per annum in potable water.

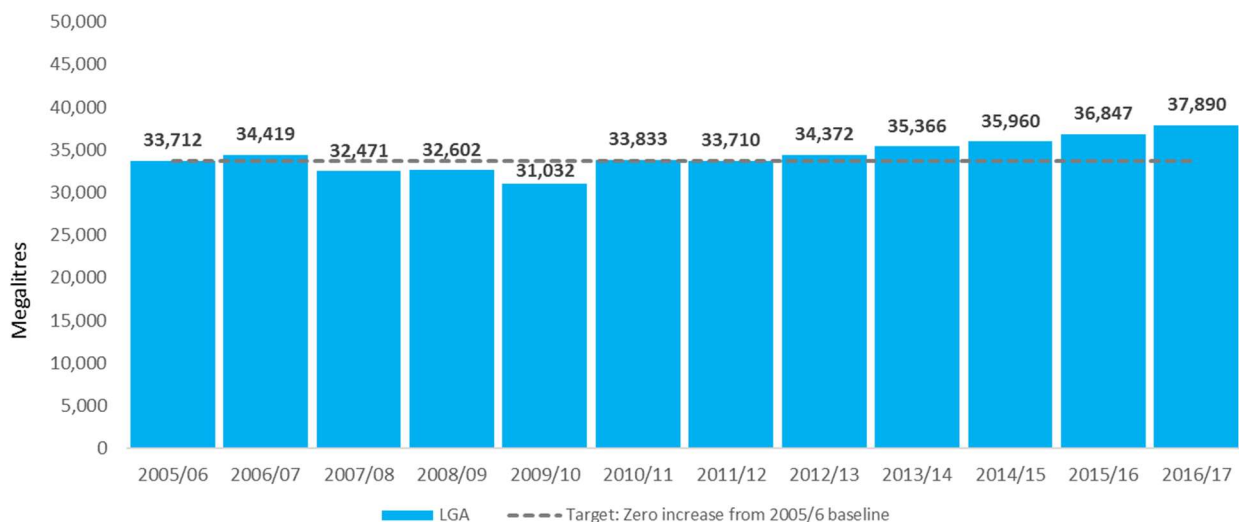
Water consumption data

This table shows water consumption data for the local government area. Data for the local government (LGA) is based on actual data received from Sydney Water in October 2017 for consumption to end 2016/17.

	Baseline (ML)	Current (end 2015/16) (kL)	Difference (ML)	Difference (%)
LGA	33,712	37,890	4178	12

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

Chart 7 Local government are potable water use.



¹¹ All data sourced directly from Sydney Water.
¹² Based on 2015/16 LGA population data for residents/workers/visitors compared to 2005/2006 baseline.

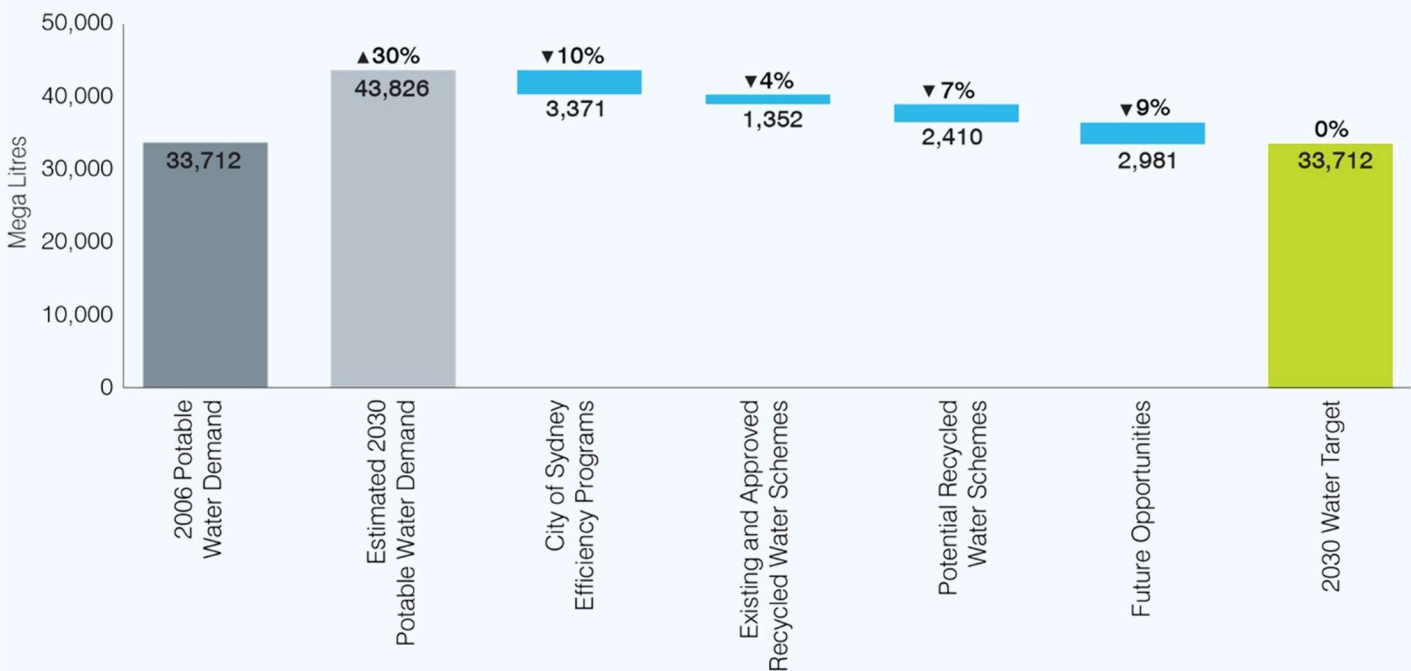
¹³ See Delivering to the community on page 49.



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

Stormwater quality and pollution reduction

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

- Mandate WSUD in all new developments
- Retrofit the drainage network with gross pollutant traps to remove litter and large solids from stormwater
- Retrofit public open space with raingardens, swales and wetlands to reduce stormwater flows and pollution

- Incorporate raingardens into road renewal and other streetscape projects.

MUSIC model

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



5. Climate resilient city



The best available scientific evidence tells us that greenhouse gas emissions from human activity, particularly our use of energy from fossil fuels, are contributing to climate change and the change is occurring faster than initially predicted¹⁴.

Climate Adaptation Strategy

The Council endorsed the Climate Adaptation Strategy in 2015 to help us prioritise and plan actions to prepare the city for the environmental, social, cultural and economic impacts of climate change. The strategy, titled “Adaption for Climate Change: A long term strategy for the City of Sydney” can be downloaded from our website. This strategy looks to 2070 to assess, and adapt to, the risks posed by climate change for the city. It focusses on near-term climate adaptation outcomes and actions.

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

100 Resilient Cities

Sydney was selected in a global competitive process to join 100 Resilient Cities, pioneered by the Rockefeller Foundation, commencing work in 2015. Resilient Sydney is a 100RC initiative in collaboration with the City of

Sydney, the metropolitan councils of Sydney and the NSW Government. The program is designed to help cities survive, adapt and thrive in the face of increasing shocks and stresses on urban populations, economies and environments worldwide. In August 2016, the Preliminary Resilience Assessment (PRA) and City Context research paper for metropolitan Sydney were completed, with a message from the NSW Minister for Planning incorporated.

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 “Is Sydney Ready?” covered key challenges and opportunities for resilience in Sydney.

During 2016 and 2017, Resilient Sydney undertook broad engagement with communities, government, business, academia and community services across metropolitan Sydney to identify solutions to the key challenges facing the city. Over 1,000 people were involved from government, business and the communities of metropolitan Sydney. The outcomes of engagement are informing development of the resilience strategy for metropolitan Sydney. Five directions with flagship and supporting actions are proposed. These focus on improving community and governance connections and decision making, adapting to our climate, household and business emergency preparedness and working together as one city. A group of experts also advised the process. A program of future actions will be overseen by the Steering Committee of representatives from councils, government, business and the community sectors of Sydney. The strategy will be released during 2018.

¹⁴ National Aeronautics and Space Administration (NASA) <http://climate.nasa.gov/causes/>



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

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

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

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

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

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

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

Construction began: *February 2015*

Expected completion: *Early 2019*



PROJECT UPDATE

Floodplain management

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

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

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

Investigation of raising the Johnston's Creek bridges to minimise localised flooding along the creek is nearing completion. These results will aid Sydney Water in the redesign of the lower reaches of the creeks stormwater channel.

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

Relevant links

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



6. Zero waste city

The City has adopted a new waste strategy. 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 from 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 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, as 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.¹⁵

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

¹⁵ 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

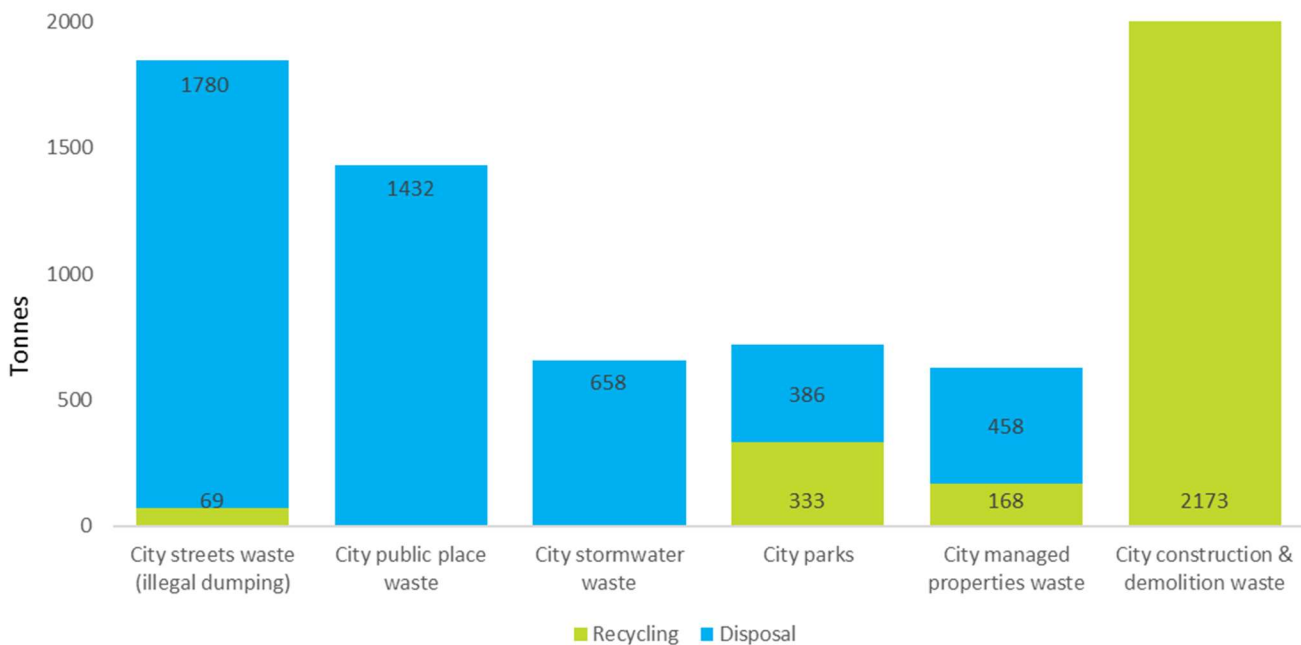
How are we tracking

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-17 to Dec-17)



- 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 streets, public place and stormwater waste is not separated for disposal. Separate tonnages are based on waste audit estimates.
- City construction and demolition waste data from Q1-2 2016/17. 2017/18 data not currently available.



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 adopted by Council on 23 October 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 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 drop off events. The waste is reprocessed in Sydney at a local recycling facility, achieving 98 per cent recovery of all material after it is broken down for recycling.

The City held two e-waste recycling events at the Sydney Park Depot, Barwon Park Road, St. Peters on 2 September and 25 November. These events attracted over 1326 drop-offs and recycled 39 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.

By next year events will be complemented by the new Community Recycling Centre that is planned at 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.

	Sept 2017	Nov 2017	FY 2017-18 totals
Residents	750	576	1326
E-waste (tonnes)	26	13	39

PROGRAM UPDATE

Waste Management Local Approvals Policy

The City's new Waste Management Local Approvals Policy has been adopted by Council. This is to replace the previous 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 new 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.

Relevant links

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



7. Active and connected city

The City is committed to promoting the most sustainable modes of transport for residents, workers and visitors.

City of Sydney Operations

Fleet emissions

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

The City's vehicle fleet has 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 Q1 and Q2 2017/18 is currently 64 tCO₂-e better than for the same period last year.

Emissions for 2017/18 remain on track, with emission reductions continuing to be achieved in the 2017/18 period. 464,054 thousand litres of fuel has been consumed by the City's fleet during Q1 and Q2 2017/18 which is a decrease of over 48 thousand litres from the same period in 2016/17. 77% of fuel consumed was blended sustainable bio-diesel. Blended bio-diesel continues to be the prime fuel type used by the City's

diesel and diesel hybrid motor vehicle fleet. Petrol hybrids use Shell Unleaded E10 exclusively.

Research is being undertaken into how our current Ausfleet systems can be better utilised to collect and communicate more accurate fuel use information. An improved system of monitoring vehicle use will better support fact-based decision making on sustainable asset management and renewal. In addition, monitoring of engine and driver performance will enable opportunities for further emission savings, particularly through driver performance.

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

The handbook remains a key tool in implementing the eco-driving strategy supported by ongoing awareness training and in-cabin driver training. By promoting and improving safer driving behaviour and skills, the City expects to achieve lower vehicle emissions in the future. Eco-driver mentoring aligned to safe, low-risk driving will be stepped up through 2018 with a goal of reaching all drivers within the fiscal year.

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



Fleet emissions

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



Active transport

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

City staff plan their travel using a simple transport hierarchy:

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

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

Bike Fleet	Q1 2017/18	Q2 2017/18	Year to date	Program to date
Staff trained (#)	21	16	37	665
Distance(km)	2,678	3,886	6,564	34,337

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 October 2017, the City held its annual SydneyRides Festival. More than 25,000 people attended over 30 events making it the biggest and best yet. Over 6,000 people took part in *The Big Adventure* family fun day at Sydney Park with activities including skating, mountain boarding, balance bike classes, kite-making, yoga, footy and cricket clinics. A record crowd of more than 5,000 people attended the *Light the City* finale for a Halloween inspired night of light and entertainment as Mrs Macquarie's Point was closed to traffic for people to ride, walk or scoot around the harbour.

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.



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 ¹⁶ 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 2017 included upgrades of Missenden Road, Camperdown, Foveaux Street, Surry Hills and Argyle Street in Millers Point.

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

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

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

The first phase started in 2016 and 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. In 2017 installation of signage

has also been completed in Haymarket, Pyrmont, Surry Hills and Redfern as well as some signage at Green Square. Darlinghurst, Potts Point and Woolloomooloo are due for completion in April this year.

In December a series of booked out walking tours were organised to highlight newly opened sections of George Street to coincide with the Christmas period.



¹⁶ Central Sydney is the Census area defined by the Australian Bureau of Statistics that informs 2011 Journey to Work data



Cycling

Six private bike share companies started operations in 2017 providing a sustainable and convenient transport option in inner Sydney.

Dockless bike share is a new business model that allows people to access a fleet of bikes through a smartphone app. Bikes can be used for return or 1-way trips and don't have to be returned to a docking station.

The City has been working closely with the operators, government agencies and councils to encourage responsible and safe management of the schemes. The City's online guidelines published in July have been viewed by more than 21,000 people to date and are regularly updated. The guidelines have been further developed by six inner Sydney councils and endorsed by operators, reviewable after three months.

The take up of bike share in Sydney is high. In November there were 2,600 trips daily.

Bike share has been particularly popular in Green Square. The 2016 census journey to work data showed up to 14 per cent of Green Square residents ride to work.

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

PROJECTS UPDATE

- Green Square town centre's newest streets and cycleways, Paul and Geddes Streets, were officially opened on Saturday 28 October.
- Final designs and proposed parking changes to support the Wilson and Burren streets walking and cycling improvements were both unanimously supported by the Local Pedestrian, Cycling and Traffic Calming Committee in December.

	Q1 2017/18	Q2 2017/18	Year to date
Share the Path sessions	35	31	61
STP Tune Ups (#)	231	286	517
STP maps issued (#)	1404	1155	2559
STP bells issued (#)	265	307	572
Cycling courses (# participants)	95	34	129
Maintenance courses (# participants)	93	60	153
Balance Bike Clinic	1378	846	2224

EVENTS & CAMPAIGNS UPDATE

- Cycling connections through Green Square were promoted with regular face to face events, a cycling map showing current and future cycleways and a commuter route map for local residents.
- A Guide to Installing Bike Parking in Residential Buildings was produced in collaboration with Smart Green Apartments program and Green Strata.
- A cycling tour was organised for the Mayor of Vancouver Gregor Robertson to experience Sydney's new public spaces, city centre development, cycleways and social housing areas ahead of his City Talk.
- The City organised and hosted a Cross Council forum of transport officers in September.
- More than 800 people provided feedback to a future of cycling in Sydney survey developed to inform a new Cycling Strategy. The draft Cycling Strategy will go on exhibition in early 2018.
- Guided market, foodie and family park rides were rolled out in November.
- We also continued our basic and intermediate bike maintenance courses and our popular balance bike clinics for kids, which take place at Sydney Park Cycling Centre.



Public transport

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

The proposed West Metro remains a centrepiece of the NSW Government's plans. It will support the growth of both Sydney and Parramatta, renewal elsewhere in the City, and increase capacity on rail lines serving the City Centre. The City is actively engaged in planning route and station location options.

The City made representations to the Australian Government to ensure the proposed transit connection between the City Centre, Green Square and Southern Sydney remains a key infrastructure priority.

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

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

The City has continued to work closely with Transport for NSW on the CBD and South East Light Rail. The Light Rail will travel from Circular Quay along George Street to Central Station and on to Moore Park, then to Kingsford via Anzac Parade and Randwick via Alison Road and High Street. The NSW Government expects light rail to be operating in 2019. Sections of the George St pedestrianised area were open to the community for Christmas 2017.





Liveable Green Network

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

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

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.

The City has delivered the following LGN Improvements recently:

- Continuing the three year follow programs for lighting, furniture and pedestrian ramps
- Missenden Road – Longdown Street to Marsden Street – Works have completed.
- Foveaux Street – Mary Street to Crown Street – Works have completed.
- Ongoing liaison with Sydney Light Rail on Devonshire Street streetscape design.
- Installation of an additional 70 seats throughout the LGA.
- Installation of 500 LED lights at the back of existing Ausgrid poles through our LGN.

Car sharing

Car sharing schemes allow people to drive when they need to, without the hassle and cost of car ownership. A single car share vehicle can take up to ten cars off the road.

As of the end of November 2017 34,288 city residents and businesses were members of a City authorised car share organisation.

The City provides 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.

The City's Car Sharing Policy, adopted by Council in November 2016, provides the framework to support the continued growth in car sharing, while allowing for increased competition from operators.

A new operator, Car Next Door, was granted eligibility to apply for onstreet spaces in mid-2017. Their fleet will be branded "citi".

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](#)



8. Green and cool city

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

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

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

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



City of Sydney Operations

What we are doing

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

- Planted thousands of new street trees since 2005 and installed landscaping and additional plants throughout the city's streets and parks
- Provided annual floral displays and hanging baskets in areas with no landscaping or planting through the City's Living Colour program
- Planted thousands of native plants and increased habitat across our bush restoration sites since 2015
- Upgraded 68 small parks since 2008 and installed 154 raingardens




How we are tracking

Measurement of canopy cover for the city was undertaken in late 2017. The data will then be analysed by the City in the first quarter of 2018, and then shared with the community. 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 sites in the city have increased to 12.3ha, from the baseline of 4.2ha in 2012.



Our operational targets

 Urban canopy	<ul style="list-style-type: none"> – The average total canopy cover is increased by 50 per cent by 2030 (from 15 to 23 per cent), and increased by 75 per cent by 2050 (to 27 per cent), from a 2008 baseline – Plant 700 street trees each year until 2021 – Tree species diversity will not consist of more than 40 per cent for any particular plant family, 30 per cent for any genus or 10 per cent for any one species by 2021
 Urban ecology	<ul style="list-style-type: none"> – Habitat sites in the city are protected and the area of bush restoration sites is increased by 100 per cent by 2023 from a 2012 baseline of 4.2 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 trees and green spaces are one of a city's most important natural assets. They are crucial to maintaining the high quality of our public realm and achieving Sustainable Sydney 2030, by assisting the creation of green corridors and increased canopy cover.

The in-road tree planting projects at Cowper Wharf Rd Woolloomooloo (pictured) were completed, work will soon commence at Bowman St Pyrmont and Ripon Way Rosebery and design work continues for Catherine Street Glebe and Primrose Ave Rosebery.

This planting is undertaken as part of the City's Street Tree Master Plan 2011¹⁷, 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, 68 small parks have been completed, including 5 completed during Q1 and Q2 in 2017/18 and several more currently being planned. Upgrades have been completed at Bowden Playground, Alexandria, Foveaux Street Reserve Surry Hills, Jack Shuttleworth, Erskineville, Amy Reserve, Erskineville and Nita McCrae Reserve, Millers Point.

Under the Greening Sydney program various areas have been converted to increase the vegetated space within the City. During Q1 and Q2 2017/18 4,591 m² of landscaping (grass and planting installation) was completed. Major planting works were completed at Paul Street, Geddes Avenue and Botany Road, Green Square, Reservoir Street, Surry Hills and Royston Street, Kings Cross.

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. 154 raingardens have been installed to date.



	Q1 2017/18	Q2 2017/18	2017/18 target	Year to date	Total to date
Small park upgrades (#)	4	1	3	5	68
Landscaping (grass/planting) (m ²)	1,980	2,611	8,000	4,591	83,424
New shrubs and grasses planted in City parks and streets	15,418	16,698	50,000	32,116	
Raingardens (#)	N/A	N/A	trend	N/A	154
Street trees planted since 2005 (#)	139	43	700	182	12,329
	Q1 2017/18	Q2 2017/18	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 undertaken in late 2017, and the data will be analysed in 2018.

Relevant links

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



Urban Ecology

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

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

The Spring Urban Ecology workshop series delivered 10 workshop and tours to 147 residents. All workshops received strongly positive evaluation with 50 additional sign ups to the City's Urban Ecology newsletter, which delivered to 273 subscribers in 2017. The City's Annual Bird Survey again partnered with Birdlife Australia's Great Aussie Backyard Bird Count. The total number of surveys submitted was 304 in the LGA with 266 participants involved throughout the duration of the event (22 – 28 October 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 used and specialist contractors required to assist in maintenance. A program to manage the wetland levels is being developed to ensure diversity of birdlife is maintained.

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 2017. Reptile and amphibian surveys will be carried out early 2018 to complete these surveys.

The City is continuing to upgrade parks to extend bush restoration sites and improve the diversity and habitat value of existing bush restoration sites. Since 2014, bush restoration sites have increased to 12.3ha, almost tripling the baseline figure of 4.2 ha from 2012. The development of internal habitat creation guidelines was finalised and is due for release across relevant City units in 2018. This will guide the design and development of habitat features in new projects and upgrades to parks.

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 organic vegetables, herbs and flowers and helping reduce household waste through community composting. Community gardens also brings people together to share knowledge and skills into a harmonious demonstration space within our city.

The City continues to support and implement community gardens in the local government area, with 20 gardens in place at the end of December 2017.

A new community garden at Millers Point is in development.

The City also supports a number of other community programs 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.

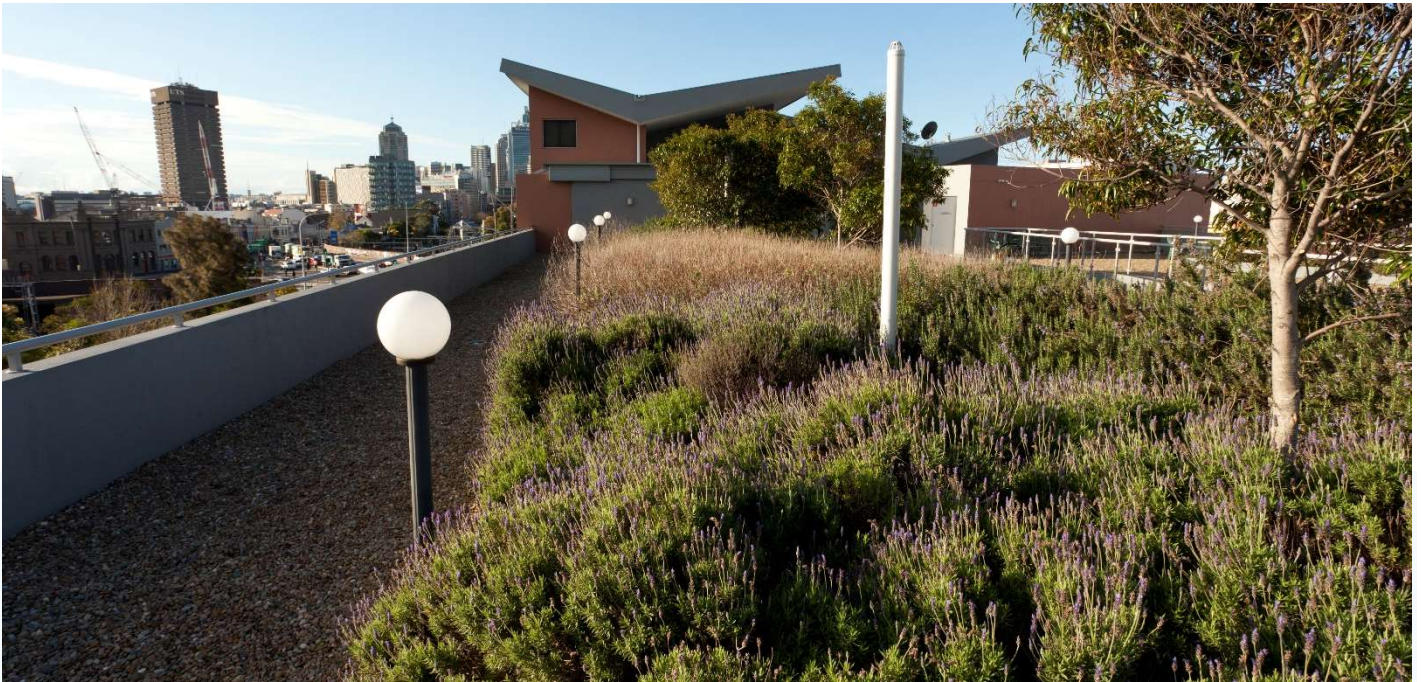
Relevant links

- [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	>18	1	20
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



Photo: Millers Point Group volunteers placing their gardens into wicker beds



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. To date in 2017/18, the City received 29 new development applications which included green roofs and walls.

Currently the City has at least 127,456 m² of green roofs and walls. This period saw green roofs and walls of about 7,500 m² completed on 10 properties.

Performance	2016/17 new sites	2017/18	Total to date ¹⁸	Total area (m ²)
Green roofs in the LGA (#)	42	9	136	127,456
Green walls in the LGA (#)	3	2	42	4,016
Total green roofs and walls (#)	45	10	177	131,472

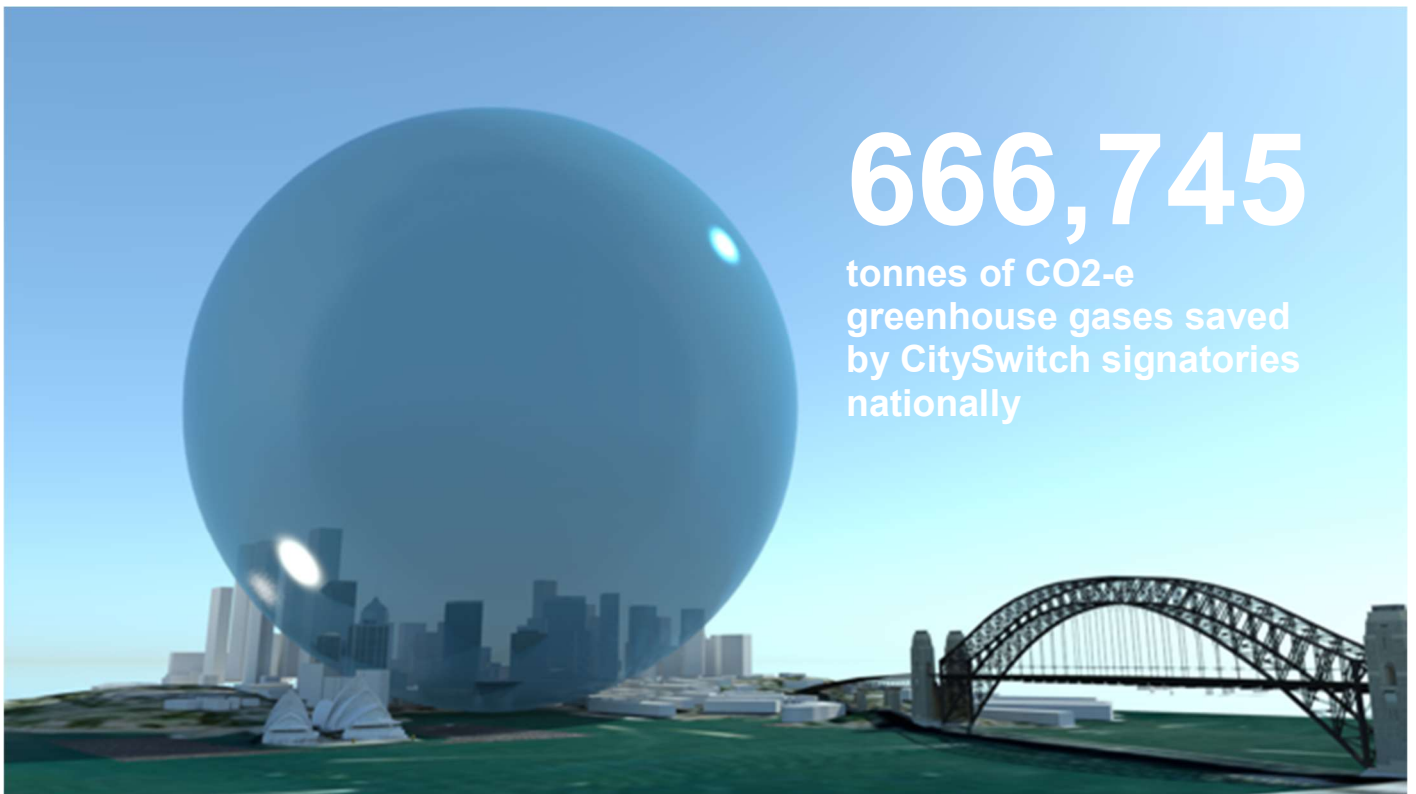
Relevant links

- [Green Roofs and Walls](#)

¹⁸ 2012/13 was the first year of measurement.



9. Delivering to the community



Highlights

In December the Better Buildings Partnership announced that its members had collectively reduced their carbon emissions by 52 per cent in the year ending 30 June 2017, from their financial year 2006 baseline. This has been achieved 4 years ahead of schedule. As a result, the members enjoyed a \$33 million saving from avoided electricity costs in FY2017.

CitySwitch national award winner – the Commonwealth Bank of Australia also announced that it had reduced its emissions by 50 per cent from a 2009 baseline. CBA's achievement is part of the 666,745 tonnes of CO₂-e saved by CitySwitch signatories nationally this year.

In November 2017, the Smart Green Apartment's contribution to the residential strata community was recognised through a NSW Government Green Globes Award for excellence in achieving environmental outcomes in the built environment.

The City has engaged 26 businesses who were introduced by the City's Health and Building Officers to provide sustainability advice during food business inspections and cooling tower inspections. Four food based business have implemented water recommendations and their businesses achieved an average cost savings of approximately \$1,000 per year.



CITY SWITCH

GREEN OFFICE



BUSINESS SECTOR - PROGRAM UPDATE

CitySwitch Green Office NATIONAL

CitySwitch signatories across Australia evidenced a combined saving of 666,745 tonnes of emissions savings from energy efficiency, renewable energy and carbon offsets during the 2016 calendar year - more than double the previous year.

The national Signatory of the Year award was won by the Commonwealth Bank of Australia for reducing their emissions by 50 per cent from a 2009 baseline. New Signatory of the Year was awarded to EML for their tenancy upgrade. Partnership of the Year was won by HFM Asset Management and TSA Group for an extensive energy audit and upgrade program

During the first half of the year CitySwitch launched its behaviour change campaign for reducing coffee cup waste, 'Choose. Reuse'. To date the toolkit has been used by over 80 organisations across Australia.

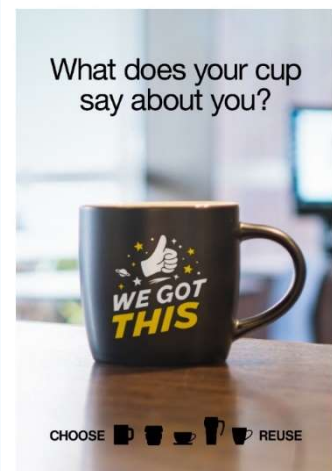
CitySwitch also produced a new ebook - "Healthy Offices: Why Wellness is the New Green". This guide considers how offices influence human health, wellbeing and productivity.

Performance	Q1 2017/18	Q2 2017/18	Year to date	Program to date
Signatories (#)	6	-5	1	580
Tenancies (#)	10	1	11	828
Office floor Space - NLA (m2)	31,861	81,320	113,182	3,608,015
Percentage of all Australian office space ¹⁹	14.05	14.37	14.37	14.37
Average NABERS Energy rating (stars)	-	4.0	4.0	4.0

Figures are net change

Relevant links

[CitySwitch Green Office](#)



BUSINESS SECTOR - PROGRAM UPDATE

CitySwitch Green Office SYDNEY

During the first half of the year CitySwitch Sydney supported Signatories to undertake waste audits and to roll out the coffee cup avoidance campaign: Choose. Reuse. A masterclass was held with twelve signatories to support them in implementing the campaign in their own workplaces.

The annual NSW Awards were held in November. The judging panel awarded: Kernel Property-The Generator Room (Sydney) the New Signatory of the Year for reuse of furniture and office materials; Australian Federal Police (ACT) received highly commended. New Signatory of the Year for their new sustainable fitout; Steensen Varming (Sydney).

Charter Hall (Sydney) and The Naked Duck (Sydney) won Partnership of the Year for implementing a whole building organics program; Norman Disney & Young (North Sydney) was awarded Signatory of the Year under 2000sqm for a wellness initiative; and Commonwealth Bank of Australia (Sydney) was awarded Signatory of the Year over 2000sqm for halving their emissions since 2009.

Performance	Q1 2017/18	Q2 2017/18	Year to date	Program to date
Signatories (#)	0	3	3	121
Tenancies (#)	1	4	5	144
Office floor space (NLA -m2)	-12,261	19,374	7,112	1,055,247
Office floor space as proportion of Sydney (%) ²⁰	20.5	20.76	20.76	20.76
Average NABERS energy rating (stars)	-	4.6	4.6	4.6

¹⁹ Based on 25.1 million NLA m² total per Property Council of Australia, Office Market Report 2016

²⁰ Based on 5.1 million NLA m² total per Property Council of Australia, Office Market Report 2016



BUSINESS SECTOR - PROGRAM UPDATE

Better Buildings Partnership

In December the Partnership announced that its members had collectively reduced their carbon emissions by 52 per cent in the year ending 30 June 2017, from their financial year 2006 baseline.

To maintain its emissions reduction momentum, the Partnership continued its planning for net zero. During the last six months it finalised a tenant engagement best practice report. The report outlines evidence-based principles and campaign ideas that building owners, managers and the City can use to engage office based tenants in the challenge to achieve net zero buildings.

Members commenced using a new tool developed by the Partnership to identify cost effective pathways to net zero buildings. The Partnership also finalised a foundation report on data management within commercial office buildings. This report identifies the barriers, and opportunities to improve data collection and analysis

The Partnership 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 to establish a draft accreditation standard for commercial waste service providers. The development of this standard has been part-funded by a City of Sydney grant. Both are complete and will be publicly launched in March 2018.

Performance	Q3 16/17	Q4 16/17	Year to date	Program to date
Commercial office building floor space participating in Sydney CBD (per cent)	-	-	54	54
Members – Partners (#)	+1	same	15	15
Associate (#)	same	same	5	5
Supporting (#)	+2	same	5	5
NABERS energy rating (stars) ²¹	-	-	4.6	4.6

Relevant links

- [Better Buildings Partnership](#)

COMMUNITY & BUSINESS - PROGRAM UPDATE

Environmental Grants

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

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

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

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

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

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

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

Within the first half of 2017/18, 49 Environmental Performance Grants were approved by Council.

This includes support for a number of Strata Plans for Buildings Operations and Ratings and Assessments projects and:

- support for Energy Action Australia’s Section J energy efficiency templates project,
- Transition Sydney’s Bring Your Own Mug public awareness campaign project,
- a feasibility study for sharing renewable energy in strata,
- 1 Million Women’s mobile phone app to reduce personal carbon emissions, and
- the Community Recycling Network of Australia’s Community Re-use, Repair and Recycling project.

Through the matching grant program funds were provided to support the Forestmedia Network’s threatened species children’s art competition and ShareWaste’s web platform initiative.

Relevant links

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

²¹ Average NABERS ratings reported from December 2016 figures.



RESIDENTIAL SECTOR

Residential Apartment Sustainability Plan

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

The City 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 City continues to provide data and support for the development of the National Australian Built Environment Rating Scheme (NABERS) energy and water rating tool for apartment building common areas.

The Smart Green Apartments Leadership Network is hosted quarterly by the City and is a forum for apartment owners, building managers and strata managers to share learnings on improving the environmental performance of their buildings. The August meeting focused on waste and recycling, linking stakeholders to a range of City and external services to further improve recycling in their building. Several buildings have since implemented initiatives, including charity textile collection bins that have led to approximately three tonnes of textiles has been diverted from landfill since September. Some buildings are now incorporating a waste and recycling element into their building tours for new residents.

The City continued to advocate for improved environmental performance in apartment buildings, presenting at the Griffith University Strata Title Conference and the Facilities Management Australia National Conference. The Smart Green Apartments program was also featured in a presentation to the C40 Private Building Efficiency Network in Singapore to promote best practice in accelerating environmental performance in the residential sector.

Relevant links

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



The Smart Green Apartments Program

The Smart Green Apartments Program is working with 20 large apartment buildings annually to reduce energy and water consumption and improve waste management. The City continues to work with buildings from the 2016 program round. By December 2017, these buildings had implemented 55 per cent of projects recommended through the program, already reducing emissions by 11 per cent.

The 2017 intake of buildings, housing over 7,000 City residents, were welcomed to the program at a launch event at Customs House in October 2017. This event also recognised outstanding achievements of building managers, strata managers and strata committees from the 2016 round.

The City continues to collaborate with Sydney Water to rectify water leaks and install efficient fixtures in apartment buildings. The Sydney Water Waterfix service was implemented in Museum Towers, reducing water use by 35 per cent and saving the owners corporation \$38,000 per annum. Summit Apartments also received the service and will save over 72,000 kilolitres of water and \$145,000 annually.

The Smart Green Apartments program was awarded a prestigious NSW Green Globes Built Environment Award in October 2017.

Photo: Sustainability Programs Team at the Green Globes Award Ceremony



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 Q1 and Q2, four Green Villages talks were delivered at Sydney Park and two at Waterloo Library. Topics included edible green walls, small space balcony gardening, worm farming basics and composting basics. Attended by 121 participants, the talks were delivered by City Farm with support from the Sustainability Programs Team. Evaluation surveys indicated 100 per cent of respondents rated the workshop attended as excellent, very good or good. Follow-up surveys indicated that 85 per cent of respondents undertook one or more new actions since attending the talk.

Four pop-up workshops were delivered to support events including Waterloo and Redfern Social Housing Information Days, Carers Day Out and a National Recycling Week event with the Alexandria Community Centre Seniors Group.

The City's Green Villages website and e-news continues to resonate with time-poor residents. The website has had 40,587 visits in this period. The interactive worm farming video tutorial: 'How to start a worm farm in 4 steps' continues successfully with 130,656 views since its launch.

Performance	Q1 2017/18	Q2 2017/18	Year to date	2017/18 target
Workshops and forums (#)	4	2	6	8
Participants (#)	109	12	121	240
Participants implementing (per cent)	91	80	85	85
Green Villages website sessions (#)	17,086	23,501	40,587	110,000
e-news subscribers (# current)	12,606	12,588	12,588	14,000
e-news open rate (per cent)	27.20	27.60	27.60	28

Relevant links

- [Green Villages](#)



10. Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

investors committed 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.

11. 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. The electricity distributor has provided community-wide high-voltage electricity data for City of Sydney local government area at a high level. Due to confidentiality clauses, a breakdown of the high-voltage data by source has not been provided and hence is not included in the City's community inventory.	Continue to monitor and report environmental data. The City is working to get more detailed information on high-voltage electricity consumption and shall include in its inventory if and when it is available.
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.
Assumptions for chart 8	<ul style="list-style-type: none"> – 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 per percentages are in relation to the 2006 baseline figure 			


Zero waste city

	City of Sydney (Operations)		Local Government Area (LGA)	
	Current Status	Forward Plan	Current Status	Forward Plan
Waste	Commercial waste and recycling from 65 City of Sydney properties is reported quarterly. Construction and demolition waste reporting is limited.	The City has recently completed an organisation wide review into the way in which it collects, reports and verifies recycling and landfill diversion performance data, to significantly improve the accuracy and transparency of our reporting. The City is committed to improved reporting processes and implementing solutions for increased recycling performance of the waste it manages.	LGA residential waste data available and reported in the Corporate Plan. City streets, public place and stormwater waste is not separated for disposal. Separate tonnages are based on estimates from the <i>Operations Waste Databases Audit July 2017</i> , Residential and city streets waste tonnages are reported from processor reports and invoices that are extrapolated into local master spreadsheets. City Parks waste tonnages are reported directly from processor reports and invoices.	LGA commercial waste data capture to be improved and verified. City parks, streets, public place and stormwater waste tonnages to be reviewed for incorporation into SMART.

 Active and connected city

	City of Sydney (Operations)		Local Government Area (LGA)	
	Current Status	Forward Plan	Current Status	Forward Plan
Quantity of people trained and distances travelled	Attendance at training sessions, and monitoring of bike fleets is maintained in registers.	Maintenance and continued review of data.		

 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.

Delivering to the Community

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

12. Appendix 2: Environment Policy

environment policy

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

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

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

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

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

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

our commitments

Objective 2.1

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

City now

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

City in 2030

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

Objective 2.2

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

City now

- City focused on diverting residential waste from landfill.

City in 2030

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

Objective 2.3

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

City now

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

City in 2030

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

Objective 2.4

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

City now

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

City in 2030

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

Objective 2.5

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

City now

- A commitment to strategic environmental initiatives

City in 2030

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

Objective 2.6

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

City now

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

City in 2030

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



Monica Barone
Chief Executive Officer April 2015



LEGEND

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

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

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Sydney2030/Green/Global/Connected



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