2025 consultation

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Sydney WATER

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The NSW Government
Net Zero Commission
contact@netzerocommission.nsw.gov.au
Subject: Sydney Water's Submission on the Net Zero Commission 2025 Consultation

Thank you for the opportunity to provide feedback on the Net Zero Commission 2025 Consultation. Sydney Water values the NSW Government's support for responding to climate change through climate adaptation, achieving net zero emissions and the planning, engagement, and implementation of sustainable solutions across NSW. Sydney Water is committed to delivering services for the city that are aligned with NSW Government policy and direction, exploring innovative solutions to enhance the reliability and resilience of our services for a growing city. Our path to net carbon zero and beyond is linked here for information, and it has an ambitious timeline, which is supported by our customers.

Sydney Water supports and has provided feedback to the Net Zero Commission, focusing on enhancing climate change adaptation and mitigation and achieving net-zero targets through cross-sector collaboration, public education, and practical actions. Our submission emphasises the importance of integrating climate risk management into all business processes, advocating for urban water risks within broader climate policies, and supporting First Nations' involvement in carbon farming and biodiversity projects. Additionally, it highlights the need for clear, actionable steps for individuals and groups to reduce emissions, and for the Commission to foster research, innovation, and community engagement to drive the net-zero transition.

To fast-track the deployment of renewable energy and infrastructure, Sydney Water suggests exploring better co-funding arrangements, promoting onshore production of supplies, and streamlining regulatory processes. It also recommends supporting biofuel research, piloting electric heavy vehicles, and providing financial incentives for emissions reduction in agriculture. For resilience, we proposed using comprehensive climate data for decision-making, addressing gaps in flood data, and coordinating scenario analysis to test community resilience during extreme heat events.

Please find attached our detailed feedback (Attachment A - Sydney Water's feedback on the Net Zero Commission 2025 Consultation). We look forward to the What We Heard report and any updates to the Commission's initiatives and its Implementation Plan.

If you have any questions about this submission, please contact Farhana Rifat - Strategy & Sustainability Lead, at **farhana.rifat@sydneywater.com.au.**

Yours sincerely,

[redacted]

Jean Davis - Strategy and Sustainability Manager – Net Zero, Sydney Water

Attachment A: Sydney Water's feedback on the Net Zero Commission 2025 Consultation

Question 1: What can you tell us about your experience of the impacts of climate change, and how can the commission seek to reflect and respond to this in its work?

Sydney Water has extensive experience in responding to weather and increasingly climate-related events through adaptive risk management. The vast scale of existing water and sewerage infrastructure—comprising diverse asset types, ages, and functions—exposes us to a wide range of climate hazards and impacts. This growing exposure is placing additional pressure on our operations and resources. It's not only our infrastructure, our suppliers (e.g. electricity, chemicals, materials), stakeholders, partners, and customers are also exposed.

Climate change can alter the frequency, intensity, duration, and distribution of climate-related hazards, such as bushfires, storms, flooding, hail, wind, and heat waves. These changes pose a wide range of potential risks that could damage Sydney Water's assets and affect operational performance, including greenhouse gas emissions and self-generation of renewable energy.

Over the last 10 years, notable events that have affected our water and wastewater services include:

- Heatwaves and hotter conditions over the 2015-2017 period resulted in higher customer demand for water, placing pressure on water operations to meet peak demands.
- Rapid and severe drought due to an extended period of below-average rainfall and record low inflows between 2017-2020 into our water supply catchments, resulting in water restrictions being implemented and acceleration of planning to enable supply augmentation. This also led to water being sourced from the Shoalhaven via pumping, which contributed to increasing Sydney Water's scope 3 emissions.
- 2019-20 bushfire events in our water supply catchment area, followed by intense rainfall, placed pressure on our water treatment facilities to continue to meet water quality requirements despite poor water quality in dams. From a NetZero perspective, this has also led to a decreased capacity to generate renewable energy as hydro was not operational.
- Flooding and recurring wet weather events since 2020 have meant that the Sydney Desalination Plant has operated full time, at an additional cost to the business and customers, to mitigate poorer quality dam water. Conserve water notices were also issued in some areas to reduce demand from the network and reduce pressure on treatment processes.

All these events have also contributed to an increase in our greenhouse gas emissions and our overall carbon footprint (Scope 1, 2, and 3). During the drought, water was pumped from the Shoalhaven catchment and during wet weather events, additional chemicals for water and wastewater treatment, increased electricity use as part of the treatment process, and reduced ability to produce renewable energy through our hydroelectric scheme (water quality resilience) and cogeneration.

Beyond reactive, operational responses, the challenge is to adapt to climate change, mitigating impacts on our water services and customers, as part of regular day-to-day business decision-making processes. Sydney Water uses a range of processes, decisions, logics, and tools to deliver the least-cost performance and servicing standards as required by our regulators and stakeholders. Climate change will challenge our current processes through preventative adaptation action and considering whole-of-life impacts from energy and carbon. Sydney Water has adopted a proactive approach to planning and prudent investment to manage climate change risks. We are committed to integrating adaptation measures into our planning processes—both for new assets and as part of asset renewals and refurbishments. Similar considerations will be made for greenhouse gas abatement through life cycle energy and carbon estimations in our decision-making.

The Commission can support Sydney Water by promoting cross-sector collaboration, aligning climate adaptation efforts with state-wide net-zero targets, and enabling access to critical data, funding, and policy frameworks that support resilient infrastructure planning and delivery. Additionally, the Commission can play a

key role in advocating for greater recognition of urban water risks within broader climate adaptation and mitigation policies and strategies.

As stated in our Resilience Policy: “Sydney Water is committed to providing secure and reliable essential services. By building infrastructure, community, and organisational resilience, it will ensure public health and safety, environmental outcomes, economic prosperity, and social cohesion of our city.” Our path to net carbon zero and beyond is linked here for information, and it has an ambitious timeline, which is supported by our customers.

Question 2: What actions can the commission take to engage across the community to help drive the shifts needed for the net-zero transition and for effective climate change mitigation and adaptation?

To effectively engage the community and drive the necessary shifts for the net-zero transition and climate change mitigation and adaptation, the commission can focus on a few key areas: education to enhance public understanding and urgency, fostering research, innovation, and collaboration that can impact community practices, and turning targets into tangible actions for people.

Climate change and its effects are increasingly apparent, but how and what Net Zero actions can contribute to addressing these impacts is still not fully understood by the community. To enhance public understanding and urgency, the commission should develop and disseminate simple educational materials that clearly explain "net zero" and its critical importance. If people understand what net zero means, their actions and decisions—such as those related to Scope 1, 2, and 3 emissions, cars, wastewater treatment, product stewardship, and purchasing—can have a significant impact. Education is essential, as is informing them about the steps the government is taking.

It would also be helpful to illustrate local climate impacts and show how both individual and group actions can drive solutions. Sharing practical net-zero examples from New South Wales and other regions can offer relatable case studies, while emphasising how current efforts will benefit future generations highlights the importance of long-term action.

The commission can foster research, innovation, and collaboration that is applicable directly at the community level. This involves actively supporting real-world pilot projects that demonstrate effective climate solutions in action, showcasing practical pathways for change. Furthermore, using interactive exhibits and engaging activities can inspire broader community participation and ownership in climate initiatives.

To turn targets into tangible actions, the commission can support providing clear, actionable steps for individuals and groups to reduce emissions, making the transition feel achievable and less abstract. Offering practical tools and readily accessible resources, such as carbon calculators and information on available incentives, will empower the community to take concrete steps towards net zero.

The commission could play a vital role in enhancing the understanding and management of shared and complex climate-related risks by fostering strategic partnerships and providing targeted funding to investigate compounding and cascading impacts on interdependent infrastructure and essential services. This includes bringing together existing groups—such as utilities, emergency services, government agencies, and community representatives—and further facilitating the development of a collaborative, cross-sector risk assessment process that identifies vulnerabilities, assesses interdependencies, and co-designs adaptive strategies and actions.

Learning from the community-focused engagement and consultation process used to shape the NSW Disaster Plan can be beneficial. Combining a community engagement process with industry insights to better define a ‘whole of community’ capacity level to respond to weather events can help establish a better understanding of gaps and investment required to adapt and mitigate impacts, which can then be embedded in policy. Supporting the establishment of clear adaptation policy expectations for all essential services is crucial, given the delivery of the net-zero policy.

By fostering collaboration, building capacity, and aligning efforts across sectors and communities, the commission can help create a shared vision and coordinated pathway toward a resilient, net-zero future.

Question 4: What additional mechanisms, support, or incentives can meaningfully empower and enhance First Nations people's involvement in climate mitigation, adaptation and environmental stewardship?

First Nations in the Northern Territory (NT) are active participants in the carbon market. Providing similar support within New South Wales (NSW) for carbon farming and biodiversity can enhance co-benefits such as employment, environmental protection, and assist NSW in achieving net zero. The Offset Policy could explore opportunities in this area.

Vegetation and reforestation projects can benefit from First Nations communities' knowledge to support native plant regeneration, restore important species, and enhance carbon sequestration, biodiversity, and cultural values. First Nations peoples possess valuable knowledge of coastal and marine environments, making their involvement crucial for restoring blue carbon ecosystems. These initiatives help capture carbon, protect coasts, support fisheries, and maintain cultural values. Access to such initiatives can benefit organisations seeking effective carbon offset strategies.

Enabling First Nations businesses to participate directly in the carbon market allows them to lead projects, manage Australian Carbon Credit Units (ACCUs) sales, and benefit their communities. Governments can also facilitate corporations in purchasing ACCUs from these projects, acknowledging their wider social and environmental benefits.

The Commission can collaborate with the relevant authorities in developing the Carbon Offset Policy for NSW and help ensure these considerations are included, even for organisations that might have a more ambitious timeline for Net Zero targets.

Question 5: What additional information and evidence should the commission consider when assessing progress towards NSW's targets for reducing net greenhouse gas emissions?

The commission should consider plans, progress, and projects, with a clear understanding that some industries are harder to abate and may require the use of offsets, particularly for Scope 1 emissions (i.e water and wastewater treatment – supporting essential services for a city).

The Commission's evidence should drive action and take a comprehensive approach, addressing both what emissions are reduced and how, besides tracking totals.

Incorporate emissions from materials used in infrastructure, construction, and manufacturing to provide a more comprehensive assessment of carbon impact and give a means/system to collect this information.

Identifying gaps and opportunities will help in deciding funding allocation strategies. So tracking public and private investments in low-carbon technologies, renewable energy, energy efficiency, and sustainable infrastructure is crucial to deciding investments and the distribution of resources.

Question 6: The speed of deployment of electricity generation and infrastructure is a key risk to emissions reduction targets. What more could be done to fast-track deployment?

Decarbonising the electricity grid is crucial for organisations aiming for net zero. If the grid continues to rely on fossil fuels or experiences delays, it will pose a risk to many organisations' ability to achieve their targets, necessitating a shift in strategy.

To fast-track the deployment of electricity generation and infrastructure, it is essential to explore better co-funding arrangements that support private or government agencies capable of self-generation. This can help bridge the short-term gap in Renewable Energy Generation (REG). Additionally, promoting onshore production of supplies such as batteries and panels can accelerate deployment.

Further considerations to fast-track deployment include streamlining regulatory and approval processes for new energy projects, investing in expansion to accommodate increased renewable energy initiatives and fostering community engagement/education to ensure local support and reduce resistance to new infrastructure required to switch to green energy targets.

Question 9: What are likely to prove the most effective approaches to accelerate rapid decarbonisation across freight and passenger transport?

Research and innovation in biofuels could be a key approach. By manufacturing biofuels instead of relying solely on electricity, we can repurpose existing engines and achieve circular outcomes. This approach, while not focusing on electric vehicles (EVs) or hydrogen, can still result in reduced emissions. Additionally, this strategy could be extended to plant and equipment.

Exploring the piloting of electric heavy vehicles, such as maintenance trucks, is another effective approach. For long-haul or high-power uses where battery electric vehicles may not be suitable due to weight or range limitations, considering alternative options is crucial.

Question 10: What specific actions or policies could increase uptake of emissions reduction strategies in agriculture, both in the short and long term?

To enhance the adoption of emissions reduction strategies in agriculture, the Commission can consider several opportunities that offer co-benefits. These include supporting co-farming with renewable energy, implementing carbon farming practices, developing circular biofuel production from waste, and providing financial incentives to encourage the adoption of leading farming practices.

Question 11: Given the uncertainties in land-sector net emissions, how should NSW incorporate this sector into the state's climate policy and emissions profile?

To effectively incorporate the land sector into NSW's climate policy, it will be beneficial to consider the nature-positive benefits and rehabilitation in land management. Nature-positive strategies consider the concept of regenerative sustainability to enhance biodiversity, improve ecosystem health, and contribute to long-term climate resilience. Rehabilitation in land management aims to restore degraded land, improve soil, prevent erosion, and help ecosystems recover, which can enhance carbon sequestration.

A practical and manageable strategy for monitoring, reporting, and verifying large-scale land-based emissions and removals should be developed, including the necessary capacity building and a reporting management framework to accurately reflect the land-based emission profile. Any approach should also be implemented in phases and piloted to allow readjustments for an effective approach.

Question 12: What specific actions could increase carbon storage and resilience of the existing carbon stock in the land sector and meaningfully enhance the application of First Nations people's knowledge and practices?

The Commission should consider steps to effectively integrate First Nations' knowledge, such as utilising historical land management practices and supporting land rehabilitation efforts that align with traditional methods. These approaches can provide nature-positive solutions and deliver important biodiversity benefits.

Question 13: What policies or programs at a sectoral level could complement the Safeguard Mechanism to support the accelerated decarbonisation of heavy industry in NSW?

Innovation is key to exploring how we approach things differently to reduce carbon and energy use while maintaining product strength and integrity. Achieving this may require upskilling and retraining to support bringing manufacturing back onshore. We should also consider the carbon impact of imports and supply chains, particularly with greater life cycle transparency.

Could the Commission also consider developing a Product Stewardship program to boost demand for locally sourced products with clear life cycle footprint information?

Question 14: What measures could accelerate industrial heat electrification in NSW, where technology is viable?

Financial support for retrofitting assets and upgrades is essential, as it will enable industries to transition to electric heating systems. Additionally, investing in decarbonising the gas grid with alternative fuel sources, as some industries may have a reliance on gas, with limited ability to electrify all processes.

Question 15: What short to medium-term measures could be prioritised to address the systemic challenges regarding waste generation and resource recovery?

To address ongoing challenges with resource recovery, the Commission should continue to prioritise funding and support for gas capture, whether used for electricity generation or biomethane production. The effectiveness and financial viability of these initiatives may depend on the amount of organic waste available. Therefore, it may be necessary to consider centralised gas collection systems or other alternatives for utilising the captured gas.

Question 16: What additional measures could accelerate electrification and increase energy efficiency of new and existing buildings?

What is in scope for building electrification – all buildings or varies based on the type of buildings and usability. This will help in tailoring specific measures to different building types and their unique requirements.

Exploring renewable gas as an alternative, linked to the waste industry's gas capture efforts, can provide a viable option for reducing carbon emissions while maintaining energy efficiency.

Utilising programs like BASIX and NABERS for water efficiency can significantly assist in meeting hot water heating demands. These programs set benchmarks for water and energy efficiency, ensuring that buildings are designed and operated sustainably.

Working in collaboration with water utilities and local councils to implement water conservation measures is crucial. This collaboration can lead to the development of integrated strategies that promote water and energy efficiency, ultimately contributing to the overall sustainability of the built environment.

Data centres are expanding rapidly, driven by advancements in AI and cloud computing. These centres consume large amounts of energy and water, presenting a huge challenge for NSW's net-zero targets. The NSW government needs to support the sustainable development of data centres to ensure they are energy and water-efficient and align with the state's NetZero target.

Question 22: What should be included in a monitoring framework for NSW in the context of the transition to net zero, including any specific metrics and indicators?

A robust monitoring framework is crucial for tracking NSW's progress towards net zero and ensuring accountability. This framework should provide clear insights into the effectiveness of policies and programs, identify areas requiring further intervention, and inform future strategic decisions. A few recommendations are,

- Tracking progress against plan and targets will be crucial to pinpoint areas of success and challenge.
- Monitor the implementation and effectiveness of policies and programs designed to reduce emissions. This includes assessing the uptake of renewable energy, energy efficiency measures, and other climate initiatives.
- Monitor the generation/need and use of offset credits within the state. Ensure that offsets are used as a supplementary measure for hard-to-abate emissions and not as a primary means of achieving emission reduction targets.
- Track investments in research and innovation aimed at developing low-carbon technologies for hard-to-abate sectors such as heavy industry, treatment processes, pumping requirements for water and wastewater distribution/collection, etc. This includes funding for pilot projects, demonstration plants, and collaborative research initiatives.
- Monitor the adoption and scaling of innovative technologies and practices within these sectors. Assess the impact of these technologies on emission reductions and their potential for wider deployment.

Question 23: The adaptation objective is for NSW to be more resilient to a changing climate. The Act allows for regulations to further define the adaptation objective. What does a more resilient NSW look like to you?

Sydney Water has adopted a Resilience Policy (2023), in which we consider resilience as "The capability to maintain services in a way that ensures our community can endure any unexpected or unprecedented event. It is our ability to withstand by adapting to changing conditions, and to recover, learn and adjust from acute shocks and chronic stresses".

An approach to resilience needs to recognise that the future is uncertain and that challenges are often not experienced in isolation from each other. Identifying and reducing vulnerabilities will enable service providers to better respond to unforeseen events and compounding impacts when challenges occur simultaneously. To do this, we must consider a whole-of-system, all-hazards approach that focuses on the functionality of our systems and contribution of assets, processes, people and partnerships to the resilience of the overall system.

Supporting our Resilience Policy, Sydney Water has developed an Infrastructure for Resilience Framework which includes the following directions for application across our assets, networks and systems:

1. No deterioration to system resilience
2. Clearly identify and define the resilience scope
3. Assess system resilience to identify system vulnerabilities
4. Remove dependency on system vulnerabilities and avoid creating new vulnerabilities
5. Enable pragmatic and adaptive approaches to increase system resilience over time
6. Measure, track and report on changes to system resilience
7. Value investments that increase system resilience
8. Assess and assure that resilience is appropriately considered in projects

Resilience across broader NSW should support, at a minimum, no overall deterioration of system resilience in the long term, with consideration of what is equitable for future generations. A measure Sydney Water uses is the number of people whose services are vulnerable from a single point of failure as a measure of system resilience. If the number of customers vulnerable to single points of failure stays the same or reduces over time, we have achieved no deterioration.

A resilient NSW would consider the continued provision of all essential community services, no matter the weather or other disruptors. A secure water supply and a resilient waste management system are fundamental to a healthy, prosperous and resilient NSW. The urban water sector in NSW remains relatively less represented in climate change risk assessments, policy and planning forums. This results in a gap of knowledge, recognition and funding to support adaptation in the urban water sector, despite the significant capability that exists within the sector.

Sitting alongside our Resilience Policy, Sydney Water has also adopted a Climate Change Adaptation Position, which states, "Sydney Water will plan and invest prudently to ensure we can maintain service levels by managing our climate risk." To do this, we will:

- Proactively manage climate change risks to our organisational objectives by embedding climate risk management into all key business processes. This will include prudent consideration of future customers' needs and whole of lifecycle assessments.
- Prepare our business for the likely levels of climate change by adapting to a medium emissions pathway (Representative Concentration Pathway (RCP) 4.5 or equivalent) as a standard requirement.
- Demonstrate adaptive pathways to a high emissions scenario (SSP7 or RCP8.5, based on best available data, or equivalent) and incorporate changes now if it is prudent to do so, considering risk, impact, cost, and required future adaptive capacity.
- Quantify the impact of climate change on demand for water, from the residential and commercial sectors, to ensure security of supply for our customers and to inform all key aspects of our business.
- Comply with our regulatory obligations to integrate climate risk management into our processes.

In alignment with Sydney Water's adopted approach, the NSW Government could establish a policy that, at a minimum, adopts a planning baseline based on a medium emissions scenario. This would ensure that service availability across projected futures aligns with RCP4.5 or an equivalent pathway.

Question 24: What additional information and evidence should the commission consider when assessing progress towards the adaptation objective?

Sydney Water's progress toward the adaptation objective is shaped by a combination of regulatory obligations, strategic initiatives, and evolving policy frameworks. Under clause 10.3 of Sydney Water's Operating Licence, it is now a regulatory requirement to assess the organisation's climate risk management maturity using the NSW Government's Climate Risk Ready Guide. Specifically, Sydney Water must achieve an 'embedded' level of climate risk maturity by June 2027 and demonstrate reasonable progress toward reaching the 'advanced' level by June 2028. This reflects a clear expectation for continuous improvement in integrating climate risk considerations across enterprise-wide decision-making and operations.

Additionally, the Sydney Water operating license, under clause 43, also requires Sydney Water to make annual, publicly available climate-related disclosures, consistent with the International Financial Reporting Standard S2 Climate-Related Disclosures issued in 2023 (IFRS S2) or another standard as nominated by Sydney Water and approved by IPART. As part of this disclosure obligation, Sydney Water must report on its climate risk management maturity level and outline the actions undertaken to progress toward meeting the mandated targets.

As acknowledged in this consultation document and the NSW Net Zero Commission's 2024 Annual Report, further work is needed to develop robust, quantitative metrics for measuring climate adaptation. Similarly, Sydney Water has prioritised a project within our Climate Risk Management Program to develop metrics that will enable us to monitor and manage climate risks and track adaptation progress. This includes climate maturity indicators to assess our advancement toward targeted maturity levels, as well as metrics that reflect climate resilience across the full lifecycle of our services and infrastructure. These metrics will also help evaluate the effectiveness of adaptation measures over time. Importantly, they will be designed to align with NSW Government reporting requirements while remaining meaningful and actionable for internal decision-making and long-term planning. As part of this effort, Sydney Water will also review significant planning and investment processes to better understand how adaptation is embedded in the delivery of essential infrastructure and to identify opportunities for improving future business cases.

Recent policy developments from the NSW Treasury, TPG24-34, set out the NSW Government Investment Framework requirements on carbon emissions. It specifies the carbon values that agencies must use when valuing emission impacts in cost-benefit analysis (CBA). Complementing this, the Infrastructure NSW: Decarbonising Infrastructure Delivery Policy directs to prioritise emission reduction in public infrastructure delivery. The NSW EPA: NSW Guide for Large Emitters introduces additional requirements for projects expecting annual Scope 1 and 2 emissions to exceed 25,000 tonnes, reinforcing the need for robust emissions management. In alignment with these policies, Sydney Water is reviewing its Net Zero Carbon Directional Statement to embed these policy changes across the full infrastructure lifecycle—planning, designing, procuring, building, operating, maintaining, and decommissioning. A Greenhouse Gas Emissions Tool has also been implemented to identify GHG and energy efficiency opportunities from the early stages in system, process and asset planning.

Question 25: How can adaptation planning better use the NSW Government's climate change projections (NARCliM)?

Sydney Water relies on NARCliM to implement our Climate Change Position Statement, where we will "Sydney Water will plan and invest prudently to ensure we can maintain service levels by managing our climate risk". To achieve this we utilise the best available climate projections to prepare our business for the likely levels of climate change by adapting to a medium emissions pathway (Representative Concentration Pathway (RCP) 4.5 or equivalent) as a standard requirement, and demonstrate adaptive pathways to a high emissions scenario (SSP7 or RCP8.5, based on best available data, or equivalent) and incorporate changes now if it is prudent to do considering risk, impact, cost, and required future adaptive capacity.

Sydney Water would welcome opportunities to serve as a use case in making NARCliM data fit-for-purpose, particularly in flood planning. For example, to help us update our planning assumptions around rainfall intensity, we have been using the updated 2024 Australian Rainfall and Runoff guidelines, alongside NARCliM 2.0 regional data to adjust rainfall time series in our catchments. This data will help us calibrate our networks,

understand water usage trends and highlight the areas in our operations that need considerable uplift to deal with rising rainfall intensity.

Beyond using the data, there is a need to continue efforts to better improve the awareness and understanding of NARCliM, climate change scenarios and adaptation expectations of decision makers. Without this education, the onus remains on the end user and technical experts.

Question 26: What other information or tools are needed to support decision-makers in NSW?

A guiding principle of Sydney Water's Climate Adaptation Position Statement is our commitment to using the best available climate data to inform decision-making. To support this, we draw on a comprehensive suite of tools to assess and understand the potential impacts of climate hazards and long-term climate change on our operations, infrastructure, and services. These tools enable us to adjust the planning assumptions we already make about the climate in our processes to account for climate change (medium emissions scenario).

Sydney Water has a contract with Climate Risk Solutions to utilise their Cross Dependency Initiative (XDI) to model climate impacts on our asset base. We are actively looking to further enhance our use of XDI data to better demonstrate interactions between assets and observe climate impacts at a system or regional scale, rather than at an individual asset level. Our current database is modelled using NARCliM 1.5 data, and we are in the process of updating this to NARCliM 2.0. Additionally, we are trying to combine XDI outputs with real case studies to better illustrate what climate impacts can look like and how the likelihood of these events increases.

Whilst our systems and assets have high exposure to flooding across Sydney, both from riverine and overland sources, there is not enough information to accurately highlight the risk. Typically, more residential or commercial areas will carry appropriate flood data to reduce the risk of flooding to the general population. These areas are the responsibility of local councils, who typically fund the flood model creation. Our assets are not always confined to these boundaries, which often results in limited or no modelled data on flood exposure. Additionally, the flood data that does exist is commonly not adjusted for climate change or was made with outdated guidance. This means the modelled risk is often understated when compared to the actual risk.

There is also a lack of understanding of the relationship between flood resilience and infrastructure. Urban flooding is ultimately a function of land-use planning. A reduction of permeable surfaces increases the likelihood of a flood occurring during periods of heavy rainfall, to a point where defensive infrastructure and larger stormwater capacity become inefficient and cost-prohibitive.

Question 27: What initiatives should the commission consider in assessing NSW's preparation and responses to extreme heat and humidity events in NSW?

Extreme heat and humidity events will have direct impacts on Sydney Water. These include the failure of digital and telecom systems on assets, as extreme temperatures can disrupt communication systems and affect operational efficiency. Additionally, overheating of electrical equipment on assets can lead to malfunctions and failures, while the failure of the interdependent power supply due to increased demand and heat can cause outages. Fluctuations in water demand on high heat days pose risks of being unable to supply water to customers, and prolonged exposure to extreme heat presents health risks to workers. Furthermore, high temperatures can promote algal growth in raw water supply storages, affecting water quality. The trend of decreasing cold nights (less than 2°C) is expected to continue, impacting water storage and management.

Beyond this, extreme heat and humidity increase our customers' demand for water to cool their homes, themselves, and their plants and animals. This increase in demand occurs through the greater need for cooling towers, landscape irrigation, and general use for drinking, swimming, showering, etc. There is an opportunity to support adaptation at a community level by ensuring efficient and effective water use in homes, businesses, and public spaces. By helping the community to be more efficient with their water use, our water services will be able to cope better with hotter conditions. It will also reduce the cost to the community of drought by reducing the need for severe water restrictions. This is currently being supported by the NSW Water Efficiency Program and Greater Sydney's Water Conservation Plan; however, there are gaps in community awareness and funding to proactively adopt potential solutions.

The growth of the data centre sector poses a challenge for constrained urban water supplies, like Sydney. There is a need to consider how their water needs may be met without affecting the quality and costs of water services to the broader community. There may be opportunities for the Commission to play a role here, given its dependence on both energy and water.

To address these challenges, we are proactively refining our water demand and supply planning processes to better reflect future climate conditions. This includes revising our assumptions around consecutive days of Maximum Daily Demand (MDD) within our water demand modelling to account for potential increases in peak usage driven by hotter temperatures, prolonged dry periods, and changing consumption patterns. In parallel, we have collaborated closely with WaterNSW to adjust our supply modelling, ensuring it incorporates updated climate projections using NARCliM 1.5. These adjustments are critical for informing long-term water resource planning, infrastructure investment, and operational strategies, helping to ensure water security and service reliability in a changing climate.

Additionally, extreme heat and humidity events will increase the energy needed for water treatment and pumping. We also currently have our voluntary demand response for electricity in high energy demand periods, which helps manage the strain on the power grid during peak times.

To support Sydney Water and other key service providers, the commission should consider initiatives that support resilience across interdependent services. The commission could coordinate scenario analysis to test community resilience during extended periods of extreme heat, particularly when compounded by risks from bushfire and drought.