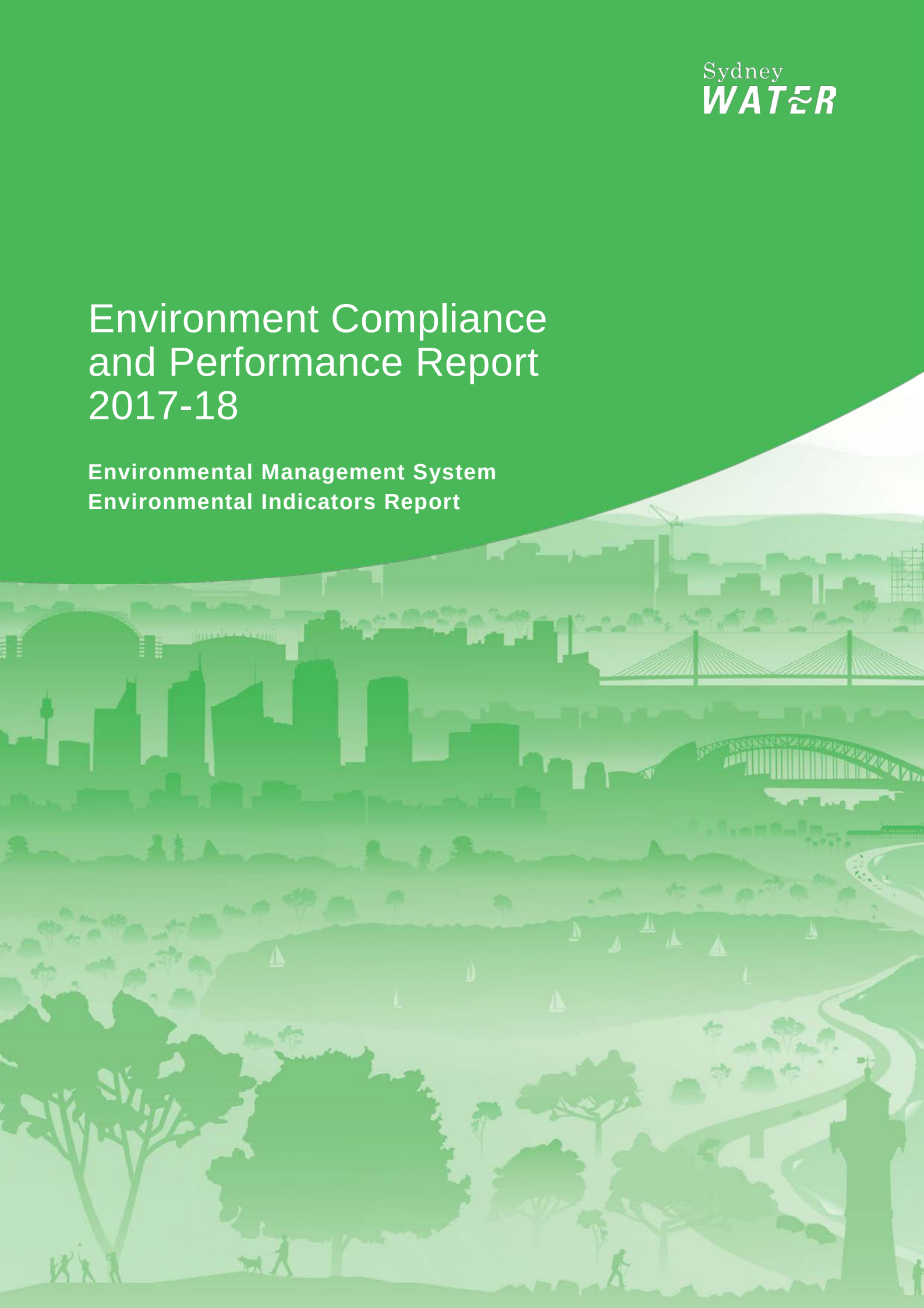
Sydney WATER

Environment Compliance and Performance Report 2017-18

Environmental Management System
Environmental Indicators Report



1 Introduction

Under our *Operating Licence 2015–2020*, Sydney Water must prepare, for each financial year, a compliance and performance report on our Environmental Management System (EMS) and our performance against a set of regulatory environmental indicators.

We must provide this report to the Independent Pricing and Regulatory Tribunal (IPART) by 1 October each year. The report is also made available on sydneywater.com.au.

Sydney Water has incorporated a statement on the implementation of its special objectives, in Part A of this report, as required by the *Sydney Water Act 1994 (the Act).* The Act requires Sydney Water to publish its statement as part of its annual report on its environmental indicators.

Reporting requirements are listed below and addressed in the relevant parts of the report.

Operating Licence 2015-20 **Reporting manual requirements (IPART, 2015)**	**Environment compliance and performance report section**
Sydney Water's statement on the implementation of its special objectives, as required by the *Sydney Water Act*	Part A *Statement on the implementation of our special objectives*
• A summary of the objectives and targets of the EMS. • The environmental management activities and programs completed by Sydney Water in the financial year to meet the objectives and targets of the EMS. • The results and outcomes from those activities and programs.	Part B *Delivering our environment plan 2017–18*
A report on Sydney Water's performance against the environmental indicators set out in Appendix D of the *Reporting Manual* and National Water Initiative performance reporting indicators for the environment.	Part C *Environmental indicators report 2017–18*
Any non-conformances with the EMS and the actions taken to resolve those non-conformances.	Part D EMS Non-conformances
Any proposed significant changes to the EMS.	Part E EMS Proposed significant changes
The environmental management activities and programs proposed to be undertaken by Sydney Water to meet the objectives and targets of the EMS in the future, including the timetable for completion.	Part F *Environment Plan 2018–19*

Part A

Statement on the implementation of our special objectives

Our business is underpinned by the three principal objectives outlined in the *Sydney Water Act 1994* (the Act):

1. To be a successful business.
2. To protect the environment by conducting its operations in compliance with the principles of ecologically sustainable development (ESD).
3. To protect public health by supplying safe drinking water to its customers and other members of the public in compliance with the requirements of any operating licence.

These objectives enable us to achieve a sustainable future by balancing social, economic and environmental considerations.

In addition to this, Section 22 of the Act states that in implementing the principal objectives, we have the following special objectives:

1. To reduce risks to human health.
2. Prevent degradation of the environment.

These objectives are to be interpreted and implemented by reference to the means specified in Section 22 of the Act and Section 6 of the *Protection of the Environment Administrations Act 1991*, so far as they are relevant to our business.

This statement on the special objectives has been prepared to meet the requirements of Section 22 (6) of the Act. It is intended to serve as a summary and demonstrate how we addressed the means identified in the Act between 1 July 2017 and 30 June 2018. It should be read in conjunction with other publicly available reports published on our website.

1.1 Implementing the special objectives

Sydney Water integrates environmental and public health management into its business decision-making and operational activities. The special objectives are implemented within a total business context, rather than as separate considerations. This approach ensures that balancing social, economic, public health and environmental considerations is part of the usual way we provide services.

We have established a number of management systems, plans and frameworks to support our business operations and ensure we continue to address the special objectives. These include our:

- ISO14001 certified Environmental Management system, which provides a systematic, planned approach to managing environmental risks
- Environment Plan, which provides clear objectives, targets and actions to enable us to protect the environment while we address the challenges of our growing cities

- Environmental Policy, which outlines our commitment to environmental protection using principles of ESD and sets the framework for continual improvement in our environmental performance
- Drinking Water Management System, aligned to the *Australian Drinking Water Guidelines 2011*, which describes the methods we use to ensure the quality and quantity of drinking water we supply to our customers
- Recycled Water Management System, aligned to the *Australian Guidelines for Water Recycling 2006*, which describes the methods we use to ensure we supply high quality recycled water to our customers and minimise risks to human health.
- Quality Management System, certified to the ISO9001 standard, enables us to continually monitor and measure how we are performing so we can improve and be more effective.

1.2 Reporting against our Special objectives

To meet our special objectives and support our *Environmental Policy*, we have summarised and aligned our special objectives to the following four broad environmental objectives in our Environment Plan 2017-18. Our 2017-18 plan included objectives from our draft Environment Strategy, which was in development at the time the plan was prepared:

1. We'll contribute to healthy waterways and clean beaches in delivering our services to safeguard ecosystems that our communities can continue to enjoy.
2. We'll work with customers to save water, improve urban environments and shape future liveable cities.
3. We'll maintain and restore valuable biodiversity and share the natural spaces, land and heritage in our care with the community.
4. We'll use our resources wisely, increase our recovery of energy and adapt to improve the climate resilience of our services.

Part B of this report, *Delivering Our Environment Plan 2017–18,* provides a summary of our performance in implementing our special objectives. To provide a year-to-year comparison of performance, we also report against a set of environmental performance indicators as listed in our Operating Licence Reporting Manual regulated by the Independent Pricing and Regulatory Tribunal (IPART).

Table 1 below lists the special objectives means specified in the Section 22 of the *Sydney Water Act 1994* and Section 6 of the *Protection of the Environment Administrations Act 1991*. It also references the sections of the *Delivering Our Environment Plan 2017–18* report that address the means listed in the two Acts.

In addition to this report, we publish a number of comprehensive performance reports on our website that demonstrate our implementation of, and performance against, the special objectives. Please refer to the following documents available at sydneywater.com.au for more information.

- Sydney Water Annual Report – provides a summary of Sydney Water's overall performance.
- Water Conservation Report: outlines how we are meeting our water conservation requirements and contributing to water efficiency, leak management and water recycling initiatives.

- Sewage Treatment System Impact Monitoring Program (STSIMP) Report: a summary of wastewater discharge quality, quantity and loads data for key pollutants relating to regulatory limits. This report also contains inland and ocean receiving water quality, wastewater overflows and recycled water data.

Table 1 – Reporting against Special Objectives requirements

Sydney Water Act 1994 means[1]	POEA Act 1991 means[1]	Delivering our environment plan Report 2017–18[2]
Reducing the environmental impact of its discharges into or onto the air, water or land of substances likely to cause harm to the environment.	Adopting the principle of reducing to harmless levels the discharge into air, water or land of substances likely to cause harm to the environment	**2.** Healthy waterways and clean beaches Environment Plan Objective 1: Contribute to healthy waterways and clean beaches in delivering our services to safeguard ecosystems that our communities can continue to enjoy **5.** Resource use and climate resilience Environment Plan Objective 4: Use our resources wisely, increase our recovery of energy and adapt to improve the climate resilience of our services
	Setting mandatory targets for environmental improvement	
	Promoting pollution prevention	
Re-using and recovering energy, water and other materials and substances, used or discharged by it, by the use of appropriate technology, practices and procedures	Encouraging the reduction of the use of materials, encouraging the re-use and recycling of materials and encouraging material recovery	**5.** Resource use and climate resilience Environment Plan Objective 4: Use our resources wisely, increase our recovery of energy and adapt to improve the climate resilience of our services
Reducing its use of energy, water and other materials and substances		
Minimising its creation of waste by the use of appropriate technology, practices and procedures	Minimising the creation of waste by the use of appropriate technology	**5.** Resource use and climate resilience Environment Plan Objective 4: Use our resources wisely, increase our recovery of energy and adapt to improve the climate resilience of our services **4.** Care for nature, land and heritage Environment Plan Objective 3: Maintain and restore valuable biodiversity and share the natural spaces, land and heritage in our care with the community
	Regulating the transportation, collection, treatment, storage, and disposal of waste	
	Promoting community involvement in decisions about environmental matters	**3.** Community amenity and city shaping Environment Plan Objective 2: Work with customers to save water, improve urban environments and shape future liveable cities
	Conducting public education and awareness programs about matters.	
	Ensuring the community has access to relevant information about hazardous substances arising from, or stored, used or sold by, any industry or public authority	

[1] *Only the means relevant to Sydney Water's activities are listed*

[2] *Numbers in bold refer to chapters in Part B report*

Part B

Sydney WATER

Delivering our Environment Plan

2017-18

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1 Introduction

Sydney Water is committed to protecting the environment and each year we document new actions and how we plan to do this better in our Environment Plan. In *Delivering our Environment Plan 2017–18*, we are reporting on our progress in implementing these actions during the last financial year.

Sydney Water has been delivering against an environment plan for over 20 years. Each year, we plan our actions to work towards our environmental objectives, aiming to meet set targets and priority outcomes. Once we complete new initiatives, we consider them to be part of business as usual and remove them from our next environment plan. Our 2017-18 plan includes objectives and targets from our draft Environment Strategy, which was in development at the time the plan was prepared.

This document should be read in conjunction with our *Environmental Indicators Report* (within the *Environment Compliance and Performance Report 2017–18*), which provides additional environmental performance information and compares key environmental indicators, selected by the Independent Pricing and Regulatory Tribunal (IPART) and the National Water Initiative (NWI), on a year-to-year basis.

We update our environment plan every year to consider emerging environmental risks, our business focus and stakeholder feedback. Our revised environment plan aligns with our 2015–2020 corporate strategy of putting the customer at the heart of everything we do. We have identified ongoing and new actions to continually improve our environmental performance.

Our Environment Plan 2018–19 outlines the next steps in our journey, and is available as part of this suite of documents (*Environment Compliance and Performance Report 2017–18*) and separately on our website.

2 Healthy waterways and clean beaches

OBJECTIVE 1: Contribute to healthy waterways and clean beaches in delivering our services to safeguard ecosystems that our communities can continue to enjoy

2.1 Progress on Environmental Plan actions

2017-18 Environment Plan action	Progress made
Balance the needs for healthy rivers and a growing city	
Support the Environment Protection Authority (EPA) in the development of a new regulatory framework for nutrient management in the Hawkesbury-Nepean River System. Develop a nutrient offset scheme for Sydney Water in preparation of the upcoming regulations.	Our dry weather sampling of the Hawkesbury-Nepean river and key tributaries is complete, and we are continuing our research into the system. We are working with the EPA to establish a draft Nutrient Offset Framework and Offsetting Protocol and are now exploring opportunities to collaborate with local councils on pilot projects in the Hawkesbury-Nepean catchment. We will include estimated budgets for pilot projects, along with costs for wastewater treatment plant upgrades to enable us to meet interim nutrient load caps by 2024, in our IPART pricing submission.
Develop a planning framework to inform the capital works optimisation process, including an assessment of lifecycle costs, environmental factors and wider economic values and benefits.	We have developed our Planning Decision Framework, which now applies to all our infrastructure-based master planning and planning activities. This enables more customer / community focused planning outcomes to be identified during the decision-making process. Environmental factors as well as wider economic values and benefits are considered when evaluating options.
Collaborate to clean up waterways	
Progress multiple waterway health improvement projects for the Georges, Cooks and Parramatta Rivers.	We have produced plans for 13 identified sites. We have completed early works at six sites and our litter booms and traps are exceeding our gross pollutant targets, collecting a total of 230.5 cubic metres of litter over the past year. We are fast-tracking design in collaboration with relevant local councils in Campsie, Kogarah Bay, Bankstown, Westmead, Annandale and Dulwich Hill.

2017-18 Environment Plan action	Progress made
	During 2017–18, we collected over 1,573 cubic metres of litter and 4,441 tonnes of sediment across all our stormwater systems
Implement the 'Waterway Health Improvement Program' contributing to the Corporate Plan's objective of improving and protecting waterway health (a series of Water Sensitive Urban Design (WSUD) projects in collaboration with councils to help improve the ecological and social values of Sydney's waterways).	As part of the Waterway Health Improvement Program (WHIP), we have developed a monitoring and evaluation framework and are using it to track benefits realisation from the WHIP.
Work with industry, associations, retailers and other stakeholders to reduce the number of wet wipes flushed down toilets.	We have continued to work with a major supplier of wipes in the Australian market for the removal of references to 'flushable' on their product. During 2017-18 a major supermarket announced a change in packaging to remove references to 'flushable'. Customer awareness of our 'keep wipes out of pipes' program remains constant.
Develop a new communications program to increase community understanding of the role they play in keeping Sydney's wastewater system healthy.	Our efforts in cleaning waterways and removing over one million plastic water bottles from our waterways have received television, radio, newspaper and magazine coverage. Beneficial use of biosolids, upgrades of wastewater systems and wet wipes articles also received media coverage. Our campaigns at Sculpture by the Sea, Newtown Festival, Beat the Bottle and the Royal Easter Show focused on the impact of plastic waste on Sydney's environment. We have also partnered with councils and community action groups to raise awareness of the impact of plastic bottles and waste on marine environment.
Reduce environmental impacts of our discharges	
Implement a tertiary nitrogen removal process unit and wetland treatment pilot project at Picton Water Recycling Plant.	Design work has progressed to inform option selection for a tertiary nitrogen removal process unit, and we have engaged specialist consultants to design the pilot wetland cells.

2017-18 Environment Plan action	Progress made
Initiate an assessment of the following six catchment areas to verify the risk of impact of wet weather overflows to the environment and community and identify works to reduce risk. • Lane Cove River • Upper Parramatta River • Vineyard Creek and Duck River • Prospect Creek and Cabramatta Creek • Middle Harbour • Long Bay	Following discussion with the EPA, the study areas assessed now include the following catchments: • Lane Cove River • Upper Parramatta River • Mid-Parramatta River • Prospect Creek • Lower Middle Harbour and Mosman Peninsula Our progress has been delayed due to the lack of wet weather data. However, we have started investigating the environmental impact of wet weather overflows and are evaluating options for the Prospect catchment. We are in the process of assessing the level of risk to public health at primary recreation sites in Lower Middle Harbour and Mosman Peninsula.
Implement programs to reduce wet weather overflows in Kurnell and Wolli Creek by preventing stormwater entry to the wastewater system, and in Woolloomooloo by separating the old combined wastewater and stormwater system.	We have corrected the detected inflows to the Kurnell vacuum system and completed works to prevent stormwater inflows at overflows across Hurstville (Wolli Creek). Property drainage inspections for the Penshurst (Wolli Creek) pilot study are complete and we are about half way through construction work to separate the Woolloomooloo combined sewer.
Use leading edge science, research and innovation to benefit waterways	
Continue to undertake scientific pilot studies to inform a new monitoring approach for wet weather overflows. Pilot studies are required to obtain statistically valid data to determine the sensitivity of proposed methodologies. If successful, the new approach will help us understand the impacts of wet weather overflows on waterway health and of pollution in stormwater run-off.	We have completed sampling for our waterway ecosystem health and aesthetics pilot studies, and conducted three expert peer review panel workshops. We have started our public health pilot study.

2017-18 Environment Plan action	Progress made
Implement actions to understand and plan to reduce the risk of wastewater discharges to the ocean at Vaucluse/ Diamond Bay.	Our Pollution Study for Diamond Bay Ocean Discharges, which assessed the environmental and human health impacts of discharges, is complete. We have started our ocean monitoring program, erected signs along the coastline and commenced community engagement to inform the public that areas near outfalls are unsuitable for contact recreation.
Improve and streamline reporting requirements for the 'Sewage Treatment System Impact Monitoring Program', which is the program used to monitor and report on our performance against our Environment Protection Licenses (EPLs).	Our revamped annual data reports to the EPA included 10-year temporal plots with simple statistical analysis to indicate if a trend is present for every analyte substance specified within our EPLs and receiving water sites. These reports are available on our Sydney Water website.
Incorporate environmental safeguards more effectively to reduce risks	
Enhance our response capability to incidents.	We presented at a regional health forum and have subsequently worked with a local council to identify a damaged asset adjacent to a sensitive receiving environment. This early identification allowed us to prevent a major environmental incident. We are developing environmental awareness training packages for our frontline staff and plan to roll this out in late 2018.
Introduce new approaches to improving prevention and response to dry weather overflows.	We have completed one project using tree canopy mapping to better target preventive maintenance, and this initiative is now business as usual. Three projects are still underway including trialing the use of acoustic technology as a screening tool prior to closed-circuit television (CCTV), predicting the likelihood of chokes in wastewater mains using machine learning, and installing low cost sensors in the wastewater system to give early warning of wastewater overflows. The costs and benefits of these projects are being assessed.

2017-18 Environment Plan action	Progress made
Integrate water services with city planning	
Apply integrated water management principles to regional water supply planning, to allow identification and realisation of financial, environmental and social opportunities via consideration of interdependencies between different waters.	We have developed a planning framework which includes integrated water cycle management. Examples of projects that have now been completed or are underway using an integrated water cycle management approach include: • Sydney Science Park • Metro North West • Inner South and Central Sydney • Greater Parramatta to Olympic Peninsula (GPOP) • Lane Cove, Ryde and Lower North Shore
Build our capability to plan and deliver integrated water cycle management and water-sensitive urban design solutions that our communities value.	We are leading the 'Splash' Network program, which provides integrated water cycle management and water sensitive urban design resources for use by Sydney Water and other agencies. As part of our Water Quality Improvement Program, we have a number of projects involving water sensitive urban design that are in the planning or delivery stage, including a pilot wetland at Picton Water Recycling Plant (WRP).
Identify and prepare for emerging contaminants of concern	
Determine risks of emerging chemicals of concern that could potentially enter our wastewater system.	Per- and poly-fluoroalkyl substances (PFAS) have been identified as the emerging chemicals with the highest potential risk by the Water Services Association of Australia (WSAA) and Australian and New Zealand Biosolids Partnership. We are collaborating with other water utilities to develop a common understanding and approach for managing PFAS risks.

2.2 Key performance indicators

Our key performance indicators help measure our progress and assess performance each year.

The following indicators within Sydney Water's *Environmental Indicators Report 2017–18* are relevant to this objective.

Key performance indicators	Environmental Indicators Report 17–18
Wastewater treatment and system discharges	Page 4

3 Community amenity and city shaping

OBJECTIVE 2: Work with customers to save water, improve urban environments and shape future liveable cities

3.1 Progress on Environment Plan actions

2017-18 Environment Plan action	Progress made
Incorporate customers' environmental values into our decisions	
Start implementation of customer engagement plan.	Customer engagement started in January 2018, with phase one and two completed. Customers place protection of the environment among the top priorities for us to deliver as a business, alongside sustainability of future supply. Amenity outcomes, including recreational use of waterways and beaches, are also valued highly by our customers. Customers want reassurance that we will use natural resources suitably and that environmental impacts will be considered when managing water and wastewater services in the future. They also want us to be mindful of energy use in our treatment processes and reduce pollution impacts on beaches.
Invest in economically efficient water conservation	
Develop a water conservation program that delivers priority leak management, recycling and water efficiency initiatives aligned with the economic level of water conservation (ELWC) methodology.	We have developed and implemented our Water Conservation Plan and saved 10,461 mega litres (ML) of water from our ongoing water conservation programs, with more than 10,000 customers participating in our water efficiency and education programs.
Build sustainable water behaviours through our education programs	
Deliver a new approach to communicate with people of culturally and linguistically diverse (CALD) backgrounds about water and wastewater.	All communications and education campaigns now focus on languages other than English with five languages prioritised: Arabic, Mandarin, Cantonese, Korean and Vietnamese.

2017-18 Environment Plan action	Progress made
Educate the community about the environmental, wellbeing and financial benefits of tap water.	Tours and education programs continue with schools, universities, stakeholders, and community groups. Our 'Brand without a Bottle' campaign continued throughout 2017-18. We have participated at several events including Sculpture by the Sea, Newtown Festival, Illawarra Surf Carnival, Big Bash League Cricket, Australia Day at Parramatta, Beat the Bottle and the Royal Easter Show. In addition, we have worked with Local Councils to install more than 150 water stations across public parks throughout our area of operations. We also organised access to portable water stations for community events throughout the year.
Collaborate to enable water sensitive cities of the future	
Determine opportunities for Sydney Water to support the delivery of priorities identified in Greater Sydney Commission's District Plans.	We have continued working with the Greater Sydney Commission (GSC) in planning for water services in the Greater Parramatta to Olympic Peninsula (GPOP) and Western Sydney, as well as the South Creek Corridor Sector Review. We aim to ensure that planning and investment in water management, and communication about urban water issues, supports the Region Plan and Western City District Plan. In addition, we are delivering important parts of the Green Grid including creek naturalisation projects.
Contribute to improved local amenity and safety	
Complete the second group of strategic management plans for Sydney Water's odour management strategy to proactively address odour issues.	Our odour management strategies for the West Camden and Wallacia wastewater systems are complete. Our strategies show that odour issues are effectively managed in both systems, and that no additional controls are required. An odour management strategy for the Winmalee wastewater system is currently in progress.
Introduce new approaches to improve leak detection from our water network.	We completed an active trial of one intelligent network software package and will compare the results against trials of similar software packages to improve our detection of leaks from our water network.

2017-18 Environment Plan action	Progress made
Enhance liveability through use of water to help connect, cool and green our cities	
Implement a project to investigate alternative provision of water and wastewater services in the Greater Parramatta to Olympic Peninsula (GPOP) area. This project aims to support the Greater Sydney Commission's (GSC) ambition to create a green grid across central western Sydney, provide alternative water sources for irrigation, public amenity and urban cooling, and contribute to improved liveability in new development areas.	We investigated options to service GPOP and presented these to the GSC, including the potential barriers. Options addressed the need to incorporate social and environmental values that contribute to liveability. Further analysis is underway to determine the funding gap to provide recycled water to residential customers and irrigation to the GPOP area. We also contributed to microclimatic research into the cooling potential of the urban heat mitigation technologies (greenery, water and cool materials) and their impact on energy, peak electricity demand, health, environment and thermal comfort. Research found that combining cool materials and water-based technologies was most effective for mitigating urban overheating.

4 Care for nature, land and heritage

OBJECTIVE 3: Maintain and restore valuable biodiversity and share the natural spaces, land and heritage in our care with the community

4.1 Progress on Environment Plan actions

2017-18 Environment Plan action	Progress made
Reveal and restore natural landscapes	
Progressing the naturalisation of stormwater channels at Powells Creek, Homebush; Johnstons Creek, Glebe; Whites Creek, Annandale; Muddy Creek, Rockdale, St Lukes Park, Canada Bay and Iron Cove Creek.	Construction is complete for Powells Creek. Detailed concept design and specification is complete for Johnstons Creek. Preliminary concept designs for Whites Creek are being revised to accommodate potential future flood mitigation work following discussions with council. Detailed concept design is underway for Muddy Creek in consultation with Bayside Council. Detailed concept design is underway for St Lukes Park and Iron Cove Creek.
Conserve natural environments and cultural heritage in our care	
Progressing the restoration of Strangers Creek, Kellyville and Elizabeth Macarthur Creek, Bella Vista / Kellyville.	We have started construction for the restoration of Strangers Creek. We have completed concept design and environmental planning approvals for Elizabeth Macarthur Creek and are now in the process of land acquisition.
Implement management plans to protect and enhance Botany Wetlands; Eve Street Wetland, Arncliffe; Freshwater Creek Wetlands, Chullora and Rouse Hill Development Area.	Our implementation of existing management plans for Botany Wetlands, Eve St Wetland, Mana Badu Wetland (formerly Chullora Wetland) and the Rouse Hill Trunk Drainage Land is ongoing. We have continued our water quality and ecological monitoring for Botany Wetlands, and our water quality and riparian vegetation condition monitoring for our trunk drainage land at Rouse Hill.
Routine grounds maintenance incorporating the protection and enhancement of environmentally sensitive sites.	We are in the process of reviewing and updating our property environmental management plans and have implemented these at 16 sites.

2017-18 Environment Plan action	Progress made
Share land and heritage in our care with the community	
Identify opportunities to develop community assets on our land and form land-use agreements for priority sites with local councils, developers and government. Potential community assets on our land include bike paths, greenspace, urban gardens, bush care and public walkways.	We have 16 sites recommended for community/ alternate use from 69 properties assessed over the past year and have received 13 unsolicited requests for alternate use of our land. Several large projects involving community assets transfer/ agreements under negotiation or completed in 2017-18 include: • Greenway Shared Cycleway. • Potts Hill pipeline shared cycle way. • Land transfer to the National Parks and Wildlife Service – Blue Mountains National Park (Cliff Drive, Katoomba), and Wolli Creek Regional Park.
Responsibly manage land contamination and hazardous building materials	
Further develop technology to capture and access hazardous building material (HBM) information for our properties.	All of our high risk (eg asbestos roofing) inspections are complete. We have re-assessed over 1,000 HBM registers using our new digitised tool, which has HBM audit capability built in.
Look to create value from our natural capital to help maintain ecosystems	
Investigate the potential for Biobanking portions of our land. Biobanking is a market-based scheme designed to provide incentives to protect biodiversity values to offset impacts of urban development in NSW.	We completed a report detailing a portfolio of potential Biobanking sites.

4.2 Key performance indicators

Our key performance indicators help measure our progress and assess performance each year.

The following indicators within Sydney Water's *Environmental Indicators Report 2017–18* are relevant to this objective.

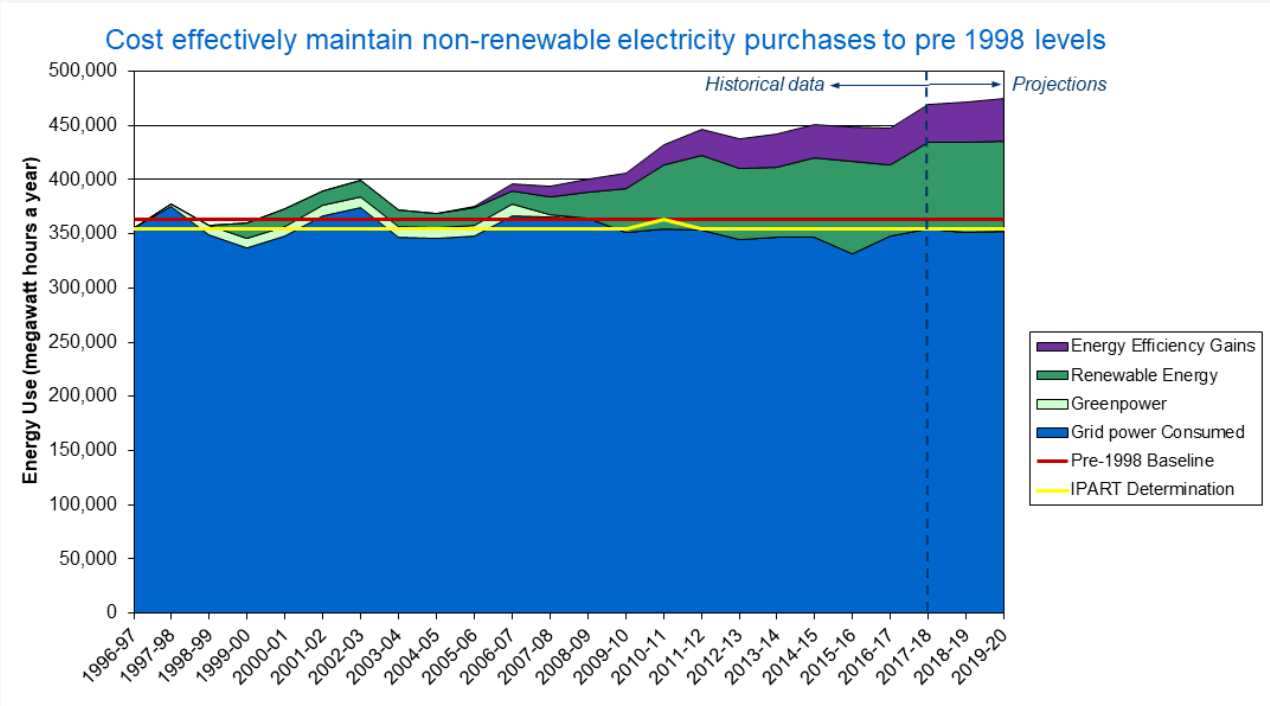
Key performance indicators	Environmental Indicators Report 17–18
Flora and fauna	Page 12

5 Resource use and climate resilience

OBJECTIVE 4: Use our resources wisely, increase our recovery of energy and adapt to improve the climate resilience of our services

5.1 Progress on Environment Plan actions

2017-18 Environment Plan action	Progress made
Remain carbon-stable to 2020 and review our future emissions reduction pathway	
Update our Energy Policy and Energy Strategy.	We have finalised our Energy Master Plan and Implementation Plan. Our plans establish a new energy vision and several aspirational energy and carbon targets for 2030, including: • self-generated renewable energy equivalent to 35% of total energy demand • grid electricity purchases in 2030 to be less than or equal to 1998 • 75% of electricity is sourced from zero emission sources
Deliver low carbon and energy efficient infrastructure and services	
Identify and deliver cost-effective energy efficiency and renewable energy projects.	During 2017-18, we purchased 355 GWh of grid electricity, which is below our limit of 363 GWh. Our sites generated 80 GWh from renewable energy sources, which constitutes 18.7 % of our overall energy consumption. Energy efficiency and renewable energy projects implemented during this period have reduced our annual grid consumption by 2.5 GWh compared to what it would have been without these initiatives. We are continuing to run 11 cogeneration plants, three hydroelectric plants and two solar photovoltaic systems. The below graph shows how were have been tracking against our 2030 energy targets.

2017-18 Environment Plan action	Progress made
	
Update the National Australian Built Environment Rating System (NABERS) energy ratings for our offices.	The NABERS rating for our Parramatta head office (1 Smith Street) has been determined at 5.12 for the period ending March 2018. We are yet to update our NABERS ratings for our other offices.
Enhance our resilience to ensure continuity of services in a changing and variable climate	
Develop a Climate Change Adaptation Implementation Plan to embed climate change preparedness within Sydney Water.	Our Climate Change Adaptation Implementation Plan has now been developed with actions to be rolled out over the next two years to embed adaptation planning into key business processes.
Beneficially recover and re-use resources to reduce waste to landfill	
Develop a Resource Management Strategy to define our approach to recovery, re-use and disposal of resources to meet Sydney Water's strategic objectives.	We are developing a monitoring program to characterise different product types to classify them under waste classification guidelines to enable entry to potential beneficial use markets and divert products from landfill. We are developing our Master Plan for Bio-resources, which will include Biosolids and other products from our collection systems. Our wastewater grit monitoring program is underway.

2017-18 Environment Plan action	Progress made
Increase re-use of silt and debris collected from stormwater channels.	Our trials with licensed providers for the receipt and recovery of different types of stormwater system silt and debris are continuing.
Trial co-digestion of organic food waste at our wastewater treatment plants to convert the waste to useable energy. Operating on a fee-for-service basis, the program reduces energy costs and the costs to our customers while diverting waste from landfill.	We have continued our trial on co-digestion of food waste at Cronulla Wastewater Treatment Plant (WWTP). During the 2017-18 reporting period, we: • processed 94,000 litres of food waste • generated an average 7% increase in biogas • had a negligible (<1%) increase in biosolids. We have been able to address underlying digester performance issues that were limiting the amount of food waste that could be processed and expect the food waste volumes to increase in the future.
Explore new approaches to maintain 100% beneficial use of biosolids.	We are progressing our monitoring trial for stabilisation and multiple barrier approaches to develop a Hazard Analysis and Critical Control Points (HACCP) approach for the management of our biosolids. We are testing our biosolids for PFAS salts, the emerging chemical of concern that has the highest risk at present. We have participated in a workshop with the EPA and Office of Environment and Heritage (OEH) to discuss PFAS risk and will continue to work with them to better understand the risks and implications.
Harness research and innovation to increase our use of renewable energy	
Develop knowledge in innovative renewable energy storage to operate critical assets off the grid in extreme weather events.	We are progressing a trial installation of a renewable energy management solution on a wastewater pumping station. The solar and lithium ion battery equipment has been purchased, and design and safety plans are being finalised.
Contribute to future sustainable and resilient water supplies	
Develop a recycled water position statement.	Our recycled water position statement has been developed and is being incorporated into our broader Water Master Plan.

2017-18 Environment Plan action	Progress made
Deliver Sydney Water's actions in the Metropolitan Water Plan and support the Monitoring, Evaluation, Reporting and Implementation (MERI) Plan.	During 2017-18 we delivered our Annual Water Conservation Report 2016-17. This report included our Water Conservation Plan for the next 5 years, based on the Economic Level of Water Conservation (ELWC) methodology, and approved by IPART in December 2016. It also included the costs and water savings from our water conservation programs run in 2016-17. We also supported the delivery of the 2017 Metropolitan Water Plan, including the WaterSmart Cities program, and provided key inputs such as updated demand forecasts.

5.2 Key performance indicators

Our key performance indicators help measure our progress and assess performance each year.

The following indicators within Sydney Water's *Environmental Indicators Report 2017–18* are relevant to this objective.

Key performance indicators	Environmental Indicators Report 17–18
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Part C

Sydney WATER

Environmental Indicators Report

Our environmental performance

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1 Executive summary

Sydney Water is governed by the *Sydney Water Act 1994* (the Act) and conducts its activities under an operating licence granted by the NSW Government. Sydney Water's current *Operating Licence 2015–2020* commenced on 1 July 2015.

The Act and the Operating Licence require us to report each year on 'indicators' of the direct impact of our activities on the environment. The Independent Pricing and Regulatory Tribunal (IPART) determines the environmental indicators we must report on, and publishes these in the *Operating Licence Reporting Manual* (the *Reporting Manual*, available at ipart.nsw.gov.au). IPART may review the *Reporting Manual* during the operating licence period and make changes as required. This report is based on the *Reporting Manual* dated July 2018.

The *Environmental Indicators Report 2017-18* outlines our performance against the environmental indicators in the *Reporting manual* during the last financial year. These include:

- 10 environmental indicators in Appendix D (IPART Reporting Manual July 2018)
- 15 National Water Initiative (NWI) indicators relating to the environment, from the *National urban water utility performance reporting framework* (Indicators and Definition Handbook – January 2018).

The National Water Initiative (NWI) indicators are part of the National urban water utility performance reporting framework. The NWI is a shared commitment by Australian state and federal governments to improve water resource management and use water resources more efficiently. Data from all Australian water utilities is collated annually and published in a National Performance Report prepared by the Bureau of Meteorology. The report provides a national comparative 'report card' that enables consumers and governments to assess how well water utilities are performing.

For more information on our environmental objectives and this year's achievements, please see our annual environment plan report, *Delivering our environment plan*, which is the first part of this *Environment Compliance and Performance Report.* The full report is available at sydneywater.com.au.

2 Our environmental indicators

Category	Indicator
Wastewater treatment and system discharges	**NWI IE1** Volume of wastewater only treated to a primary level (ML) **NWI E1** Percentage of wastewater treated only to a primary level **NWI IE2** Volume of wastewater only treated to a secondary level (ML) **NWI E2** Percentage of wastewater treated only to a secondary level **NWI IE3** Volume of wastewater treated to a tertiary level (ML) **NWI E3** Percentage of wastewater treated to a tertiary or advanced level **IPART E3** Total number of controlled wastewater overflows that occur in dry weather that are discharged to the environment, per km of sewer main **IPART E4** Total number of uncontrolled wastewater overflows that occur in dry weather that are discharged to the environment, per km of sewer main
Greenhouse gas emissions	**NWI IE9** Net greenhouse gas emissions: water supply **NWI E9** Net greenhouse gas emissions per 1,000 properties: water supply (tonnes CO_2 equivalents per 1,000 properties) **NWI IE10** Net greenhouse gas emissions: wastewater **NWI E10** Net greenhouse gas emissions per 1,000 properties: wastewater (tonnes CO_2 equivalents per 1,000 properties) **NWI IE11** Net greenhouse gas emissions: other **NWI E11** Net greenhouse gas emissions per 1,000 properties: other (net tonnes CO_2 equivalents per 1,000 properties) **NWI IE12** Total net greenhouse gas emissions **NWI E12** Total net greenhouse gas emissions per 1,000 properties (net tonnes CO_2 equivalents per 1,000 properties)
Energy	**IPART E1** Total energy consumption by the water utility (electricity, fuel and gas) in units provided on energy bills **IPART E2 (previously IPART E5)** Electricity consumption from renewable sources or generated by the water utility expressed as a total percentage of electricity consumption
Biosolids	**IPART E5** Estimated total mass of biosolids produced by water utility **NWI E8** Percentage of biosolids reused
Waste	**IPART E6 (previously IPART E9)** Percentage of solid waste recycled or reused expressed as a percentage of solid waste generated

	IPART E7 (previously IPART E10 (S)) Estimated total mass of solid waste generated by water utility
Flora and fauna	**IPART E8 (previously IPART E11)** Total area of clearing of native vegetation **IPART E 9 (previously IPART E12)** Total area of native vegetation rehabilitated, including due to replanting, weeding and protection by Sydney Water **IPART E10 (previously IPART E13)** Total area of native vegetation gain due to rehabilitation, replanting, weeding and protection by Sydney Water

3 Wastewater treatment and system discharges

Indicator	2013–14	2014–15	2015–16	2016–17	2017–18
NWI IE1 Volume of wastewater only treated to a primary level (ML)	344,543	387,977	407,262	397,194	315,657
NWI E1 Percentage of wastewater only treated to a primary level	75%	73%	73%	68%	68%
NWI IE2 Volume of wastewater only treated to a secondary level (ML)	15,436	22,421	22,780	46,437	34,858
NWI E2 Percentage of wastewater only treated to a secondary level	4%	4%	4%	8%	8%
NWI IE3 Volume of wastewater treated to a tertiary level (ML)	104,607	122,344	125,567	138,743	104,156
NWI E3 Percentage of wastewater treated to a tertiary or advanced level	21%	23%	23%	24%	23%
New IPART E3 - Total number of controlled wastewater overflows that occur in dry weather that discharged to the environment, per km of sewer main *					0.002
New IPART E4 - Total number of uncontrolled wastewater overflows that occur in dry weather that discharged to the environment, per km of sewer main *					0.012

Note: * new indicators from July 2018.

IPART E3 and E4

In 2017-18, Sydney Water operated 25,863 km of wastewater main network. During 2017-18, there were:

- 45 controlled network overflows (from designated - designed overflow structures); and
- 308 uncontrolled network overflows

Dry weather sewage overflows generally occur when tree roots block pipes or pipes collapse due to soil movement. Sewage overflows either affect downstream of designed overflow structures or result in uncontrolled discharge to the local environment.

It is well established that dry weather overflows have potential to cause environmental damage and impact on customers, therefore a choke management strategy is in place, targeting a reduction of

chokes and the resultant sewage overflows. A key component of the strategy is a program of works to reduce the risk of repeat sewer overflows where an asset has failed three or more times in a five-year period. When the program identifies tree roots in a customer's private sewer they are requested to voluntarily clean or repair their sewers.

4 Greenhouse gas emissions

Table 4-1 Greenhouse gas emissions

Indicator	2013–14	2014–15	2015–16	2016–17	2017–18
NWI IE9 Net greenhouse gas emissions: water supply (tonnes CO_2 equivalents)	126,692	117,571	114,713	126,199	132,411
NWI E9 Net greenhouse gas emissions per 1,000 properties: water supply (tonnes CO_2 equivalents/1,000 properties)[1]	69	63	60	65	67
NWI IE10 Net greenhouse gas emissions: wastewater (tonnes CO_2 equivalents)	212,727	230,189	204,585	193,949	189,206
NWI E10 Net greenhouse gas emissions per 1,000 properties: wastewater (tonnes CO_2 equivalents/1,000 properties)[1,2]	118	126	110	103	98
NWI IE11 Net greenhouse gas emissions: other (tonnes CO_2 equivalents)	-182,189	-190,529	-44,918	19,863	20,764
NWI E11 Net greenhouse gas emissions per 1,000 properties: other (tonnes CO_2 equivalents/1,000 properties)[1,4]	-99	-102	-24	10	10
NWI IE12 Total net greenhouse gas emissions (tonnes CO_2 equivalents)	157,230	157,231	274,379	340,011	342,381
NWI E12 Total net greenhouse gas emissions per 1,000 properties (tonnes CO_2 equivalents/1,000 properties)[1,3]	85	84	144	176	173

[1] Scope 3 emissions are excluded. Scope 3 emissions are defined in the Greenhouse Gas Protocol, see ghgprotocol.org

[2] Includes recycled water use.

[3] Total net emissions don't equal the sum of NWI E9, NWI E10 and NWI E11, because the numbers of properties with water and wastewater services differs. NWI E10 is calculated using the number of properties supplied with wastewater services. NWI E9, E11 and E12 are calculated using the number of properties supplied with water services.

[4] For the period up to 2016–17, this includes surrendering NSW Greenhouse Gas Abatement Certificates (NGACs) to offset greenhouse gas emissions.

Table 4-2 Sydney Water's greenhouse gas emissions by fuel type in 2017–18

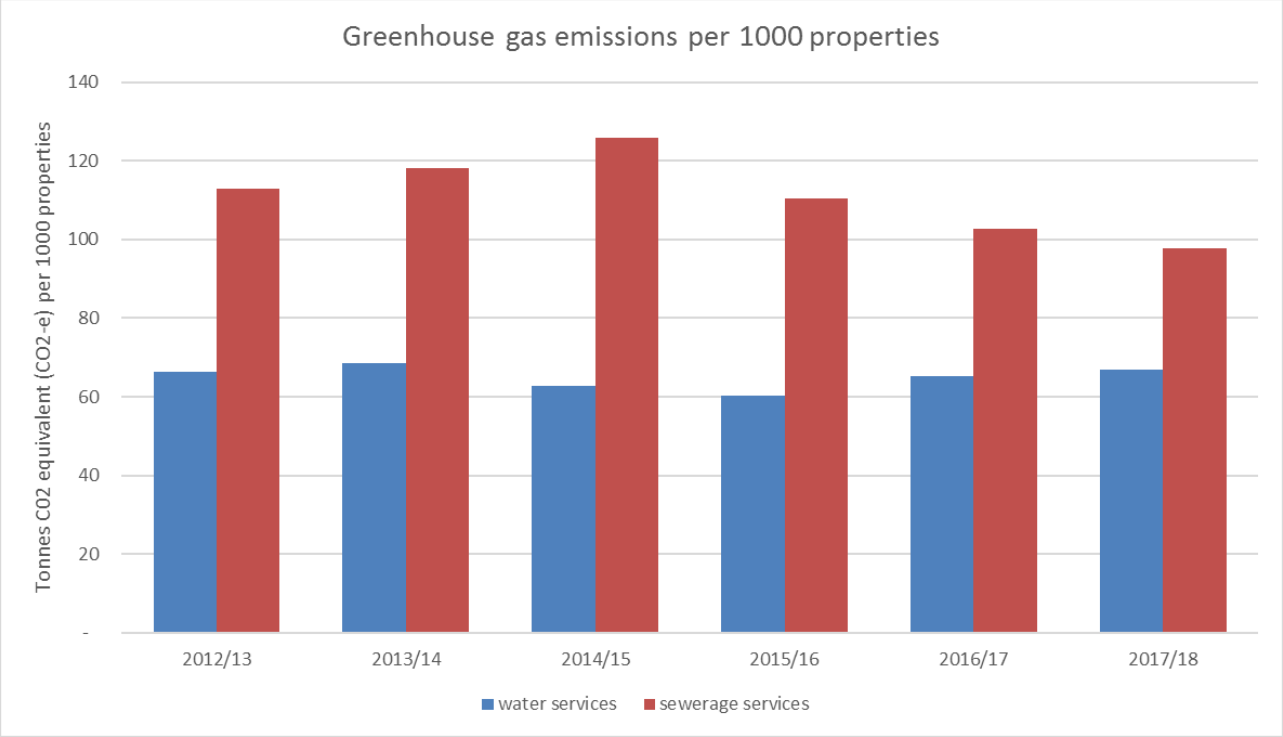
Source	Tonnes CO_2 equivalent	% of total
Electricity	294,634	86.1
Natural gas	281	0.1
Stationary fuel	6,417	1.9
Transport fuel	5,793	1.7
Fugitive emissions	35,257	10.3
Sub-total tonnes CO2–e (gross)	342,381	
Surrender of carbon credits	0	
Total tonnes CO2–e (net)	342,381	

Sydney Water's operational greenhouse gas emissions

Sydney Water reports its greenhouse gas emissions (that is, the equivalent carbon dioxide (CO_2–e) emissions) by measuring its electricity, fuel and gas use and fugitive gas emissions (NWI E9 and E10). The reported figure for greenhouse gas emissions (NWI E11) includes emissions from corporate overheads and the surrender of carbon offsets.

Greenhouse gas emissions for treating and transporting water (NWI E9) and collecting and treating wastewater (NWI E10) have remained relatively stable in 2017-18. The figure 4.1 on following page compares greenhouse gas emissions per 1,000 properties for water and wastewater services.

Figure 4-1 Greenhouse gas emissions per 1000 properties



In 2017-18, Sydney Water's gross greenhouse gas emissions were 342,381 tonnes CO2–e, a decrease of 0.7% compared to 2016-17. An increase in self-generated renewable energy was offset by an overall increase in grid electricity demand for water servicing.

Sydney Water no longer has any NSW Greenhouse Gas Abatement Certificates (NGACs) or other carbon credits to offset emissions.

To know more about National Greenhouse and Energy Reporting (NGER), please see the Australian Government's Clean Energy Regulator website at www.cleanenergyregulator.gov.au.

5 Energy

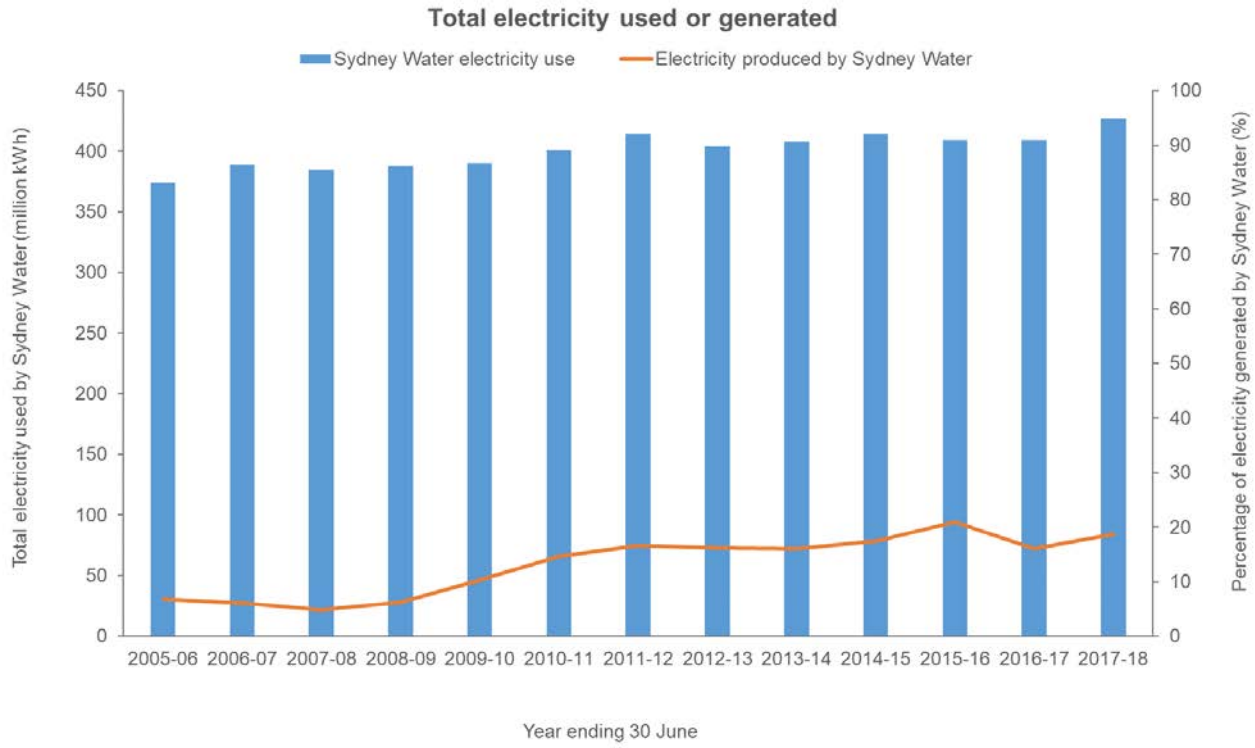
Table 5-1 Energy

Indicator	Unit	2013–14	2014–15	2015–16	2016–17	2017–18
New IPART E1 - Total energy consumption by the water utility in units provided on energy bills* #	Electricity (kWh)					426,644,411
	Fuel (L)					2,246,257
	Gas (MJ)					5,459,495
IPART E2 Electricity consumption from renewable sources or generated by Sydney Water expressed as a percentage of total electricity consumption*		16%	17.5%	21%	15.9%	18.7%

* Electricity consumption data only includes energy used by assets under Sydney Water's control.

new indicator from July 2018.

Figure 5-1 Total electricity used or generated



Note: Data excludes the Sydney Desalination Plant, as the plant was refinanced in June 2012. It continues to offset 100% of its electricity use with renewable energy.

IPART E2

Sydney Water has eight sites with biogas cogeneration facilities, three hydroelectric generators, and several solar installations across Sydney Water sites.

In 2017-18, Sydney Water generated 80 million kWh of electricity which was equivalent to 18.7% of the total Sydney Water usage of 427 million kWh.

Total renewable generation increased by 18% compared to renewable energy generation in 2016-17. The increase in renewable energy generation was due to increased electricity generation at Prospect hydro and a return to service of North Head hydro, which was under maintenance for large part of 2016-17.

6 Biosolids

Table 6-1 Biosolids

Indicator	2013–14	2014–15	2015–16	2016–17	2017-18
IPART E5 Estimated total mass of biosolids produced by Sydney Water (dry tonnes)	37,118	40,627	39,370	36,623	36,148
NWI E8 Percentage of biosolids reused	100%	100%	100%	100%	100%

Biosolids are the nutrient-rich organic material produced when we treat wastewater at our water recycling plants (WRPs) and wastewater treatment plants (WWTPs). Variations in wastewater treatment processes, population and flows to WRPs and WWTPs can all affect yearly totals. Totals may also include biosolids produced in the previous reporting period, as we don't record the totals until after the biosolids are removed from storage facilities.

Sydney Water has been consistently achieving 100% beneficial reuse of biosolids. Biosolids is reused for agriculture and horticulture purpose.

To know more about biosolids use, visit sydneywater.com.au.

7 Waste

Table 7-1 Waste

Indicator	2013–14	2014–15	2015–16	2016–17	2017-18
IPART E6 Percentage of solid waste recycled or reused expressed as a percentage of solid waste generated (%)	88%	88%	71%	70%	54%
IPART E7 Estimated total mass of solid waste generated by the water utility (tonnes)	196,137	329,055	190,230	201,296	154,242

IPART E6

The overall recycling rate for 2017-18 was 54%, significantly lower than the previous four years. Construction and demolition waste continues to be the major contributor to the overall lower rate of recycling for 2017-18.

Table 7-2 Waste recycled or reused by category

Waste category	Percentage of waste recycled or reused (%)				
	2013–14	2014–15	2015–16	2016–17	2017-18
Construction and demolition waste – Sydney Water	98%	48%	80%	77%	91%
Construction and demolition waste – contractors	88%	93%	73%	70%	34%
Office waste	44%	83%	46%	57%	40%
Water, wastewater and stormwater process wastes	78%	64%	61%	71%	76%
Total	88%	88%	71%	70%	54%

Construction and demolition waste

The average recycling rate for construction and demolition waste generated by Sydney Water and our contractors combined was 53%. This figure is below the 80% target set by the Office of Environment and Heritage for recycling construction and demolition waste by 2021[1].

Recycling rates vary considerably during the life cycle of capital projects; as a project moves from preparation to works and to handover, types of waste material and their recyclability will change.

The recycling rate for Sydney Water increased by 14% due to the inclusion of organic waste from the grounds maintenance and land management on Sydney Water property. The contractor *construction and demolition waste* recycling rate decreased by 36% predominantly due to a high proportion of acid sulfate soils and general solid waste collected which are not classified as recyclable products.

Office waste

We report all mixed waste collected from our offices and depots as office waste, unless captured under construction and demolition waste or process waste. Because the work done at our locations varies, the volume and type of waste generated and the portion of recyclable materials also varies from site-to-site.

The office waste recycling rate for 2017-18 decreased to 40%. The rate is highly dependent on recycling from our facility management contracts.

Process waste

Recycling of waste from our water, wastewater and stormwater processes has increased by 5% from last year to 76%. Although there has been an improvement in the overall recycling of process waste, it remains highly dependent on the quantity and composition of wastes from our stormwater system due to large amounts of litter collected, as well as the material that cannot be recycled including wet wipes in the wastewater network.

Recycling rates were maintained at 90% for grit and screenings from wastewater treatment plants[2].

[1] 2014, *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*, NSW EPA, Sydney.
[2] This is a derived figure, given to Sydney Water by the receiving facility.

IPART E7

In 2017–18, Sydney Water generated 154,242 tonnes of solid waste, a decrease of 23% from 2016-17. This is primarily due to a decrease in construction and demolition waste. The capital works programs undertaken by both Sydney Water and contractors were responsible for over 85% of the total waste generated.

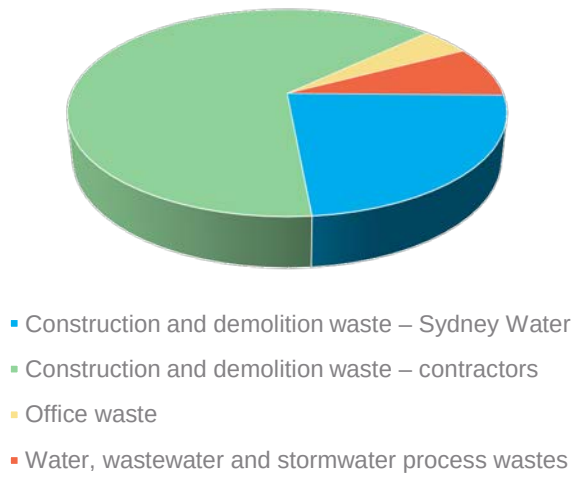
Process waste volumes decreased by 17% compared to 2016-17. Water Filtration Plant residuals are generally stored in sedimentation ponds on site for several years before being excavated and removed. This means there can be a significant fluctuation in the process waste from year to year.

Table 7-3 Waste generated by category

Waste category	Total waste generated (tonnes)				
	2013–14	2014–15	2015–16	2016–17	2017-18
Construction and demolition waste – Sydney Water*	25,711	20,191	24,633	22,671	43,363
Construction and demolition waste – contractors*	143,800	277,823	133,597	145,762	88,024
Office waste	2,828	5,836	9,773	15,052	8,059
Water, wastewater and stormwater process wastes	23,797	25,205	22,227	17,810	14,796
Total	196,137	329,055	190,230	201,296	154,242

* Data from 2013–14 to 2015–16, includes an estimated portion of waste

Figure 7-1 Waste generated by category



8 Flora and Fauna

Table 8-1 Flora and Fauna

Indicator	2013–14	2014–15	2015–16	2016–17	2017-18
IPART E8 (previously IPART E11) Total area of clearing of native vegetation (ha)	7.94	7.99	2.92	2.36	1.77
IPART E9 (previously IPART E12) Total area of native vegetation rehabilitated, including due to rehabilitation, replanting, weeding and protection by Sydney Water (ha) #	7.38	19.03	6.23	8.95	63
IPART E10 (previously IPART E13) Total area of native vegetation gain due to rehabilitation, replanting, weeding and protection by Sydney Water (ha) ^	-0.56	11.04	3.31	6.59	2.8

Indicator changed from 2017-18. Historical data from 2013 to 2017 only includes rehabilitation from capital works projects. 2017-18 data also includes rehabilitation projects for Sydney Water owned and managed properties.

^ Data reflects either the net gain or loss of native vegetation annually from capital works projects only.

The minimum area of native vegetation reported for each project is 0.01 hectares (ha), or 100 square metres. There are no targets set for these native vegetation indicators. The scale and scope of capital works, the natural and built characteristics of a site, and the timing of reporting influence Sydney Water's performance.

Major capital works projects

Sydney Water conducts capital works projects to renew and upgrade its assets, deliver government programs and support urban growth. We aim to limit the impact of works on native vegetation and conserve biodiversity and essential fauna habitat.

Since 2013-14 to this reporting year, a cumulative total of 22.98 ha of native vegetation has been cleared and 46.16 ha has been revegetated or rehabilitated through construction project work. Most of the clearing is temporary, with the disturbed land revegetated through site restoration with native species. In 2017–18 there was a net gain of native vegetation, with a total of 1.77 ha of native vegetation cleared and 4.57 ha revegetated or rehabilitated. As major capital works projects often take longer than 12 months, there is a lag between reporting data on upfront clearing and reporting the completion of rehabilitation, restoration or replanting works. Table 7-2 lists capital works projects that involved native vegetation clearing or rehabilitation in 2017-18.

Table 8-2 Native vegetation clearing and rehabilitation for capital works projects

Project	Area of native vegetation cleared (ha)	Area of native vegetation rehabilitated (ha)	Status / expected completion date
South West Growth Centre – - priority land release area - second release: stage 1A- water	0.65	3.60	Ongoing, December 2018
Powells Creek rehabilitation	0	0.77	Ongoing, September 2018
Lower South Creek treatment program - St Marys	0.70	0	Ongoing, March 2019
North Richmond Water Filtration Plant – raw water intake	0.08	0	Ongoing, May 2019
Leppington wastewater – stage 2	0.26	0	Ongoing, December 2018
Oakdale Reservoir alternate supply	0.02	0.20	Complete, April 2018
Georges Hall mechanical and electrical upgrade	0.06	0	Ongoing, December 2018
Total	**1.77**	**4.57**	

Sydney Water owned and managed properties

Sydney Water owns over 3,000 properties across its areas of operations, including properties with significant threatened native vegetation, endangered ecological communities and locations with threatened species of plants and animals. We also manage 452.58 ha of riparian lands, wetlands and naturalised stormwater assets.

The total area of land owned by Sydney Water that has had natural area restoration work done in 2017-18 is 58.43 hectares. These projects are undertaken under our Property Environmental Management Plans, Plans of Management and responses to requirements to undertake weed control works. Table 7-3 lists projects for Sydney Water owned and managed properties that involved native vegetation rehabilitation in 2017-18.

Table 8-3 Rehabilitation projects for Sydney Water owned and managed properties

Project	Area of native vegetation rehabilitated (ha)	Status / expected completion date
Revegetation of turfed area on the bank of Caddies Creek, Glenwood	0.18	Completed, June 2018
Revegetation of Turfed area of basin 5 in Stanhope Gardens	1.0	Ongoing, August 2018
Naturalisation of turfed and weed infested areas of Strangers Creek in Beaumont Hills	0.21	Completed, June 2018
In-fill planting of provenance native species on the banks of Caddies Creek, Second Ponds Creek and Strangers Creek as part of bush regeneration	1	Completed, June 2018
In-fill and enhancement planting of banks of the Botany Wetlands was undertaken as part of biodiversity works.	0.9	Completed, June 2018
Naturalisation of Endangered Ecological Community (EEC) at Potts Hill.	0.45	Completed, June 2018
In-fill planting in the vegetation conservation areas at Potts Hill	0.1	Completed, June 2018
Enhancement revegetation of a few sections of Smalls Creek bank in Kellyville and two sections of Smalls Creek in Beaumont Hills.	0.26	Completed, June 2018
In-fill planting along the banks of Smalls Creek in Kellyville, Beaumont Hills and Eve Street Wetlands	0.53	Completed, June 2018
Prospect Reservoir – Works commenced with primary weed control in the form of mechanical control (flailing) and herbicide treatment to be followed up with further control.	5.0	Ongoing, June 2023.
Fairfield WRP and Potts Hill Reservoir sites - ongoing weed control works, including flailing and treatment. Planting has commenced at both sites.	5.7	Ongoing, June 2020 with view to continue.
Multiple sites in the Blue Mountains and Western Sydney, including Reservoir, Wastewater Pumping Station and former WWTP sites. Extending from Mt Victoria to Glenbrook and Penrith.	23.6	Ongoing until 2022 with view to continue.
Weed management of two areas in Warragamba township (8.6 ha) and Wallacia WWTP (4.0 ha) to induce restoration.	12.6	Ongoing until 2022 with view to continue.
Bush regeneration work at Pymble Reservoir 3 (0.6 ha) and Pymble Warringah pipeline (1.4 ha) in Blue Gum High forest.	2.0	Ongoing until 2022 with view to continue.
Weeding and rehabilitation at Riverstone Biodiversity Offset Area (BOA).	1.0	Ongoing in perpetuity
Weed management at Winmalee WWTP in upper and lower areas of the plant	1.2	Ongoing until 2022 with view to continue.
Weeding and restoration at reservoir sites: Minchinbury and Rogans Hill	2.7	Ongoing until 2022 with view to continue.
Total	**58.43**	

Part D

EMS Non-conformances

The Sydney Water Environmental Management System (EMS) is externally audited every year. The external auditor, BSI Group ANZ Pty Ltd, conducted a surveillance audit of the Sydney Water EMS in March 2018. The audit team concluded based on the results, that Sydney Water continues to fulfil the standard and audit criteria identified within the audit report, and it was deemed that the management system continues to achieve the intended outcomes. No non-conformances were identified. A surveillance audit on the EMS is scheduled for March 2019.

Part E

EMS Proposed significant changes

No significant changes have been made to the EMS in 2017-18.

Sydney Water is planning to integrate the EMS and Sydney Water's Quality Management System by 30 June 2020. However, individual certifications will be retained until at least 2020.

Part F

Sydney WATER

Our Environment Plan 2018–19

Sydney Water's environmental actions to bring our lifestream strategy to life

1 Introduction

This plan outlines the actions we will take in 2018–19 to meet our environmental objectives and our targets by 2020 and 2030.

We update our Environment Plan every year to remain resilient against emerging environmental risks and to ensure that it reflects our business focus.

This year the plan aligns to our newly developed Environment Strategy. Our strategic approach will let us anticipate and respond to the environmental expectations of our customers and prepare for environmental challenges in the future. It also aligns our environmental commitments to our corporate strategy.

We have a vision to transform Sydney Water into a customer-centric, future-focused organisation that delivers great customer experiences and sustainable shareholder value. This reflects our core purpose to protect public health and the environment by providing essential water and wastewater services while remaining a successful business.

To meet this vision, we have the following environmental objectives:

1) We'll contribute to healthy waterways and clean beaches in delivering our services to safeguard ecosystems that our communities can continue to enjoy.
2) We'll increase our resilience to a changing climate, connect with customers and use water in the landscape to shape liveable places.
3) We'll protect and restore valuable biodiversity and share the natural spaces, land and heritage in our care with the community.
4) We'll use our resources wisely, work with customers to save water and increase our recovery of energy towards net-zero emissions.

1.1 Reporting progress on our plan

Each year, we report on the results and outcomes of our actions as part of this plan. To provide a year-to-year comparison of performance, we also report against a set of environmental performance indicators determined by the Independent Pricing and Regulatory Tribunal (IPART). Both reports can be found in our Environment Compliance and Performance Report. This plan aligns with Sydney Water's objectives as outlined in the *Sydney Water Act 1994* and reported in our Annual Report. We are also benchmarked against other Australian water utilities through the National Water Initiative.

Healthy waterways and clean beaches

OBJECTIVE 1: We'll contribute to healthy waterways and clean beaches in delivering our services to safeguard ecosystems that our communities can continue to enjoy

We aim to meet this objective through establishing priority outcomes and targets. Aspirational short and long-term targets are listed below. We will implement the following actions in 2018–19.

Timeframe	Priority outcome	Target	Actions
By 2020 we will:	Balance the needs for healthy rivers and a growing city by managing water cycle outcomes.	Contribute to developing a new framework for licensing of nutrients to maintain and protect the health of the Hawkesbury-Nepean River system.	Support the Environment Protection Authority (EPA) in developing a new regulatory framework for nutrient management in the Hawkesbury-Nepean River System. Continue investigating a suite of measures including nutrient offsets to protect the river. Support the EPA in the development of the operational protocol for nutrient offsets in the Hawkesbury-Nepean River system. Work with IPART to determine an appropriate approach for the regulatory treatment of expenditure on various forms of nutrient offset projects.
	Collaborate to improve waterway health and amenity and manage access.	Establish a new framework to plan, deliver and evaluate water sensitive urban design projects in collaboration with local government and catchment groups.	Build our capability to plan and deliver integrated water cycle management and water-sensitive urban design solutions that our communities value. Progress waterway health improvement projects, consistent with the Waterway Improvement Strategy.

Timeframe	Priority outcome	Target	Actions
	Reduce environmental impacts of our discharges.	See our work contribute to over 90% of coastal and estuarine beaches classified as having ‘very good’ or ‘good’ recreational water quality (as measured by Beachwatch).	Assess the following six catchment areas to verify the risk of wet weather overflow impacts to the environment and community and identify works to reduce risk: • Lane Cove River • Upper Parramatta River • Mid-Parramatta River • Prospect Creek • Lower Middle Harbour • Mosman Peninsula
	Use leading edge science and research to benefit waterways.	Develop and share our capability in innovation monitoring and modelling to protect aquatic environment and public health outcomes for major Sydney waterways.	Continue scientific pilot studies to inform a new monitoring approach for wet weather overflows. Pilot studies are required to obtain statistically valid data to determine the sensitivity of proposed methodologies. Continue to develop online and analytic monitoring of water and wastewater systems to enable proactive management of our networks to reduce impacts to our customers.
	Maintain reliability of our infrastructure to ensure we meet environmental obligations.	Continue to work towards 100% of wastewater volume treated that is compliant with our environment protection licences (from current performance of over 99%).	Develop and apply a planning framework to inform the capital works optimisation process, including an assessment of lifecycle costs, environmental factors and wider economic values and benefits. Implement a tertiary nitrogen removal process unit and wetland treatment pilot project at Picton Water Recycling Plant.

Timeframe	Priority outcome	Target	Actions
	Incorporate environmental safeguards more effectively to reduce risks and communicate incidents impacting waterways.	Enhance our prevention and response to dry weather overflows.	Introduce new approaches to detecting, predicting and improving prevention and response to dry weather overflows.
By 2030 we aspire to:	Support a risk-based approach to manage cumulative impacts of development and improve catchment and waterway health.	Work collaboratively to support the swimmability goals for the Parramatta River by 2025.	Collaborate with State government and local councils to integrate Parramatta River Masterplan outcomes (swimmability) into our servicing strategies.
	Understand impacts and prioritise improvements considering all discharge sources to waterways.	See our work contribute to increased proportion of waterways meeting community expectations and environmental objectives[1].	Review and update the Sewage Treatment System Impact Monitoring Program (STSIMP) to better target the impact of wastewater discharge on the environment.
	Collaborate to integrate water services with city planning.	Enhance integrated water planning by working collaboratively to deliver the WaterSmart Cities program[2].	Apply integrated water management principles to regional water supply planning, to identify and realise financial, environmental and social opportunities.

[1] Key indicators in Sydney Water's Sewage Treatment System Impact Monitoring Program
[2] WaterSmart Cities program detailed in 2017 Metropolitan Water Plan, Metropolitan Water Directorate

Create resilient and liveable places

OBJECTIVE 2: We'll increase our resilience to a changing climate, connect with customers and use water in the landscape to shape liveable places

We aim to meet this objective through establishing priority outcomes and targets. Aspirational short and long-term targets are listed below. We will implement the following actions in 2018–19.

Timeframe	Priority outcome	Target	Actions
By 2020 we will:	Enhance our resilience to ensure continuity of services in a changing and variable climate.	Assess 100% of our climate risk interdependencies with transport, power and other services.	Continue to implement the Climate Change Adaptation Implementation Plan including incorporating outcomes from the AdaptWater™ tool to embed climate change preparedness within Sydney Water.
	Incorporate customers' environmental needs and values into our decisions and regulatory submissions.	Engage with our customers to understand what they need and value, including environmental considerations, from across our services.	Implement customer engagement plan.
	Build sustainable water and wastewater behaviours through our education programs.	Measure increased customer satisfaction (positive environmental responses), awareness and behavior with our customer research.	Develop a communications program to increase community understanding of their role in keeping Sydney's wastewater system healthy. Educate the community about the environmental, health and financial benefits of tap water. Work with industry, associations, retailers and other stakeholders to reduce pollutants affecting waterways and beaches.

Timeframe	Priority outcome	Target	Actions
			Run community engagement programs supporting Sydney Water projects focused on improving waterway health.
	Play a leading role in urban water infrastructure strategy and reforms.	Work closely with agencies to include an integrated water management cycled approach in the infrastructure strategy for the South Creek corridor.	Support and influence the Infrastructure NSW (INSW) South Creek Corridor Sector Review. Prepare a strategic business case for a different approach to greenfield urban development and water services.
	Improve local amenity to support safe, healthy and inclusive communities.	Deliver programs that manage the odour, noise and visual impacts of our operations.	Complete the strategic management plans for Sydney Water's odour management strategy to proactively address odour issues for Wollongong, Bondi, Cronulla, Shellharbour, Glenfield and Malabar systems.
By 2030 we aspire to:	Collaborate and share knowledge to enable water sensitive cities of the future.	Be recognised by our stakeholders as working in partnership with them, as measured by our annual corporate stakeholder perception audit.	Determine opportunities for Sydney Water to support the delivery of priorities identified in the Greater Sydney Region and District Plans and engage with planning authorities such as Councils on strategic planning decisions related to water sensitive cities.
	Collaborate on climate adaptation to create shared solutions for our communities.	Be a benchmark leader for climate readiness and service continuity to contribute to our communities being more resilient to a changing climate[3].	Partner with the NSW Office of Environment and Heritage and other NSW government agencies on the Cross-Dependency Initiative (XDI) to identify interdependency risks to critical city infrastructure from extreme weather events and climate change.

[3] Objective identified in NSW Climate Change Policy Framework, 2016, Office of Environment and Heritage

Timeframe	Priority outcome	Target	Actions
	Enhance liveability through the use of water in the landscape to help connect, cool and green our places.	Deliver servicing strategies that support the Green Grid[4] priority opportunities and future connections. Deliver programs that provide multiple benefits from flood planning and management.	Investigate alternative supply of water and wastewater services in the Greater Parramatta to Olympic Peninsula (GPOP) area.

[4] Green Grid for Greater Sydney in the draft Greater Sydney Region Plan and District Plans, 2017, Greater Sydney Commission

Care for nature, land and heritage

OBJECTIVE 3: We'll protect and restore valuable biodiversity and share the natural spaces, land and heritage in our care with the community.

We aim to meet this objective through establishing priority outcomes and targets. Aspirational short and long-term targets are listed below. We will implement the following actions in 2018–19.

Timeframe	Priority outcome	Target	Actions
By 2020 we will:	Conserve natural environments and cultural heritage in our care.	Consolidate and renew our strategic plans of management for cultural heritage and natural environments (including riparian lands and wetlands).	Routine grounds maintenance incorporating the protection and enhancement of environmentally sensitive sites. Revision of Sydney Water's Strategic Heritage Asset Management Program (SHAMP); prioritised projects aligned to IPART determination periods.
	Reveal and restore natural waterways and landscapes.	Implement programs to reinstate more natural conditions in highly modified waterways. Achieve net gain in area of native vegetation restored year on year.	Progressing the naturalisation of stormwater channels at Powells Creek, Homebush; Johnson Creek, Glebe; Whites Creek, Annandale; Muddy Creek, Rockdale, St Lukes Park, Canada Bay and Iron Cove Creek.
	Responsibly manage land contamination and hazardous building materials to prevent risk of harm.	Have clear outcomes and milestones for site clean-up or management established for all declared contaminated sites on our land.	Further develop technology to capture and access hazardous building material information for our properties. Undertake a Contaminated Land Risk Ranking of our property portfolio. Assess all potentially high-risk sites (detailed site investigations) in FY 18-19.

Timeframe	Priority outcome	Target	Actions
	Support our people to live our environmental values every day.	Have over 90% of staff complete environmental awareness training and communicate how we care for the environment.	Roll out refreshed Environmental Accountabilities eLearning, and further develop our environmental communications program.
By 2030 we aspire to:	Share our land and heritage in our care with the community to support liveable places.	Increase the availability of our land for agreed community use or public open space year on year.	Identify opportunities to develop community assets on our land and form land-use agreements for priority sites with local councils, developers and government. Potential community assets on our land include bike paths, greenspace, urban gardens, bush care and public walkways. Identify sites that may be of value to local community.
	Look to create value from our green infrastructure[5] to maintain ecological health.	Identify and where feasible, create biobanking, green offset or other opportunities to fund green infrastructure.	Develop Sydney Water's biodiversity offset portfolio.
	Identify and prepare for emerging contaminants of concern	Collaborate on shared responses, as needed, to risks to land and waterways from microplastics and emerging chemicals of concern.	Identify and prepare for contaminants of emerging concern to protect Sydney's waterways. Assess and identify risks from emerging contaminants (PFOS / PFAS) to our sites - risks to site users.

[5] Green infrastructure principles identified in the draft Greener Places, 2017, Office of the Government Architect NSW

Efficient and sustainable resource use

OBJECTIVE 4: We'll use our resources wisely, work with customers to save water and increase our recovery of energy towards net-zero emissions.

We aim to meet this objective through establishing priority outcomes and targets. Aspirational short and long-term targets are listed below. We will implement the following actions in 2018–19.

Timeframe	Priority outcome	Target	Actions
By 2020 we will:	Work with customers and invest in economically efficient water conservation.	Develop and implement a Water Conservation Program.	Implement Water Conservation Plan initiatives. Introduce new technologies to improve leak detection in our water network.
	Drive low-carbon, energy efficient and demand responsive water infrastructure and services.	Maintain our grid-sourced electricity demand below 1998 levels.	Update the National Australian Built Environment Rating System (NABERS) energy ratings for our offices. Develop cost-effective energy efficiency and renewable energy projects.
	Beneficially recover and re-use resources and reduce waste to landfill.	Identify alternative uses for biosolids recovered from wastewater treatment to maintain 100% beneficial use of biosolids. Improve our overall solid waste recycling rate by responsible re-use of our recoverable resources.	Increase re-use of different types of waste collected from Sydney Water activities, excluding biosolids. Develop a Resource Master Plan to define our approach to recovery, re-use and disposal of resources to meet Sydney Water's strategic objectives.

Timeframe	Priority outcome	Target	Actions
	Work with suppliers and contractors towards a smaller ecological footprint.	Obtain sustainability benchmark ratings for all major infrastructure projects. Reduce our ecological footprint per customer year on year.	Progress an independent sustainability rating using the Infrastructure Sustainability (IS) Tool administered by the Infrastructure Sustainability Council of Australia (ISCA) for St Marys and Quakers Hill Water Recycling Plants PARR project, part of the Lower South Creek treatment program. Progress preliminary ISCA scorecard containing indicative credit weightings and target performance levels for the proposed Prospect Water Filtration Plant upgrade project.
By 2030 we aspire to:	Contribute to future sustainable and resilient water supplies.	Develop innovative servicing solutions that make the best use of water for priority growth areas, considering recycled water, stormwater and decentralised approaches.	Develop our Water Masterplan. Deliver Sydney Water's actions in the Metropolitan Water Plan.
	Reduce our carbon emissions to help meet NSW's aspirational objective of net-zero emissions by 2050[6].	Provide 75% of our electricity demand from net-zero emissions sources, and 100% by 2050.	Implement our Energy Masterplan initiatives.
	Harness research and innovation to increase our use of renewable energy.	Achieve 35% of our electricity demand from self-generated renewable electricity.	Develop knowledge in innovative renewable energy storage to operate critical assets off the grid in extreme weather events.

[6] Objective identified in NSW Climate Change Policy Framework, 2016, Office of Environment and Heritage

Timeframe	Priority outcome	Target	Actions
		Support precinct-based initiatives to increase renewable energy, and energy and water efficiency.	
	Explore innovative waste management to support the development of a circular economy.	Increase our recovery of energy using externally-sourced organic wastes Move towards energy self-sufficiency at our major wastewater treatment plants.	Improve scientific knowledge of food waste co-digestion by continuing the food waste research program and commencing research into improving biogas quality

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