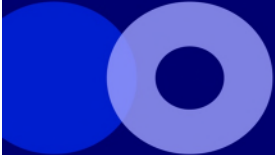


Research horizon priorities

Innovation Research & Deployment Plan



Sydney
WATER

Research horizon priorities

Strategic outcomes	Horizon 1 (1-2 years)	Horizon 2 (2-5 years)	Horizon 3 (5-10 years)	Horizon 4 (10 years +)
First choice of customers and partners New products and services	R&I for developing and de-risking new products & services - New water conservation and WaterFix products and services Circular economy – food-waste-energy applications Green infrastructure services for greening and cooling Decentralised solutions for recycled water as a service - New solutions to improve customer service delivery and quality (including water, wastewater, customer service)	- Customer acceptance – valuing natural capital - Business and residential water conservation solutions for improved drought resilience - Developing cost-effective industry and developer solutions to deliver recycled water through urban typology framework - Incorporating indigenous supply-chains for urban greening and cooling applications - Explore bioenergy, nutraceuticals and bio-fertiliser products - New epidemiological and lab service tools - Exploiting Sydney Water's smart asset management tools externally - Exploring new decentralised wastewater treatment options	Harnessing robotics, automation and analytic solutions that improve customer service delivery - Smart integrated supply and demand Validated circular economy models - Real-time smart asset monitoring to preventatively detect and remedy customer network issues - Contribution of water to climate change adaptation solutions including urban greening and cooling	- Establish green solutions for reducing urban heat Integrated water management solutions for advanced manufacturing, e.g. Aerotropolis - Integration smart home and digital metering data for personalised real-time water conservation Offset/biobanking for urban greening and cooling - Co-develop a methodology for delivering an optimised suite of technology solutions to meet the needs of future developments.
High performance culture - Open innovation - Capability building	Enhanced engagement with front line staff ideas - Enhancing innovation best practice – idea to deployment - Supporting open innovation to co-design solutions - Facilitate knowledge sharing events - Create a Digital Innovation 'Sandpit' - Lead Innovation Working Group activities - Leverage supply chain partners to build R&I capability and delivery	- Support graduate program & talent through the R&I program - Seek cross industry recognition for innovation Central idea capture and knowledge sharing platform - Improving pace of innovation adoption - Best practice innovation success stories - Robotics & augmented reality to improve WH&S - Staff innovation awards - All staff encouraged to incorporate innovation into their performance plan Best practice R&I deployment framework - Collaborative R&I projects that harness smart sensing , AI and analytics to support decision making	- Seek global recognition as a top 20 utility Upskilling next generation digital capabilities - Renowned industry best practice of technology adoption AI and innovation capability in most teams Assistive robotics to improve field safety	- Majority of manual repetitive tasks automated - Harnessing next generation quantum sensing and analytics - Next generation intelligent workplace safety monitoring and management technologies (people and assets)

Research horizon priorities

Strategic outcomes	Horizon 1 (1-2 years)	Horizon 2 (2-5 years)	Horizon 3 (5-10 years)	Horizon 4 (10 years +)
Thriving liveable & sustainable cities - Smart cities - Circular economy & resource recovery - Reliable & resilient water supply - Healthy waterways & environment - Assets & operations	- Trialling circular economy approaches to wastewater management - Developing smart asset tools for detecting leaks, breaks, raw water & treatment impairment Recycled water/ stormwater treatment options for urban greening, cooling and environmental flows - Harnessing green solutions for whole of catchment management - Incorporating indigenous cultural values into waterway management. - Innovation in water conservation to improve literacy around water efficiency	- R&I to enable SW to reduce environmental impact and footprint, improving waterway health New data smart solutions that support sustainable and cost-effective management of assets across whole of lifecycle, including automated network inspections - Developing smart solutions to improve environmental discharge beyond compliance. - Integrating circular economy solutions - Use of purified recycled water and alternative water sources to support drought resilience, irrigation, urban food and energy production - Enhancing water quality through new cost-effective solutions to meet new regulatory requirements - Exploring opportunities to contribute to the hydrogen economy - Explore technologies to support our target towards net zero emissions by 2030 - Leveraging indigenous knowledge systems for water resource and land management	- R&I outcomes enables world-class support thriving, liveable and sustainable cities - R&I solutions facilitate world-class environmental performance Operationalise technologies that support resource recovery & purified recycled water in urban precincts - Smart sensing technologies to ensure waterways are clean, healthy and safe for swimming and recreation - New integrated water solutions resilient to shocks and disruptions - Harnessing advanced nano-satellites and in-situ testing for water security - Enabling zero net energy and waste through biorefineries - Advanced green manufacturing opportunities - Exploring net positive energy opportunities	- Intelligent personalised water conservation tools for business and residential customers - Solutions for on-demand fit for purpose water Reconfigurable robots for automated repair and maintenance - Supporting whole of city initiatives to integrate water, wastewater and recycled water into the urban landscape (blue-green-grey solutions) to optimise cooling and liveability - Intelligent monitoring and 4D printed self-aware systems to enable self-healing pipes - Optimised automation of treatment plants
Successful & innovative business - Horizon scanning - Pilots & technology trials	- Exploring technology trial centres and improved digital technology - Contribute towards evidence for regulatory reform - Implement revised Innovation Effectiveness Index - R&I horizon scanning and pilot trials for strategy blueprint challenges - Leveraging W-Lab and other providers for technology scanning and collaborative trials	- Merging western science and indigenous cultural values - Adoption of process automation where scientific validation required - Benchmarking Innovation Effectiveness Index - Flagship Technology Trials Centre (Liverpool) and research facility (Sydney Science Park) - Harnessing digital engineering tools such as Digital Twins to reduce costs and enhance efficiency - Informing innovation investment as part of utility regulation	- New technology scanning to solve Horizon 4 challenges - Exploring hyper automation, explainable AI solutions, internet of behaviours and robots to predict high risk business challenges - New ways to measure non-financial benefits such as liveability, greening and cooling to inform future regulation	- Trialling smart solutions to offset infrastructure upgrades - State of the art trial facilities - Widespread adoption of AI and Digital Twins for process and risk automation