

2012/13

# CITY OF SYDNEY STATE OF THE ENVIRONMENT REPORT



*city of villages*



# Future focus

Across the city there are many projects underway to green our own operations, deliver ground-breaking new green infrastructure, and support residents and businesses to live and operate more sustainably.

We are completing retrofits of our own buildings to improve energy and water efficiency, reducing greenhouse gas emissions by 42 per cent in our buildings from 2006 levels and water consumption in our buildings by 20 per cent by the end of the year.

We supply 27 million litres of recycled water each year to irrigate our parks and gardens.

We are installing solar panels on more than 30 major buildings over 2 years, cutting annual greenhouse gas emissions by up to 2,250 tonnes.

We are retrofitting LEDs in 6,448 City owned street and park lighting columns over 3 years to reduce electricity use and greenhouse gas emissions in these columns by 51 per cent.

We have planted more than 8,200 trees since 2005, with plans to double the city's tree canopy by 2030.

We have increased recycling rates from 49 to 66 per cent due to advanced waste treatment which removes recyclable materials from domestic waste and produces compost.

Work is underway on our Green Infrastructure Plan, including the ground-breaking Decentralised Energy and Water Master Plans.

*Sustainable Sydney 2030* and the City's Environmental Management Plan establish the environmental vision, targets and actions for the City's own operations and our local government area. All targets appear in *Sustainable Sydney 2030* with the exception of waste targets, which appear in the Environmental Management Plan.

Our targets for our own operations and the LGA are:

## Emissions

- Achieving a 70 per cent reduction of greenhouse gas emissions from our own operations and the LGA by 2030 based on 2006 levels

## Energy

- Ensuring 100 per cent of electricity used in our LGA comes from local energy by 2030 (70 per cent from trigeneration and 30 per cent from renewable energy)
- No reliance on coal-fired electricity in our own operations or the LGA by 2030

## Transport

- 10 per cent of total trips in the LGA to be made by bicycle by 2030
- Reducing emissions from our own fleet by 20 per cent by 2014

## Greening Sydney

- Having 24 square metres of public open space per resident
- Increasing current canopy cover by 50 per cent by 2030 and by 70 per cent by 2050

## Water

- Reduce mains water consumption across the LGA by 10 per cent of 2006 levels by 2030
- Reduce mains water consumption in the City's own operations to 10 per cent below 2006 levels by 2030
- Replace 30 per cent of the mains water demand across the LGA with recycled or alternative water generated from local resources by 2030
- Reduce sediments and suspended solids discharged into the waterways by 50 per cent and nutrients by 15 per cent from stormwater runoff generated across the LGA by 2030

## Waste

- Achieving 66 per cent resource recovery of residential waste and waste generated by our own operations by 2014
- Achieving 63 per cent resource recovery of commercial waste generated in our LGA by 2014<sup>1</sup>
- Achieving 76 per cent resource recovery of construction and demolition waste from our LGA and City projects by 2014

<sup>1</sup> This is an aspirational target based on government targets. Whilst not responsible for this target, the City has committed to contributing to achievement of this rate

## Legend

\$	Cost
CO <sup>2</sup>	Carbon dioxide
Gt	Billion metric tonnes
Ha	Hectare
kg	Kilograms
kL	Kilolitres
kWp	Kilowatt-peak
LED	Light Emitting Diode
LGA	Local Government Area
m	Metre
m <sup>2</sup>	Square metres
m <sup>3</sup>	Cubic metre
ML	Megalitres
mm	Millimetre
MWh	Megawatt hour
MWe	Megawatt equivalent
MWp	Megawatt-peak
MtCO <sub>2</sub> e	Megatonnes of carbon dioxide equivalent
ppm	Parts per million
t	Tonne
tCO <sub>2</sub> e	Tonnes of carbon dioxide equivalent

## Contents

Message from the Lord Mayor	01
Sustainability Programs	02
Energy and Climate Change	06
Transport	14
Waste and Recycling	18
Water	20
Greening Sydney	22
Land and Noise	24
Community	26

# Lord Mayor's message

Around the world, more and more people choose to live in cities. This can increase the impact on the natural environment and strain natural resources. Cities also offer the best opportunity to reduce our impact.

The City of Sydney recognises the importance of an enduring, balanced approach taking into account the city's economy, ecology, society and culture.

We are addressing each with bold ideas and good governance.

We're working with you to make your vision of a green, global and connected city a reality.

The City of Sydney is working to secure a future that is sustainable, prosperous and liveable.

We define sustainability as meeting the environmental, social and economic needs of the present without compromising the ability of future generations to meet their own needs.

In our consultations to develop Sustainable Sydney 2030 you told us you want a city that is green, global and connected.

Addressing climate change is the biggest challenge we face and identifying alternative sources of energy, including renewable energy, continues to be a priority.

The City will continue to reduce its greenhouse gas emissions and invest in a network of green infrastructure to reduce energy, water and waste water demands.

By 2030 we aim to provide 100 per cent of our energy needs from renewable energy resources within 250km of the local government area. Seventy per cent of our energy will come from trigeneration fuelled by renewable gases and thirty per cent from other renewable sources.

We are investing in energy-efficient buildings, lighting and transport systems. We are helping to contain the Sydney region's urban sprawl by planning for new housing opportunities integrated with vital transport, facilities, infrastructure and open space.

We're also delivering more trees, parks and linked open space to support healthy ecosystems and clean air, land and waterways.

In 2030, the City of Sydney will be internationally recognised as an environmental leader with outstanding environmental performance and new green industries helping to drive economic growth.

Sydney's economic future will be global through links, partnerships and the exchange of knowledge backed by an open-minded outlook.

We will strengthen connections with improved options for walking, cycling and high-quality public transport and foster a sense of community and social wellbeing.

I am proud of the work we have done so far and am committed to delivering our ambitious projects.



**Clover Moore**  
Lord Mayor

# Sustainability

## programs

The City of Sydney is recognised as a leading environmental performer working towards a sustainable future for the city's use of water, energy and waste.

Climate change is the most important issue in the 21st century.

All levels of government, the private sector and the community have a vital role in helping to address the impact of the changing climate on our city and our society.

The City of Sydney has adopted ambitious greenhouse emissions reduction targets in response to mounting evidence of a warmer, more unstable climate.

The City understands that we can work together to:

- stabilise emissions to maintain an acceptable global climate
- ensure the city can cope with the impacts of rising sea levels and flood risk
- reduce the unsustainable growth in energy, water and waste resource demands
- ensure the city has greater energy security and
- build resilience to face climate threats and extreme weather events.

The City of Sydney delivers a broad range of sustainability engagement programs to our residential and business communities. These programs include:

### CitySwitch Green Office

CitySwitch Green Office is a national office tenant program that focuses on energy efficiency. It is run in partnership with the cities of Sydney, North Sydney, Parramatta, Willoughby, Ryde, Adelaide, Perth, Melbourne, Port Phillip and Yarra. The program is supported by the NSW Government Office of Environment and Heritage. The City of Sydney is the national administrator of the program.

The program provides advice, resources and recognition to participants who commit to achieving highly energy-efficient offices, as measured by the NABERS energy rating system. CitySwitch Green Office aspirational targets are for the program to engage with more than 20 per cent of commercial office space in participating Council areas (being 3.27 million square meters), more than 650 tenancies and annual CO<sub>2</sub> reduction of 163,000 tonnes by June 2015.

In Sydney, there are now 105 commercial tenancies covering 865,074m<sup>2</sup> of office floorspace working towards a minimum four out of five star energy rating.

For more, visit [cityswitch.net.au](http://cityswitch.net.au)

### Smart Green Business

The Smart Green Business Program, run in partnership with Sydney Water, assists small to medium businesses in the local government area to improve environmental performance.

The program provides hands-on sustainability advice and support to small to medium businesses in the form of water and waste audits. It also provides assistance in implementing water-efficient fixtures and fittings, waste efficiency recommendations and management, and provides referral to relevant state energy efficiency programs.

The program has assisted 366 Sydney businesses to save on their utility bills and improve their environmental performance since the program began in 2009.

Participants have collectively reduced greenhouse gas emissions by 5,600 tonnes, saved 202 million litres of water and diverted 3,669 tonnes of waste from landfill.

### Smart Green Apartments

The City's Smart Green Apartments program aims to create a more sustainable apartment building sector by inspiring, driving and supporting greener, more cost effective and efficient buildings. The program aims to minimise environmental impacts and improve liveability in strata communities.

This program aims to effect change in apartment buildings within the City local government area.

The program is currently focused on developing and delivering the program with 30 apartment buildings.

The City of Sydney worked with owners and their building and strata managers to develop action plans for each of the 30 apartment buildings during 2012/13, guiding energy-efficiency, water and waste reduction improvements within their buildings.

### Green Villages

The Green Villages program works to drive, build and celebrate sustainable villages through the development of local sustainability programs, events and resources. Participants are encouraged to develop and drive their own local community projects supported through the Environment Grants Program.

The program provides face-to-face engagement and in 2012/13 attracted 1,333 participants to workshops and forums held to support local communities to develop and drive their own sustainability projects.

For more, visit [greenvillages.com.au](http://greenvillages.com.au)

## Environmental Upgrade Finance

The City's environmental upgrade finance service is part of the NSW Government's recently introduced Environmental Upgrade Agreements (EUA). This allows councils to enter into agreements with property owners and finance providers to fund works aimed at improving the energy, water or environmental efficiency of their building.

Under this service, a finance provider gives funds to a building owner for an environmental improvement project, with the funding repaid over time via council charges on the land.

Environmental upgrade finance also allows the cost of an upgrade to be shared with the tenant. Under the agreement, a building owner may pass on part of the cost of the upgrade to the tenant, providing the amount does not exceed the financial saving the tenant will benefit from as a result of the upgrade. This means that tenants can enjoy the benefits of an environmental upgrade in the short-term, and operating cost savings in the long-term.

In 2012/13, the City of Sydney enabled an innovative finance agreement that will deliver low-carbon trigeneration energy to 4,000 future residents of the Central Park development being built by Frasers Property on the former Carlton & United Breweries site.

## Better Buildings Partnership

The Better Buildings Partnership is a collaborative partnership with Sydney's leading commercial building owners.

The intent of the partnership is to support the implementation of the City's Green Infrastructure Plan. It plays an important role in developing and advocating for solutions to key issues and barriers facing building owners. It also helps to improve the environmental performance in the commercial building sector, responsible for approximately 50 per cent of local government area emissions.

The Partnership is directed by a leadership panel, consisting of the sustainability managers of the foundation members, and will deliver solutions as defined in an annual work plan.

The Partnership has published two guides; 'Connection Guidelines to Prepare a Building for Recycled Water Source' and a guide explaining to tenants the business case for choosing high-performing buildings.

A number of other documents have also been finalised, ready for endorsement by stakeholders prior to publishing. These documents provide information related to: planning, compliance and the Building Code of Australia Energy Efficiency Regulations - Section J, Leasing Agents and sample green lease clauses.

Throughout the year the Better Buildings Partnership has been working with the industry stakeholders who influence the delivery of improved environmental performance in the commercial sector to help them address the barriers they face.

For more, visit

**[sydneybetterbuildings.com.au](http://sydneybetterbuildings.com.au)**

*Image: Outside the Brewery Yard Building at Central Park from left to right:*

*Chairman, Low Carbon Australia Martijn Wilder, Frasers Property CEO Guy Pahor, ANZ Global Head of Commercial Property, Eddie Law, City of Sydney Lord Mayor, Clover Moore, Sekisui House General Manager, Atsuhide Segushi, Director of Eureka Funds Management, Niall McCarthy*



# Sustainability

## programs

### Green Living Centre

The Green Living Centre is a sustainability 'drop-in' information and education hub located on King St, Newtown. The centre is open to the public Tuesdays to Saturdays.

The Centre is a partnership between the City of Sydney and Marrickville Councils aiming to inspire, enable and connect local communities to reduce their environmental footprint.

Visitors can find out about free workshops, browse the library for information and inspiration, borrow a cargo bike, find out about local sustainable services and initiatives, buy some worms, or simply chat to staff about practical ideas for every day sustainable living.

### Waste avoidance programs

The City's Sustainability Programs team ensures that waste avoidance and reuse initiatives are incorporated into all of the programs we offer our community. This can take the form of specific Green Village workshops, waste assessments for small and medium businesses and support for City sponsored events to reduce their waste and strategies and studies.

A summary of the City's Reuse Study was presented at the Coffs Harbour Waste 2013 conference.

During 2012/13 the City delivered education and events designed to reduce waste being produced and to increase the amount of waste that is reused rather than disposed of.

### Environmental grants

Environmental grants provide funding for organisations that provide an environmental benefit to our city villages.

Grants have been awarded to start community gardens, sponsor exhibitions on sustainable living and begin urban renewal projects. Grant submissions are accepted twice a year and community information sessions are held before application closing dates.

In 2012/13 grants were provided to:

- Alternative Technology Association (Speed Date a Sustainable Designer)
- Australian Climate Coolers (Women Power)
- Conservation Volunteers Australia (Breathing Green Health into Moore Park)
- Eastside Radio (East Side Ride)
- Garage Sale Trail (Grow It Local)
- Green Renters (Green Renting Expo)
- Hobo Gro & Curb Collective (Living Sustainably Workshop Series)
- Matthew Talbot Homeless Services & St Vincent de Paul Society (Pedal Power)
- Mission Australia (Common Ground Community Garden)
- The Nature Conservation Council of NSW (Growing Edible Food in Small Spaces)
- Sydney Sustainable Markets (Pop-Up Education Area)
- Total Environment Centre (Kick a Can for Recycling)
- University of Technology, Sydney (Feasibility study on reusable food container scheme for takeaway food in the city centre)
- Youth Off The Streets (Trashed)
- Youth Off the Streets (Palletable)

## Sustainability Programs

CitySwitch Green Office (Sydney)	2008/09	2009/10	2010/11	2011/12	2012/13
Tenancies (total in program)	No data	No data	77	95	105
Office floor space - NLA (m <sup>2</sup> ) (total in program)	No data	No data	672,552	736,915	865,074
NABERS rating average for tenancies <sup>2</sup>	No data	No data	4 star	3.6 star	No data

<sup>2</sup> NABERS ratings for tenancies for 2012/13 will be available in the 2013/14 report.

Smart Green Business <sup>3</sup>	2008/09	2009/10	2010/11	2011/12	2012/13
Businesses engaged (number)	-	90	49	81	146
Potable water savings implemented (ML p.a)	-	56	215	85	117
Waste diverted from landfill (T p.a)	-	-	-	1,549	2,120
Energy savings implemented (MwH p.a)	-	-	-	625	675
Greenhouse gas emissions reduced (tCO <sub>2</sub> e p.a)	-	-	-	2,345	3,255

<sup>3</sup> The Smart Green Business Program commenced in 2009. Waste, energy and emissions savings actions were added to the water savings actions from 2011/12.

Green Villages	2008/09	2009/10	2010/11	2011/12	2012/13
Workshops and forums (number)	No data	No data	39	39	34
Participants engaged face-to-face (number)	No data	No data	956	1,598	1,333
e-News subscribers (total)	No data	12,768	14,920	12,449	13,029

Better Buildings Partnership (BBP) <sup>4</sup>	2008/09	2009/10	2010/11	2011/12	2012/13
Commercial office space under management (percentage)	-	-	-	No data	51%
Founding members (total)	-	-	-	14	14
Ordinary members (total)	-	-	-	2	2
Associate members (total)	-	-	-	3	7
Reduction of greenhouse gas emissions from 2006 (percentage)	-	-	-	No data	31%

<sup>4</sup> The Better Buildings Partnership commenced in 2011. Percentages calculated in accordance with the Better Buildings Partnership Metrics Benchmarking and Reporting Handbook.

Green Living Centre	2008/09	2009/10	2010/11	2011/12	2012/13
Workshops and events (number)	No data	111	73	65	71
Workshop participants (number)	1,360	2,563	2,706	1,124	1,448

# Energy and climate change

Scientific evidence tells us that greenhouse gas emissions from human activity, particularly our use of fossil fuels, are contributing to climate change. We also know that climate change is occurring faster than initially predicted.

Only dramatically reducing greenhouse gas emissions can slow the changes we are experiencing now.

Sydney is already starting to feel the effects of global temperatures rising. The city recorded its hottest day ever on 18 January 2013, with temperatures peaking at 46.4 degrees Celsius.

June 2013 was the wettest month since 2007, with more than double the historical rainfall average for Sydney.

## Climate change

In its Fourth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC), a group of 1,300 independent scientific experts from around the world, concluded there is a **more than 90 per cent probability that human activities over the past 250 years have warmed our planet.**

Cities have a critical role in reducing greenhouse gas emissions because, though they cover only two per cent of the earth's land surface, they have more than 50 per cent of the population, and produce 75 per cent of the world's emissions.

The City of Sydney is developing a Climate Change Adaptation Plan to look at ways we can prepare the city for the environmental, social and economic impacts of climate change such as heatwaves, energy and water security, storms and flooding.

The City has ambitious targets to reduce 2006 emissions by 70 per cent by 2030. We are:

- installing energy efficient LED street and park lights
- rolling out Australia's largest building-mounted solar panel project
- carrying out energy efficiency retrofits of major buildings
- helping residents, businesses and building managers reduce greenhouse gas emissions and energy bills through energy efficiency programs.

## Green infrastructure

At the moment, 80 per cent of the City's greenhouse gas emissions come from the production of electricity, primarily by coal-fired power stations in the Hunter Valley. Two-thirds of the energy being used by these stations is wasted as heat from cooling towers and on long-distance transmission and distribution over power lines to Sydney.

Energy efficiency and renewable energy could achieve savings of around \$224 million by 2020 and \$1.28 billion by 2030 in deferred electricity network costs and avoided costs of new power station capacity to serve the city's growing demand.

As part of *Sustainable Sydney 2030*, we're working to turn Sydney from its reliance on coal-fired electricity into a 100 per cent renewable energy city.

We're investigating innovative plans for producing energy from renewable sources, advanced waste treatment to generate renewable gases from non-recyclable waste and a decentralised water system. We call this green infrastructure.

The City is developing a Green Infrastructure Master Plan to help decide the best way to implement green infrastructure projects in our own operations and the City of Sydney LGA.

The Green Infrastructure Plan comprises five Master Plans. Some of these plans have been approved or are on public exhibition:

- Decentralised Energy Master Plan – Trigenation
- Decentralised Energy Master Plan – Renewable Energy
- Decentralised Energy Master Plan – Advanced Waste Treatment
- Decentralised Water Master Plan
- Automated Waste Collection Master Plan.

In addition to these plans and the Climate Change Adaptation Plan, we are also looking at technologies and actions we can use to reduce energy consumption and greenhouse gas emissions across the city through an Energy Efficiency Master Plan.

These plans, combined with our own individual efforts to reduce our impact on the environment will create a green, global and connected city.

For more,

visit [greeninfrastructure.net.au](http://greeninfrastructure.net.au)

## Decentralised Energy Master Plan – Renewable Energy

Renewable energy is a key part of the City's goal to reduce greenhouse gas emissions across the entire local government area by 70 per cent below 2006 levels by 2030. This includes targets to replace 100 per cent of the natural gas supplying the trigeneration network with renewable gas and 30 per cent renewable electricity generation by 2030. Together, trigeneration fuelled by renewable gas and electricity generated from renewable sources within 250km of the City's LGA could meet 100 per cent of the City's LGA electricity, heating and cooling requirements by 2030.

The Decentralised Energy Master Plan – Renewable Energy has been developed to focus on renewable resources and technologies that could deliver a 100 per cent non-intermittent renewable energy system for the City of Sydney LGA by 2030. The Master Plan is based on the most detailed technical, financial and economic assessment of renewable energy opportunities for the Sydney region.

Based on worldwide renewable energy best practice, the Master Plan identifies the mix of renewable electricity and renewable gas resources to overcome the irregularity of supply of renewable energy and to supply the City's LGA with 100 per cent non-intermittent, secure and reliable renewable energy.

In developing the Master Plan the 100 per cent local energy target in *Sustainable Sydney 2030* was developed into a proximity principle of renewable energy generation within 250km of the City's LGA. The LGA cannot accommodate all of the renewable energy generation that it needs to meet demand. The proximity principle avoids the theoretical supply of renewable energy from other states or even outback NSW that could never reach Sydney. The proximity principle also reduces the need for costly network augmentation by incentivising renewable energy generation close to energy demands.

Renewable electricity generation is principally based on solar and wind technologies but other renewable generation resources such as marine technologies which may become economically viable by 2030 are also included in the Master Plan.

Renewable gas generation is based on two principal renewable feedstocks – synthetic gas (syngas) derived from municipal solid waste, commercial, industrial, non-native forestry and broadacre crop waste and biogas derived from animal manures, horticulture waste, sewage and landfill. Both types of gases can be converted into a substitute natural gas and injected into the gas grid to replace natural gas to supply the trigeneration network and domestic gas supplies in the City's LGA.

The Decentralised Energy Master Plan - Renewable Energy, if implemented, could:

- reduce greenhouse gas emissions across the City of Sydney LGA by 2.384 MTC02e per year (37.5 per cent) below 2006 levels by 2030
- together with the Decentralised Energy Master Plan - Trigeneration reduce greenhouse gas emissions across the City of Sydney LGA by 4.411 MTC02e per year (69.2 per cent) below 2006 levels by 2030

- together with all three Decentralised Energy Master Plans (Trigeneration, Renewable Energy and Advanced Waste Treatment) reduce greenhouse gas emissions across the City of Sydney LGA by 4.520 MTC02e per year (71.1 per cent) taking account of avoided landfill gas emissions, below 2006 levels by 2030
- supply 100 per cent (477 MWe) of the City of Sydney LGA trigeneration network from renewable gas derived from waste feedstocks available within 250 km of the LGA by 2030
- supply 18 per cent (534.5 MW) of the City of Sydney LGA electricity demand from renewable electricity generation located within the City's LGA by 2030
- supply 12 per cent (170 MW) of the City of Sydney LGA electricity demand from renewable electricity generation located within 250 km of the City's LGA by 2030
- supply 100 per cent of the City of Sydney electricity, heating and cooling demands from trigeneration fuelled by renewable gas and electricity generated from renewable sources within 250km of the LGA by 2030.

Although beyond the scope of the Master Plan, the plan does identify Australia's vast renewable energy resources which are many times greater than Australia's annual energy needs. For example, the annual solar radiation falling on Australia is approximately 58 million petajoules (PJ), about 10,000 times Australia's annual energy consumption. This compares with the 8,053 PJ of black coal and 1,086 PJ of natural gas that Australia exported in 2010/11. Utilising new 'power to gas' and liquefied renewable gas technologies, Australia could replace its fossil fuel exports with renewable energy exports of a far greater economic value and reduce global emissions rather than increasing them.

The Master Plan is based on three technical appendices – a Renewable Energy Master Plan Study undertaken by international consultancy firm Arup, a Renewable Gases Supply Infrastructure Study undertaken by Talent With Energy and a Financial and Economic Analysis Study undertaken by The Allen Consulting Group.

The draft Master Plan was drawn up by the City and made available for public exhibition during July-September 2013.

Renewable energy so far installed in the City of Sydney LGA amounts to 1.365 MW with 1.346 MWp of solar PV over 34 sites and 0.019MW of wind turbines over four sites.

# Energy and climate change

## **Decentralised Energy Master Plan – Trigeneration**

Trigeneration is a key part of the City's goal to reduce greenhouse gas emissions across the entire local government area by 70 per cent below 2006 levels by 2030. This includes a target of 70 per cent of electricity from trigeneration by 2030.

We plan that trigeneration will initially be fuelled by low carbon natural gas to enable the construction of the first precincts. We are aiming to replace this low carbon natural gas by renewable gases by 2030.

The final Master Plan was adopted by Council in June 2013. It forms part of the City's Green Infrastructure Plan and completes the interim Trigeneration Master Plan, published in 2010/11. The Master Plan includes new results for four "hot spot" zones, bringing the new total trigeneration and cogeneration potential capacity to 477MWe (previously 360MWe).

The adopted Master Plan also contains updated information about the negligible air quality impacts, availability of natural gas supplies, case studies for buildings to connect to the thermal energy network and for domestic fuel cell cogeneration.

The Decentralised Energy Master Plan – Trigeneration shows that, if implemented, a decentralised energy network could:

- reduce greenhouse gas emissions within Low Carbon Infrastructure Zones by 39 to 56 per cent below 2006 levels by 2030
- reduce greenhouse gas emissions across the City of Sydney LGA by 24 per cent to 32 per cent below 2006 levels by 2030
- provide lower cost of carbon abatement than solar, wind, hydro, or coal or gas-fired power station carbon capture and storage
- provide the city with an energy solution that is transformative, future-proof and will provide infrastructure that other green infrastructure can benefit from.

Trigeneration so far installed in the City of Sydney LGA amounts to 12.9 MWe of trigeneration capacity over 12 sites.

The final Decentralised Energy Master Plan – Trigeneration was drawn up by Kinesis, the case studies by WSP and the gas augmentation study by Jemena.

For more visit [greeninfrastructure.net.au](http://greeninfrastructure.net.au)

## **Automated Waste Collection Master Plan**

An automated waste collection system could evacuate recycled and non-recycled waste underground at 70km/hour via underground pipes to a receiving station. Waste would be taken away by conventional trucks to the advanced waste treatment station to be recycled or converted into renewable gases for trigeneration. Advanced waste collection systems may eventually form an underground collection network in high density areas, in the same way as underground sewage waste collection systems replaced the previous truck collection system in cities.

Where automated waste collection systems have been installed in other countries, they have significantly improved amenity for both residents and businesses and reduced waste collection transport emissions by up to 90 per cent.

The Master Plan will explore how phased development of a city-wide automated waste collection system at strategic locations in the city can take advantage of any common precinct-scale trigeneration network infrastructure routes and stations. As a city-wide automated waste collection system may take some time to deliver, the Master Plan will also include local advanced non-automated waste collection systems.

## **Decentralised Energy Master Plan – Advanced Waste Treatment**

Advanced waste treatment is a key part of the City's goal to reduce greenhouse gas emissions across the entire local government area by 70 per cent below 2006 levels by 2030. This includes a target of converting 34 per cent of the city's waste that would otherwise go to landfill as non-recyclable waste, into renewable gas for the City's trigeneration network.

The reduction in greenhouse gas emissions from using renewable gas derived from waste replacing natural gas supplying the City's trigeneration network are accounted for in the Decentralised Energy Master Plan – Renewable Energy. The reduction in greenhouse gas emissions from avoided methane emissions at landfill sites by diverting waste away from landfill to renewable gas generation is accounted for in the Master Plan.

The Decentralised Energy Master Plan – Advanced Waste Treatment shows that, if implemented, the city's municipal, commercial and industrial non-recyclable waste going to landfill could:

- reduce greenhouse gas emissions across the City of Sydney LGA by 0.108 MTCO<sub>2</sub>e a year (2 per cent) through avoided landfill gas emissions below 2006 levels by 2030 (not included in the Renewable Energy Master Plan)
- reduce greenhouse gas emissions across the City of Sydney LGA by 0.106 MTCO<sub>2</sub>-e a year (2 per cent) through conversion of non-recyclable waste into renewable gas for the trigeneration network below 2006 levels by 2030 (included in the Renewable Energy Master Plan)
- together with avoided landfill gas emissions and conversion of non-recyclable waste into renewable gas for the trigeneration network reduce greenhouse gas emissions across the City of Sydney LGA by 0.214 MTCO<sub>2</sub>-e a year (4 per cent) below 2006 levels by 2030
- supply 5 per cent (22 MWe) of the City of Sydney LGA trigeneration network from renewable gas derived from the non-recyclable waste feedstocks available within the City's LGA by 2030.

The Master Plan draws from an earlier business case for an advanced waste treatment plant to treat the City of Sydney domestic (municipal solid waste) and the LGA's commercial and industrial waste undertaken by Arup and a technical appendix – a gasification Technologies Review study undertaken by Talent With Energy.

The draft Master Plan is being drawn up by the City and will be placed on public exhibition during 2013/14.

**Decentralised Water Master Plan**

The 2003–2010 droughts brought home the impacts of taking water for granted. The recent floods and unseasonable warmer weather have also reminded us that Australia’s historic drought and flood cycles are predicted to become more intense with climate change.

The droughts led to water restrictions and a growth in individual recycled water systems, as Sydney tried to adapt to unpredictable and dramatic weather cycles. However, there was no integrated city-wide strategy to mitigate or adapt to these events. It is vital the city’s water supply is sustainable, drought-proofed and utilised to adapt to climate change.

The city has the oldest water supply and sewerage infrastructure in Australia, and now is the time to rethink how we deliver the city’s drinking and non-drinking water supplies for the 21st century.

**Currently, we only drink two per cent of the drinking-quality water which is pumped into our city.**

Even taking other drinking-quality water uses into account, such as catering, showering and bathing, it still accounts for no more than half our water consumption. The other half is for non-drinking water uses such as toilet flushing, air-conditioning cooling towers and irrigation of our parks and gardens.

In response, the City of Sydney has developed a Decentralised Water Master Plan. The Master Plan identifies actions and investments the City of Sydney can make to reduce its reliance on potable water, increase the use of recycled or alternative sources of water for non-potable use, and improve the quality of stormwater discharged to Sydney Harbour and Cooks River. This will make our city more self-sufficient and able to address climate change issues such as the urban heat island effect. It will also free up drinking water supply capacity, particularly important in times of drought.

The Master Plan provides a blueprint to:

- reduce mains water consumption across the local government area and in our own operations by 10 per cent of 2006 levels by 2030.

With the growth in Council buildings and operations portfolio, in particular irrigating all City parks and gardens to adapt to climate change and reduce the urban heat island effect, the City anticipates that its water consumption will increase by 30 per cent on a ‘business as usual’ basis.

Reducing 2006 mains water use will provide an effective target of a 40 per cent reduction in mains water consumption by 2030 in practical terms.

- replace 30 per cent of the mains water demand across the local government area with recycled or alternative water generated from local resources by 2030.

The 30 per cent target will be delivered in partnership with NSW and Federal governments to help deliver the City’s LGA contribution towards the national target of 30 per cent of Australia’s wastewater being recycled, with 10 per cent by the City of Sydney implementing measures and 20 per cent by NSW and Federal governments funding and/or implementing measures.

- reduce sediments and suspended solids discharged into the waterways by 50 per cent and nutrients by 15 per cent from stormwater runoff generated across the local government area by 2030.

In addition, the Decentralised Energy Master Plan – Trigeration, if implemented, has the potential to reduce water demand from coal fired power stations by a net 9.5 GL/year, equivalent to a 22 per cent reduction in the City of Sydney LGA 2030 potable and non-potable water demand.

The Master Plan was produced by the City and is based on three technical appendices – a Water Efficiency Plan, a Recycled Water Plan and a Water Sensitive Urban Design and Stormwater Infrastructure Improvement Plan. The technical appendices were prepared by international consultancy firm GHD with assistance from the Institute for Sustainable Futures and P3iC.

The draft Master Plan was placed on public exhibition during August/September 2012 and has now been adopted by Council.



Image: Sydney Park, St Peters

# Energy and climate change

## Solar photovoltaics program

The City has continued the installation of 5,500 solar photovoltaic panels on more than 30 City buildings. A total of 2,574m<sup>2</sup> of panels had been installed at 24 sites to end June 2013.

By 2015 the panels are expected to supply up to 12.5 per cent of all the electricity needs from renewable energy and will be the largest concentration of solar photovoltaics on buildings in single ownership in Australia.

Installation of further panels will complement the installations already in place on rooftops of City properties including Sydney Town Hall, Alexandria Child Care Centre, Redfern Community Centre and the Surry Hills Community Centre.

Solar power has been installed in a number of buildings with others due to be installed over the next two years. Sites include:

- 343 George Street
- Abraham Mott Gymnasium
- Andrew (Boy) Charleton Pool
- Bourke Street Depot
- Epsom Road Depot
- Erskineville Town Hall
- Paddington Town Hall
- Pine Street Creative Arts Centre
- Sydney Park CARES facility
- Sydney Park Pavilion
- Tote Building, Green Square
- Ultimo Community Centre
- Victoria Park Pool
- Waterloo Library

It is expected that the project will reduce greenhouse gas emissions by 1,571 tonnes a year and, together with the City's existing solar photovoltaic projects, will increase the City's solar electricity capacity to 2MWh.

The contract was let to Solgen Energy. Indicative figures based on current analysis suggest that the cost per tonne of carbon abatement for sites where panels are already installed is approximately \$10 per tonne with a payback period of approximately 13 years.

## LED lighting

The City has one of the largest portfolios of street lighting in NSW with 22,000 lights. Of these, 13,500 are maintained by Ausgrid and 8,500 by the City.

The City of Sydney has become the first city in Australia to roll out new energy-efficient LED street and park lights.

The City is replacing 6,448 conventional lights with the new LED lights. This will save nearly \$800,000 a year in electricity bills and maintenance costs, and reduce electricity consumption in City-owned street lights by over 40 per cent, and greenhouse gas emissions by 2,185 tonnes a year. Payback is estimated within 10 years.

To end June 2013, 2,620 LED street lights had been installed, resulting in a 27 per cent reduction in emissions from street lighting.

The rollout of LED lights follows a successful 18 month trial in Alexandria Park, Kings Cross, Martin Place and Circular Quay and participation in an international trial of LED lighting with London, New York and Hong Kong. The trial was organised by the Climate Group, an international environmental organisation.

A report on the benefits of LED lighting in cities was produced by the Climate Group and is available on their website at [theclimategroup.org](http://theclimategroup.org)

Following the commencement of the City of Sydney's LED street and public domain lighting program, the NSW Government supported the City's work, with electricity network operator Ausgrid announcing in August 2013 that they will be rolling out LED lighting in Ausgrid owned lights across 41 councils in Sydney, the Central Coast and the Hunter Valley. Under Ausgrid's proposal, about 10,000 LED street lights will be installed each year.

The \$7 million guaranteed energy performance contract was let to the GE and UGL consortium and will be completed within three years.

## Building efficiency retrofits

The City has let a contract to retrofit 45 of our major buildings with energy and water savings measures.

It is anticipated that the retrofit will cut energy use in our properties by 6,641 MWh, reduce greenhouse gas emissions by 7,000 tonnes or 24 per cent per year and water consumption by 53,313 kL per year.

The energy and water savings will be independently verified. Payback is estimated within nine years.

Approximately 95 per cent of the contract had been installed at June 2013.

Over the coming months, energy and water saving equipment will be commissioned, fine-tuned and monitored to achieve the prescribed results.

Following this commissioning period, the City Property team will record 12 months utility usage figures to verify the savings achieved. These will be verified using industry standard measurement and verification in line with the Best Practice Guide to Measurement of Energy/Water Savings.

Projects implemented to date include:

- lighting upgrades
- voltage reduction on lighting circuits
- amenities upgrades
- pool circulation pump upgrades
- waterless woks for food retail tenants
- voltage power, boiler and compressor optimisation
- PC power management, and more.

Benefits of implementation include:

- improved NABERS ratings for commercial offices and tenancies
- significant avoided maintenance costs.

The \$6.9 million guaranteed energy and water performance contract was let to Origin Energy and Ecosave and was 95 per cent complete at end 2012/13.

### **Trigeneration**

In trigeneration, electricity is produced locally and the waste heat from the process is used to supply heating and hot water. Waste heat is also converted into cooling via a heat-driven chiller system. When combined with renewable gases, trigeneration provides a pathway to 100 per cent renewable energy.

Changes to regulations and the Federal Government's decision to lower the future carbon price mean that trigeneration projects in some of the City's trigeneration precincts may not go ahead at this time. We are continuing with our plans to install trigeneration systems in our own buildings, starting with a plan to provide electricity, heating and cooling to Sydney Town Hall, Town Hall House and the Queen Victoria Building. We will continue to work to remove the regulatory barriers to trigeneration.

### **Renewable energy fund**

The City of Sydney previously purchased Green Power as an interim measure while we established our long-term carbon reduction program (including trigeneration, building energy and water efficiency retrofits, LED street lighting and solar photovoltaic projects).

In 2010, Council resolved to invest the \$2 million a year previously allocated to Green Power to invest in renewable energy installed in the City's own buildings and operations. We expect this action will also deliver a financial return on investment, reduce the City's annual electricity bills and help meet the City's target of 25 to 30 per cent renewable electricity by 2030.

### **Carbon neutral**

The City has been measuring, reducing and offsetting 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 National Carbon Offset Standard. The City has applied for renewed certification as carbon neutral in 2012/13.

The City remains carbon neutral by continuing to implement carbon reducing 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.

As the City completes its carbon reducing projects, fewer and fewer carbon offsets will be required for the City to remain carbon neutral.

Since 2006 we have reduced carbon emissions from our City buildings by 20 per cent, based on 2011/12 data. With these significant reductions in our buildings and reductions in other key areas we are also well on our way towards reducing total emissions from our operations by 70 per cent by 2030 with total reductions of 12 per cent for our own operations since 2006 (based on 2011/12 data).

### **Environmental management and reporting**

The City of Sydney is committed to continuously improving environmental management and reporting and disclosure of performance against published targets.

We are implementing an environmental management system for our own operations, with the development phase complete and the implementation phase in progress.

In addition to this report, we also publish a quarterly Green Report which provides the most up to date information about how we are implementing our major environmental projects for our own operations and the local government area.

In 2010 the City joined the Carbon Disclosure Project (CDP) Cities program to publicly report on our greenhouse gas emissions and share this information with other major cities around the world.

CDP's cities program provides a voluntary climate change reporting platform for city governments. Each year we provide data through the CDP, which in 2012/13 included additional information requested by the CDP Cities partner, the C40 Cities Climate Leadership Group.



*Image: solar panels at Redfern Oval*

# Energy and climate change

## Greenhouse gas emissions

There are many greenhouse gases, of which carbon dioxide (CO<sub>2</sub>) is the most abundant. Different greenhouse gases have different global warming potentials and longevity in the atmosphere and therefore concentrations are often expressed as CO<sub>2</sub>-equivalent (CO<sub>2</sub>e). There is general consensus in the scientific community that atmospheric concentrations of CO<sub>2</sub>e need to be less than 450ppm in order to limit the probability of global average temperatures increasing by more than 2 degrees Celsius which could lead to catastrophic climate change. According to the IPCC AR4 Synthesis Report, atmospheric CO<sub>2</sub>e concentrations were already 455ppm in 2005, of which 379ppm is CO<sub>2</sub>. By June 2009, long-lived greenhouse gases in the atmosphere were estimated to be 467ppm, of which CO<sub>2</sub> was 385ppm. Currently there is an estimated 3,706Gt (billion metric tonnes) of CO<sub>2</sub>e in the atmosphere and this figure continues to rise by at least 2Gt per month<sup>5</sup>. A 2009 report by the Potsdam Institute<sup>6</sup> shows that a global emissions budget of 1,356Gt CO<sub>2</sub>e spread from 2000 to 2050 is required to constrain warming to below 2 degrees and even then there is a 20 per cent chance it would be exceeded. With 234Gt of CO<sub>2</sub> emitted between 2000 and 2006 alone, we see how urgently we must reduce emissions now.

(t CO <sub>2</sub> e) parts per million	2006	2007	2008	2009	2010	2011	2012	2013	Trend
Australia <sup>7</sup>	527	542	547	548	545	542	547	552	~
City of Sydney LGA <sup>8</sup>	5.46	No data							

5 [www.dbcca.com/dbcca/EN/carbon-counter.jsp](http://www.dbcca.com/dbcca/EN/carbon-counter.jsp)

6 Malte Meinshausen et al, 'Greenhouse-gas emission targets for limiting global warming to 2 degrees C' in *Nature*, vol. 458 (30 April 2009). doi:10.1038/nature08017 <https://www1.ethz.ch/jac/people/knuttil/papers/meinshausen09nat.pdf>

7 [www.climatechange.gov.au](http://www.climatechange.gov.au) - Australian National Greenhouse Accounts – December Quarter 2012

8 Estimate developed by Kinesis for Sustainable Sydney 2030. There are currently no reliable emissions estimates at the local government area level.

## City of Sydney Council greenhouse gas emissions<sup>9</sup>

Greenhouse gas emissions for the City of Sydney organisation come from a range of sources – the major source being mains electricity used within our buildings and street lighting. Other emissions include fuel used by our fleet and contractors, natural gas used in buildings, work flights and taxi journeys, waste, and emissions from major events like Sydney New Years Eve. Emissions are categorised as Scope-1 (direct emissions created onsite, for example burning natural gas), Scope-2 (direct emissions created offsite for example, electricity), and Scope-3 (indirect emissions such as by contractors and travel emissions). Many carbon neutral organisations only account for Scope-1 and Scope-2 emissions. By also including Scope-3 emissions, the City is taking responsibility for more of its emissions to be more transparent and accountable.

Summary 1 tCO <sub>2</sub> e	Scope(s)	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Scope-1	1	4,053	4,338	4,465	5,022	4,744	4,449	4,649	3,042
Scope-2	2	37,760	38,709	38,439	35,506	35,073	33,821	31,835	31,889
Scope-3	3	11,159	11,429	11,490	11,208	10,213	10,066	10,217	10,011
Total		52,972	54,475	54,395	51,736	50,030	48,336	46,701	44,941

### Summary 2 tCO<sub>2</sub>e

Electricity emissions	2,3	44,973	46,020	45,700	42,213	41,698	40,281	38,346	38,412
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9 The City receives independent verification of annual emissions inventories. However 2012/13 emissions were not verified at the time of this report and may be subject to change. Verified 2012/13 emissions will be provided in the 2013/14 report.

## Electricity usage

City of Sydney LGA (MWh) <sup>10</sup>	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
Households	439,024	434,836	432,774	440,233	433,363	431,756	410,632	397,256	✓
Small business	1,436,625	1,480,902	924,474	850,323	807,972	788,843	771,186	754,450	✓
Large business	2,295,607	2,283,418	2,879,260	2,857,349	2,852,247	2,809,656	2,722,806	2,634,988	✓
Council usage (MWh) <sup>11</sup>									
Total	42,427	43,010	42,710	39,451	38,970	37,475	35,870	34,187	✓
Per employee	29	28	27	24	23	21	20	19	✓

<sup>10</sup> Information provided by Ausgrid for suburbs in and around the City of Sydney. Data is not confined to the LGA and may be based on accruals and estimates

<sup>11</sup> Information provided from the City of Sydney's utility management system using data from electricity suppliers. Per employee information based on full and part time staff only. Excludes casual and contractor staff.

## GreenPower usage

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
Australia (MWh) <sup>12</sup>	688,754	1,013,707	1,455,887	2,144,726	2,275,234	2,110,628	1,945,548	1,673,995	✗
Households (# customers)	281,701	565,977	748,377	940,560	838,492	712,932	737,078	789,785	✓
Businesses (# customers)	14,676	24,313	30,313	32,276	38,688	47,082	47,821	45,187	✗

<sup>12</sup> Figures are based on unaudited quarterly data and is subject to change and revision by GreenPower Providers. For audited figures please see the annual audit reports that are available on the GreenPower website [www.greenpower.com.au](http://www.greenpower.com.au)

## Renewables

Solar generation exported to grid (Ausgrid)	2009/10	2010/11	2011/12	2012/13	Trend
Solar generation to grid (MWh)	5,267	60,055	119,695	148,647	✓
Council installed renewables	2009/10	2010/11	2011/12	2012/13	Trend
Renewable generation (kWp) <sup>13</sup>	73.5	93	93	387	✓

<sup>13</sup> From 2009/10 the City remains carbon neutral through the purchase of offsets but no longer purchases GreenPower. Instead, these funds are invested in local renewables projects. Amounts shown are cumulative.

## Air pollution

	2003/04	2004/5	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
Regional air quality (days stds exceeded) <sup>14</sup>											
Visibility – NEPH	3	0	1	3	0	2	5	0	0	3	✓
Ozone – 1hr	1	1	0	0	0	0	0	0	0	0	✓
Ozone – 4hr	0	1	0	0	1	0	0	0	0	0	✓
Particulates (PM10)	0	0	0	2	0	4	5	0	0	0	✓
Air pollution (number of reports) <sup>15</sup>		17	228	200	283	262	321	270	252		–

<sup>14</sup> Data from Air Quality Index (Randwick) [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au) as at 13 August 2013. Note, the higher days exceeded for visibility in 2009/10 was the result of the dust storm affecting Sydney in September 2009

<sup>15</sup> Reports of air pollution/odour to the City of Sydney Customer Service Centre

# Transport

With a rapidly growing population and employment, but the same amount of space, we have to find sustainable and public transport options to move people in and across our city.

Trips on foot, by bike and on public transport are growing faster than the number of trips people are taking by car.

We are harnessing this trend by making walking and cycling a safer, more pleasant experience for everyone.



Image: City Rangers patrolling on bikes

## **Sustainable vehicle fleet**

Our four year target to reduce light and heavy vehicle emissions by 20 per cent before 2014 is on track. The City's fleet emitted a total of 2,304 tonnes CO<sub>2</sub> during 2012/13 against a target of 3,042 tonnes.

In recognition of the City's receipt of the Australasian Fleet Management Association - Environment Award 2012, a number of invitations were received to present papers at regional and national conferences. This is a great leadership opportunity for the City.

Parks, footpaths and roads are now serviced by diesel-electric hybrid trucks that emit up to 30 per cent less CO<sub>2</sub>. In addition to the 20 hybrid trucks already in place, a further 12 were ordered in 2012/13, with another 20 due for purchase to a total of 52 by end 2013/14.

All new diesel trucks bought by the City now meet the stringent Euro 5 engine standards which aim to reduce fuel consumption and emissions.

The City now uses sustainable biofuels in many of our diesel trucks. These combine diesel with recycled cooking oil and animal fat. A total of 819,176 litres of B50 and B20 sustainable bio-diesel was used during 2012/13.

The City's Recycling Depot commissioned a new 22 tonne diesel-electric hybrid excavator during 2012/13, which reduces CO<sub>2</sub> emissions by up to 25 per cent.

Behaviour change initiatives across the organisation to support these changes to our fleet include the professional driver educators working "in cabin" with our operational drivers to improve their low emission driving skills and behaviours.

## **Electric vehicle fleet**

The City is leading the way in pollution-free travel after buying a fleet of 10 new Nissan LEAF electric cars, the largest order of pollution-free vehicles in Australia. The 10 vehicles join the City's existing four Mitsubishi i-MiEV electric cars and will replace 10 Toyota Prius petrol-electric hybrid vehicles. The vehicles are used by City staff for daily inspections or meeting attendance.

As new vehicle models arrive in Australia we aim to replace up to 50 vehicles, all powered by pv installations at the City's own properties, including the iconic Sydney Town Hall.

Unlike petrol or even hybrid petrol-electric vehicles, fully electric vehicles produce no dangerous pollutants such as carbon monoxide and nitrous oxide. Using solar power ensures the vehicles result in zero CO<sub>2</sub> emissions.

To support this, the City has now installed seven zero emission electric vehicle charging facilities in our public parking stations in Kings Cross and Goulburn Street.

Australia's first public electric-vehicle charging station was installed by Charge Point in Glebe in 2010. It charges a plug-in Prius operated by GoGet car scheme and is used by residents and businesses.

## **Staff travel**

The City has a fleet of 19 bicycles for City staff to use, including three electric assist models and one cargo bike.

We have trained a total of 230 City staff to use the bike fleet, with 126 trained in 2012/13. The fleet travelled over 2,700km in 2012/13.

A Staff Transport Review was undertaken in 2012/13 to examine current staff travel behaviours and attitudes. Recommendations are being assessed and those considered feasible and appropriate will be implemented through 2013/14 with the assistance of the City of Sydney's Green Champions.

## Cycleways

Since our first separated bike path opened, the number of people cycling has doubled or trebled in some areas, particularly for the morning rush.

We've been building a safe, convenient and sustainable network of cycleways.

Providing separated paths for people to ride bikes frees up the road for other users, reducing congestion and increasing public transport capacity.

We're proposing a 200km network, delivering cyclists 55km of separated cycleways, 60km of shared paths and 40km of other related infrastructure.

The City of Sydney is building a new separated cycleway on George Street in Redfern, from Prince Alfred Park to Green Square and extending the Kent Street cycleway to Liverpool Street. The recently released NSW Government Sydney Centre Access Strategy outlines other cycleways to be built in the future.

More than 80 per cent of people who want to ride a bike in the city want us to keep building the separated network, but we also have to provide connectivity beyond the city.

## Cycling

Cycling trips have increased by 113 per cent across the LGA since March 2010, with around 2,000 bikes passing through top peak-hour intersections on an average weekday.

In 2012/13 more than 1,400 people attended the City's free cycling confidence or bike maintenance courses and the City distributed more than 45,000 cycling maps and 20,000 *Sydney Rides* booklets.

## Walking

**Within the city centre nearly 93 per cent of all trips are by foot.**

The City recognises the popularity of walking and is working closely with Transport for NSW to investigate, design and implement infrastructure to encourage and support walking as a priority mode of transport in the local government area.

We recognise that Sydney has some of the longest waiting times at signals for pedestrians of any global city and that there are many opportunities to both reduce frustration and increase safety by managing signals differently.

The City continues to invest in improving our streets, parks and plazas ensuring a connected city. We are installing more effective wayfinding signage, updated street furniture and planting new street trees to make our city one that is easy and pleasant to walk around to ensure that walking is a priority transport mode in our city.

## Car share

In a big city owning a car can be a hassle but most of us need to drive occasionally. Signing up to a car share scheme means people can drive when they need to, without all the worries and costs associated with owning a car - including parking, permits, meters, insurance and maintenance.

More than 15,000 city residents and businesses have made that economical choice - more than one in 10 licensed drivers. Because they don't own a car, they have taken pressure off the limited street parking.

It's just a matter of joining the scheme (a membership fee applies), booking a car in advance and picking up the nearest one. You then pay an hourly and/or per kilometre fee for usage.

The City of Sydney is supporting car sharing by creating further on-street car share parking spaces as membership grows.

We're also asking developers to include car share spaces when they build car parks under new apartment buildings.

*Image: artists impression of George Street with light rail*



# Transport

The City has developed a comprehensive pedestrian master plan that complements the bike network called the Liveable Green Network.

This Liveable Green Network will connect people to destinations through a network of attractive and easy access walking routes and cycling routes.

All over Sydney, trips by car are taking longer. The only real solution is better public transport, including light rail in central Sydney.

## **Congestion**

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Congestion is costing Sydney \$3.5 billion per year, and this is projected to rise to \$7.8 billion by 2020. The cost includes travel time, loss in productivity, unreliability, higher fuel costs and air pollution.

In Sydney's city centre, there are nearly 100,000 car trips and 6,000 bus movements to Central Sydney each weekday.

The City of Sydney has been working closely with the NSW Government to improve bus reliability, light rail, heavy rail, cycling and walking.

The NSW Government's commitment to light rail is progressing, with recent announcements regarding the commencement of feasibility studies for further routes through the inner east and west to create an effective network.

The City of Sydney is contributing through planning and financial support and essential public domain works including plans to support light rail with the transformation of the public domain of George Street.

The City is also on Transport for NSW's Congestion Management Taskforce, which is implementing changes to parking and traffic operations in the city centre to ensure that both buses and cars can travel more freely in peak hour to reduce travel time and localised pollution.

Improving bus reliability reduces the number of buses required to carry the same number of people by turning them around more quickly, and it also becomes a more attractive service and a realistic alternative for car users.

The introduction of bus clearways in the past year has improved bus reliability, but both the state government and the City realise that there needs to be a rerouting of bus services to take route clashes out of the system to be truly effective.

## **Light rail**

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Light rail along George Street will form a high-capacity link through the city's heart. It will replace hundreds of slow and inefficient buses, and reliably move up to 9,000 people across the city centre every hour.

George Street will then be able to reclaim its position as Sydney's premier street. Five blocks from Bathurst to Hunter Streets will be given over to pedestrians.

The City is committed to working in partnership with the NSW Government. We've already committed \$220 million to improving the public domain, with new drainage, street lighting and signs, landscaping, public domain furniture and traffic management work to accompany light rail on George Street.

## **Connecting our city**

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A sustainable transport network will deliver more choices for people to make a trip, including walking, cycling, buses, light rail, train, ferries, taxi and car share.

We recognise that using a car is sometimes the only feasible option for people, particularly given that public transport reliability and frequency outside of peaks has some way to go.

To support sustainable transport choices, the City is investigating how we can best support the transition to hybrid and electric motor vehicles.

The City continues to work closely with the NSW Government to improve public transport reliability, services and networks. We aim to reduce peak congestion, reduce costs to city users and deliver a better local environment where people live, work and visit.

## Fleet emissions

Council fleet emissions prior to 2009/10 only reflected Scope 1 – ‘tailpipe’ (for example emissions directly from the vehicle) only and did not include Scope 3 – ‘well to wheel’ (for example emissions resulting from fuel and gas extraction, production and transport). By also including Scope-3 fleet emissions from 2009/10, the City is taking responsibility for more of it’s emissions to be more transparent and accountable.

Council Fleet emission data is directly proportional to the increasing distances travelled each year in delivering City services.

Total tCO <sub>2</sub> e	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
Contractor vehicle emissions	1,150	1,315	1,407	1,548	1,378	1,262	1,251	1,004	✓

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
<b>Council fleet emissions (tCO<sub>2</sub>e) by Scope</b>											
Scope-1	2,795	2,981	2,692	2,980	3,001	3,208	2,993	2,931	2,494	2,142	✓
Scope-3							227	224	189	162	✓
Total	2,795	2,981	2,692	2,980	3,001	3,208	3,220	3,155	2,683	2,304	✓

## Transport

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
Vehicles per day LGA <sup>16</sup>	No data	No data	701,476	689,581	697,788	689,391	689,458	679,233	644,190	no data	✓
Staff with travel passes	194	266	321	338	363	408	362	425	512	490	✓
Percentage of staff with travel passes	13%	18%	22%	22%	23%	25%	21%	24%	29%	27%	✓

<sup>16</sup> Information provided by Transport for NSW based on combined direction vehicle numbers for Sydney Harbour Bridge, Sydney Harbour Tunnel, Anzac Bridge, Oxford Street, Parramatta Road, King Street, Regent Street, O’Riordan Street, Cleveland Street, and City West Link Road. Information does not include Cross City Tunnel. Data for 2012/13 not available at time of publication and will be provided in the 2013/14 report.

## Cycleways

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
Cycleways (m) <sup>17</sup>	Nil	Nil	Nil	Nil	Nil	204	4,324	8,909	2,965	6,485	✓

<sup>17</sup> Data for cycleways installed. For 2012/13 the figure includes Saunders Street to Street John Street link path, Sydney Park Road to Huntley Street, Wattle Street to Bulwarra Road, Thomas Street to Mary Ann Street, Belmore Park, Glebe Foreshore path, Hyde Park, Southern Cross Drive Reserve and Turruwul Park. Includes separated, shared path, shared path in park, existing shared path upgrade, shared zone and mixed traffic facilities

# Waste and recycling

Waste and recycling processes can have a significant impact on the environment. These impacts are largely a result of methane release at landfill and energy and water use in processing and recycling materials.

Disposal of untreated waste to landfill is no longer a responsible waste management option. Loss of potential resources and environmental harm arise from methane gas emissions from decomposing garbage. Methane as a greenhouse gas is 21 times more potent than carbon dioxide.

The City of Sydney sent zero household waste direct to landfill during 2012/13, with waste processed at an advanced waste treatment facility. At this facility, organic material is removed and the recyclable material processed into low-grade compost.



Above: Residents drop of waste at an e-waste collection at the City's Bay Street Depot

## Advanced Waste Treatment

Advanced Waste Treatment (AWT) is part of an integrated suite of long term waste solutions being investigated by the City. The aim is to integrate waste treatment with other key Green Infrastructure elements including two Decentralised Energy Master Plans – Trigeneration and Renewable Energy.

In 2012/13, the City sent all 40,000 tonnes of domestic garbage for processing at the Waste Treatment facilities at Kemps Creek and Eastern Creek. At these facilities, garbage is processed, and recycling and compost suitable for use in mine-site rehabilitation and other approved uses is extracted.

The Resource Recovery Rate of 65.17 per cent achieved was slightly lower than the target of 68 per cent this year due to lower than expected diversion rates at the processing facilities.

## Electronic waste

Australians generate more than 140,000 tonnes of electronic waste (e-waste) each year and most of it ends up in landfill. As well as putting more pressure on limited landfill capacity, e-waste can be hazardous as it contains toxic materials.

To keep recyclable e-waste out of landfill, the City ran four quarterly e-waste collections through the Bay Street, Depot in Ultimo this year. At these events, 2,215 residents dropped off a total of 72.23 tonnes of electronic waste for recycling. This electronic waste is sent for processing by SIMS Metal in Sydney with the maximum amount of material components recycled here in Australia.

The federal government is currently rolling out the National Television and Computer Recycling Scheme which makes sure industry takes responsibility for the collection and recycling of waste televisions, computers, printers and computer products.

Under the scheme, City residents and small business can drop-off e-waste items at designated access points, which may include permanent collection sites, take-back events or through a mail-back option. There are six drop-off sites now located in the City of Sydney area.

For more, see [environment.gov.au](http://environment.gov.au)

## Clean Streets program

The City's Clean Streets program aims to improve cleanliness of the City's streets and laneways, reduce clutter and to increase pride of place for the community. There are dozens of laneways across the City that pose consistent challenges to these objectives including bins being stored on the street permanently, illegal dumping, litter and graffiti.

This year the Clean Streets program has achieved positive results for over 20 streets and laneways, including significant reduction in clutter and increases in cleanliness and visual amenity.

The City also communicated a proposal for its first underground communal waste and recycling system at Royston Street, Darlinghurst. Whilst the underground bins will be the first of their kind in Australia, these systems are prevalent throughout the UK and Europe where waste collection and storage constraints are common in the urban environment.

The current accessibility and space constraints at this site mean waste is often presented in an unsightly way. General feedback from residents is that the current design of the structure makes it difficult for residents to 'do the right thing'.

Once installed, waste and recycling will be placed in the bin system by residents via above ground openings which drop to enclosures underground. In order to be emptied, bins will be mechanically raised to the surface by collection crews.

### Waste and recycling - City of Sydney local government area

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
<b>Household waste collected<sup>18</sup></b>											
Total (t)	26,020	36,553	39,999	38,752	40,230	41,890	37,180	30,358	20,759	21,075	✓
Per person (kg)	230	238	257	234	238	237	215	168	112	113	✓
<b>Household recycling collected<sup>19</sup></b>											
Total (t)	9,169	12,186	13,227	16,122	16,654	19,556	21,031	29,231	39,664	39,928	✓
Per person (kg)	84	79	85	97	99	110	116	161	214	215	✓
Resource recovery rate (per cent)	26%	25%	25%	29%	29.3%	32%	36%	49%	66%	65%	✓
Public place waste collected (t) <sup>20</sup>	7,565	6,901	7,410	7,750	7,205 <sup>16</sup>	7,451	8,044	9,560	9,752	8,340	✓
Litter infringements (number)	80	122	671	1,412	1,340	1,406	531	1,176	1,672	1,341	–

<sup>18</sup> Waste includes garbage sent to landfill as residual from waste processing and clean-up material disposed to landfill

<sup>19</sup> Recycling includes containers, paper, green waste and white goods collection and recovery at AWT facilities

<sup>20</sup> Includes street cleansing waste, public bins, events and waste dumps

### Waste and recycling - City of Sydney organisational facilities<sup>21</sup>

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
Council facility waste collected (t)				No data					1,922	1,903	
Material recovered from waste collected (t) <sup>22</sup>				No data					568	575	
Council facility recycling collected (t)				No data					532	517	
Council A4 paper use (sheets/employee) <sup>23</sup>	6,370	8,597	8,781	8,157	6,178	5,254	5,938	5,774	5,838	4,677	✓
Building material recycled (t) <sup>24</sup>	21,417	18,950	26,727	19,894	19,349	25,725	19,803	18,041	15,832	21,675	–

<sup>21</sup> Council facility waste information only available from 2011/12

<sup>22</sup> This represents material recovered from waste collected and processed at a sorting facility prior to landfill

<sup>23</sup> Per employee information based on full and part time staff only. Excludes casual and contractor staff.

<sup>24</sup> Building materials recycled at the City of Sydney Burrows Road Materials Recycling Facility, St Peters. The facility accepts construction waste including concrete, asphalt, metal, bricks, pavers and stone. These products are crushed and recycled into roadbase.

# Water

To cope with the anticipated rise in population, growth in urban development, ageing infrastructure and drought associated with climate variability, it is critical that the city reduces its reliance on mains water supply through decentralised water solutions for the future.

Improving water efficiency within buildings and irrigated green spaces and amenities reduces the demand for water and is therefore the first and most cost-effective way to prepare for adapting to climate change.

Having a local supply of recycled water that is independent of the centralised water supply also improves the security of supply for irrigating and maintaining more green space areas, which in turn, helps to mitigate the urban heat island effect, as well as reducing stress on drinking water supplies.

Using alternative sources of water supply, such as stormwater, not only provides an alternative to mains water but also prevents pollutants discharging into our waterways.

## **Decentralised Water Master Plan**

The City's Decentralised Water Master Plan was adopted during 2012/13. It provides a blueprint for reducing mains water demand, increasing recycled water use and improving stormwater quality.

For details of the City's Decentralised Water Master Plan see pages 09-10 of this report.

## **Sydney Park water reuse**

The City began building the second stage of Sydney Park's water reuse scheme in April 2013. Works will be completed in phases and are due for completion mid-2014. The project will deliver the city's largest water harvesting system, and help us achieve our target for 10 per cent of water demand to be met through local water capture and reuse by 2030.

This project is the first of a suite of initiatives being formulated under the Decentralised Water Master Plan and is being partially funded through the City of Sydney and 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. Stage I harvested and treated 50 million litres of stormwater during 2012/13 for the topping up of wetlands.

Water harvesting is the diversion and storage of stormwater that would otherwise drain away. The system treats the water to deliver a new sustainable water supply to the wetlands, to Sydney Park and potentially beyond to other water users in the local government area.

The developed design for Stage II will include landscape improvement works to enhance the park's look and recreation and play opportunities. New lighting, seating and picnic areas will be installed and the footpath network will be improved.

## **Property upgrades for water efficiency**

City of Sydney council buildings and operations account for 1.5 per cent of water use in the LGA with about 80 per cent used by apartments, commercial and institutional buildings.

Retrofitting City buildings will improve water efficiency of major high water using properties with water saving devices such as aerated taps and shower heads, cistern modifiers in toilets and waterless urinals to be installed.

The City has installed rainwater tanks at nearly 20 childcare centres, kindergartens and community centres. There are also 20 stormwater harvesting and reuse projects completed or under construction to irrigate the City's park and sporting fields.

## **Stormwater**

The City aims to achieve its target of 50 per cent reduction in pollutants entering waterways through stormwater harvesting and integrating natural treatment devices such as raingardens into the City's roads and footpaths.

There are now more than 107 rain gardens in local streets, traffic islands, footpaths, parks and open spaces collecting and filtering stormwater. Fourteen rain gardens were installed during 2012/13.

The City operated stormwater harvesting and re-use projects during 2012/13 at Surry Hills Library, Pirrama Park in Pyrmont, Lillian Fowler Reserve in Newtown, Alexandria Oval and Prince Alfred Park in Surry Hills.

## **Green Square town centre**

The City has entered into an agreement with a private water utility who will design, build and operate a stormwater recycling scheme across the Green Square Town Centre.

The recycled water will be used for irrigation of gardens and parks, toilet flushing and laundries in the residential development and for cooling towers in the commercial development.

The project is expected to save up to 900 kilolitres of drinking water – just under half an Olympic-sized swimming pool – every day and prevent nearly 3,000 kg of pollutants from entering the Cooks River each year.

For more, visit [cityofsydney.nsw.gov.au](http://cityofsydney.nsw.gov.au)

## Water supply

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
Potable water cost (\$/kL) <sup>25</sup>	\$1.013	\$1.013	\$1.264	\$1.48	\$1.83	\$1.87	\$1.87	\$2.103	\$2.13	\$2.168	-
Water storage level (per cent) <sup>26</sup>	42.6%	38.3%	41.8%	50.5%	66.7%	61.4%	57.6%	76.4%	95.9%	94.6%	✓
Average rainfall LGA (mm) <sup>27</sup>	705	1,041	792	1,403	1,197	1,156	1,045	1,172	1,661	1,166	-

<sup>25</sup> Sydney Water pricing for potable water consumption for businesses. Source <http://sydneywater.com.au/SW/accounts-billing>

<sup>26</sup> Data from Sydney Catchment Authority as at 8 August 2013. Source <http://www.sca.nsw.gov.au/>

<sup>27</sup> Average rainfall for 5 monitoring stations around the City of Sydney provided by Sydney Water

## Water usage

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
<b>City of Sydney LGA water usage<sup>28</sup></b>											
Total (ML)	32,891	34,508	33,712	34,419	32,471	32,602	31,032	33,833	33,710	34,372	✗
Commercial average (kL)	2,825	2,504	2,417	2,451	2,292	2,194	2,049	3,154	1,213	1,223	✓
Units average (kL)	176	171	172	170	161	160	159	203	166	166	✓
Houses average (kL)	200	191	190	183	173	175	180	147	143	147	✓
<b>Council water usage<sup>29</sup></b>											
Total (ML)	534	484	483	497	500	432	415	395	325	410	✗
Per employee (kL)	361	326	327	320	318	261	244	225	184	224	✗
Fountains (total kL) <sup>30</sup>	No data		43,094	21,839	15,176	13,224	11,665	10,720	7,665	8,931	✗

<sup>28</sup> Information provided by Sydney Water based on billing data for the local government area. Information for houses is preliminary data and will be updated in the 2013/14 Report.

<sup>29</sup> Information provided from the City of Sydney's utility management system using data from Sydney Water. Figures vary from previous reports as properties that the City of Sydney do not have operational control over have been removed, consistent with reporting guidelines. Please note that park water use is seasonally influenced. For 2012/13 water usage was high due to very low rainfall in spring and summer, therefore increasing the supplementary water requirements. Per employee information based on full and part time staff only. Excludes casual and contractor staff.

<sup>30</sup> Please note, in 2011/12 El Alamein Fountain and Sandringham Gardens were out of commission for four and six months respectively

## Water pollution

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Trend
<b>City of Sydney LGA rubbish collection (m<sup>3</sup>)<sup>31</sup></b>											
Blackwattle Bay	96	99	116	126	93	95	80	92	94	76	-
Rozelle Bay	214	298	263	204	157	87	45	46	41	40	-
Council rubbish collection (t) <sup>32</sup>	1,104	1,372	1,102	1,290	1,334	1,263	1,205	1,272	1,284	1,243	-
Water pollution infringements	52	94	76	44	84	81	54	42	52	35	-
Sewer overflows/water leaks <sup>33</sup>	No data		25	170	144	191	194	187	195	178	-
Stormwater pollution <sup>34</sup>	No data		5	85	68	93	88	107	121	146	-

<sup>31</sup> Rubbish collected by NSW Roads and Maritime Services stormwater pollution traps. For 2012/13 the reduction in waste collected is not a reflection of less waste in waterways, rather a reflection of a reduction in on-water clean-up time by Roads and Maritime Services personnel

<sup>32</sup> Rubbish collected from City of Sydney stormwater pollution traps

<sup>33</sup> Sewer overflows and/or water leaks reported to the City of Sydney Customer Service Centre

<sup>34</sup> Stormwater pollution reported to the City of Sydney Customer Service Centre

# Greening Sydney

The City of Sydney recognises the importance of trees and other plants in providing significant environmental, social and economic benefits for the community.

The City recognises that green spaces are one of a city's most important natural assets. 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, economic and social benefits.

## Greening Sydney Plan

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 canopy cover, ecology and biodiversity to city living and supports the Urban Forest Strategy and the development of the Urban Ecology Strategic Action Plan.

Three strategic focus areas have been identified informing the objectives and targets of the Greening Sydney 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
- There are also three focus delivery areas for achieving the Plan:
- public domain - greening for quality streetscapes and public spaces
  - new development - maximising greening opportunities
  - community greening - empowering the community to green our city.

Under the Greening Sydney Plan, the City will deliver some 42 programs and projects in partnership with residents, local business, developers and volunteer groups.

## Urban Forest Strategy

Trees and the urban forest play a vital role in the health and social framework and economic sustainability of a city. Research shows that trees improve our air, soil and water; they improve mental health and wellbeing, reduce anger and aggression, provide a sense of place, enhance property values and provide other economic savings.

We are working towards our target of increasing the urban canopy by 50 per cent by 2030.

The Strategy focuses on four key initiatives:

- protect and maintain the existing urban forest
- increase canopy cover
- improve urban forest diversity
- increase community knowledge and engagement.

## Urban Ecology Strategic Action Plan

The City has developed an Urban Ecology Strategic Action Plan to outline the City's approach to identify, protect and rebuild locally indigenous plant and animal populations.

The Plan is part of the City's work to restore and conserve our urban ecosystems to create a liveable city for all of its inhabitants.

Maximising urban biodiversity involves many challenges but also offers many opportunities. The Plan outlines five categories of general actions to be implemented to conserve and enhance biodiversity across the local government area:

- park and streetscape maintenance
- planning controls
- staff and contractor engagement
- community engagement
- partnerships.

The Plan will be implemented over ten years to 2023.

## Open space

We are delivering a number of small parks upgrades within the LGA with 31 small parks improved during 2012/13.

Our community gardens program has continued to support the implementation of community gardens across the LGA with 17 community gardens, including three footpath gardens. These gardens enable residents to grow herbs, flowers, vegetables and fruit, and even conserve rare plants and seeds.

We maintain more than 400 parks and open spaces spanning some 188 hectares, providing the City community with welcoming public spaces to meet up, exercise and relax.

The City has installed 12,837m<sup>2</sup> of landscaping throughout City streets since 2008, well in excess of our target.

## Street trees

The City's Street Tree Master Plan 2011 is a blueprint for street trees across the City of Sydney. The objectives of this Master Plan are to improve and develop the number, health, longevity and form of street tree species; and to enhance the distinct character of the various city precincts. With this Master Plan, we will continue to provide healthy street trees which will beautify our urban environment today and will become a legacy for future generations.

There are already close to 30,000 street trees in the city. We're increasing Sydney's urban forest by planting 800 more trees a year with 8,900 planted since 2005. Our parks are home to 12,000 trees and this number is ever growing.

## Green roofs and walls

Green roofs and walls have been recognised by the City of Sydney as making an important contribution to the urban environment and supporting the objectives of *Sustainable Sydney 2030*. Green roofs and walls help to 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.

Inventories carried out by the City show that there are around 90,000 square metres of green roofs and walls installed in the local government area. On average, Council is receiving one new development application which includes a green roof or wall each week.

The City of Sydney is supporting the installation of green roofs and walls through the Green Roofs and Walls Strategy, which was adopted by Council in July 2012. We are also supporting green roofs and walls through research, skills training and information sessions, planning controls and through installing green roofs and walls on Council properties.

The City convenes the Green Roof and Walls Technical Advisory Panel made up of academics, architects, policy specialist and industry representatives. The panel meets monthly and provides valuable input into policy and program development for green roofs and walls in the City.

## Greening Sydney

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Area of parks and open space (Ha)	377	377	377	377	377	377	377	377	377	377
Canopy cover (per cent) <sup>35</sup>	No data			15.5%						
Area managed by the City of Sydney (Ha)	188	188	188	188	188	188	188	188.5	188.5	188.5
Park upgrades (number) <sup>36</sup>		4	4	7	9	17	11	5	20	31
Community gardens (total)	No data				10	12	13	15	16	17
Raingardens (total)	0	0	0	0	0	12	26	52	81	107
New and replacement street trees (number)	850	1,127	1,150	2,030	1,301	777	759	462	753	689
Weeds (number of reports) <sup>37</sup>	No data		1	24	19	32	31	22	45	35
Vermin/pests/insects (number of reports) <sup>38</sup>	No data		18	270	177	328	282	310	308	343
New aerial bundle cabling on electricity cables (spans)	100	95	45	15	9	0	147	77	0	14

<sup>35</sup> Canopy covered was measured in 2008/09 and will be measured every five to six years

<sup>36</sup> Includes small, medium and iconic park upgrades

<sup>37</sup> Reports of weeds to the City of Sydney Customer Service Centre

<sup>38</sup> Reports of vermin, pests and insects to the City of Sydney Customer Service Centre

## Green roofs and walls - City of Sydney local government area<sup>39</sup>

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Green roofs (number)										51
Green walls (number)										25
Total area of green roofs and walls (m <sup>2</sup> )										89,287

<sup>39</sup> Green roofs and walls were first measured in 2012/13 and will be measured annually ongoing.

## Native plantings in the City of Sydney local government area

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Event days (number) <sup>40</sup>	11,660	6,547	8,000	4,665	5,400	4,500	5,600	4,900	3,000	3,190
Glebe Blue Wren Group (number)	-	-	-	-	-	-	-	-	1,500	1,130
Rozelle Bay Community Native Nursery (number)	2,365	1,441	2,806	2,812	2,757	No data	2,112	~3,800	~2,500	~2,300
Pymont Ultimo Landcare (number)	No data		~1,500 per year			2,000	3,000	2,000	No data	520

<sup>40</sup> Includes National Tree Day and other environmental events

# Land and noise

Since European settlement, Sydney has experienced a substantial degree of urbanisation. There is very little remaining of the original landscape, natural creeks and vegetation.

Today, Sydney serves as a commercial, financial and cultural centre also supporting a sizeable residential population.

While urbanisation brings with it many economic and social benefits, it also places considerable pressure on the land. Human activities and buildings have altered the natural form and in some areas resulted in land degradation and contamination.

As the local government authority for the area, the City seeks to manage the land in an environmentally and socially responsible manner. This is a balancing act between the needs of work and social interactions, as well as ecological processes.

## **Land**

How community land is used, managed and improved in the future by the City of Sydney is outlined in our specific and generic plans of management. A range of supporting policies and strategies also relate to the management of community land.

Council boundary changes in 2004 resulted in three different plans of management for each of the former local government areas now being managed by the City. The former plans were consolidated and updated as part of the City's Generic Plan of Management that provides more information about the City's objectives, operational plan and performance measurement.

## **Community facilities and public space**

The City's Open Space and Recreation Needs Study aims to help the City deliver a cohesively linked, well-managed system of open space, sporting and recreation facilities to meet a range of recreational needs over the next 10 to 20 years.

The Study provides the City and other stakeholders with the framework and strategic direction to further develop and enhance open space and recreation facilities in the local area.

To support ever increasing populations, the City continues to invest in local community and cultural infrastructure. This ensures access of all residents to local services. The City strives for design excellence to ensure that the physical improvements we make also improve liveability.

## **Noise**

The City of Sydney regulates unwanted neighbourhood noise from a variety of sources such as loud music, mechanical plant and machinery, licensed venues, household burglar alarms, barking dogs and construction related activities.

City officers receive and investigate complaints concerning "offensive noise" and activities being conducted in an environmentally unsatisfactory manner which includes the emission of noise as defined under the Protection of the Environment Operations Act 1997.

In determining whether a noise is offensive, officers must give consideration to many factors including the frequency and duration of the noise, the time of the day it occurs, its volume and any tonal characteristics and how it is affecting the complainant. Once a complaint has been substantiated, the City has a variety of enforcement options available to ensure the noise in question is reduced to an acceptable level. City Officers will always try to resolve complaints where possible informally and refer to the City's Enforcement Policy when considering what course of action to take.

Under existing noise regulations there are certain time restrictions within which noise from residential premises, such as noise from air conditioners, musical instruments and power tools should not be heard inside any neighbouring residence.

The City also controls noise through the ongoing development and enforcement of noise-related development consent conditions and associated policies and works with other regulators in order to provide a coordinated approach in regulating noise impacts.

For more, visit [cityofsydney.nsw.gov.au](http://cityofsydney.nsw.gov.au)

## Demographics

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Residents <sup>41</sup>	154,073	159,854	165,596	170,173	173,444	177,920	180,679	183,281	187,561	190,187
Workers (per day) <sup>42</sup>	350,000	365,000	377,000	385,413	405,230	417,645	418,478	424,960	438,492	442,256
Visitors (per day) <sup>43</sup>	450,000	475,000	475,000	480,000	475,000	475,000	480,000	483,000	500,000	510,000
Visitors (total nights) <sup>44</sup>	8,732,065	9,000,032	9,039,918	9,462,835	9,519,826	9,358,668	9,804,849	10,096,232	10,004,209	10,050,000
City of Sydney employees <sup>45</sup>	1,479	1,485	1,477	1,552	1,571	1,653	1,698	1,750	1,764	1,830

41 2011 and 2012 figures have been revised, re-based to the 2011 Census. The 2013 resident population is an estimate. The official 2013 Estimated Resident Population (ERP) will be released by the Australian Bureau of Statistics (ABS) in 2014.

42 Figures from 2008 to 2012 inclusive have been revised in light of the results of the recently completed Floorspace and Employment Census. Previous Census was conducted in 2007.

43 City of Sydney estimate – tourist visitors, students, business visitors, shoppers.

44 Estimate obtained from Australian Bureau of Statistics Tourism Accommodation Small Area data (Cat no 8635).

45 Headcount figures from 2006 for full and part time staff only. Excludes agency and casual staff. Data updated in 2012/13.

## Built Form<sup>46</sup>

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Households (dwellings)	82,342	86,093	88,664	89,764	91,522	92,918	95,234	96,648	98,986	100,886
Completed commercial development (m <sup>2</sup> )	85,276	166,259	246,442	73,867	112,118	135,564	177,149	176,845	206,194	253,166
Completed residential development (no of units)	4,802	3,751	2,571	1,100	1,758	1,396	1,346	1,141	1,189	1,900

46 2006/07 and 2011/12 data from Floor Space and Employment Survey Census. Other years: Development statistics identifying residential completions utilised. Numbers include non-private dwellings.

## Noise<sup>47</sup>

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Construction noise	No data	No data	15	274	183	348	354	374	293	284
Other noise	No data	No data	124	852	625	899	893	900	896	921

47 Reports of noise to the City of Sydney Customer Service Centre.

# Community

## Memberships

In 2012/13 the City maintained memberships with many environmental organisations and government departments including:

- Aborigiculture Australia
- Australasian Fleet Management Association (AFMA)
- Australian Institute for Traffic Management and Planning (AITPM)
- Australian Solar Council
- Birdlife Australia
- Cooks River Alliance
- Ecological Consultants Association NSW (ECANSW)
- Environment and Planning Law Association (EPLA)
- Floodplain Management Association (FMA)
- Global Product Stewardship Council (GlobalPSC)
- Green Capital
- Green Roofs Australasia
- Institute of Public Works Engineering Australia (IPWEA)
- International Council for Local Environmental Initiatives (ICLEI)
- Keep Australia Beautiful (KAB)
- Local Government Tree Resources Association (LGTRA)
- Parking Association of Australia (PAA)
- Parks Forum
- Property Council of Australia (PCA)
- Resource and Energy Recovery National Division
- Royal Australian Institute of Architects
- Royal Zoological Society of NSW (RZSNSW)
- Southern Sydney Regional Organisation of Councils (SSROC)
- Stormwater NSW
- Sustainable Business Australia (SBA)
- Sydney Coastal Councils Group (SCC)
- The Sports Turf Association NSW (STA)
- Treenet
- Waste Management Association of Australia (WMAA)

## Partnerships

In 2012/13 the City worked in partnership with many environmental organisations and government departments including:

- The Australian Conservation Foundation
- Australian Electric Vehicle Network
- Better Practice Recycling in Commercial Buildings Advisory Panel
- The Bower
- Community Recycling Network
- Environment Business Australia
- Garage Sale Trail
- Green Living Centre
- Grow It Local
- Institute of Sustainable Futures
- Pyrmont Ultimo Landcare
- Rozelle Bay Community Native Nursery
- Southern Sydney Region of Councils Environmental Managers Group
- Southern Sydney Sustainability Educators Network
- Stormwater Industry Association
- Sydney Metropolitan Wildlife Service
- Sydney Water
- Total Environment Centre
- WWF Australia

## Submissions

In 2012/13 the City made various submissions on environmental issues, projects, policy and programs including:

- Australian Energy Market Commission: National Electricity Market Rule Change for Connecting Embedded Generators
- Australian Energy Market Commission: National Electricity Market Rule Change Small Generators Aggregator Framework (successful outcome with rule change implemented from January 2013)
- Australian Energy Market Commission: Power of Choice
- Australian Energy Regulator: Framework and Approach to NSW Electricity Distribution Networks Determination 2014-2019
- Coalition: Removal of Regulatory Barriers to Decentralised Energy
- NSW Environment Protection Authority: Proposed NSW Energy from Waste Draft Policy Statement
- NSW Government Public Accounts Committee: Inquiry into Cogeneration and Trigenation in NSW
- NSW Government: Joint Review of the Water Industry Competition Act 2006
- NSW Government: NSW Draft Renewable Energy Action Plan
- NSW Office of Environment & Heritage: Cogeneration Feasibility Guide
- Productivity Commission: Electricity Network Regulatory Frameworks
- Productivity Commission: Potential Improvements to Regulation of Distribution and Transmission Networks in the National Electricity Market
- Review of the NABERS Ruling Proportioning of Energy Used by Cogeneration and Trigenation Systems

Our website has more information about the City of Sydney's progress against environmental targets at

[cityofsydney.nsw.gov.au](http://cityofsydney.nsw.gov.au)