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 develope**r 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)

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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