

An aerial photograph of Sydney Harbour, Australia. The Sydney Harbour Bridge, a large steel arch bridge, spans across the water. In the background, the Sydney Opera House is visible on a small island. The water is a deep blue-green color, and several boats are seen moving across the harbour, leaving white wakes. The sky is clear and blue. There are decorative circular elements: a white circle on the left and a teal circle on the top right.

Creating a water resilient city:

Towards a sustainable and smart Eastern Harbour City



Sydney
WATER



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Acknowledgement of Country

Sydney Water respectfully acknowledges the Traditional Custodians of the Eastern Sydney region: the Dharug or Eora and Dharawal nations.

Their lore, traditions and customs nurtured and continue to nurture the waters, both salt water and sweet water, in our operating area, creating wellbeing for all.

We recognise that the Traditional Custodians have cared for this country over countless generations, and we celebrate their continuing contribution to life in the region.

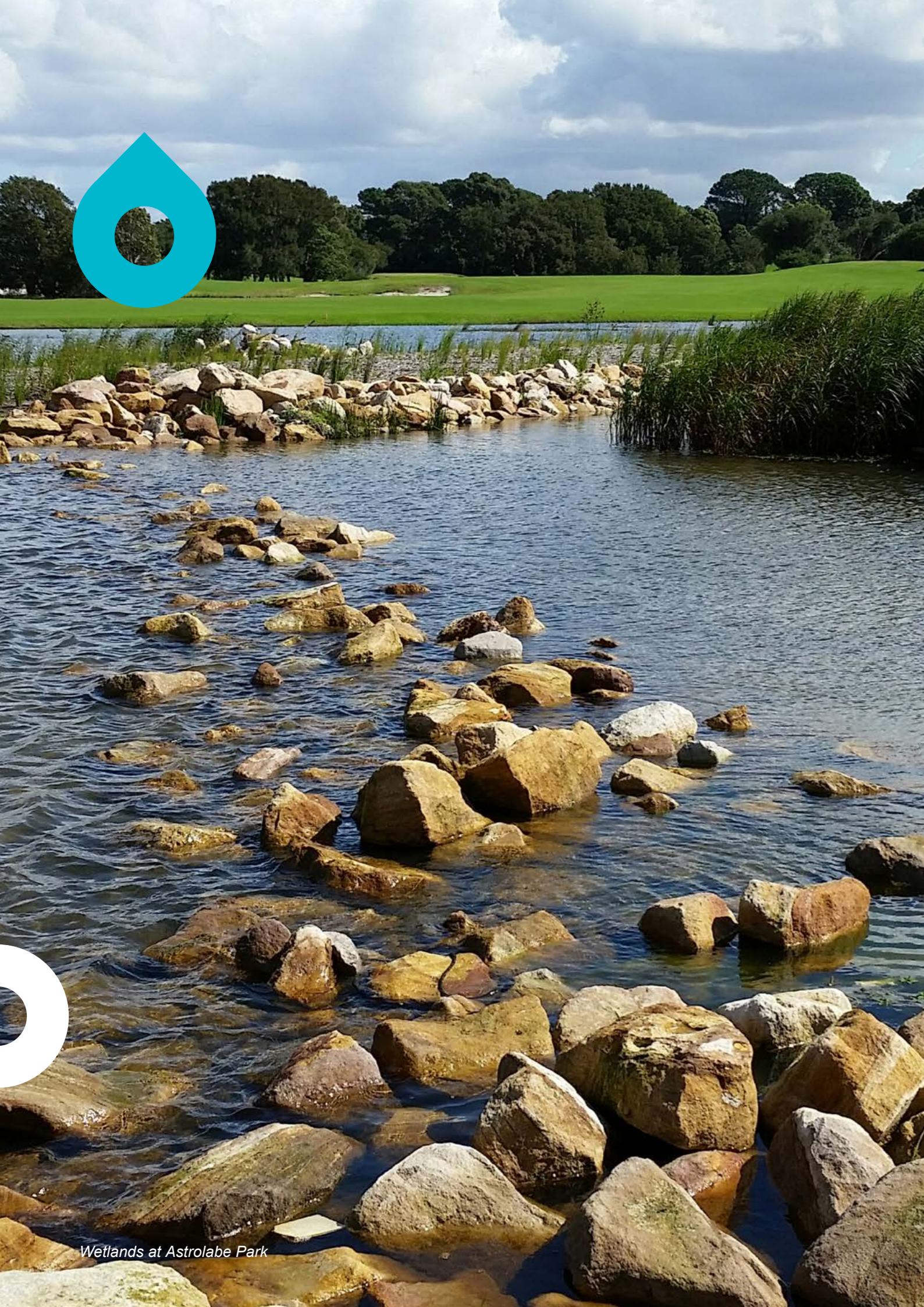
Innovate Reconciliation Action Plan

We are committed to reconciliation and partnering with the Traditional Custodians to ensure we continue Caring for Country, learning from traditional and contemporary approaches, while maintaining and respecting cultural and spiritual connections.

Our Innovate Reconciliation Action Plan (RAP) is an important step on our journey. In the RAP, we outline how we will acknowledge and celebrate the enduring connections of Aboriginal and Torres Strait Islander peoples to the waters and lands on which we operate. We aim to develop strong relationships with Aboriginal and Torres Strait Islander communities to bring about meaningful change.

This RAP reinforces our vision of creating a better life with world-class water services by respecting and celebrating the cultural heritage of First Nations people and driving positive social change that will benefit generations of Australians to come.





Wetlands at Astrolabe Park



Foreword

Sydney Water has a 130-year legacy of providing safe, high-quality water to people in and around Sydney for drinking, bathing and recreation. Every day, we deliver drinking water to over five million people. By 2056, we will be providing water services to about eight million customers across Greater Sydney and the Illawarra.

We are also proud custodians of wastewater, recycled water and some stormwater services. As the operator of more than 26,000 kilometres of wastewater network, we are always looking for innovative ways to protect our customers and the environment.

Our role extends beyond providing world-class water services. We're taking significant steps to ensure our service is sustainable, resilient to climate change and advances our contribution to a circular economy.

Water services in the Eastern Harbour City have evolved since the early 20th century as the region has grown. With the population in the region forecast to reach 4.1 million by 2056, urban development presents the opportunity to rethink the way water is valued, used and managed.

To service growth in the region, we're planning to invest over \$1 billion to upgrade our wastewater network, along with \$100 million to renew our water and stormwater infrastructure. We want the Harbour City to remain a great place to live, work and play – now and into the future.

Our investments include:

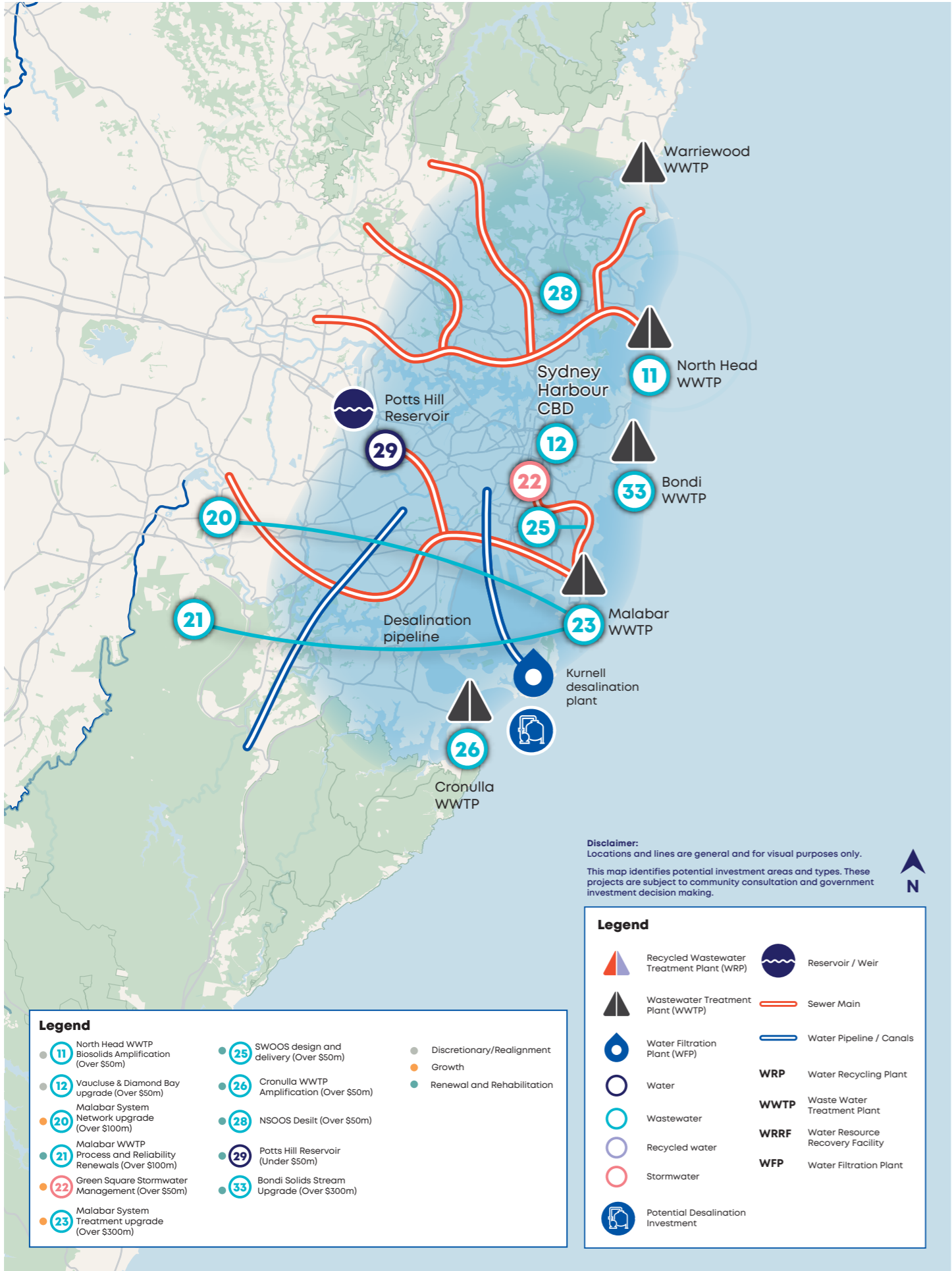
- Renewing the Bondi Water Resource Recovery Facility to support growth and expand our resource recovery operations.
- Upgrading the Malabar system, one of Sydney's oldest and largest wastewater networks, which services over a third of Sydney.
- Improving the environmental performance of the Northern Suburbs wastewater system.

These investments are additional to the more than \$5 million we invest each year on innovation initiatives aimed at improving the performance of our assets and operations, protecting and enhancing our waterways, and advancing our wastewater treatment and recovery processes.

We look forward to continuing to work with our partners and customers to improve our urban landscape, reduce our impact on the environment and create a truly water resilient Eastern Harbour City.

Roch Cheroux
Managing Director

Our planned major investments over the next five years



Transitioning to a water resilient Eastern Harbour City

The Eastern Harbour City is a dynamic and thriving region, home to the Central Business District and a hub of economic activity in Greater Sydney. Stretching from the Northern Beaches down to Cronulla, and from the coast to Bankstown and Strathfield in the west, the region's population is forecast to increase by 50 per cent by 2056, reaching a total population of 4.1 million.

Sydney Water understands the water needs unique to this well-established region. We are already investing to support a growing population, to modernise infrastructure, and to increase the proportion of rainfall-independent water supply sources.

At the same time, we're re-imagining the ways in which water is used and managed, and how water services are provided, to enable the city's precincts and communities to grow and thrive.

Beyond essential water services

Sydney Water is planning for a future water supply that is resilient to growth and climate extremes. Within a decade, temperatures are expected to rise by 1.5 degrees Celsius above pre-industrial levels. Increasing urban heat is already having an adverse impact in the Harbour City, which includes some of Sydney's hottest locations, such as the Sydney Airport precinct and the Sydenham to Bankstown Corridor.

That's why we've developed the Eastern Sydney Regional Master Plan in partnership with NSW government agencies, local councils and subject matter experts. This comprehensive, forward-looking plan goes beyond essential water services to consider the entire water cycle for a more sustainable future.

The master plan evaluates pathways to achieving water resilience that improve the health of our rivers and beaches, support the green spaces needed to cool the city, mitigate floods and reduce carbon emissions.

It identifies options to capture and reuse materials from the treatment process to generate renewable energy, considers a range of water sources, and presents opportunities for capturing, treating and reusing stormwater.

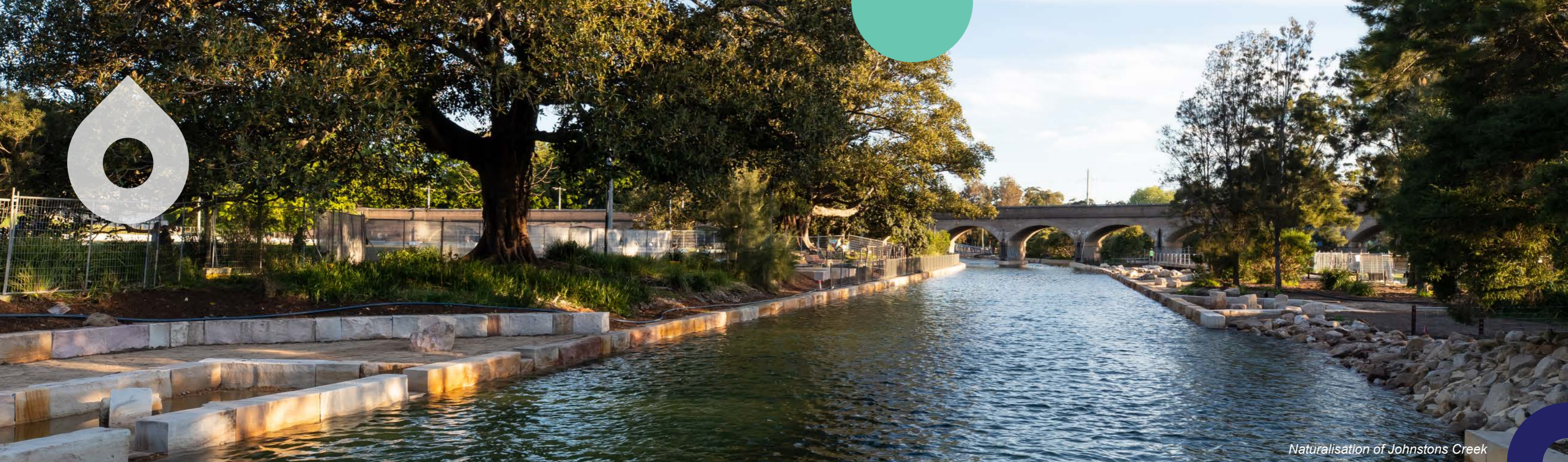
Planning is already underway to progress urban greening outcomes, investigate decentralised recycled water options for growth precincts, and implement projects that support resource recovery.

Enabling sustainable urban renewal

Key renewal areas in the Harbour City are located along the Eastern Economic Corridor, which stretches from Macquarie Park to the City of Sydney and Sydney Airport, and the Sydenham to Bankstown Corridor. Bankstown, Randwick and Kogarah have also been identified for their potential to grow into centres of increased productivity and innovation. Urban renewal to support population growth in these areas presents an opportunity to re-evaluate the way we manage the entire water cycle.

We are passionate about growing our cities sustainably, which is why we're developing circular water initiatives with our valued partners. We already provide customers with recycled water for irrigation, in industry, and for flushing toilets and watering gardens in new developments. In 2021 we signed a Memorandum of Understanding with the City of Sydney to provide recycled water to its existing network along George Street and to investigate opportunities for recycled water in urban renewal precincts.

Collaborations with valued partners are essential to help us meet our sustainability and resource-recovery goals for Eastern Sydney. Our combined efforts will ensure a greener, cooler and more sustainable future for the Harbour City.



Naturalisation of Johnstons Creek

Thriving, liveable waterways

Sydney Water plays a leading role in transforming our waterways and contributing to thriving and liveable communities across Sydney. We want our urban waterways to support biodiversity and invite recreation, and our coasts and estuaries to maintain their world-class status for future generations.

Shared ambition guides best-practice waterway management

As an active member of the Sydney Coastal Councils Group, Cooks River Alliance, Parramatta River Catchment Group and Georges Riverkeeper, Sydney Water seeks to guide best-practice waterway management in the Eastern Harbour City.

By partnering with councils and other key stakeholders in a whole-of-catchment approach, we aim to improve social, economic and environmental outcomes for local communities.

Accelerating new swim sites

Urban Plunge is Sydney Water's new initiative to dramatically accelerate the number of swim sites across Sydney and expand access to water sport and recreation beyond established beaches.

The initiative builds on Sydney Water's existing expertise in water-quality modelling and monitoring, urban-water management, strategic planning and program delivery.

While Urban Plunge is focused on making more permanent sites available, we are also progressing pop-up pools to test locations, technology, design, public appetite and business models. Sydney Water is holding discussions with potential partners to bring the Urban Plunge concept to life.

Enhancing green and blue public spaces – including more swimming sites – has the potential to connect recreation, health and enterprise across the city, making the Eastern Harbour City a global lifestyle superpower.

Naturalised waterways increase social amenity

Sydney Water is improving the health of waterways and social amenity by reinstating more natural conditions in urban stormwater channels.

The deteriorating condition of the Johnstons Creek stormwater channel between Rozelle Bay and The Crescent in Annandale presented an opportunity to remediate the waterway. We replaced the old concrete banks with sandstone and native vegetation, improving the habitat for birds and marine life, and transforming the creek into an attractive place for the community to enjoy.

The naturalisation of the Johnstons Creek stormwater channel set a new benchmark. The project won the Place-based Collaboration Award at the 2021 Greater Sydney Commission Planning Awards, and the 2021 Stormwater New South Wales Excellence in Asset Management Award.

Sydney Water is committed to creating more spaces where the community can connect with waterways in the Eastern Harbour City. We're investigating the feasibility of naturalising Muddy Creek in Rockdale, Iron Cove Creek in Five Dock and St Luke's Park in Concord.

Water Sensitive Urban Design improves waterway health

Sydney Water is investing \$15–20 million over the next five years on a program that aims to minimise the impact of stormwater run-off on our waterways.

We're working with councils to apply Water Sensitive Urban Design principles to create naturally vegetated stormwater treatment areas. These areas remove pollutants and nutrients in stormwater before they enter our waterways, improving waterway health and creating new habitat for wildlife to thrive.

Construction has begun on wetlands at Parkside Drive Reserve in Kogarah Bay, which will improve waterway health in the Georges River. Future projects will focus on preventing pollutants and nutrients in stormwater from entering the Cooks River and Sydney Harbour.

Modern infrastructure enhances liveability of historic area

Sydney Water's \$45 million Refresh Woolloomooloo project transformed a combined wastewater and stormwater system from the 1800s into modern and sustainable infrastructure for the future.

The milestone project involved laying 4.2 kilometres of wastewater pipes and 650 metres of stormwater pipes in a densely populated urban area. The new separated system captures excess wastewater during wet weather in the Woolloomooloo catchment and directs it to the Bondi Water Resource Recovery Facility, while stormwater flows to Woolloomooloo Bay. The project has enhanced the liveability of the area by significantly reducing odour and improving water quality, while increasing environmental outcomes for marine life in Sydney's iconic harbour.

Sydney Water was awarded the prestigious Project of the Year at the 2021 Global Water Awards in London for the Refresh Woolloomooloo project.



Protecting our customers and the environment

Sydney Water is taking action to mitigate our impact on the climate and protect the environment – both globally and locally. We are investing in critical, modern infrastructure to ensure we leave a better world for future generations.

Committing to a global climate change initiative

Sydney Water has signed the United Nations (UN) Global Compact to fight climate change, poverty and inequality through the adoption of the compact's 17 Sustainable Development Goals. We have aligned our strategies and operations with the ten principles of the UN Global Compact as part of our commitment to broader societal change.

Joining forces in the Race to Zero

Sydney Water is one of 14 Australian and New Zealand water utilities to become signatories to the UN-backed Race to Zero carbon emissions campaign.

Our Carbon Zero plan supports our ambition to reduce our impact on the environment and create a carbon-zero world.

The plan identifies four key aspirations:

- Net-zero carbon emissions for Sydney Water by 2030 and for our supply chain by 2040.
- Implement best-practice energy performance and achieve net-zero carbon emissions in our operations and investment programs.
- Actively participate in the energy market to reduce costs and increase the value of our energy generation.
- Use our services to help our customers and the community reduce their emissions.

Preserving our iconic coast

Sydney Water is investing approximately \$85 million to decommission the ocean outfalls at Vaucluse and Diamond Bay to protect this iconic part of the Eastern Harbour City.

The three ocean outfalls at Vaucluse and Diamond Bay have been operating for over 100 years in a largely inaccessible part of the coastline and are the last remaining ocean outfalls which release untreated wastewater into the ocean.

The Refresh Vaucluse Diamond Bay project will divert wastewater from the catchment to the Bondi Water Resource Recovery Facility, using new and existing infrastructure. The project is expected to be completed by the end of 2024.

Refreshing the wastewater system in Vaucluse and Diamond Bay will significantly improve water quality in the harbour and along the coast, protect community health and marine ecology, and reduce odour.

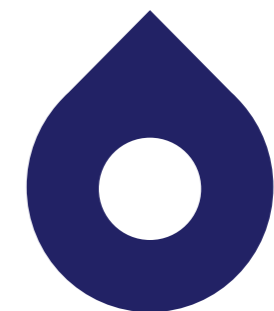
Protecting our customers from flooding

Located 3.5 kilometres south of the central business district, Green Square is one of Australia's largest urban renewal developments, expected to accommodate 40,000 new residents and 22,000 new workers by 2030. Once a network of wetlands and creeks, urban renewal at Green Square wouldn't be possible without first addressing the flood risk that is expected to worsen with the impacts of climate change.

Sydney Water partnered with the City of Sydney to build the Green Square stormwater trunk drain, a 2.4-kilometre underground drainage system from Epsom Road in Zetland, through the new Green Square Town Centre, to Alexandra Canal. The new drain takes floodwaters from Sydney into Botany Bay, increasing the liveability and amenity of Green Square and minimising impact on the community and environment.

The new drain diverts stormwater to the City of Sydney's water recycling plant. The plant treats up to 320 million litres of recycled stormwater each year so that it can be used in the Green Square town centre.

Sydney Water and the City of Sydney won the Infrastructure Project Innovation Award for NSW at the 2019 NSW Water Awards for the Green Square Stormwater Drainage Project.





Malabar Water Resource Recovery Facility

Towards a resource-efficient future

Sydney Water is investing in leading-edge technology to recover energy from waste and minimise water use, while transitioning to a lower carbon economy. By using resources efficiently, we're supporting growth and productivity in the Eastern Harbour City.

Turning waste into green energy

Sydney Water is leading the way in resource recovery with Australia's first biomethane-to-gas project at the Malabar Water Resource Recovery Facility.

In partnership with Jemena, and with support from the Australian Renewable Energy Agency (ARENA), the project will generate zero-carbon emission, high-quality biomethane gas from the wastewater treatment process and inject it into the gas grid for cooking, heating and hot water.

This will be the first time renewable gas is sent to the grid and the first time customers can purchase zero-carbon emissions gas. Each year, around 95,000 gigajoules of biomethane gas will be generated through the Malabar project, enough to meet the gas demand of 6,300 homes.

The Malabar biomethane project is expected to remove 5,000 tonnes of carbon emissions each year – the equivalent of around 4,500 cars off the road – and potentially 11,000 tonnes if scaled up to its full potential. The project will significantly contribute to the NSW Government's target to cut emissions by 35 per cent by 2030 compared to 2005 levels and achieve zero emissions by 2050.

Beach to bush initiative helping farmers

During the wastewater treatment process, Sydney Water captures organic solids and processes them into a safe, stable, nutrient-rich fertiliser product called biosolids.

We produce over 180,000 tonnes of biosolids each year at more than 20 wastewater treatment and water recycling plants. That's over 9,000 bus loads. Since 2003, we have beneficially used 100 per cent of our biosolids, keeping them out of the ocean and landfill.

The biosolids produced from our treatment plants are applied to agricultural soils in cropping and livestock farms, as well as forestry and mine rehabilitation sites.

Sydney Water has also reduced its pressure on the electricity grid, with the renewable energy by-product from biosolid processing powering up to 30 per cent of our wastewater business, or the equivalent of 8,000 homes, and cutting greenhouse gas emissions by over 50,000 tonnes each year.

Large-scale water savings in residential and commercial buildings

Sydney Water's WaterFix® program delivers water and economic savings to residential and commercial buildings by repairing or replacing leaking or inefficient taps, toilets and showers.

Since 2017, our WaterFix® Strata program has saved over 400 million litres of water in strata-managed buildings and tens of thousands in costs. By participating in the program, the residents of Century Towers – a 52-floor, 292-apartment building in the CBD – saved 28 million litres of water and \$64,000 over 12 months.

Non-residential buildings can make significant savings through our WaterFix® Commercial program. WaterFix® Commercial is a specialised service that provides commercial buildings with an end-to-end solution in achieving large-scale and cost-effective water savings. Our goal is to help our customers save water, energy and money while helping Sydney build a more resilient water network.

Water-efficient bathrooms of the future

Sydney Water has partnered with the University of Technology Sydney's Institute for Sustainable Futures (ISF) and Caroma Industries to investigate what a smart and water-efficient bathroom of the future might look like.

The first-of-its-kind pilot project at Rhodes Corporate Park uses state-of-the-art smart bathroom technology to measure water savings via real-time usage insights. In addition to saving water, the project delivers a touch-free bathroom experience for tenants, elevating hygiene and safety standards.



Leading the way with smart solutions

Sydney Water is undergoing a digital transformation to better service the Eastern Harbour City. We're using intelligent technologies and advanced analytics to increase the efficiency of our operations, improve asset performance and enhance customer outcomes.

Predicting underground leaks through acoustic sensing

The Eastern Harbour City has the oldest water network in Australia. The region's growing population will put additional pressure on infrastructure, making our network susceptible to leaks and breaks.

In partnership with the University of Technology Sydney, we've developed the Active Leak Detection program. The program deploys acoustic sensors that use frequency, sound levels and other key parameters to predict leaks in underground pipes before the pipes break, reducing disruption to our network and customers.

Since deployment, the sensors have detected 125 potential leaks in the Sydney CBD. An estimated 9,000 megalitres and \$20 million in water production costs have been saved over the past two years.

Identifying wastewater blockages with IoT technology

Sydney Water has invested \$2 million to install around 5,000 Internet of Things (IoT) sensors across our wastewater network. The project is the biggest roll-out of IoT sensors in wastewater networks in Australia.

The IoT sensors provide near-real-time monitoring of wastewater assets that alert field crews of a fault in the system so they can complete maintenance before overflows occur. To date, the sensors have detected over 250 blockages in wastewater pipes, reducing adverse impacts on the environment.

By protecting our green and blue public spaces, the IoT technology is helping to ensure our waterways remain clean, so the community can enjoy swimming for more days of the year.

Sydney Water was awarded the 2021 IoT Alliance Australia Water Award in recognition of the success of the project.

Detecting leaks and odours with canine recruits

Sydney Water is reducing leaks in our network with canine recruits, Winnie, Ziggy and Joey, who have a nose for leak detection.

Winnie and Ziggy are trained to alert us to the presence of wastewater in our waterways and the environment when there are no other indicators.

Joey is trained to detect leaks in our drinking water pipeline. He is sent to sites where we believe there may be a leak due to a drop in water pressure, an influx of stormwater or feedback from customers.

These highly trained dogs complement the existing approaches Sydney Water uses to protect the environment and community health.

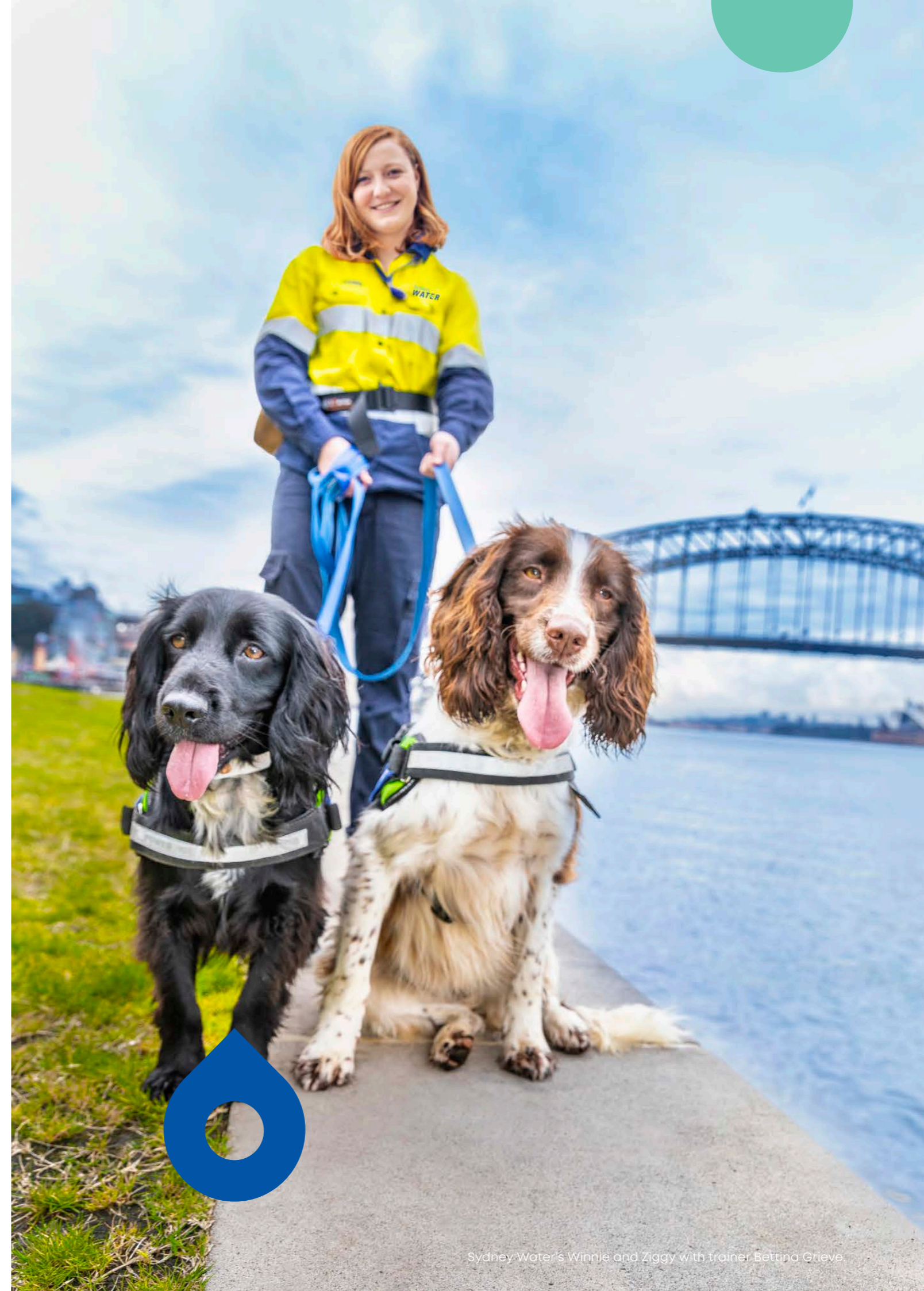
Increasing energy resilience with batteries

Wastewater pumping stations use around 40 per cent of Sydney Water's total electricity consumption. Pumping stations serve a critical purpose in moving wastewater through Sydney Water's network, so energy resilience is vital at these sites.

With support from the Australian Renewable Energy Agency (ARENA), Sydney Water partnered with the University of Wollongong to develop novel sodium-ion batteries that could assist with storing renewable energy.

As part of the project, Sydney Water launched a pilot renewable energy generation, storage and management system at the Bondi Wastewater Pumping Station. A combination of solar panels and temporary lithium-ion batteries provide the pumping station with more energy than it consumes. We are now working towards replacing the lithium-ion batteries with less costly sodium-ion batteries.

Implementing the outcomes of this project across Sydney Water's network will enable pumping stations to operate off-grid in extreme weather events, increasing the resilience of our network.



A better life through achieving together

Sydney Water is taking an innovative and collaborative approach to servicing the Eastern Harbour City so that we are well placed to adapt to the evolving challenges of our urban and natural environments.

We're working closely with state and local government, the development industry, business and local communities to sustain a greener, cooler and more resilient Eastern Harbour City – now and into the future.

We welcome you to join us on this exciting journey.

For further information or to discuss partnership opportunities, please contact:
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