WATER SERVICES
ASSOCIATION OF AUSTRALIA

NATURE POSITIVE WATER

AUGUST 2024

Acknowledgement of Country

Water Services Association of Australia (WSAA) acknowledges Aboriginal and Torres Strait Islander people as Australia's First Peoples and as the traditional owners and custodians of Country throughout Australia. We recognise their continuing connection to land, waters and community and we pay our respects to Elders past and present.

WSAA acknowledges that water is core to life for Aboriginal and Torres Strait Islander peoples and is essential to their identities, cultures and livelihoods. Protecting and managing water is a custodial and intergenerational responsibility

About WSAA

Water Services Association of Australia (WSAA) is the peak body representing the water sector. Our members provide water and wastewater services to over 24 million customers in Australia and Aotearoa New Zealand and many of Australia's largest industrial and commercial enterprises.

Acknowledgements
This paper has been produced by WSAA based on interviews and engagement with several water utilities and partner organisations.

We acknowledge WSAA members for their insights and support developing this publication, including our Regenerating Nature, Biodiversity and Carbon Working Group and Climate Change, Energy and Environment Network.

WSAA also thanks the water utilities that provided case studies to support this paper.

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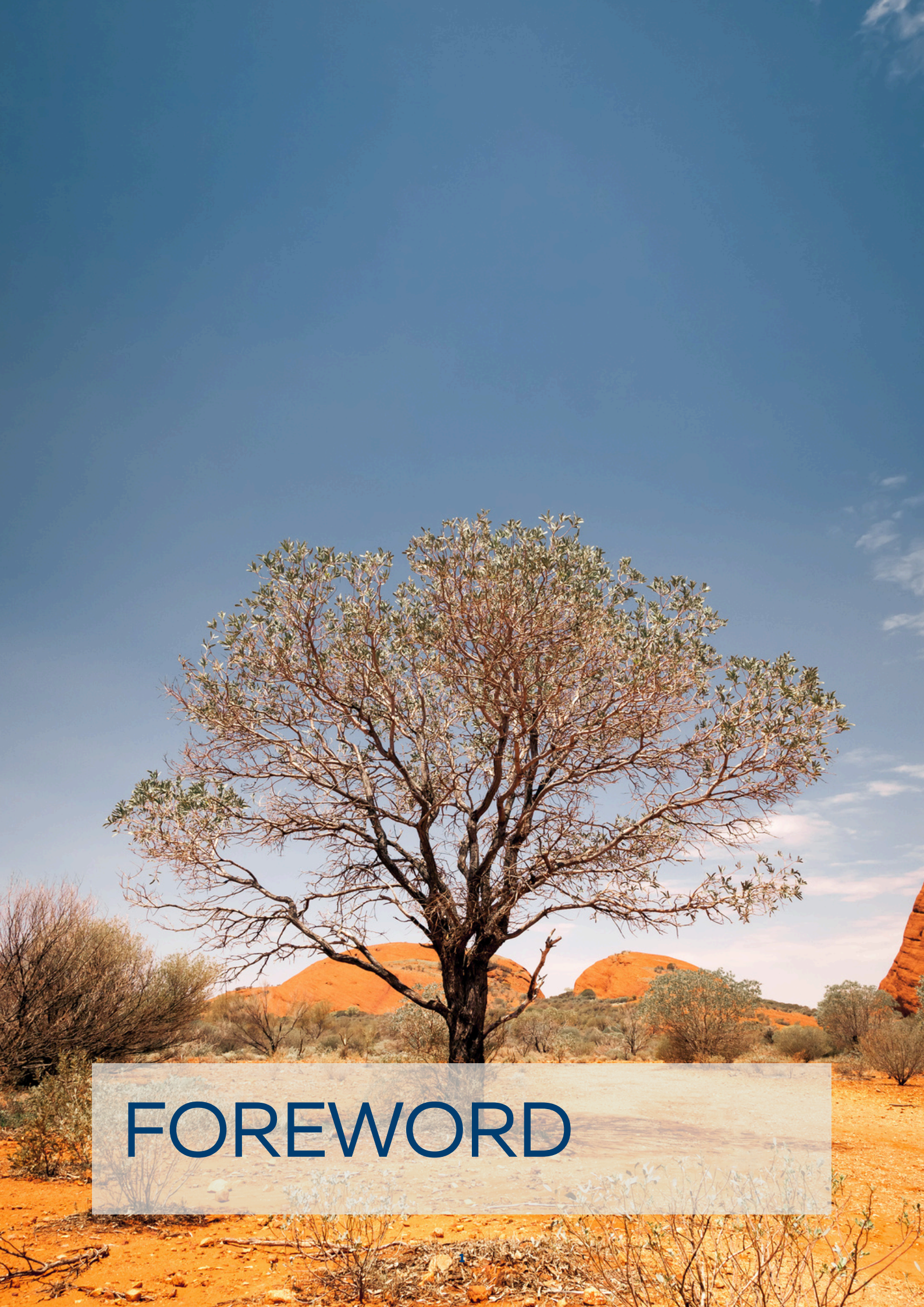

FOREWORD

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Nature sustains water, and water sustains nature

> Globally, including in Australia and Aotearoa New Zealand, there is a call to action to restore and regenerate natural ecosystems. The water sector, which has led efforts toward achieving net zero emissions and transitioning to a circular economy, now seeks to drive positive change for nature.

Nature loss has significant implications for the global economy and society. Understanding nature-related risks, and building on the opportunities to address these, will ensure the resilience of our infrastructure and services for our communities and future generations.

To achieve a Nature Positive future, it is essential to recognise the interconnectedness of climate, nature, and the circular economy. Addressing the complex challenges of our future requires a systematic and balanced approach across these three areas. Water, as a critical element linking all three, must play a significant role in implementing and leading Nature Positive actions.

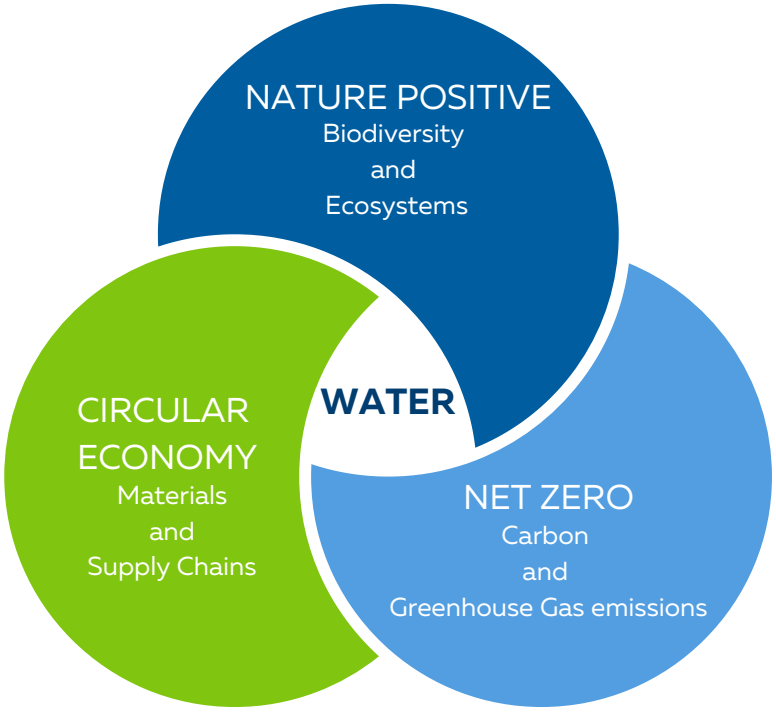


Figure 1. Relationship between the Nature Positive, Net Zero and Circular Economy transitions with water

Water utilities provide essential services that support community health and wellbeing by delivering safe drinking water and managing wastewater, in addition, some water utilities provide stormwater, waterways and catchment management services. As cities and towns have expanded, so have the impacts and dependencies of the water sector on natural ecosystems. The sector's heavy reliance on rainfall and fixed infrastructure makes it highly susceptible to climate change impacts. However, this dependency also presents substantial opportunities to drive the transition to a low-carbon, circular, and Nature Positive economy.

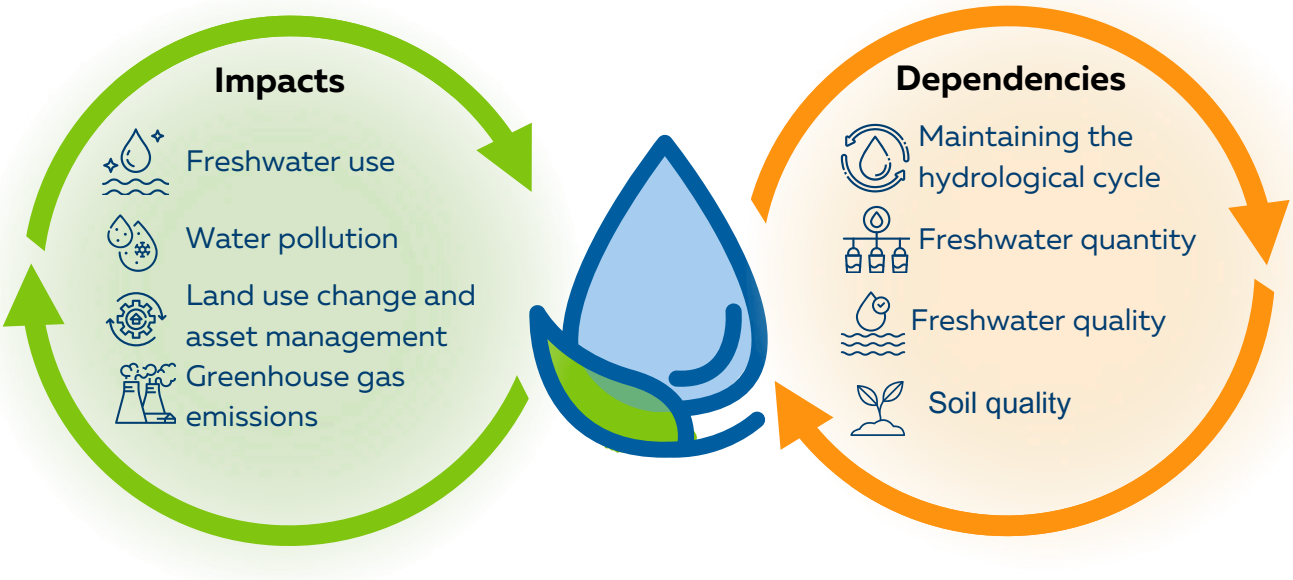


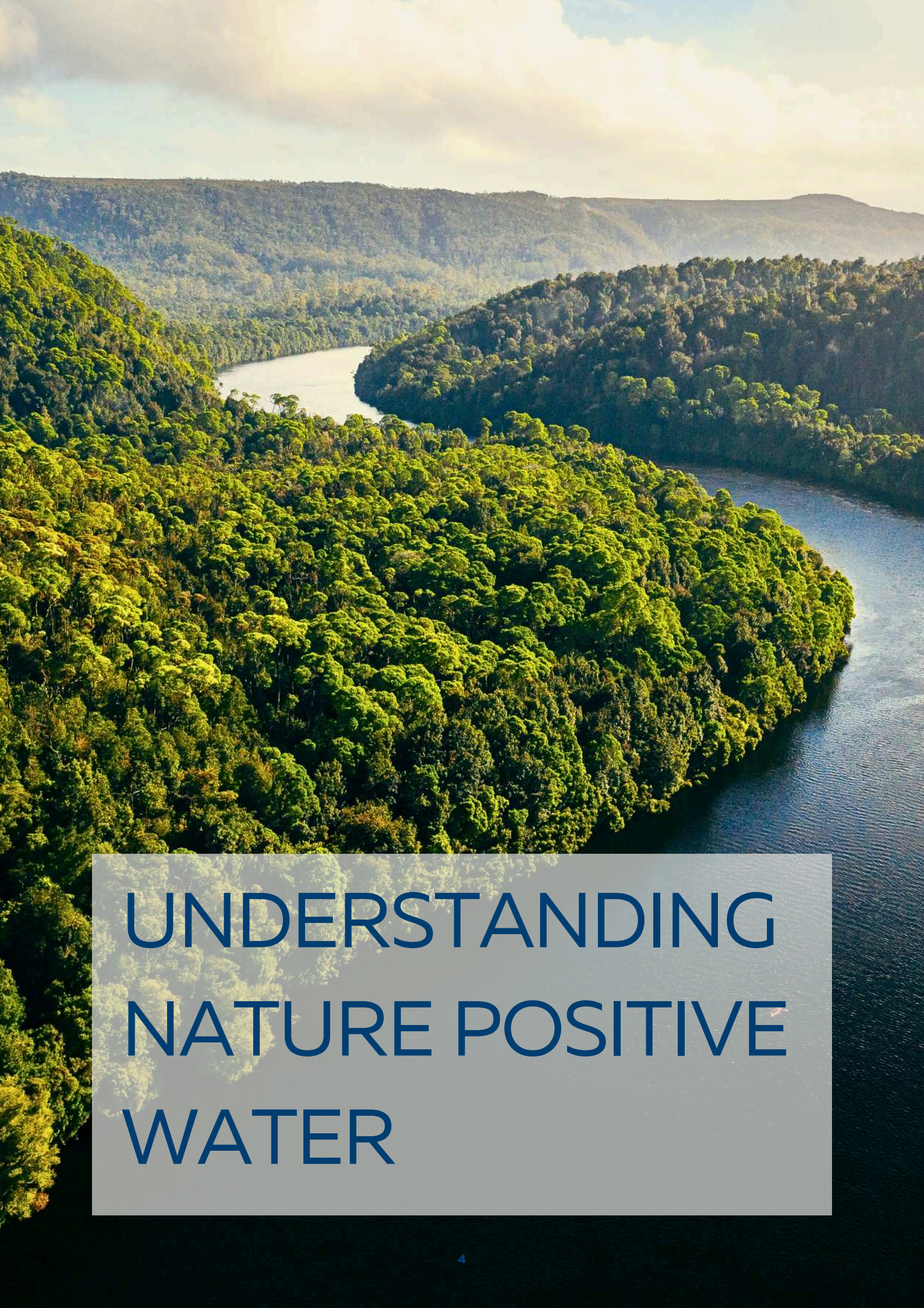
Figure 2. Water sector impacts and dependencies on nature

We have prioritised focus areas and actions to highlight the water sector's existing work and encourage further efforts to achieve measurable and impactful outcomes. Across each of the focus areas we share practical actions from core service delivery to opportunities beyond operational boundaries through dedicated partnerships. Through collaboration, innovation, and focused action, the water sector can lead the way in fostering a sustainable and thriving natural environment.

The water sector is the partner of choice for investing in, delivering, and scaling projects that support Nature Positive and social outcomes. Enhancing understanding among governments, non-government organisations, land and water conservation groups, and the agriculture sector is crucial. Additionally, recognising that 91 per cent of lands managed by First Nations peoples and local communities are in good or fair ecological condition (WEF, 2023), we must approach the net zero, Nature Positive, and circular transition with the full inclusion of First Nations peoples and local communities.

Achieving the objectives outlined in the Sustainable Development Goals, Paris Agreement, and the Global Biodiversity Framework is not possible without this inclusive approach.

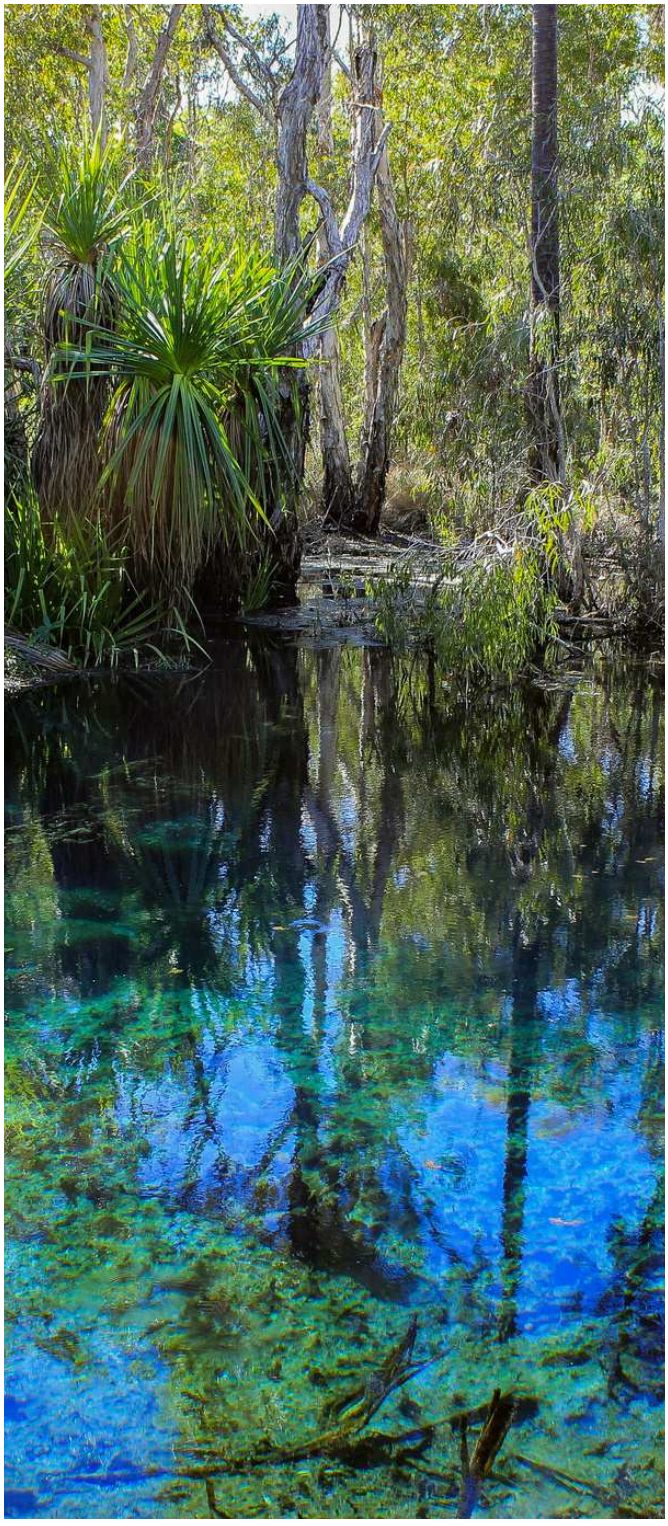
This paper aims to provide water utilities and the broader water sector with a comprehensive understanding of the challenges and transformations required to achieve a Nature Positive future. It is supported by case studies from Australia and Aotearoa New Zealand, showcasing future possibilities for the sector.



UNDERSTANDING NATURE POSITIVE WATER

UNDERSTANDING NATURE POSITIVE WATER

Ecosystems are being degraded and biodiversity is being lost at alarming rates around the world, including in Australia and Aotearoa New Zealand. At the same time, our climate is changing. These changes impact the natural systems we depend on to provide clean water, purify our air, secure our food supplies, regulate our climate, control disease, and support cultural practices, recreation, and our overall wellbeing.



The water sector is in a unique position to respond to the interconnected nature and climate crises and play our role in halting and reversing nature loss. We provide essential services, supporting the health and wellbeing of communities by delivering safe drinking water and wastewater services. As towns and cities have grown, so have the impacts and dependencies of the water sector on nature. To deliver essential services, water utilities extract water from the environment, modify natural waterways, discharge treated wastewater into the environment, and generate greenhouse gas emissions.

The water sector is committed to being responsible stewards for the environmental and cultural assets that we manage. Our expertise in resource management, pollution control, and ecosystem restoration positions us as a key player in improving biodiversity and environmental health.

Nature Positive is a term used to describe where nature – species and ecosystems – is being repaired and is regenerating rather than being in decline.

Nature Positive is a disruptive idea. The concept aims to shift our relationship with the natural world from being dominated by extraction and depletion to active restoration and regeneration.

The water sector recognises nature as a critical asset and we are committed to transforming the way we operate to achieve a Nature Positive future.

SPEAKING THE LANGUAGE OF NATURE POSITIVE

The concept of Nature Positive joins an already extensive glossary of terms associated with work involving nature, ecosystems, and biodiversity. Here, we unpack the key terms and principles often associated with Nature Positive.

Biodiversity The variety of plant and animal life in the world or in a particular ecosystem, including diversity within species, between species and of ecosystems (CBD, 1992). Biodiversity is essential for ecosystem function and human wellbeing, underpinning ecosystem services and contributing to resilience against environmental changes.

Ecological Infrastructure The natural or semi-natural structural elements of ecosystems and landscapes that are important in delivering ecosystem services (IPBES, 2019).

Nature-based Solutions (NbS) Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human wellbeing and biodiversity benefits (UNEA, 2022).

Net Zero The amount of greenhouse gases emitted balances with the amount removed and absorbed from the atmosphere and durably stored by nature, leaving zero in the atmosphere (UN, 2024). Net Zero is closely linked with Nature Positive, as healthy ecosystems are critical for sequestration.

Ecosystem-based Adaptation Ecosystem-based Adaptation (EbA) uses biodiversity and ecosystem services as part of an overall strategy to help people adapt to the adverse effects of climate change. The approach encompasses four core elements:

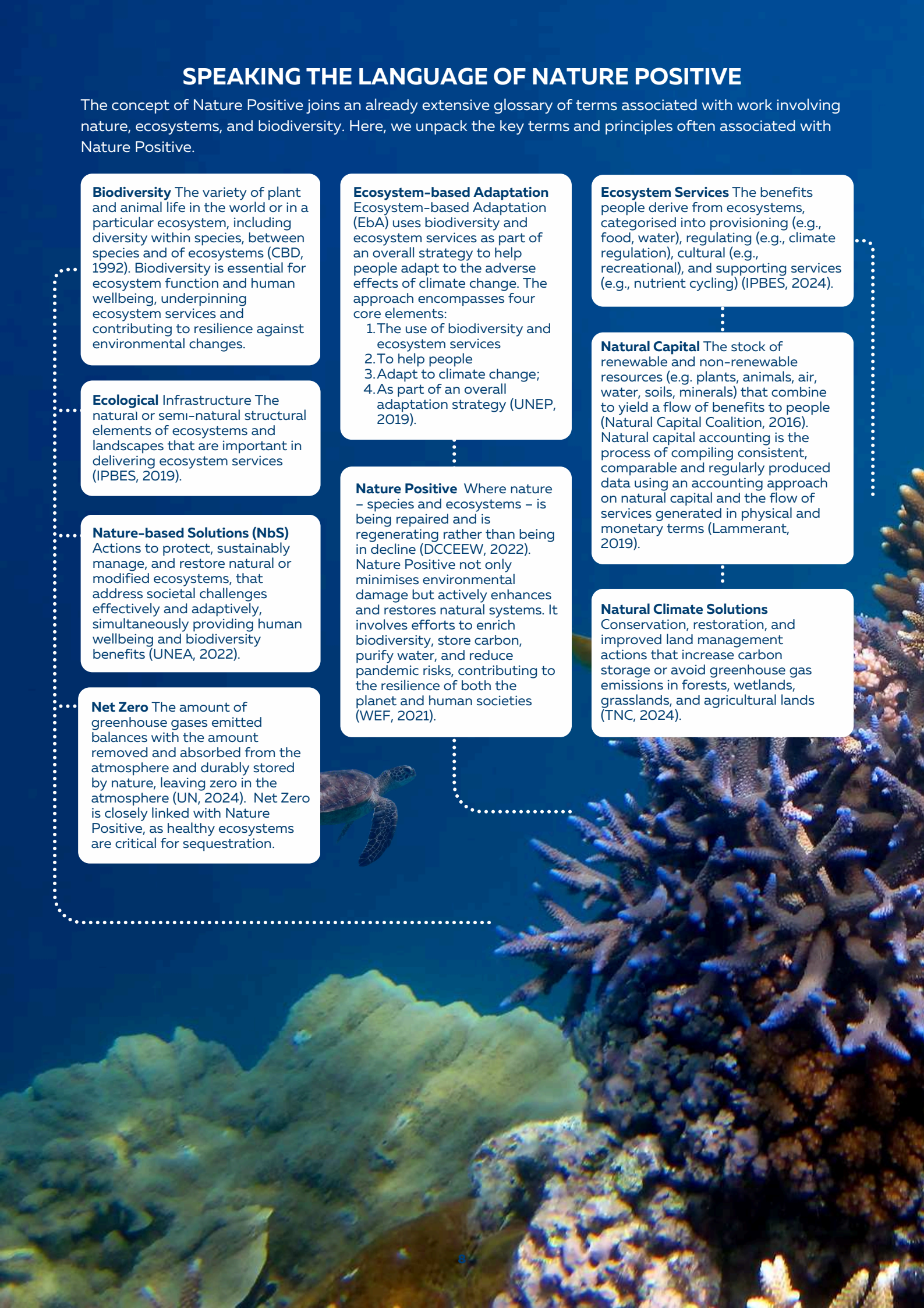
1. The use of biodiversity and ecosystem services
2. To help people
3. Adapt to climate change;
4. As part of an overall adaptation strategy (UNEP, 2019).

Nature Positive Where nature – species and ecosystems – is being repaired and is regenerating rather than being in decline (DCCEEW, 2022). Nature Positive not only minimises environmental damage but actively enhances and restores natural systems. It involves efforts to enrich biodiversity, store carbon, purify water, and reduce pandemic risks, contributing to the resilience of both the planet and human societies (WEF, 2021).

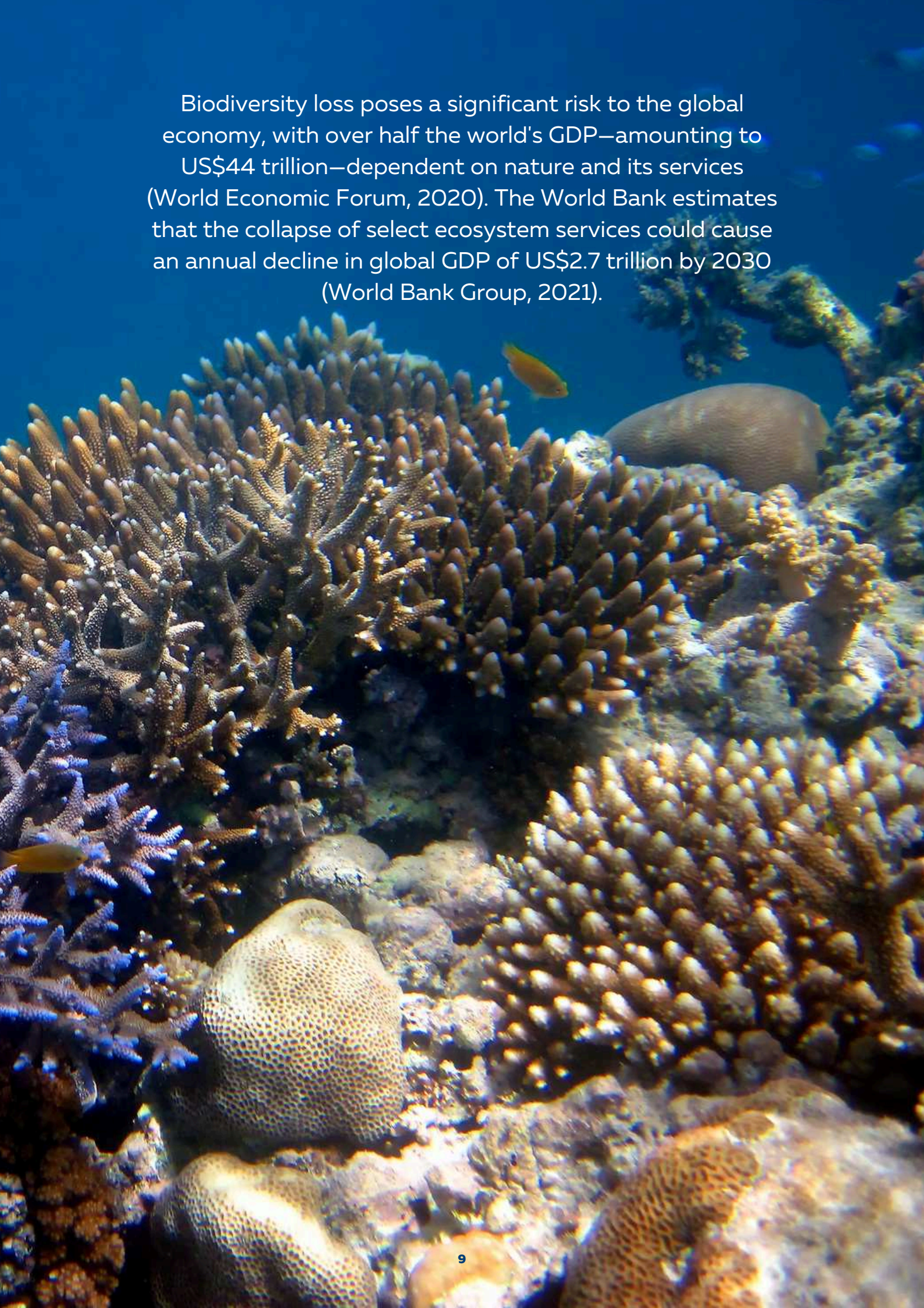
Ecosystem Services The benefits people derive from ecosystems, categorised into provisioning (e.g., food, water), regulating (e.g., climate regulation), cultural (e.g., recreational), and supporting services (e.g., nutrient cycling) (IPBES, 2024).

Natural Capital The stock of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people (Natural Capital Coalition, 2016). Natural capital accounting is the process of compiling consistent, comparable and regularly produced data using an accounting approach on natural capital and the flow of services generated in physical and monetary terms (Lammerant, 2019).

Natural Climate Solutions Conservation, restoration, and improved land management actions that increase carbon storage or avoid greenhouse gas emissions in forests, wetlands, grasslands, and agricultural lands (TNC, 2024).



Biodiversity loss poses a significant risk to the global economy, with over half the world's GDP—amounting to US$44 trillion—dependent on nature and its services (World Economic Forum, 2020). The World Bank estimates that the collapse of select ecosystem services could cause an annual decline in global GDP of US$2.7 trillion by 2030 (World Bank Group, 2021).



Water is dependent on nature

The water sector's impacts and dependencies on nature occur because we interact with natural ecosystems to deliver water supply and wastewater services. Our interconnectedness with nature leads to significant opportunities for action across the water value chain to achieve Nature Positive outcomes (refer to Figure 3).

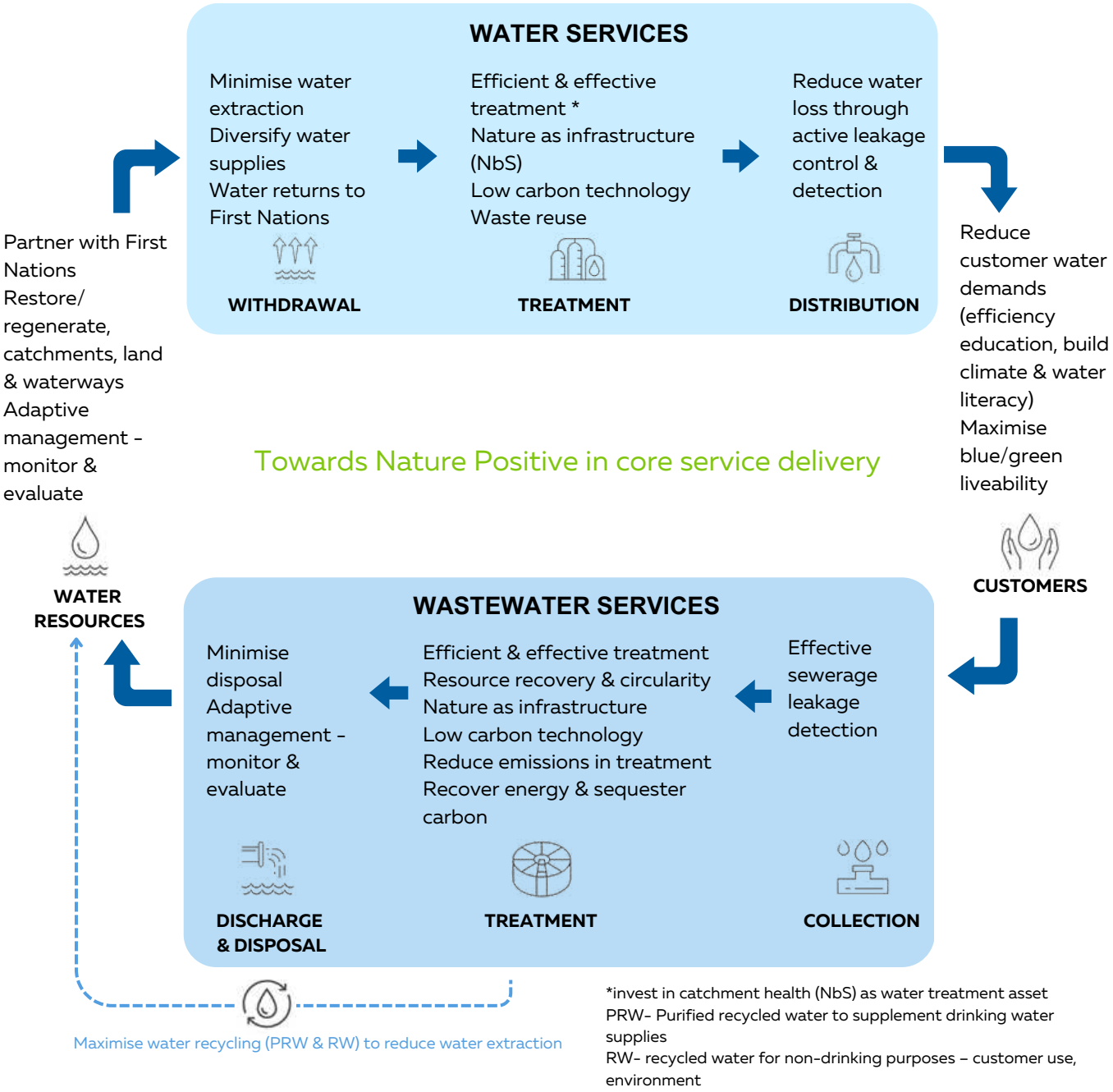
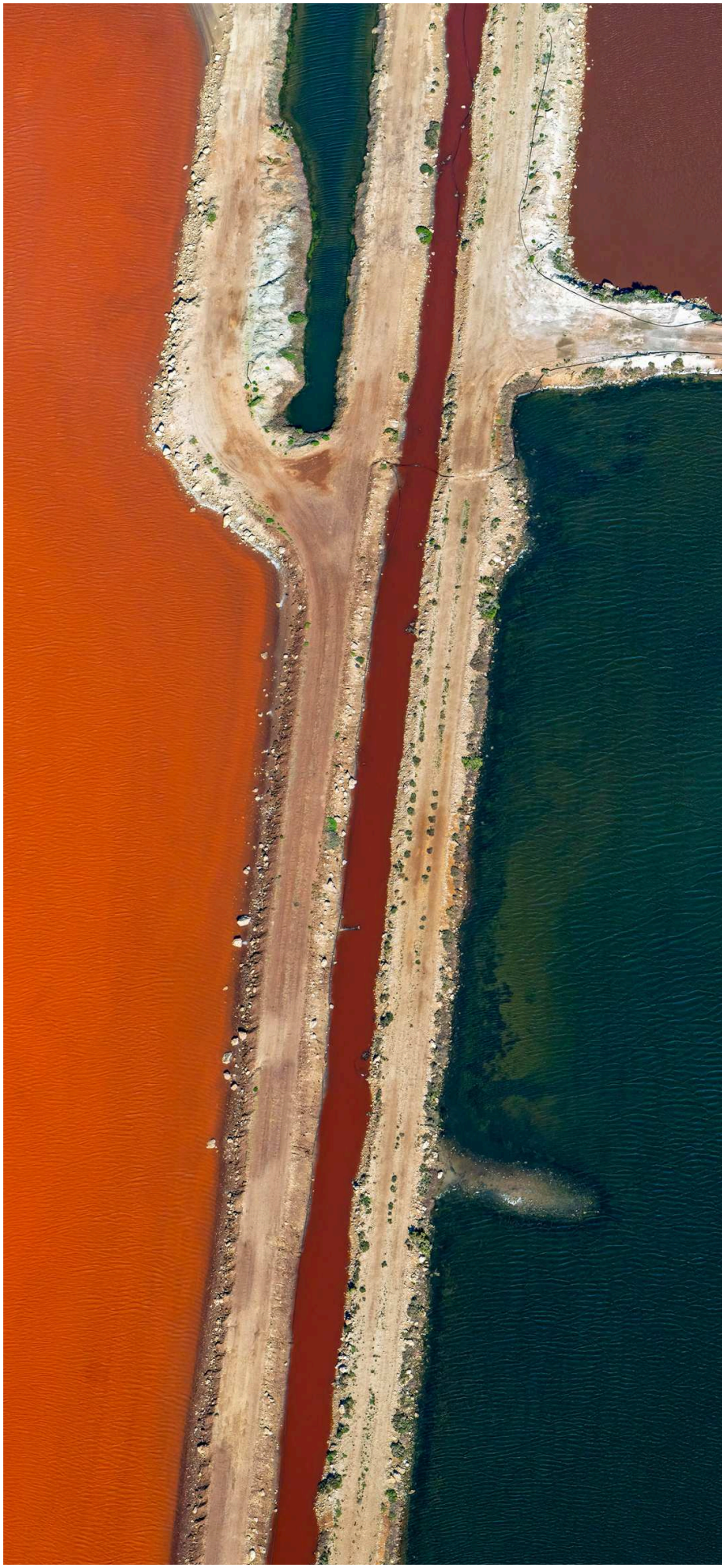


Figure 3. Opportunities for the water sector to achieve Nature Positive outcomes (Source: Adapted from Business for Nature, 2023)

Understanding the dynamics of our dependence on and impacts on nature is crucial for the water sector. By addressing these dynamics, we can better align our actions with the objectives of Nature Positive.

In the report, 'Water utilities and services: Priority actions towards a Nature Positive future', Business for Nature (2023) identified nature-related impacts, nature-related dependencies and priority actions and opportunities for the water sector. There are also cases where the existing approach to delivering water supply and wastewater services delivers benefits to nature. For example, the Cotter dam wall supporting the threatened Macquarie Perch population (Icon Water, 2023) and Melbourne Water's Ramsar-listed wastewater treatment plant supporting abundant wildlife (Melbourne Water, 2024).

We consider the impacts, dependencies, actions and opportunities for Australia and Aotearoa New Zealand water utilities in this paper.



Water sector nature-related impacts

Providing water supply and wastewater services has impacts on nature.

Freshwater use

Water is essential for life – nature, people, and economies. To deliver a safe, affordable and reliable supply of water to communities, water utilities extract freshwater from reservoirs, rivers, streams, and groundwater.

Water pollution

Water utilities are responsible for effective and affordable collection, treatment and disposal of wastewater, providing human health and environmental benefits. As part of managing wastewater, water utilities discharge treated wastewater to the environment, and at times there are spills of untreated wastewater into the environment, or wet weather overflows from wastewater networks during peak storm events.

Land use change and asset management

Water utilities manage land and waterways within the water cycle as part of delivering essential water supply and wastewater services. Water utilities can significantly impact biodiversity through land asset management practices. Modifications of natural water flows, such as diversions, piping, and dam storage, can disrupt hydrological regimes and increase invasive species. Infrastructure construction can fragment ecosystems and create barriers for wildlife. Management practices often prioritise operational objectives, which can mean biodiversity is neglected.

Greenhouse gas emissions

Greenhouse gas emissions contribute to climate change, which has major impacts on nature and ecosystems. Water utilities directly and indirectly produce greenhouse gas emissions. The main sources of greenhouse emissions in the water sector are from wastewater treatment processes; using energy in operations; and arising from supply chains, construction of infrastructure, and using raw materials in network operations.

Water sector nature-related dependencies

Water utilities are dependent on water resources and ecosystems to deliver water supply and wastewater services to communities.

Maintaining the hydrological cycle

Water utilities rely on the hydrological cycle to maintain surface water flows and recharge groundwater sources. Stable and predictable hydrological cycles ensure a consistent water supply, yet climate change - through altered weather patterns, extreme floods, droughts, and rising water temperatures - significantly impacts water quantity and quality, as well as the resilience of water and wastewater infrastructure.

Freshwater quantity

Water utilities depend on sufficient freshwater from surface water and groundwater. Maintaining adequate water quantity in these sources is essential to ensure the beneficial uses of waterways, including drinking water supply, fisheries, tourism, recreation and cultural use.

Freshwater quality

The quality of water determines the extent of treatment required to supply safe, affordable and reliable drinking water. Pollution from agricultural runoff, urban stormwater runoff, industrial discharges, and other sources can degrade water quality, increasing treatment costs and public health risks. Effective management and protection of water sources is critical to maintaining high-quality drinking water.

Soil quality

High quality soils are integral to the hydrological cycle, supporting nutrient cycling, food production, pollution remediation, and climate regulation. Healthy soils store, accept, transmit, and purify water.

Case Study 1

UNDERSTANDING NATURE IMPACTS AND DEPENDENCIES

YARRA VALLEY WATER, VICTORIA

Yarra Valley Water (YVW) has tested and trialed a variety[1] of different biodiversity footprint tools to assess the relative materiality of its impacts on nature from its direct operations and supply chains (refer Figure 4). The aim was to prepare for nature-related disclosures and establish a baseline of biodiversity impacts for any future Nature Positive pathways. From these assessments, the most significant impacts on biodiversity from YVW's operations were:

- construction and maintenance[2]
- water extraction and distribution
- waste generation, particularly sewerage waste.

One assessment tool [3] included avoided impacts, with material 'avoided impacts' derived from recycled water use.

Methods to assess biodiversity impacts are inherently complex. However, the process helped identify YVW's dependencies and impacts on nature to prepare for Nature Related Financial Disclosures (TNFD), spotlighting key opportunities reduce impacts on nature. These include:

- reducing drinking water use and increasing water recycling and alternative water use
- supporting the emerging circular economy's focus in construction, maintenance, and waste generation activities. For example, modifying approaches such as trenchless drilling, use of recycled materials, local sourcing, zero waste contracts and biosolids reuse. A current focus area is replacing virgin sand with recycled crushed glass for pipe embedment[4].

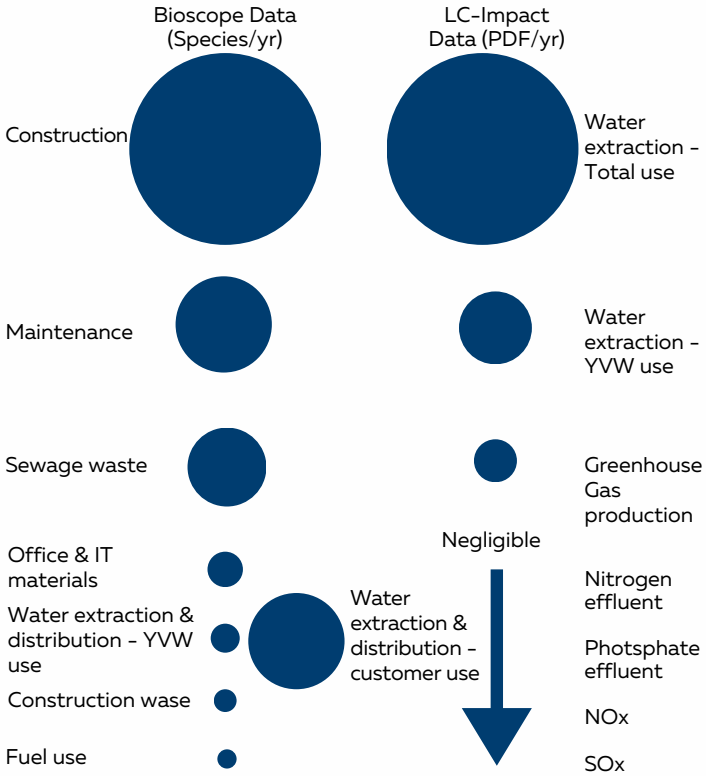


Figure 4. Outputs of Yarra Valley Water's biodiversity impact assessment from RMIT using different methods: Bioscope – species impact per/year (left) and LC-Impact Data impact measured as potentially disappeared fraction of species (PDF) per year (right)

Footnotes:
[1] YVW assessed its baseline material impacts on nature through GIST's propriety tool based on LC-Impact methodology, with estimates based on the effects of identified drivers on global extinction risk. YVW also engaged RMIT for Life Cycle Analysis, using and comparing Bioscope and LC-Impact, capturing a broader range of impacts freely available online.
[2] The relatively large impact from construction and maintenance is due to materials impact on biodiversity as sourced from around the globe and delivered by complex supply chains
[3] GIST's propriety tool based on LC-Impact enabled avoided impact assessment, using the 'Potentially Disappeared Fraction of species' (PDF) measurement unit. PDF measures the fraction of species richness potentially lost globally due to environmental pressure (De Schryver et al., 2010). Note that due to the varying methods of calculating PDF, these results should not be considered in isolation.
[4] Sand is the second-most used material on the planet after water and mining causes large adverse biodiversity impacts (World Economic Forum, 2022).

Biodiversity at a global scale

Kunming-Montreal Global Biodiversity Framework

Global recognition of environmental risks and the link to addressing climate change culminated at the United Nations Biodiversity Conference (COP 15) in Montreal, Canada, in 2022. The Conference concluded with the adoption of the landmark Kunming-Montreal Global Biodiversity Framework, by 196 countries, including Australia and Aotearoa New Zealand (CBD, 2022).

This Framework sets a global ambition to halt and reverse biodiversity loss and protect 30 percent of land and oceans by 2030 (also known as "30 by 30"). To support this ambition, the Global Goal for Nature aims to achieve a Nature Positive world by setting measurable objectives: net zero loss of nature from 2020, net positive by 2030 and full recovery by 2050 (CBD, 2022). The goal reflects a global commitment to restore and regenerate the natural environment (refer Figure 5).

Central to achieving the global Nature Positive goal are two primary objectives:

Restoring biodiversity: Involves addressing the critical drivers of habitat destruction, overexploitation, pollution, and climate change. The goal is to halt the current decline in species populations and ecosystem health, ensuring the preservation and recovery of biodiversity.

Regenerating nature: Beyond merely stopping the decline, Nature Positive focuses on actively repairing and enhancing ecosystems. This includes activities such as habitat restoration, reforestation, species reintroductions, and improved management practices that promote biodiversity and ecosystem resilience.

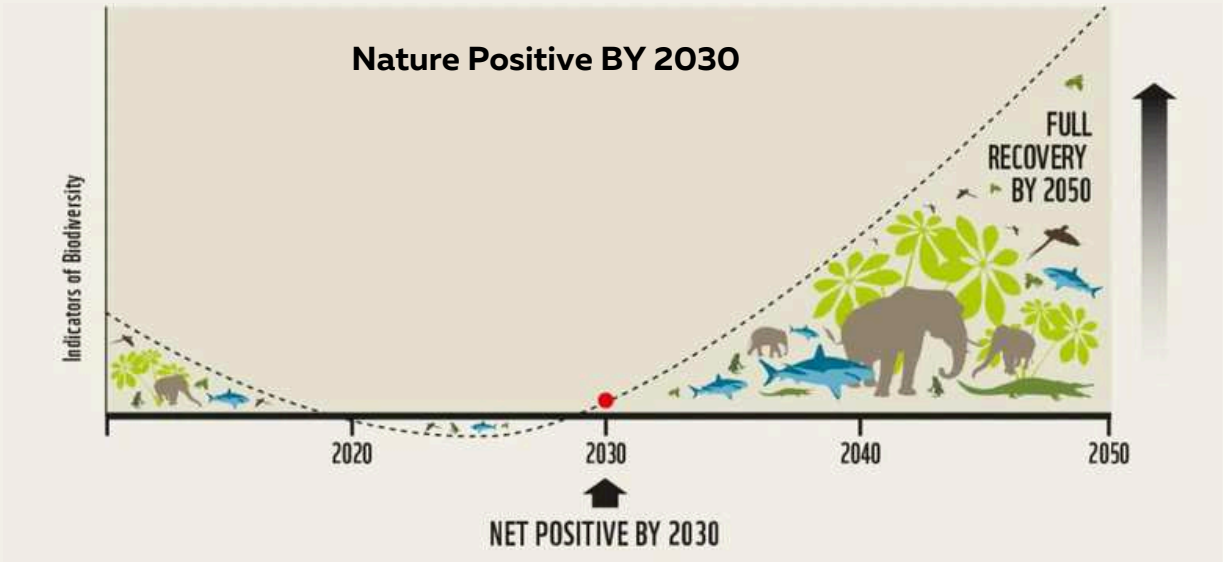


Figure 5. The journey of achieving Nature Positive to 2030 and beyond (Source: www.naturepositive.org)

Sustainable Development Goals

The United Nations Sustainable Development Goals (SDGs) are a set of 17 interconnected goals that address the global challenges we face, including poverty, hunger, inequality, climate change, and environmental degradation (refer Figure 6). The SDGs were adopted by all UN Member States in 2015 and provide a blueprint for achieving sustainable development through the articulation of goals, targets and indicators.

The water sector supports the United Nations Sustainable Development Goals as a plan of action for a prosperous, sustainable and equitable society.

For water utilities, SDG 6: Clean water and sanitation captures the sector's fundamental role. Water utilities understand the broader contribution we can make and are reaching further to improve social and environmental outcomes for communities both locally and globally by contributing to the goals.

SDG 6 is one of four biosphere goals (SDG 6: Clean water and sanitation, SDG 13: Climate action, SDG 14: Life below water and SDG 15: Life on land) that need to be reached to create a stable foundation on which to build sustainable development and achieve Nature Positive.

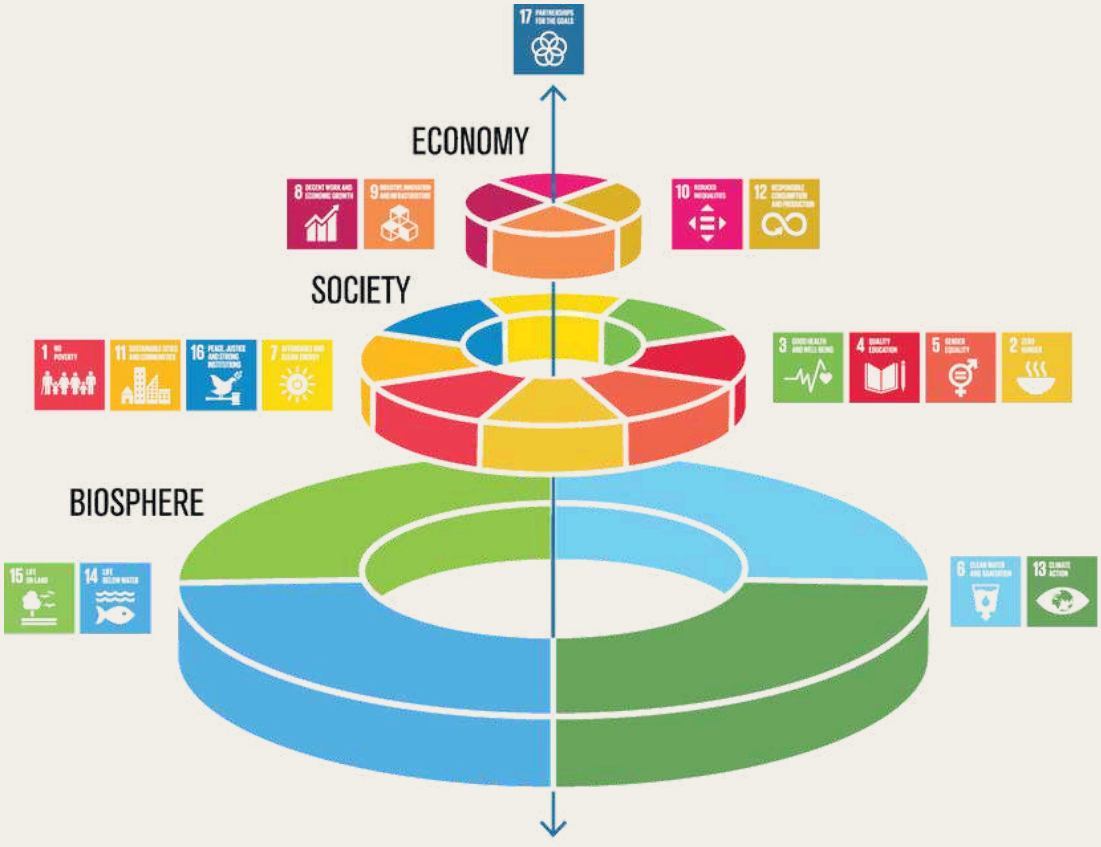


Figure 6. United Nations Sustainable Development Goals showing goals for the biosphere, society and economy, Illustration: J. Lokrantz/Azote

NATURE POSITIVE OPPORTUNITIES FOR WATER UTILITIES

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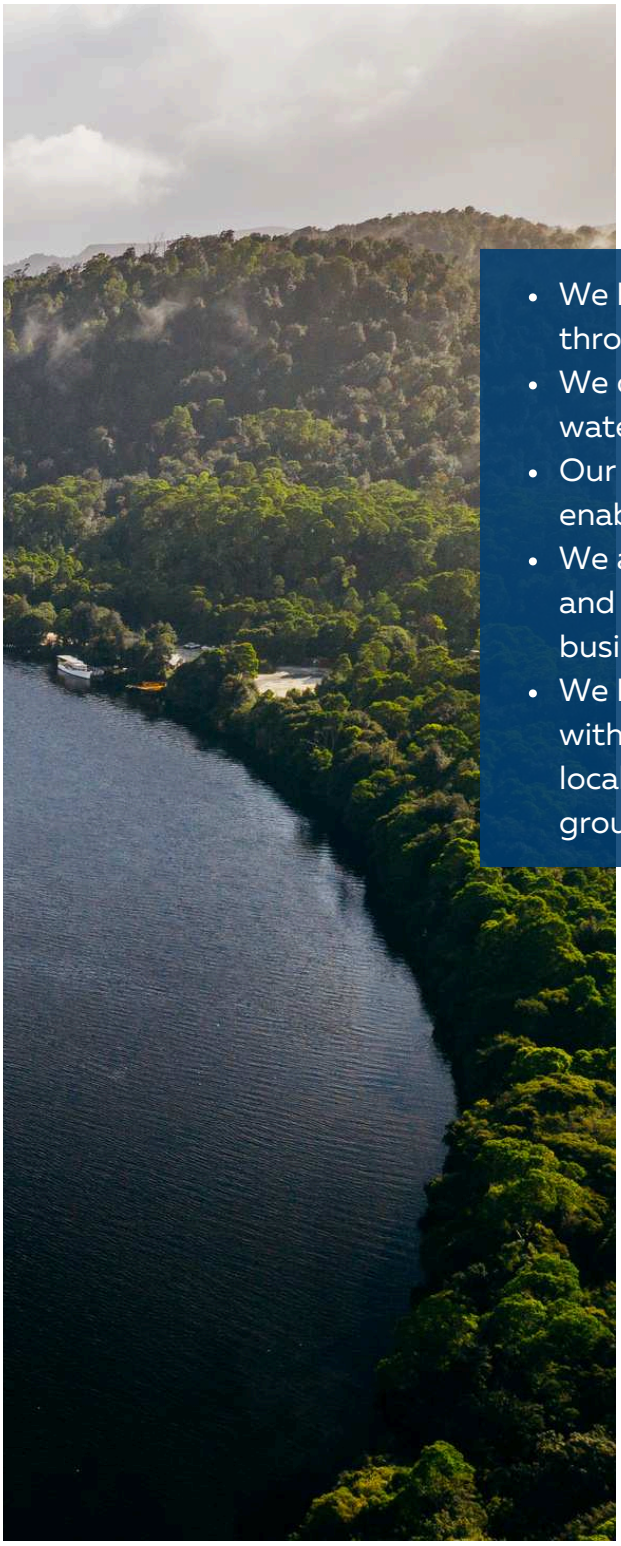


The water sector is in a unique position to lead the transition towards a Nature Positive future. Australia and Aotearoa New Zealand water utilities have significant opportunities to repair and regenerate nature because:

- We have impacts and dependencies on nature throughout the water value chain.
- We own and manage large areas of land and waterways.
- Our operations cover large geographic areas enabling a whole of catchment approach.
- We are publicly owned, with environmental and social outcomes embedded in how we do business.
- We have capacity and experience engaging with First Nations peoples, our customers, our local communities, and diverse stakeholder groups.

In response to the challenges posed by climate change, the water sector has committed to mitigating our impact, adapting our services to the effects of a changing climate, and enhancing the resilience of communities and the environment. Our water sector climate change commitment (WSAA, 2021; WSAA, 2024) aligns with the objectives and ambitions of Nature Positive, underscoring the potential for water utilities to achieve progress in both addressing climate change and Nature Positive outcomes through simultaneous actions.

Framework for actions on nature

For water utilities to contribute to Nature Positive, we need to act to further support and drive our existing net zero and circular economy transformations. The High-level Business Actions on Nature framework (Business for Nature, 2022) provides an approach for key actions that water utilities can take towards Nature Positive (Figure 7), using the 'ACT-D' approach:

A – Assess
C – Commit
T – Transform
D – Disclose

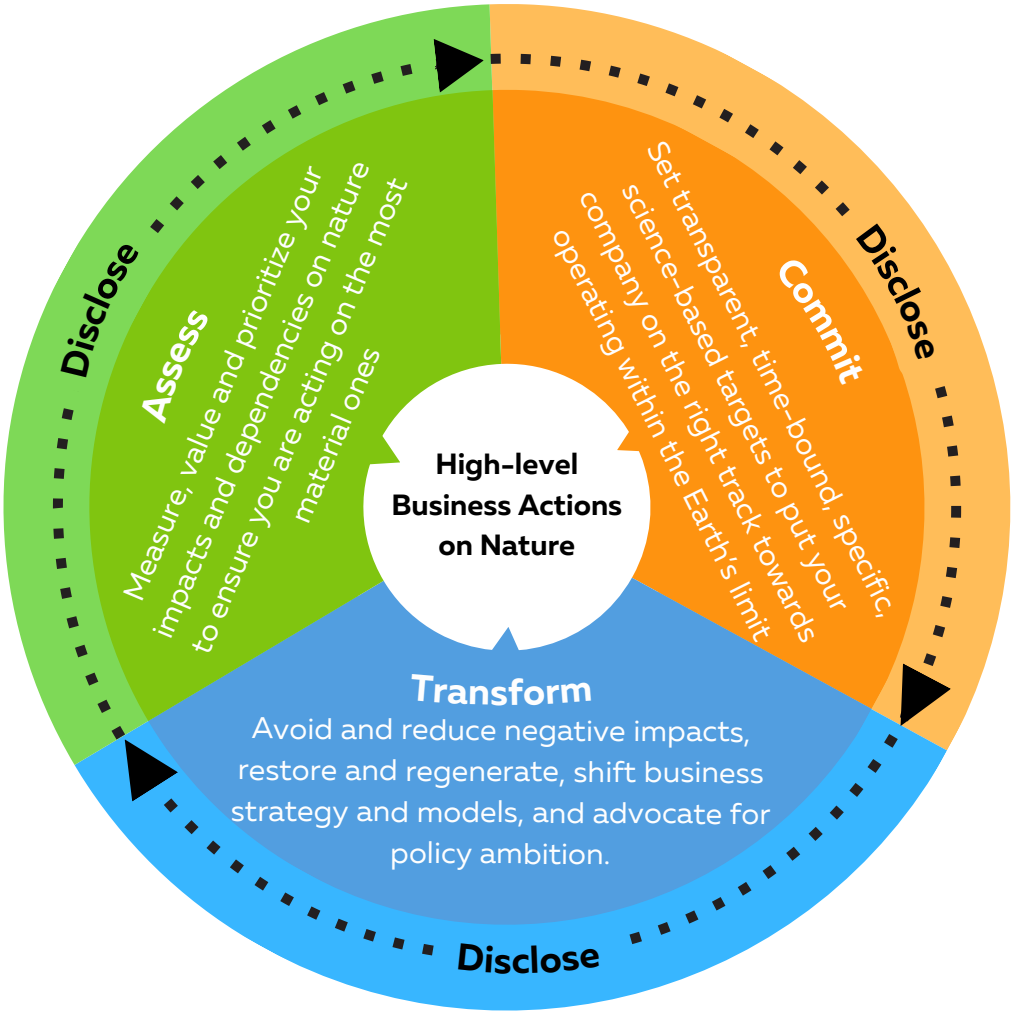


Figure 7. High level business actions on nature framework (Business for Nature, 2022)

A summary of how to implement the ACT-D framework is included below, based on the International Union for Conservation of Nature and Natural Resources (IUCN) in Nature Positive for business: Developing a common approach (Baggaley et al., 2023).

Assess

Action to assess:

- Material impacts, benefits, and dependencies on nature within your business operations and value chain.
- Opportunities to prevent and avoid impacts while maximising positive benefits.
- Capacity for integrating the application of nature-based solutions to address operational and risk management objectives while delivering on corporate targets and indicators.

Commit

Action to:

- Set Nature Positive objectives or development of a strategy, with commitments embedded across the business.
- Consider the existing strategic setting of the business and the relatability of sustainable, net zero and circular initiatives and how these already contribute or can support proposed objectives, strategic setting and/or commitments.
- Participate and support in relevant jurisdictional or landscape objectives in your area of operation.
- Establish, measure, and monitor outcomes.

Transform

Action to:

- Make systematic change to reverse activities contributing to nature loss.
- Seek out innovative partnerships locally and across sectors and value chains.
- Workplace culture, including behavior and awareness on the goals and values for achieving Nature Positive
- Work through value and delivery chains by enhancing policies, standards and operating procedures.
- Support advocacy for improving and strengthening nature policies.

Disclose

Action to:

- Make robust, scientifically-driven disclosures that align with the Global Goal for Nature and Kunming-Montreal Global Biodiversity Framework.
- Publicly share and track progress.

Focus areas to achieve Nature Positive

There are five Nature Positive focus areas for Australian and Aotearoa New Zealand water utilities to protect and enhance natural systems while continuing to deliver essential water supply and wastewater services:

1. **Resilient water supplies and water conservation**
2. **Efficient and effective treatment reducing water pollution**
3. **Achieving net zero greenhouse gas emissions**
4. **Regeneration to restore balance with nature**
5. **Systems transition and partnerships**

In identifying the five focus areas, we adapted the Global Water Utility Priority Actions identified by Business for Nature (2023) to the context of the Australian and Aotearoa New Zealand water sector (Figure 8).

Figure 8. Nature Positive focus areas for Australian and Aotearoa New Zealand water utilities (adapted from Business for Nature, 2023)

The five focus areas are supported by case studies, highlighting a range of innovative practices and partnerships that demonstrate how Australian and Aotearoa New Zealand water utilities can leverage our operations, infrastructure, and community engagement to foster biodiversity and support sustainable water management.

Resilient water supplies and water conservation

- Enhance rainfall-independent water supplies
- Conserve water by reducing water loss in our networks and encouraging our customers to value efficient and effective water use
- Deliver water for First Nations and the environment.

Efficient and effective treatment reducing water pollution

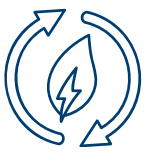
- Water treatment levels are effective and appropriate for the intended end uses
- Treated wastewater minimises risk of harm from nutrient pollution
- Water recycling to enhanced environment and social outcomes
- Apply adaptive management to respond to change and take action to protect and enhance nature.

Achieving net zero greenhouse gas emissions

- Avoid energy use and emissions through innovative design of new and renewed water and wastewater assets
- Minimise energy and emissions through efficiency and optimisation of our operations.
- Recover and generate renewable energy (e.g. wind, solar, biogas) and local upcycled materials from our activities (e.g. soil conditioner, biochar)
- Sequester carbon (e.g., biochar, native forests, wetlands on land managed by water utilities)
- Offset residual emissions, using local offsets where possible and exploring initiatives that enhance liveability and climate change adaptation for our communities and the environment.

Regeneration to restore balance with nature

- Regenerate landscapes and ecosystem services within and beyond utility boundaries
- Invest in catchment health as a water treatment asset
- Restore and re-naturalise urban waterways
- Nature as infrastructure in servicing.



Systems transition and partnerships

- Transition to a circular economy
- Keep bioresources in use
- Use local recycled/repurposed materials
- Enhance and restoring ecosystems with land stakeholders and First Nations peoples
- Work in partnerships with communities and all levels of government.

Resilient water supplies and water conservation

To ensure water security for Australian and Aotearoa New Zealand communities, the water sector supports an all options on the table approach to water supply options and water conservation. This approach requires a considered, balanced, and place-based assessment for a diversified portfolio of water supply less reliant on rainfall dependent sources (Figure 9). Resilient water supplies and water conservation also support other positive outcomes, including reducing the disparity of First Nations' peoples' access to services, and protecting and restoring the ecological and community values of waterways and catchments.

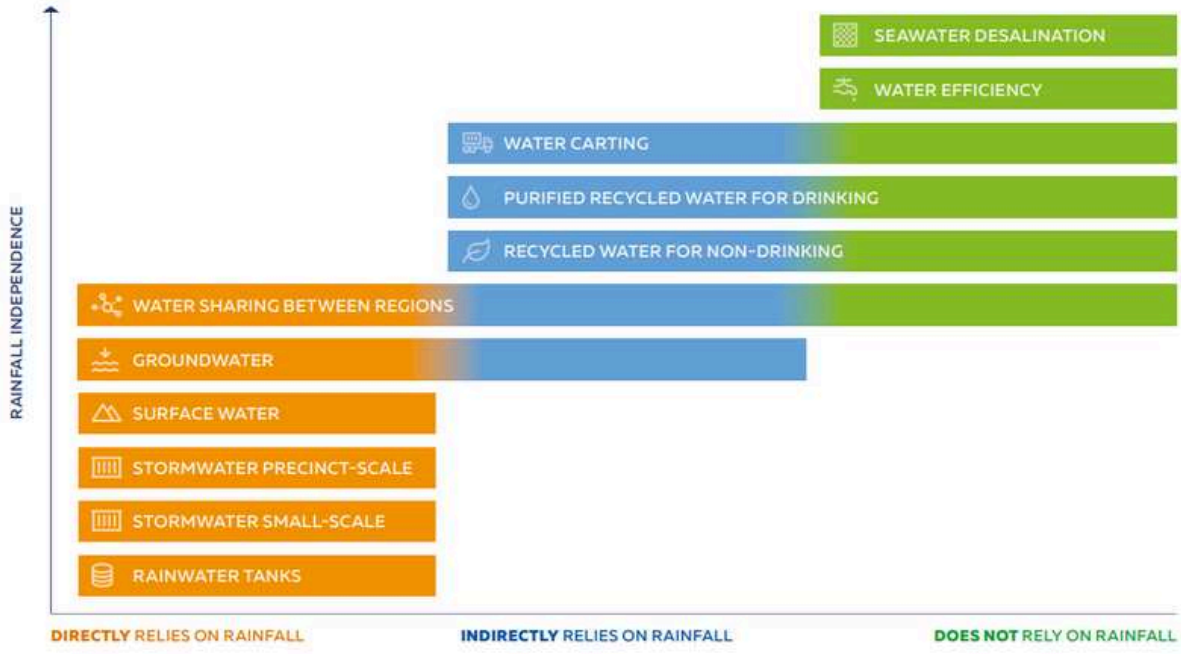


Figure 9. Rainfall independence spectrum (WSAA, 2020)

The water sector is investing in rainfall independent sources including desalination and purified recycled water for drinking.

Desalination plants are operating in major cities around Australia and provide a reliable water source unaffected by drought. Similarly, purified recycled water projects are being developed to augment drinking water supplies.

By optimising the use of rainfall dependent and independent sources, we enhance our capacity to balance resilience, security, cost, and network constraints, while addressing the diverse and evolving needs of our customers and communities.

These initiatives include the augmentation of groundwater and surface drinking water supplies with purified recycled water, ensuring a sustainable and reliable source of drinking water. For example, Water Corporation's groundwater replenishment scheme in Perth, the first scheme of its kind in Australia, which recharges aquifers with purified recycled water for drinking.

Additionally, demonstration plants and visitor centres are being established to showcase the technology and processes involved in water purification, providing education and transparency to the community about the safety and benefits of recycled water.

Case Study 2

PURIFIED RECYCLED WATER DISCOVERY CENTRE

SYDNEY WATER, NEW SOUTH WALES

Sydney Water has taken significant steps towards resilient water management and innovation by establishing the Purified Recycled Water Discovery Centre. This centre exemplifies the integration of advanced water treatment technologies and public engagement to promote water recycling and sustainability.

Located at the Quakers Hill Water Recycling Plant, the Purified Recycled Water Discovery Centre is part of Sydney Water's commitment to exploring innovative solutions for water scarcity and sustainability. The centre serves as a demonstration facility and an educational hub, aiming to enhance community understanding and acceptance of purified recycled water as a safe and sustainable water source.

Key features include:

- Advanced Treatment Processes: State-of-the-art purification including microfiltration, reverse osmosis, and advanced oxidation to produce high-quality purified recycled water.
- Interactive Educational Exhibits: Interactive displays, hands-on activities, multimedia presentations, and guided tours explaining water purification processes.
- Community and Stakeholder Engagement: Workshops, seminars, and open days for community members, students, industry professionals, and policymakers to build trust and transparency.
- Research and Innovation Hub: Ongoing research and development in water recycling technologies, with collaboration from universities, research institutions, and industry partners.

Image credits: Sydney Water and WSAA

Case Study 3

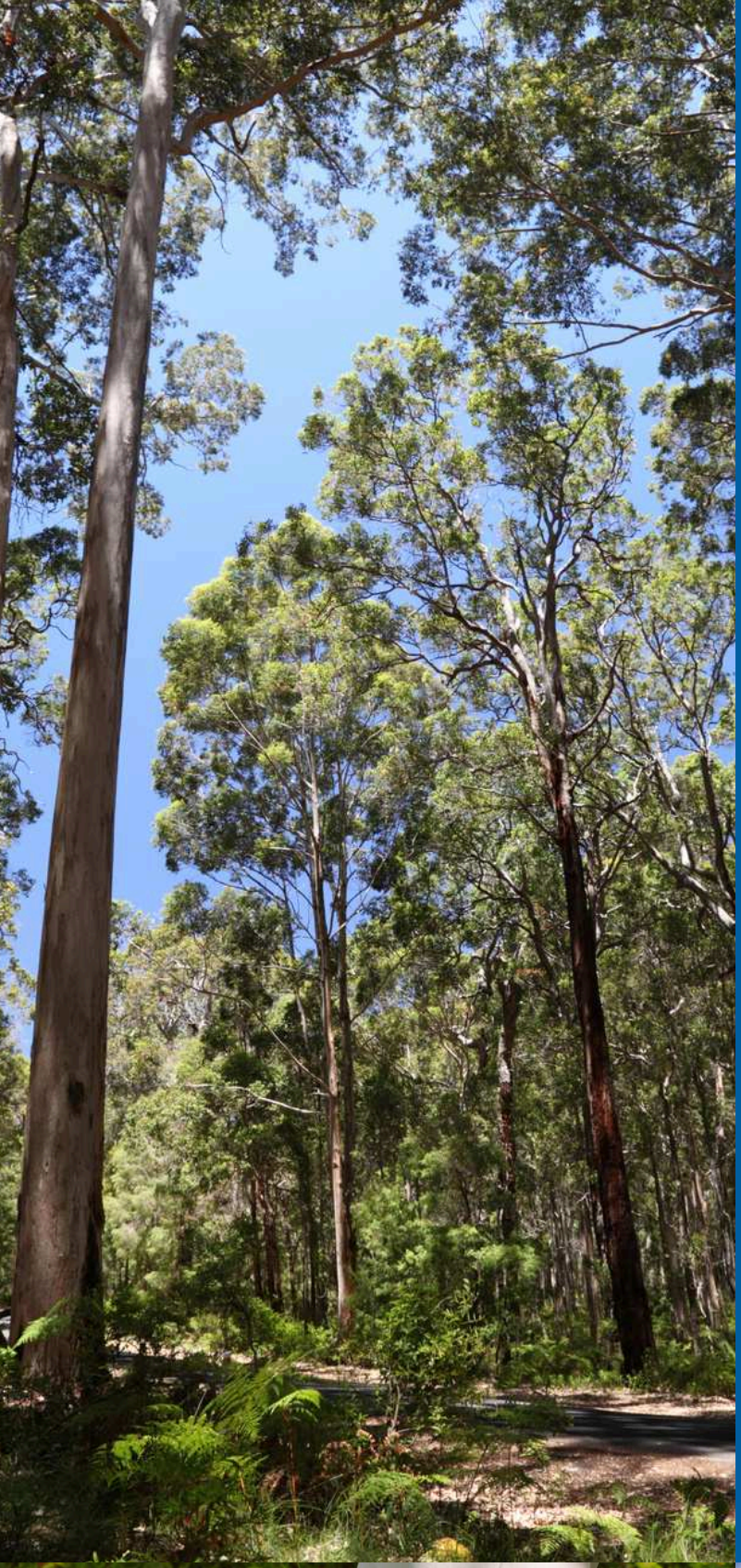
REMOVAL OF DISUSED WATER INFRASTRUCTURE AND RECONNECTING HEADWATERS OF YARRAM CREEK

BARWON WATER, VICTORIA

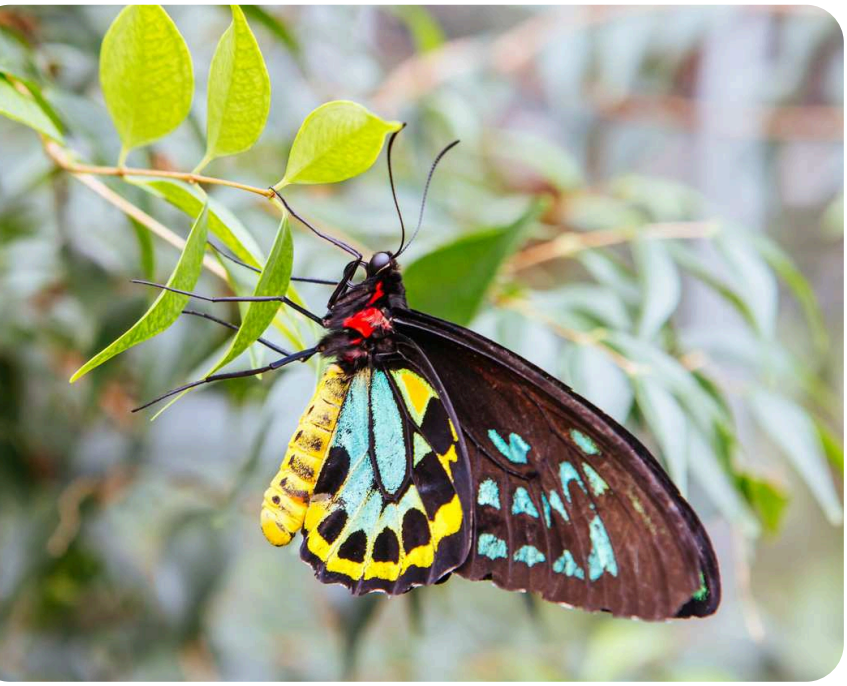
Barwon Water has assessed the potential to use its landholdings to enhance biodiversity, water quality and connect community to Country. Barwon Water's approach includes working with Wadawurrung Traditional Owners and community groups in the design and delivery of the restoration activities.

An example of this is the 37 ha Murrk Ngubitj Yarram Yaluk restoration site (Barwon Water, 2023) in the heart of the Bellarine Peninsula. The site was home to the Bellarine Water Basin, which had become redundant with changes to the regional supply network. The project design, developed with Spiire Consulting and part-funded by the Victorian Government, involves removal of parts of the basin walls, reconnection of the upper headwaters to Yarram Creek, progressive removal of a pine plantation and removal of security fencing, enabling public access and slow regeneration of the indigenous bush that is still present in parts of the site. This means that the site-specific indigenous vegetation is protected and underpins regrowth across the site. The outcome will enhance the unique and natural features of the Bellarine Peninsula, by restoring waterway connectivity and biodiversity. A strong feature of the process is that the site's design is being shaped by walking alongside Wadawurrung Traditional Owners and in partnership with community volunteers (Barwon Water, 2023; Barwon Water, 2024).

Image credit: Barwon Water



The water sector is committed to reducing the disparity of First Nations peoples' access to services and increasing engagement with First Nations peoples (WSAA, 2024). This commitment includes collaborating with First Nations communities to integrate traditional knowledge into water management practices and implementing water returns to support cultural and environmental needs. Incorporating traditional knowledge and cultural values through integrated water management practices and partnerships with First Nations peoples, can promote water conservation and support climate adaptation.



Case Study 4

HEALING COUNTY WITH WATER RETURNS TO TRADITIONAL OWNERS

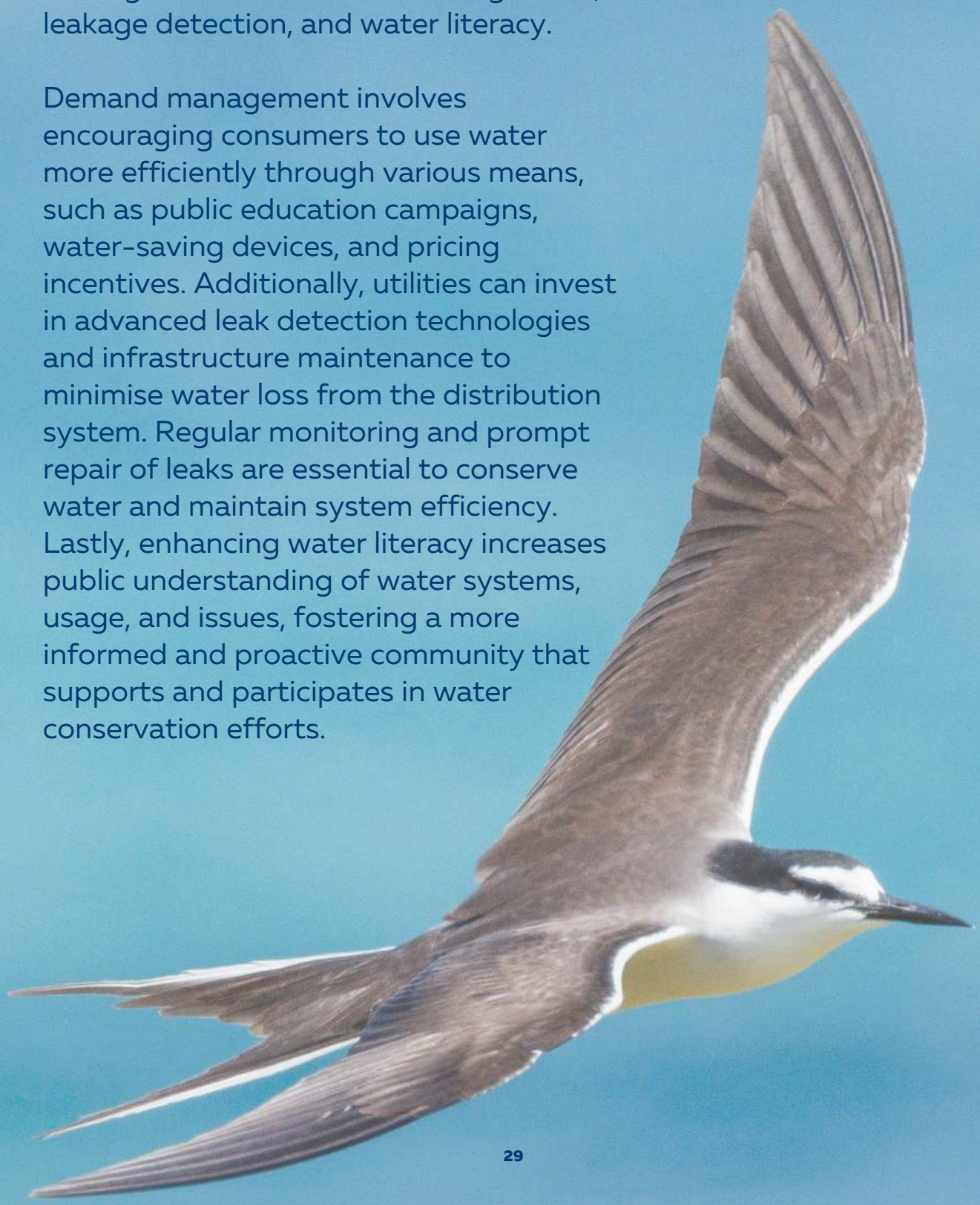
VICTORIAN GOVERNMENT

To address the impact on waterways in Victoria, Water is Life – Traditional Owner access to water roadmap outlines the Victorian Government's commitment to return water to First Nations peoples as a priority. The Traditional Owner Nation Statements included within Water is Life, express the desire for increased access to water to meet cultural responsibilities and restore and heal Country, addressing the widespread degradation in waterway health since colonisation. Victoria's Central and Gippsland Region Sustainable Water Strategy also includes this commitment.

At the Yoorrook Justice Commission, Minister Shing's Witness statement detailed water return commitments underway in Victoria, (acknowledging the process has been slow and the allocation system was not set up with First Nations people in mind), which include, among other returns, continuing to work with the Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation for the return of 1.4 GL of entitlement in the Birrarung (Yarra River).

By implementing effective water conservation strategies, water utilities can ensure the long-term availability of water resources, reduce the environmental impact of water extraction and usage, and enhance the resilience of water supply systems. Effective water conservation strategies include demand management, leakage detection, and water literacy.

Demand management involves encouraging consumers to use water more efficiently through various means, such as public education campaigns, water-saving devices, and pricing incentives. Additionally, utilities can invest in advanced leak detection technologies and infrastructure maintenance to minimise water loss from the distribution system. Regular monitoring and prompt repair of leaks are essential to conserve water and maintain system efficiency. Lastly, enhancing water literacy increases public understanding of water systems, usage, and issues, fostering a more informed and proactive community that supports and participates in water conservation efforts.



Case Study 5

THAT'S MY WATER! BUSH SCHOOLS

POWER AND WATER CORPORATION, NORTHERN TERRITORY

Power and Water Corporation's 'That's My Water! Bush Schools' educates students in remote and Indigenous communities on water conservation. The program features interactive learning modules, cultural integration with Indigenous knowledge, and practical activities like school water audits. Resource materials support ongoing education. The initiative has increased water literacy, engaged communities by involving elders, and led to noticeable reductions in water usage. By combining interactive and culturally relevant education, That's My Water! Bush Schools, effectively promotes sustainable water management and empowers students to become water stewards in their communities.

Image credit: Power and Water Corporation

Efficient and effective treatment reducing water pollution

The discharge of treated wastewater, and stormwater, into receiving environments is one of the water sector's biggest impacts on nature. The appropriate treatment of wastewater, and effective handling of stormwater, has a crucial role in ensuring impacts are minimised, and to enable recycling and reuse. The effective removal of nutrients and pollutants from wastewater and stormwater significantly minimises the risk of harm from nutrient pollution, essential for protecting aquatic ecosystems and maintaining water quality.

In addition to point source treatment, developing and participating in nutrient offsetting and trading regimes present an alternative way for water utilities to minimise impact and enhance the receiving environment. Nutrient offsetting offers a win-win solution for addressing catchment and aquatic ecosystem degradation by allowing nutrient source dischargers with high on-site abatement costs to purchase nutrient load reductions from more cost-effective off-site sources. For instance, water utilities can invest in catchment restoration or nutrient-reducing practices to offset the increased nutrient discharge from expanding facilities due to population growth. These offsetting schemes not only achieve nutrient load reductions but also help deliver multiple benefits through sediment reduction, carbon storage, groundwater recharge, flood retention, and habitat protection (WSAA, 2023a).

Some water utilities have committed to net zero nutrients targets, and are implementing nature-based solutions, integrated water initiatives, and innovative wastewater treatment to achieve the targets.

The treatment and recycling of treated wastewater gives substantial environmental and social benefits. For instance, it supports agricultural irrigation, industrial processes, and urban landscaping, reducing the demand for freshwater resources and promoting sustainable water management practices. Current research is exploring novel and innovative applications of using natural systems in the treatment of wastewater and use of water recycling, including floating wetland systems to reduce nutrients discharged to waterways. These systems not only serve to replenish natural ecosystem functioning but also aim to contribute to the health and resilience of ecosystems.

The adaptive management approach of water utilities ensures that we can respond to changes and emerging challenges effectively. By continuously monitoring and assessing the performance of wastewater treatment systems, we can take timely actions to enhance efficiency and effectiveness.

The ongoing commitment to high treatment standards and adaptive approaches not only safeguards public health and the environment but also fosters a positive relationship between water management and nature.

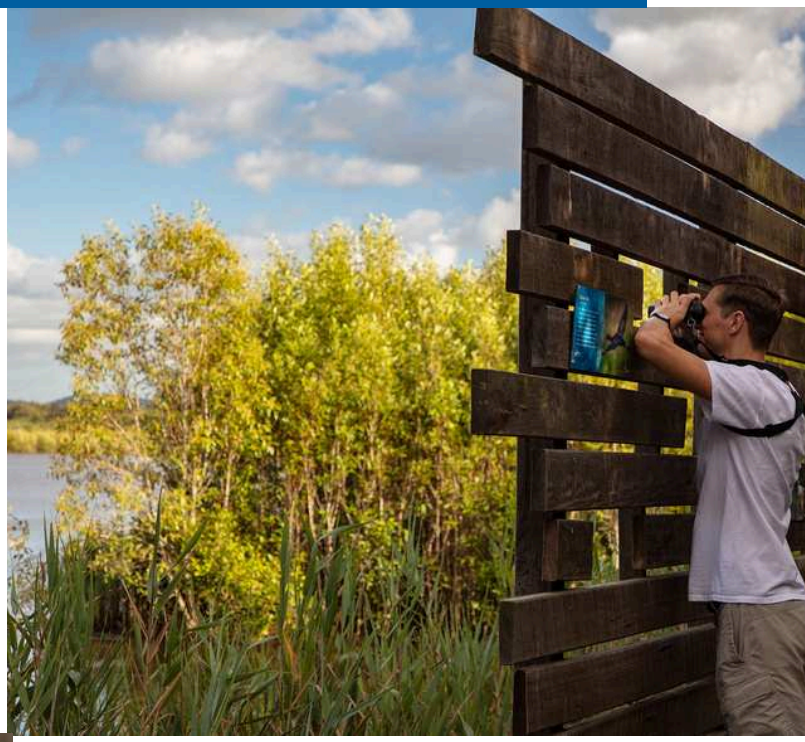
Case Study 6

ACHIEVING NET ZERO NUTRIENTS

UNITYWATER, QUEENSLAND

Unitywater was the first water utility to make a commitment to achieve net zero nutrients by 2040, aligned with its net zero carbon emissions target. Going beyond compliance, Unitywater uses different methods to achieve these goals including nature-based solutions, integrated water initiatives, and innovative wastewater treatment, which enable broader outcomes for catchment health. Unitywater purchased 191 ha of land for wetland establishment at Yandina Creek Wetland, downstream of its wastewater treatment plant. Water modelling highlights that the wetland should achieve 5.3 T/y total nitrogen reduction and 0.3 T/y total phosphorus reduction. Unitywater is also leading a trial 10 km up the Pine River in Moreton Bay, creating oyster reefs to absorb nutrients from the waterways. The projects take a holistic approach to wastewater management by embracing nature-based solutions to improve overall catchment health, involving partnerships with researchers, community groups and regulators.

Oyster Reef Restoration Unitywater's oyster reef restoration pilot project involves installing a series of 400 square metre triangular 'reef' baskets filled with 18kg of recycled oyster shells sourced from Brisbane restaurants and commercial shucking operations. Pre-seeded baskets are soaked in Moreton Bay for about a year before being placed in the Pine River. The project aims to quantify nitrogen sequestration by oysters and establish oyster reefs as a valid nutrient offset method, providing an additional pathway to meet Unitywater's goal of net zero discharges by 2040. Monitoring by the University of Sunshine Coast will provide data to develop models for optimal restoration and nutrient abatement.



Yandina Creek Wetland In 2016, Unitywater purchased two lots of former cane farming land on River Road, Maroochy River, to regenerate the site into a wetland by reinstating tidal flows from Yandina Creek and the Maroochy River. This wetland helps remove nutrients and sediments from the river, improving water quality and overall river health. The site features a 1.7 km trail walk and bird viewing hide, promoting community engagement and biodiversity.

Image credit: Unitywater

Case Study 7

ENHANCING DRAINAGE SYSTEMS AND MITIGATING POLLUTION – DRAINAGE FRESHWATER MUSSEL RESEARCH AND DEMONSTRATION

WATER CORPORATION, WESTERN AUSTRALIA

Water Corporation manages an extensive network of over 2,500 km of open drainage systems across Western Australia. A key focus for Water Corporation is to explore opportunities for restoring and regenerating these systems to improve liveability and environmental outcomes. One such initiative involves the conservation and study of Carter's freshwater mussel (*Westralunio carteri*), a species native to south-west Western Australia and listed as vulnerable by the IUCN Red List.

Image credit: Jake Daviot, Murdoch University

The project aims to use these mussels to enhance ecosystem health within drainage networks, leveraging their biofiltration and nutrient cycling capabilities. The additional benefit is that the project will also address the decline in population and habitat of Carter's freshwater mussel.

At the Murdoch University Harry Butler Institute, in cooperation with Water Corporation and its Water Research Innovation Precinct, an innovative trial is being conducted to understand and quantify the distribution and ecosystem services provided by Carter's freshwater mussel across two main drainage networks around Perth. The research is focused on understanding the species role in ecosystem health, through biofiltration and nutrient cycling, including quantifying the inactivation and removal of pathogens, such as E.coli.

Image credit: Jake Daviot, Murdoch University

Findings to date indicate that viable, reproducing populations of Carter's freshwater mussel are persisting in several artificial drainage sites managed by Water Corporation. The biofiltration rates observed are comparable to those of other freshwater mussels globally, with maximum rates exceeding 800 mL per mussel per hour when fed unicellular phytoplankton.

Research findings provide opportunities for Water Corporation to consider ways to optimise the habitats within their drainage networks to support Carter's mussel populations. This includes creating suitable environments that secure endangered mussel populations while restoring ecosystem functions in heavily modified waterways. Additional work is recommended to explore increasing the reproductive success of Carter's mussel through captive breeding strategies to establish new populations in novel habitats.

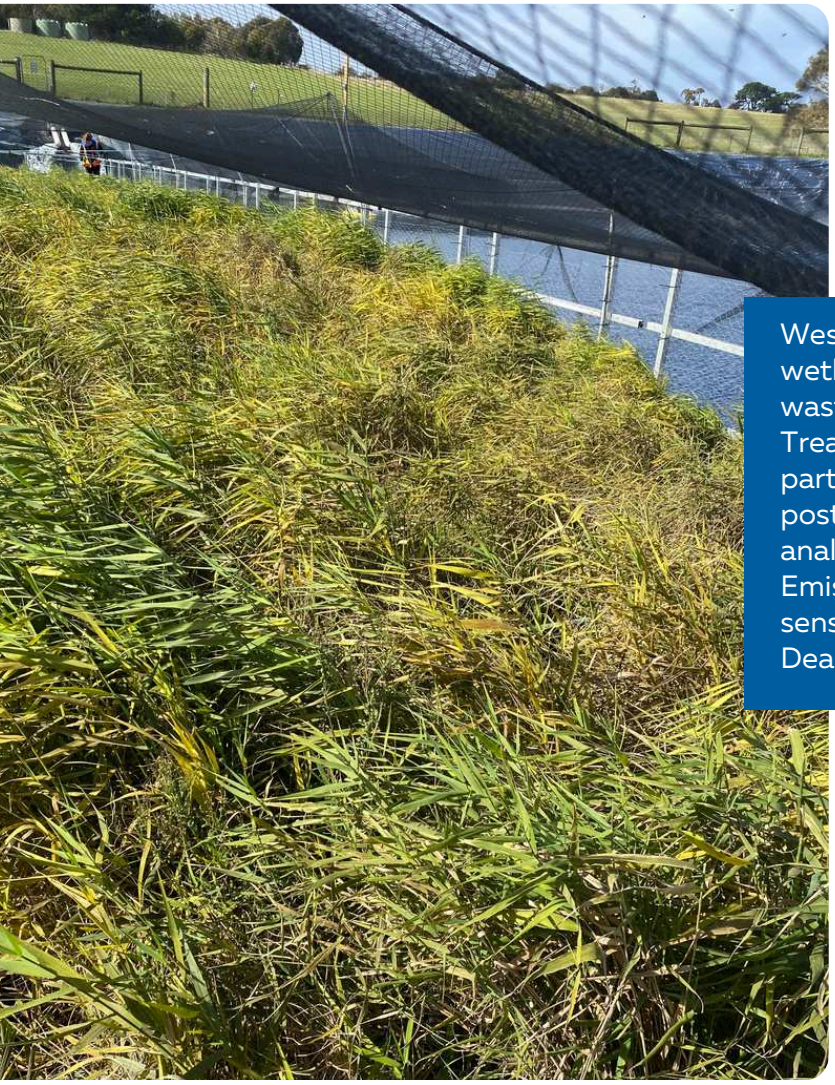
Water Corporation's innovative approach to using Carter's freshwater mussel exemplifies a win-win scenario for conservation and ecosystem restoration.

Case Study 8

WESTERNPORT WATER FLOATING WETLAND PILOT PROJECT

WESTERNPORT WATER, VICTORIA

Westernport Water has launched an innovative two-year study to assess the effectiveness of wetland plants in removing nutrients and reducing greenhouse gas emissions from treated wastewater. This groundbreaking study, conducted in collaboration with Deakin University's Blue Carbon Lab and CSIRO, is the first to evaluate the performance of a floating wetland on both water quality and greenhouse gas emissions.



Westernport Water has installed a floating wetland platform with 1,800 native plants in a wastewater lagoon at the Cowes Wastewater Treatment Plant. This pilot project is in partnership with CSIRO and involves pre- and post-assessment of water quality, plant tissue analysis, and solids (sludge) analysis. Emissions are measured in real-time using sensors on the water surface, managed by Deakin University's Blue Carbon Lab.

The trial aims to showcase a circular economy model by using recycled water for beneficial environmental outcomes. The findings will inform the design and implementation of a permanent, large-scale restorative wetland system at King Road Wastewater Treatment Plant, set to begin in 2025.

Image credit: Westernport Water

Case Study 9

FLOATING WETLAND TRIAL TO EXTEND THE LIFE OF BUILT WASTEWATER ASSETS

TASWATER, TASMANIA

TasWater operates 110 sewage treatment plants (STPs), with 58 of these being lagoon-based systems. Many of these plants are over 50 years old and primarily serve regional towns. TasWater is exploring how floating wetlands can be utilised in the wastewater treatment process to extend the operational life of assets. This two-year project involves installing floating wetland systems at three wastewater treatment plants, with performance monitored over 24 months to evaluate the effectiveness in nutrient uptake, emissions reduction, and contaminant removal.

The primary objective of this project is to trial the performance of floating wetlands at three sites to inform opportunities for extending the asset life of other treatment lagoons. The aim is to achieve 40-60% nutrient removal (total nitrogen), with potential phosphorus removal.

The trial will enable the assessment and application of floating wetlands on the following outcomes:

- Provide a circular, low-energy, passive system to reduce nutrients released into the environment.
- The potential for broader installation of floating wetland systems across TasWater's sites, potentially extending the life of assets by 20-50 years, saving on costly upgrades and delaying the construction of larger, more expensive wastewater treatment plants.
- Build circular economy principles into the program, considering the end-of-life for the treatment modules and harvested plant material.
- Increase biodiversity and improve local ecology.

Image credit: TasWater

Achieving net zero greenhouse gas emissions

Most water utilities across Australia have net zero emission commitments. Through the application of the emissions hierarchy (Figure 10), the water sector is actively reducing emissions including by using renewables to provide energy for operations, mitigating fugitive emissions from the wastewater treatment process, and with carbon sequestration projects.

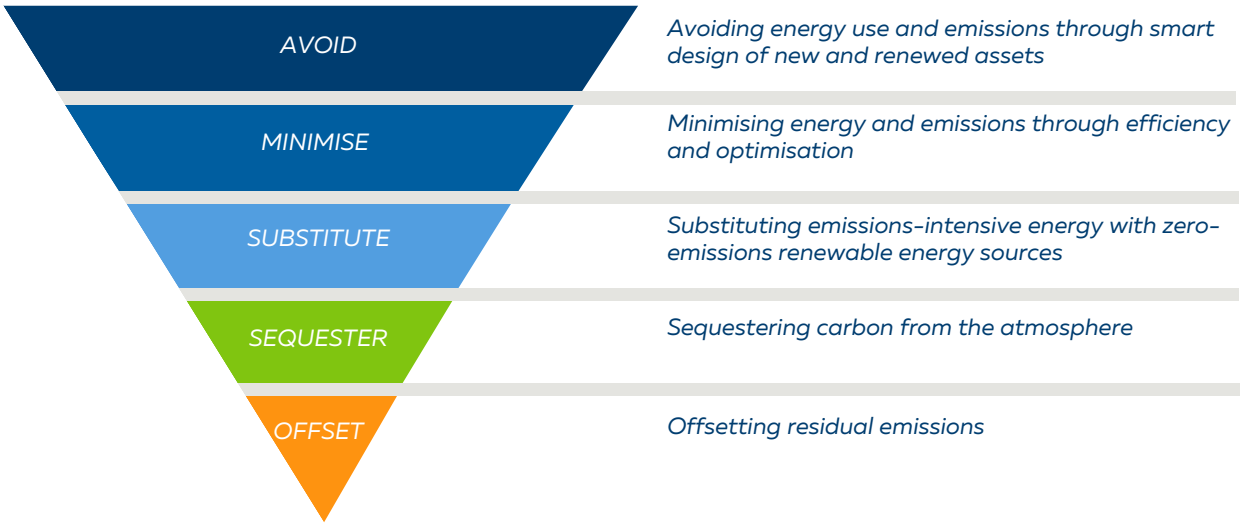


Figure 10. Emissions reduction hierarchy (WSAA 2023b)

In a first for Australia, Sydney Water is constructing biomethane-to-gas projects at the Malabar Water Resource Recovery Facility. North East Water, Yarra Valley Water, Barwon Water are at various stages of trialling green hydrogen generation. Solar panels are also extensively used by water utilities, such as SA Water's deployment of 360,000 solar panels across tanks, pipelines, and pump stations. In Victoria, the Zero Emissions Water initiative covers more than 500 ha, with over 718,000 panels to service a collective of 12 Victorian water corporations to achieve emission reduction goals.

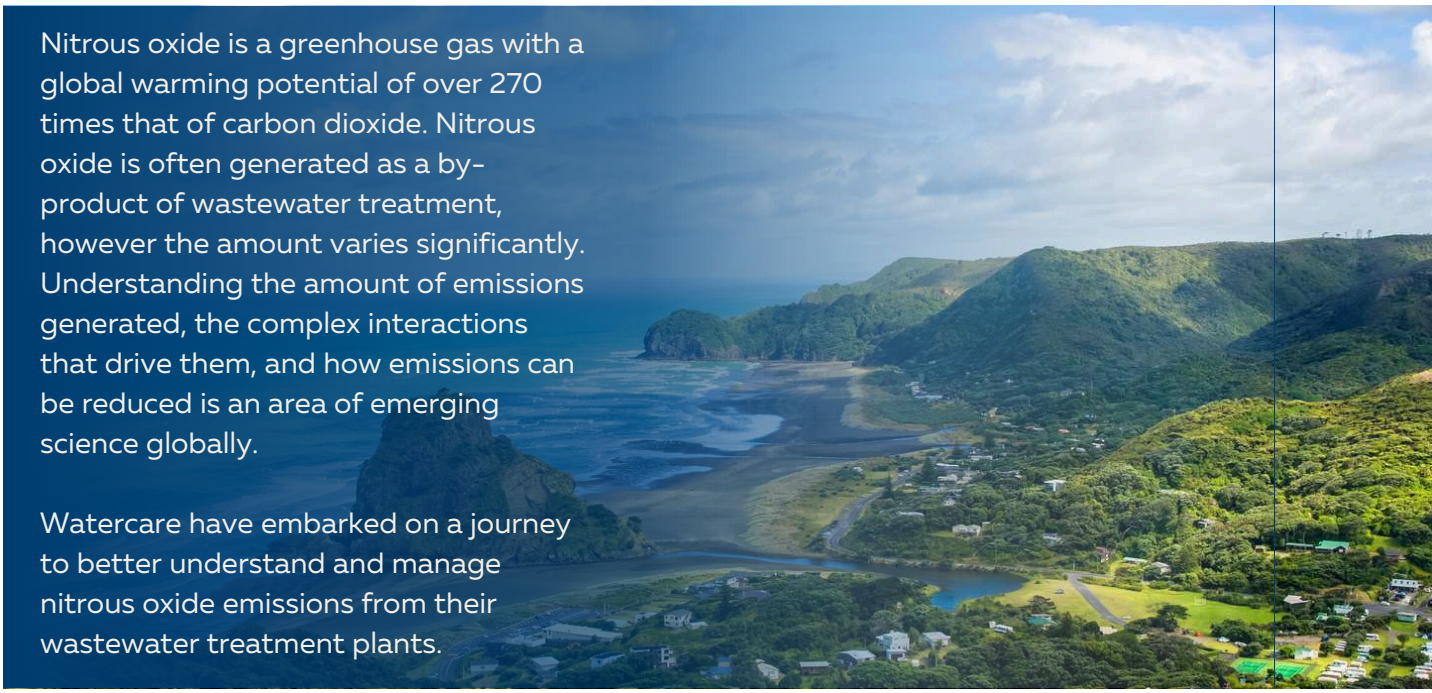
Management of fugitive emissions, including nitrous oxide and methane, is crucial to for water utilities to achieve net zero. Water utilities, such as Icon Water and Urban Utilities, are investing in research and development of monitoring systems to improve the accuracy and efficacy of mitigation solutions to reduce and capture fugitive emissions. Watercare in Aotearoa New Zealand has run an innovative program to monitor and model nitrous oxide, to inform the development of a large-scale mitigation strategy.

Water utilities are also looking to reduce embodied carbon in construction, by designing and constructing low carbon materials and technologies, and integrating grey infrastructure with natural assets and systems where appropriate. This approach includes implementing circular economy principles to manage resources like water, waste, energy, and natural capital. The focus on sustainable infrastructure is further supported by trenchless technologies and innovative pipe linings, which help reduce the embedded carbon in construction.

Case Study 10

NITROUS OXIDE TRIALS AND SCENARIO TESTING

WATERCARE, AOTEAROA NEW ZEALAND

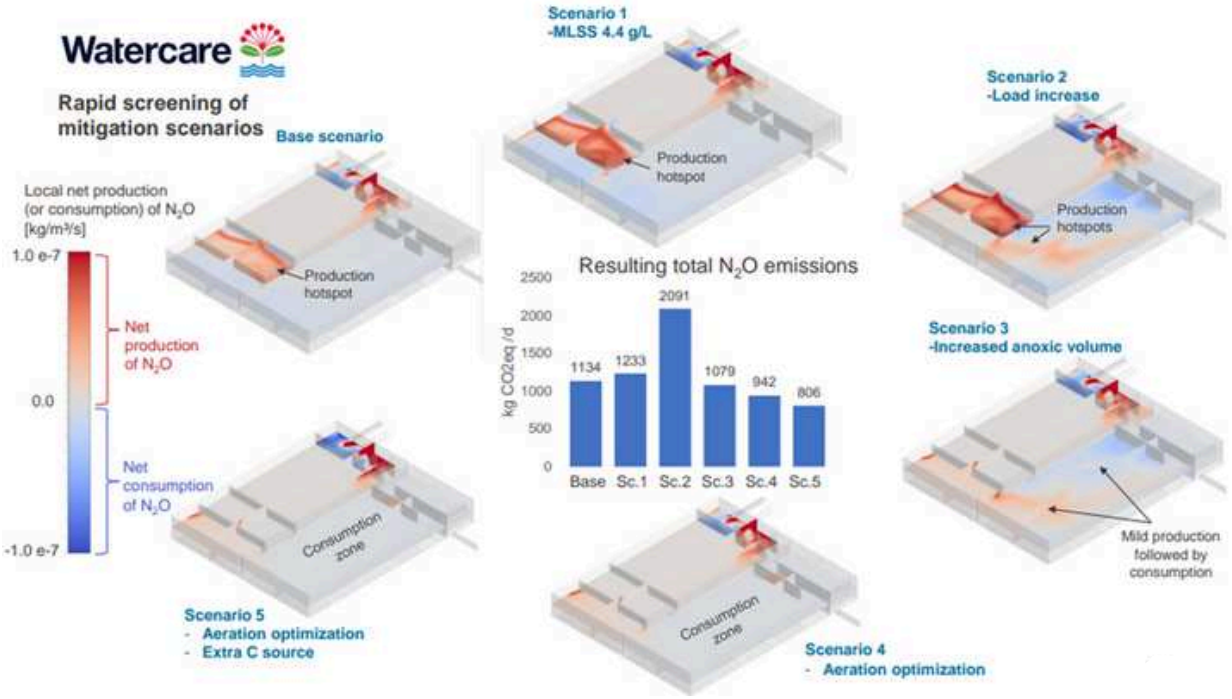


Nitrous oxide is a greenhouse gas with a global warming potential of over 270 times that of carbon dioxide. Nitrous oxide is often generated as a by-product of wastewater treatment, however the amount varies significantly. Understanding the amount of emissions generated, the complex interactions that drive them, and how emissions can be reduced is an area of emerging science globally.

Watercare have embarked on a journey to better understand and manage nitrous oxide emissions from their wastewater treatment plants.

Watercare carried out a 13-day intensive campaign at their Rosedale site and found an emissions factor of EF 0.5% over that period compared to the base case in the model prediction of 0.58%. This work gave confidence in the model outputs used for scenario development and compared to the initial trial. Watercare is currently deploying a large-scale nitrous oxide mitigation strategy. The strategy includes using modelling to accelerate mitigation and increase the efficiency and accuracy of emission quantification.

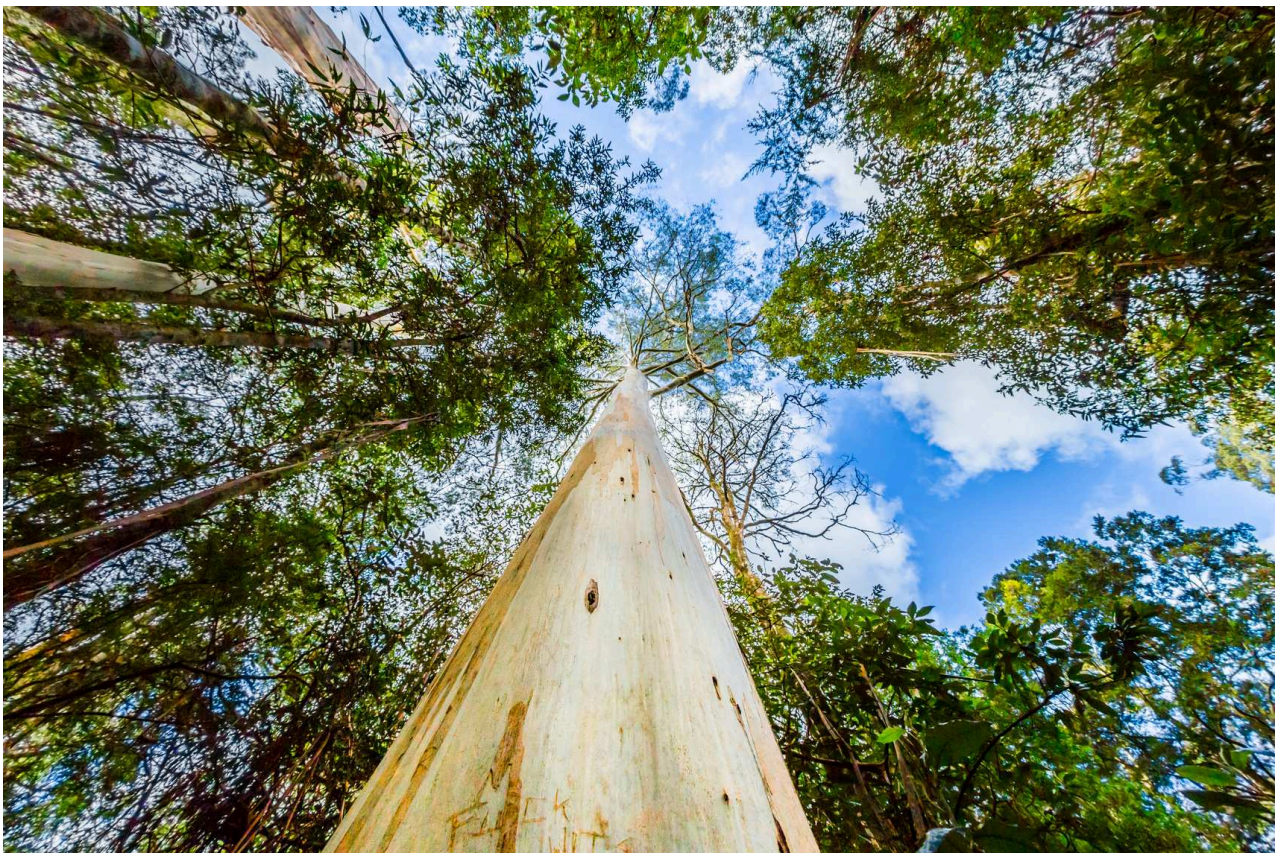
Image credit: Watercare



Currently, 75% of biosolids in Australia are used in agriculture through land application. Water utilities have been applying biosolids to agricultural land for over 100 years. This had led to significant outcomes from the recycling of nutrients and increased soil health leading to increased food production. Water utilities are now looking to use gasification and pyrolysis technologies to destroy emerging contaminants in biosolids and to produce biochar. Biochar production offers the ability to establish a nutrient-carbon trade-off as biosolids are converted and carbon is sequestered. Notwithstanding the ongoing benefits of sustainable land application methods, the production of biochar will have a role to play in managing incidences of contaminated biosolids and growth of new markets for carbon capture.

Many utilities are engaging in carbon farming and resource recovery projects. Some water utilities have also developed waste-to-energy facilities, showcasing innovative ways to harness the potential of wastewater treatment by-products for energy production.

Global collaborations are aiding the acceleration of the transition to net zero. A net zero partnership between, Melbourne Water, Severn Trent (UK) and Aarhus Vand (Denmark) is focused on sharing and delivering solutions to reduce the emissions of wastewater treatment facilities, including the development of the world first Net Zero Hub. By leveraging each other's strengths and sharing knowledge, these utilities are making significant strides towards a sustainable future with net zero emissions.



Case study 11

GLOBAL COLLABORATION TOWARDS NET ZERO EMISSIONS

MELBOURNE WATER, VICTORIA WITH SEVERN TRENT (UK) AND AARHUS VAND (DENMARK)

Melbourne Water, Severn Trent (UK), and Aarhus Vand (Demark) have pledged to collectively reduce their carbon emissions by approximately a million tonnes, aiming to lead the green transformation of the water sector. This collaboration will leverage their combined experience, expertise, and innovation to undertake key projects. These include transforming one of Severn Trent's wastewater treatment facilities into a Net Zero hub for researching carbon-neutral wastewater technologies, developing accurate measurement standards for nitrous oxide and methane emissions, and enhancing wastewater treatment sites with green technology to achieve net zero emissions.

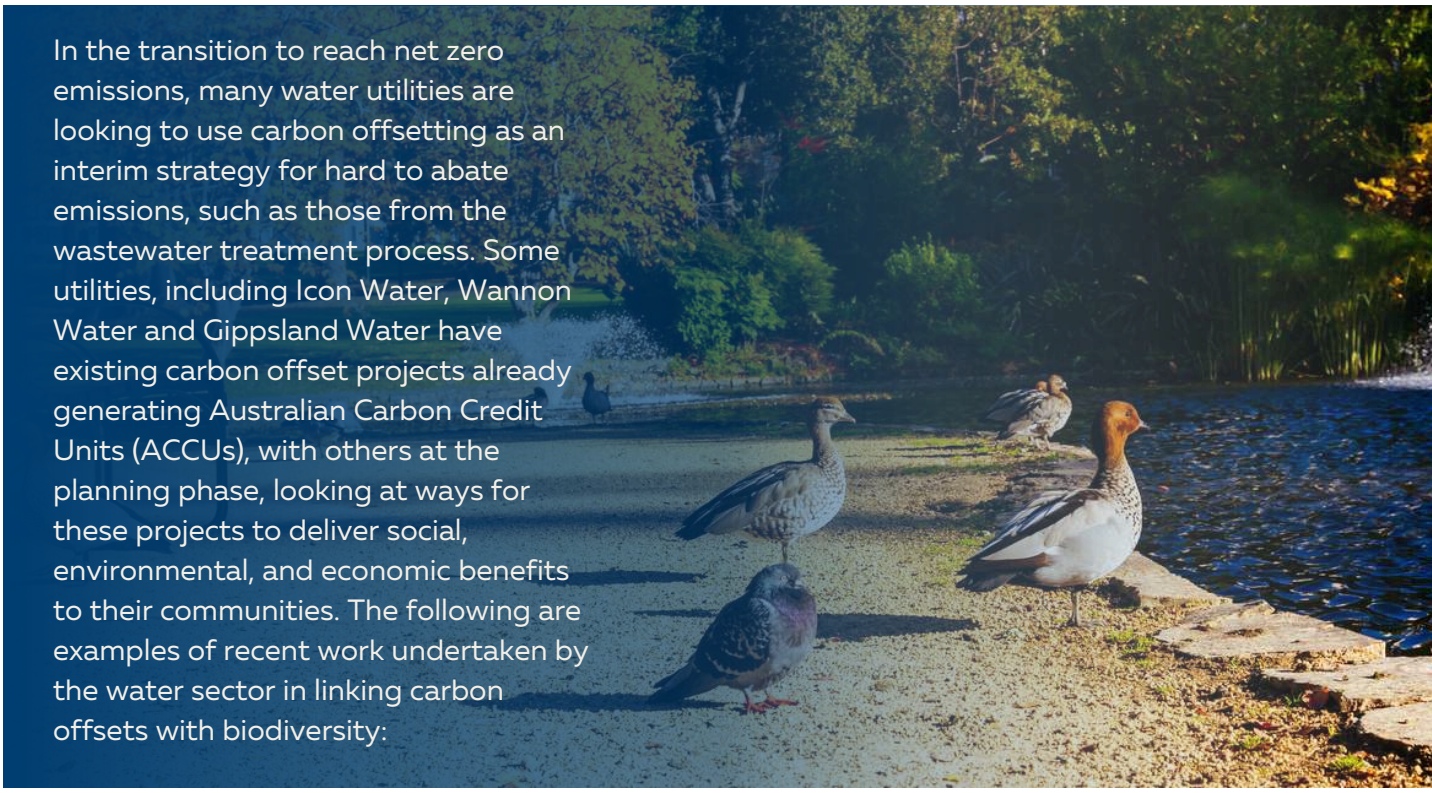
Additionally, the partnership will focus on maximising using renewable resources at treatment facilities and sharing insights on the technical and economic feasibility of emission reduction options. This will help create a comprehensive roadmap for the sector to achieve net zero cost-effectively. The utilities will explore employment secondments to facilitate international professional development and the exchange of innovative ideas.

Through these initiatives, the utilities seek to set new standards for the water sector, integrating green technologies and sustainable practices into wastewater treatment processes. The shared knowledge and coordinated efforts aim to significantly reduce carbon emissions while optimising facility performance and ensuring value for customers.

Case Study 12

DEMAND FOR CARBON OFFSETS WITH BENEFITS FOR BIODIVERSITY

VICTORIAN WATER CORPORATIONS



In the transition to reach net zero emissions, many water utilities are looking to use carbon offsetting as an interim strategy for hard to abate emissions, such as those from the wastewater treatment process. Some utilities, including Icon Water, Wannon Water and Gippsland Water have existing carbon offset projects already generating Australian Carbon Credit Units (ACCUs), with others at the planning phase, looking at ways for these projects to deliver social, environmental, and economic benefits to their communities. The following are examples of recent work undertaken by the water sector in linking carbon offsets with biodiversity:

Melbourne Water peri-urban forest projects

Melbourne Water is developing three small-scale pilot carbon forest projects across the Greater Melbourne peri-urban region. It will be planting approximately 8,500 seedlings to expand existing native forests and aims to plant native trees over a further 8ha of privately owned land in a partnership with the local landowner groups, Greater Western Water and Yarra Valley Water.

Scaling Action in Victoria

There are limitations of land availability within a single utilities' ownership to achieve offsets at an effective scale. A joint project led by VicWater is aiming to establish a portfolio of high integrity, ACCU generating projects for the Victorian water sector (VicWater, 2024). This project aims to meet the collective demands for carbon offsets for transitional net zero arrangements in Victoria. This state-wide and led initiative recognises the opportunity for carbon offset projects to be able to deliver on multiple benefits, through co-investing with other entities, as outlined in the Co-Benefit and Co-Investment Guide released by the Victorian Department of Energy, Environment and Climate Action (DEECA, 2023).

Regeneration to restore balance with nature

Moving beyond sustainability, water utilities are increasingly prioritising efforts to restore and regenerate the natural ecosystems within our area of operation and influence. These efforts range from addressing impacts linked to land use change, to river and wetland restoration, including the enhancement of natural flows and improved catchment management.
Water utilities are starting to incorporate traditional knowledge, working towards healthy Country, in partnership with First Nations peoples.

The process of regeneration aims to restore both social and planetary health, by renewing natural capital through revitalising biodiverse ecosystems. Water utilities recognise the substantial benefits of investing in catchment health, which include mitigating risks to drinking water supplies, reducing operational treatment costs, and restoring natural flows and ecosystem services to build system resilience in both urban and rural catchments. The range of activities and interventions that water utilities can consider delivering and enhancing our natural capital are often presented as Nature-based Solutions and include:

Rehabilitating, restoring, and protecting native vegetation Activities such as reforestation, tree planting, creating buffer zones, conserving forests, successional planting, and restoring habitats and degraded lands.

Regenerative land and agriculture methods These methods involve the use of cover crops, grass strips, windbreaks, riparian buffers, and agroforestry to enhance ecological resilience, soil health and agricultural productivity.

Integrating natural treatment systems By constructing, restoring, and conserving wetlands and floodplain ecosystems, this supports conventional water treatment systems by further take up of excess nutrients and management of sediments.

Restore hydrological connections and cycles Includes re-wetting historical wetlands, creating a network of retention, detention, and infiltration ponds, and providing for floodplain inundation and channel reconnection to restore natural water flow and enhance groundwater recharge.

Promote and enhance blue and green infrastructure By furthering the use of sustainable urban drainage systems to transition to a water sensitive city, the role of blue and green infrastructure is fundamental to reestablish the urban hydrological cycle.

Removing invasive species Efforts to eradicate non-native, pervasive flora and fauna are vital to restoring native biodiversity and ecosystem health.

There is a growing interest and demand to recognise natural capital assets, together with typical financial assets, steering investment away from negative outcomes and towards Nature Positive outcomes (WSAA, 2021). As part of valuing the natural capital we deliver, the water sector has estimated the health benefits directly attributable to water-enabled liveability are up to $94 per person per year (WSAA, 2019).


Image credit: Mulloon Institute

Case Study 13

REGENERATING WATERWAYS AND RECONNECTING LOCAL WATER CYCLES

WATERNSW, NEW SOUTH WALES

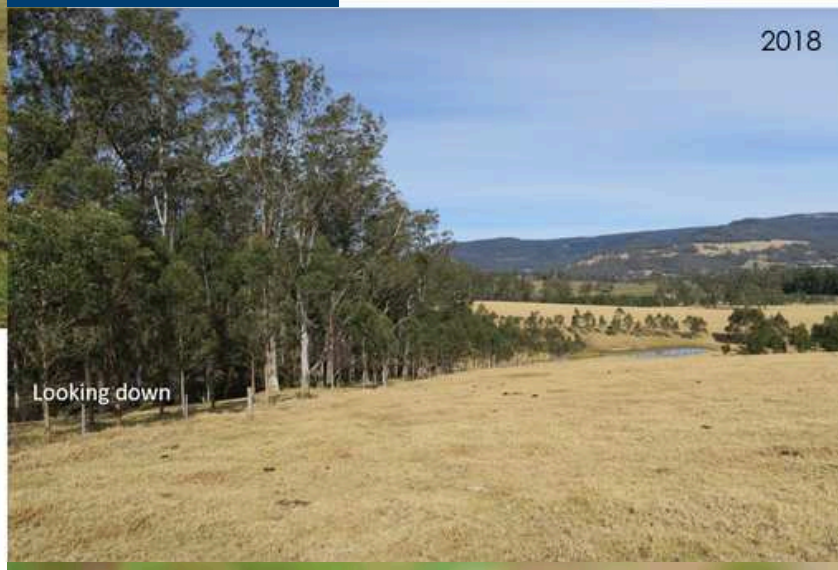
WaterNSW manages Greater Sydney's drinking water catchment area. An important focus is the agricultural and grazed landscapes spread across the major river systems, which make up more than one-third of the total land use.

In many areas, there is considerable degradation and the small water cycles on which the landscape depends are often broken or disconnected. Stock access to creeks and rivers, loss of riparian vegetation, and erosion and incision of wetlands, waterways, and floodplains have diminished the values of the landscape. This has cascading impacts for catchment health, resilience to climate extremes, drinking water quality, agricultural productivity, and the community costs of treatment.

WaterNSW has supported partnerships with landholders for many years to improve waterway and landscape health. WaterNSW is now exploring partnership opportunities with the Mulloon Institute. The Institute has a mission of equipping communities with skills to regenerate landscapes, repair broken water cycles and ensure every rain event drives improvements in landscape function and health.

The Mulloon Rehydration Initiative, is an ongoing restoration program run by the institute, and with nearly 20 years' of data from Mulloon Creek (Soils for Life, 2019), has observed significant improvements in water quality and quantity over dry and wet periods alongside improvements to soil health, agricultural productivity, and biodiversity. The initiative includes interventions focused on restoring local water cycles alongside revegetation of native species. By restoring the local hydrological cycles, the initiative is actively regenerating degraded landscapes.

Image credit: WaterNSW



Recently, the Rehydration Initiative published the projects establishment and monitoring framework (Peel et al., 2022) and has applied the principles of local water cycle restoration to varied agricultural landscapes across Australia (Mulloon Institute, 2024).

One of the initial aims of the partnership between WaterNSW and the Mulloon Institute is to improve the understanding of hydrology in waterway and landscape regeneration, and help drive innovation and scale in the practice of landscape rehydration in the Sydney catchment area. The partnership seeks to encourage communities working together and the shared benefits of improved landscape, waterway, and agricultural health.

Case Study 14

PROTECTING CATCHMENT HEALTH AND RESTORING THREATENED HABITAT

SA WATER, SOUTH AUSTRALIA

SA Water has transformed a 24 ha site, previously devoid of vegetation, into a flourishing open grassy woodland habitat. This project, located in South Australia's Mount Lofty Ranges, has introduced 82 native plant species and over 2.2 million native grasses. This habitat type is exceedingly rare in the region. The restoration effort combines trees and large shrubs with extensive areas of grasses and flowering plants, facilitating the return of woodland bird species such as the Buff-rumped Thornbill, Dusky Woodswallow, Red-browed Finch, and Yellow-tailed Black Cockatoo. The restoration was undertaken to offset vegetation removal required for a major dam safety upgrade at the nearby Kangaroo Creek Reservoir.

Image credit: Shaun Kennedy, SA Water

Outcomes from the project include:

Created critical and thriving habitat in an area with only 13% remnant vegetation and significant flora and fauna threats

Installed 70 log stacks from salvage timber to provide immediate habitat for an array of native birds and reptiles

Monitoring and evaluation attracted 50 new bird species, including 11 threatened species

SA Water exceeded the necessary biodiversity credits for the upgrade works, demonstrating their commitment to environmental stewardship.

Key to the success of the work was :

- Adopting a project management approach
- Being prepared to innovate to solve problems
- Integrating science and practice to deliver leading outcomes.

This project demonstrates that genuine biodiversity offsets can be achieved via habitat reconstruction to deliver a range of benefits.

Image credit: SA Water

Case Study 15

BUSH REGENERATION AT FOSTERS SPUR

ROUS COUNTY COUNCIL, NEW SOUTH WALES

The objective of the Fosters Spur Bush Regeneration is to establish a self-sustaining, sub-tropical rainforest that realises improved water quality, public amenity and ecological benefits. Over 10 years, the project will clear 40 ha of significant weed infestations and replace it with 50,000 native seedlings.

Restoring Fosters Spur to native rainforest forms part of Rous's Buffer Zone Improvement Program to manage water quality at the source. The buffer zone around the Rocky Creek Dam is the first barrier in protecting against water quality risks and promotes improvements in raw water quality.

Since the commencement of the project in 2021, approximately 6,000 seedlings have been planted. The completion of this latest stage brings the current size of the regeneration project to approximately 7 ha. That is 2.4 ha through planting and 4.6 ha through assisted regeneration.

2021

Stage 1-2 planting W-E

Zone 1 and 2 Excavator in action

The team's best practice approach has seen the planting first of pioneer species whose seeds are gathered from the nearby forest floor. These include Pencil Cedar, Brown Kurrajong, Red Kamala and Bleeding-Heart seedlings. These are classified as pioneer species as they are the first to return after a disturbance or a clearance on the land. Natural regeneration then takes over to create new rainforest areas that expand into the existing forest. Surrounded by conservation areas, there is confidence that birds and other animals will carry in new species so natural seed recruitment continues.

As a leader and service provider in the community, Rous County Council is setting an example of how a long-term and large-scale ecological restoration project can simultaneously improve water quality and a unique environment of great ecological value.

Images credit: Rous County Council

2021

Stage 1-2 planting E-W

2023

Stage 1-2 planting E-W

Plantings at Williamsdale offset property - Image credit: Icon Water

Case Study 16

RESTORING LAND AND ENHANCING BIODIVERSITY

ICON WATER, AUSTRALIAN CAPITAL TERRITORY

Icon Water manages a 440-ha property of which 110 ha of land is dedicated to environmental conservation and biodiversity enhancement as part of the Murrumbidgee to Googong (M2G) offset scheme. A significant feature of this area is the Box-Gum Woodland, a critically endangered ecosystem. This initiative aligns with Icon Water's broader environmental stewardship objectives, which include protecting catchment health, mitigating biodiversity loss, and collaborating with local communities, including Traditional Owners, to implement sustainable land management practices.

Icon Water is actively engaged in improving and preserving these ecologically significant areas. The landscape management efforts include maintaining vegetation cover, enhancing habitat connectivity, managing pest animals and weeds, and supporting populations of threatened and significant plant and animal species. These efforts are guided by rigorous monitoring and adaptive management programs to ensure the long-term health and resilience of these ecosystems.

Following bushfire operations plan
Image credit: Icon Water

Case Study 17

RESTORING FLOWS FOR THE PLATYPUS IN MONBULK CREEK

MELBOURNE WATER AND SOUTH EAST WATER, VICTORIA

Image credit: Rhys Coleman, Melbourne Water

Melbourne Water and South East Water, in partnership with The University of Melbourne, Yarra Ranges Council, the Victorian Government and the Australian Research Council, are implementing a Smart Water Network with real-time control to create a hybrid centralised-decentralised storage system. The Smart Water Network, which includes retrofitting three urban lakes and installing up to 300 rainwater tanks on public and private land, provides real-time controlled storage solutions. The network will be operated for multiple benefits, such as:

- Maintaining environmental flows in Monbulk Creek
- Reducing the risk of localised flooding
- Mitigating the impact of urban stormwater on the creek by releasing water from rainwater tanks before forecasted storm events
- Augmenting non-potable household water use (e.g., toilet flushing, garden watering).

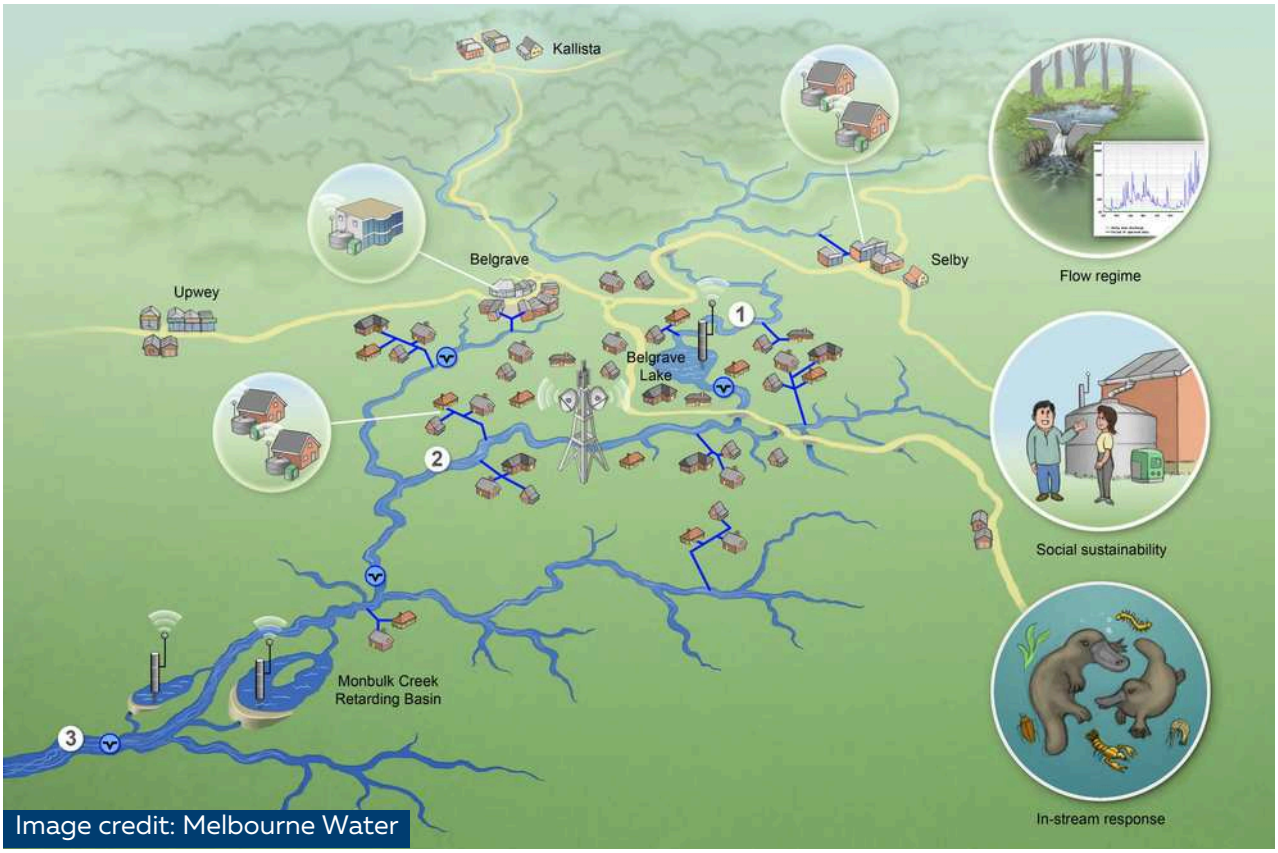


Image credit: Melbourne Water

Monbulk Creek, in the Dandenong Creek catchment, supports the last platypus populations in one of Greater Melbourne's five major catchments. Modelling predicts these populations could be lost within 50 years due to habitat drying from climate change. To address this, the Smart Water Network aims to maintain and improve Monbulk Creek's habitat, ensuring a minimum summer/autumn flow of >2 ML/day for 90% of the time and a winter flow of 5 ML/day. The approach includes retrofitting three urban lakes in the catchment, providing a storage capacity of 42.9 ML, and installing rainwater tanks for 300 households. These tanks will help to manage environmental flows and pre-storm releases to mitigate flooding.

This project serves as a proof of concept for broader applications, exploring future investigations like a feed-in tariff to reward contributions to environmental flows. It demonstrates a forward-thinking approach to urban water management, ensuring the sustainability of vital habitats while benefiting the environment and community.


Image credit: Rhys Coleman, Melbourne Water

Case Study 18

DROUGHT PROOF KOALA HABITAT
URBAN UTILITIES, QUEENSLAND

In 2018, Urban Utilities was challenged to find an alternative way to manage recycled water from its Helidon Resource Recovery Centre (RRC), following the retirement of the local farmer who had previously used all the recycled water from the plant to irrigate fodder crops. A new blue gum forest developed by Urban Utilities is now beneficially using this recycled water in a Nature Positive way.

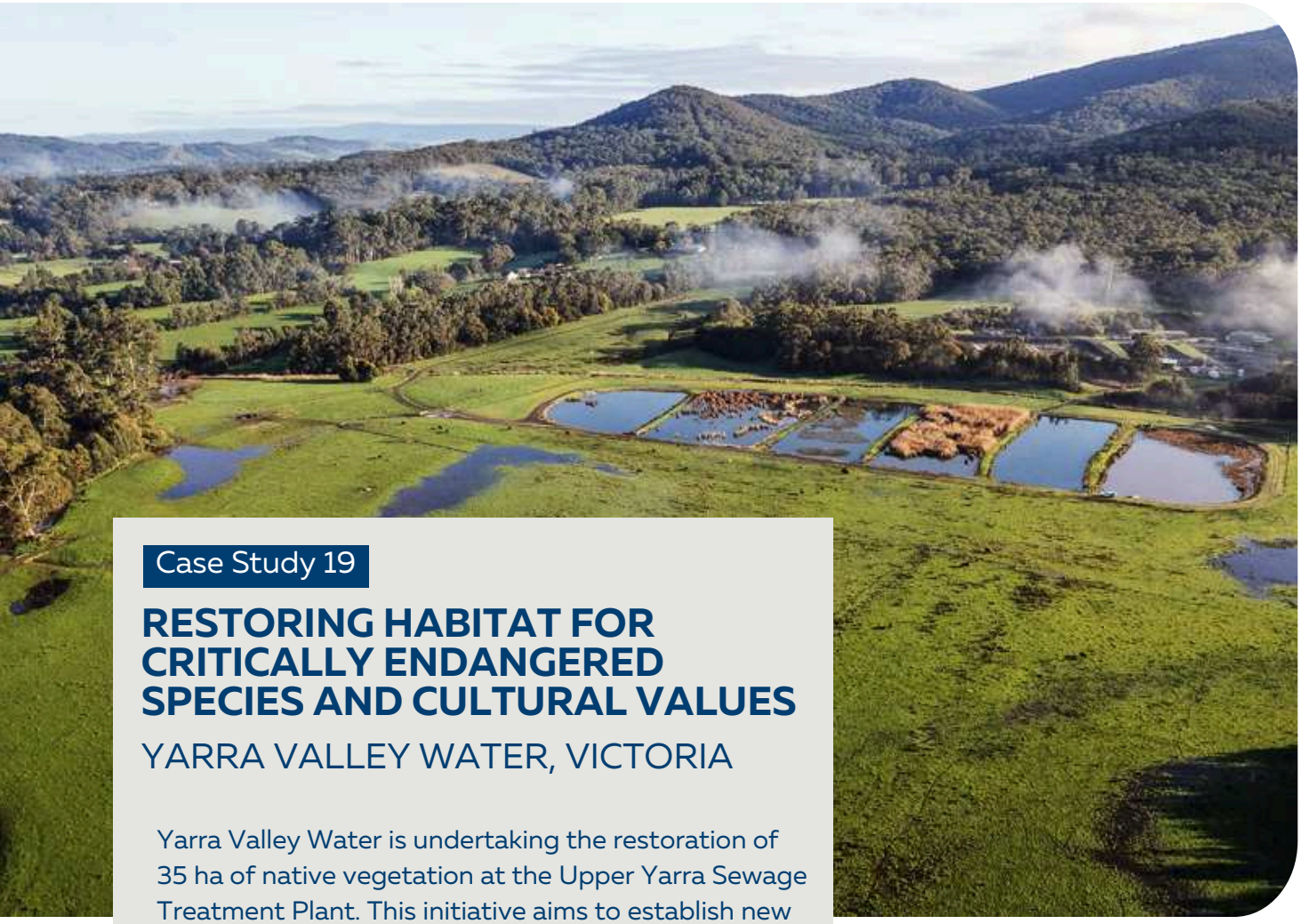
Koalas and other wildlife in the Lockyer Valley in South-East Queensland now have access to a new drought proof home. Seven ha of 2,800 native trees, planted and irrigated by Urban Utilities, has transformed low productivity farmland (adjacent to 100 ha of koala habitat) into a thriving forest ecosystem (Endangered Regional Ecosystem 12.3.3 - *Eucalyptus tereticornis* woodland on Quaternary alluvium).

Urban Utilities' recycled water irrigated agroforestry project provides several environmental benefits, including:

- sustainable recycled water use – Helidon RRC is a zero liquid discharge plant
- restoring an endangered regional ecosystem, endangered koala habitat and establishing non-juvenile koala habitat trees
- reducing greenhouse gas emissions – the forest offsets nearly all greenhouse gas emissions from the Helidon RRC - supporting Urban Utilities' commitment to reduce greenhouse emissions.

Urban Utilities is managing the irrigated blue gum forest in partnership with a Lockyer Valley business, which provides irrigation management and maintenance services through a 'local buy' arrangement. Urban Utilities is proud to have worked with the local council, businesses and the community to develop this Nature Positive natural asset for one of Australia's most adored animals, while generating multiple benefits for the region.

Image credit: Urban Utilities



Case Study 19

RESTORING HABITAT FOR CRITICALLY ENDANGERED SPECIES AND CULTURAL VALUES

YARRA VALLEY WATER, VICTORIA

Yarra Valley Water is undertaking the restoration of 35 ha of native vegetation at the Upper Yarra Sewage Treatment Plant. This initiative aims to establish new habitats for the critically endangered Helmeted Honeyeater and lowland Leadbeater's Possum, as well as restore culturally significant environmental values. Currently, fewer than 40 lowland Leadbeater's Possums and 200 Helmeted Honeyeaters remain in the wild (Harley, 2023). The primary obstacle to their recovery is the scarcity of high-quality swamp forest, historically cleared for agriculture (Greet et al., 2021). The project involves partnerships with Zoos Victoria, Greening Australia, Wurundjeri Woi wurrung Traditional Owners, Melbourne Water, Jacobs, and Spiire. The restoration effort supports habitats for critically endangered species by restoring floodplain hydrology and high-quality swamp forest. By partnering with Traditional Custodians, the project aims to re-establish Aboriginal cultural values, protect the Birrarung (Yarra River), and restore Manna Gum within the habitat restoration area.

Image credit: Yarra Valley Water

This partnership exemplifies how organisations can contribute to biodiversity restoration and collaborate with Traditional Custodians to integrate lost cultural values into restoration efforts, highlighting the intrinsic connection between ecological health and cultural heritage.

Case Study 20

REEF GUARDIAN COUNCILS

CAIRNS REGIONAL COUNCIL, QUEENSLAND

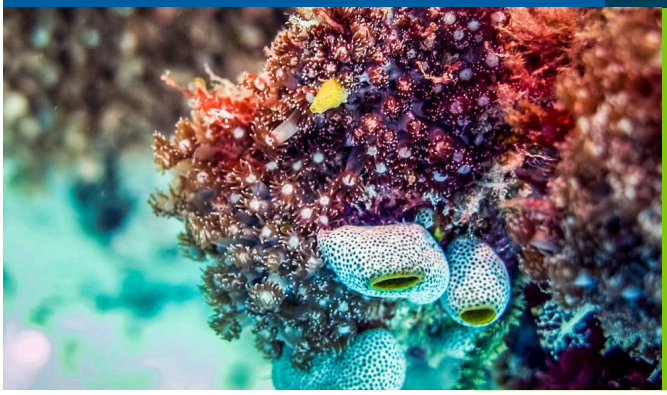
Cairns Regional Council provides water supply, wastewater and stormwater services to over 175,000 people in Far North Queensland.

Located within the Wet Tropics region of the Great Barrier Reef catchment, Cairns is situated between the two remarkable world heritage areas, the Great Barrier Reef and the Wet Tropics Rainforest. The Reef has unique environmental, biodiversity and heritage value – with the largest collection of coral reefs.

The Great Barrier Reef faces a range of threats due to the impacts of climate change, coastal development and various sources of pollution. The cumulative impact of these threats has the potential to further weaken the resilience of the Reef and is likely to affect its ability to recover from severe disturbances, such as major coral bleaching events.

450
types of coral

1,625
species of fish



6,000
types of molluscs

Cairns Regional Council is one of 19 Reef Guardian Councils supported by the Great Barrier Reef Marine Park Authority. Cairns Regional Council protects the Reef across a range of initiatives including:

Clean Creeks is a partnership between Cairns Regional Council and the regions Indigenous Land and Sea Ranger organisations to reduce the amount of litter entering the reef lagoon from the Cairns region through a combination of:

- Riparian and in-stream litter clean-ups.
- Litter data collection and source reduction opportunities.
- Community education and engagement about litter impacts and responsible disposal options.
- Nature-based solutions for litter prevention, interception and habitat restoration.

Conservation Partnerships is a multi-year initiative to revegetate bushland and riparian corridors in the Cairns region for water quality and habitat connectivity outcomes, helping to restore ecosystem services in collaboration with local conservation groups, land and sea ranger groups and natural resource management organisations. Key activities include:

- native seedling propagation
- revegetation and weed management
- community engagement and education
- supporting the conservation sector's capacity to rehabilitate sites within the Reef catchment.

Reducing emissions - With the activation of Council's renewable electricity supply agreement with CleanCo QLD from 1 July 2024, comes an opportunity to reduce fossil fuel consumption further.

- From 1 July 2024, Council's 80 largest energy consuming facilities will run on 100% renewable energy. This equates to more than 75% of Councils total energy use coming from renewable sources, through a combination of Council owned solar and the renewable electricity supply agreement with CleanCo QLD.
- The addition of battery electric vehicles and charging infrastructure to Cairns Regional Councils passenger vehicle fleet is part of the pathway to net zero emissions. Despite being a gateway to the Great Barrier Reef, Cairns' uptake of electric vehicles lags behind the national average. This project will build awareness of their benefits, provide training and drive down emissions, contributing to efforts which reduce climate change impacts on the Reef.

Source: Cairns Regional Council and Great Barrier Reef Marine Park Authority

Case Study 21

THRIVE 2035 NET CLEARING OBJECTIVE

WATER CORPORATION, WESTERN AUSTRALIA

Water Corporation views net clearing as a lead indicator for positive land and water impacts. As part of the Corporation's Thrive 2035 Strategy, at a minimum the Corporation revegetates the same area of vegetation cleared in the process of delivering water and wastewater services. This objective is a direct contribution to delivering positive nature conservation outcomes.

The Lake Bryde Landscape Recovery Catchment Revegetation Program is one example of where this has been applied. In collaboration with the Department of Biodiversity, Conservation and Attractions (DBCA) the Corporation has funded over 100 ha of revegetation work on the western boundary of Lakelands Nature Reserve in the Lake Bryde catchment since July 2021. In July 2024, the Corporation environment team members joined DBCA to undertake approximately 20 ha of the planting.

After revegetation efforts

The Corporation also sponsors DBCA to undertake revegetation work at Gnangara Forest in Perth's north. The revegetation work is within areas of a former pine plantation. The revegetation work provides overstorey vegetation providing protection for a variety of bird species including endangered black cockatoo species. Water Corporation has sponsored planting of native seedlings at Gnangara Forest since July 2021, funding approximately 30 ha for each financial year.

Image credit: Water Corporation

Seedlings ready for planting at Gnangara Forest

Before revegetation efforts

Systems transition and partnerships

The modern challenge for water utilities is not merely to manage water supply and sanitation but to contribute meaningfully to the sustainability and resilience of ecosystems. To achieve the Nature Positive outcomes, water utilities must undergo a systemic transition from traditional linear approaches to integrated, circular models that emphasise resource recovery and ecosystem services. As part of systems transition, the value of partnerships is paramount in advocating for and influencing ambitious policies essential for achieving Nature Positive outcomes at scale.

Water utilities are regulated entities and play a critical role in collaborating with policymakers to establish supportive regulatory landscapes at local, national,and international levels. Regulation sets the expectation for effective processes and practices, while creating accountability and certainty, and reducing the costs and risks associated with transitioning to a net zero, circular, Nature Positive world.

Partnerships, within the water sector and with external stakeholders, are crucial to transformation and delivering Nature Positive outcomes.

For the water sector, the transition to a circular economy model integrates the recovery and reuse of water, nutrients, and energy. This approach not only conserves resources but also enhances the resilience of water systems against climate change and other disruptions.

To facilitate the circular, net zero and Nature Positive transition, there are several key enablers:

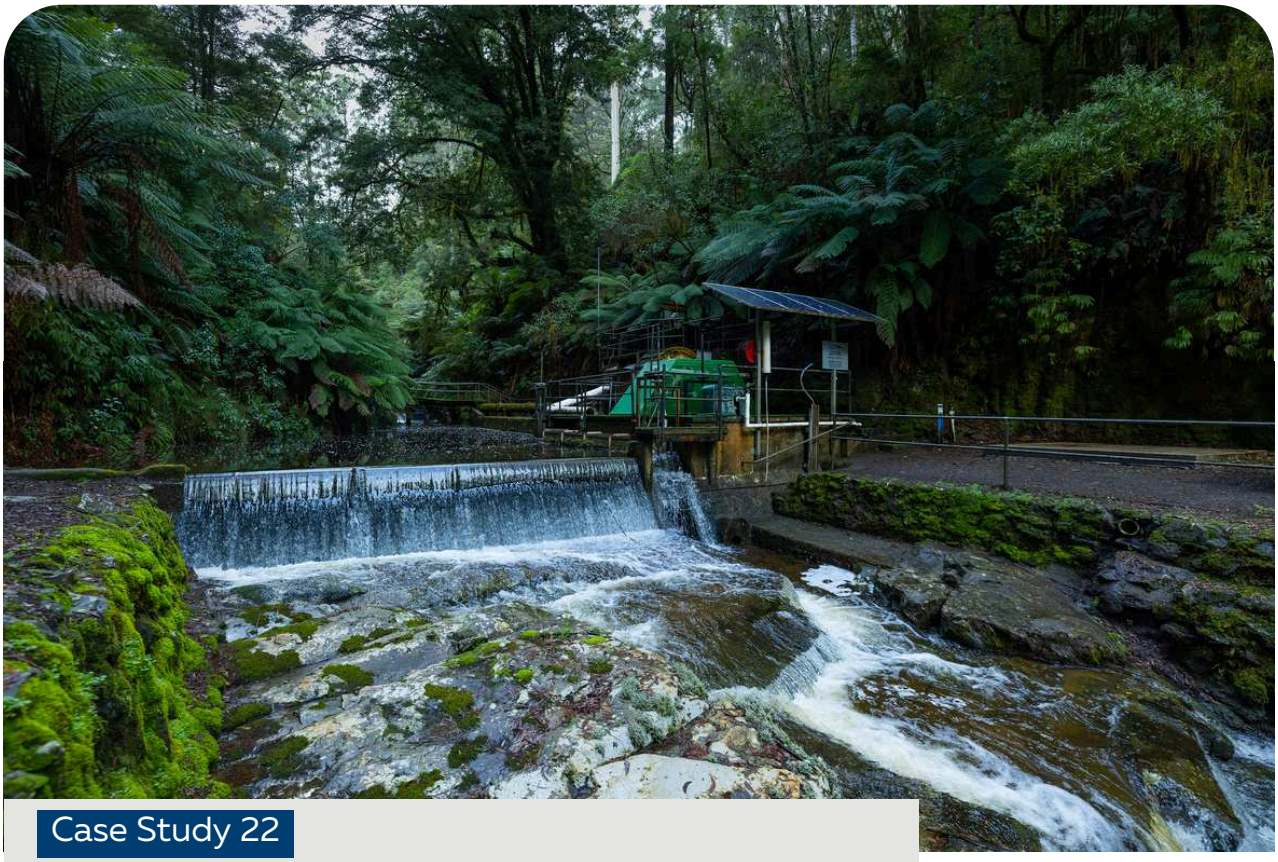
Leadership and vision: Strong leadership at the board and executive levels is essential. Leaders must articulate a clear vision, align company purposes with sustainability goals, and report on environmental and social performance.

Collaborative planning: Integrated systems thinking is necessary to combine various urban services, including land use, water, wastewater, stormwater, energy, and waste. Identifying and engaging all relevant stakeholders — from internal departments to external government bodies, local communities and First Nations peoples — is a foundational step.

Economic evaluation frameworks: Developing frameworks that incorporate the broader costs and benefits of circular, net zero and Nature Positive approaches can support business cases. Frameworks should account for externalities like greenhouse gas emissions, nutrient pollution and natural capital. Frameworks should also provide for post-implementation benefits assessment and analysis.

Regulatory support: Policies and regulations must evolve to support circular, net zero and Nature Positive practices. Water utilities should advocate for state and local governments to incentivise resource recovery and clarify funding and delivery responsibilities for projects which contribute to the outcomes of circularity, net zero and Nature Positive.

As the work of the water sector extends beyond core services, scaling up Nature Positive actions requires engaging in multi-stakeholder initiatives that address the interconnected nature of water systems. Initiatives like Stockholm International Water Institute's Action Platform for Source-to-Sea Management (SIWI, 2024) highlight the importance of managing upstream activities to benefit downstream ecosystems, ensuring coherence in policies and practices across sectors and geographies. Water utilities are increasingly developing a systems and place-based approach to the circular economy transition.



Case Study 22

CIRCULAR ECONOMY ROADMAP AND TOOLKIT

WANNON WATER, VICTORIA

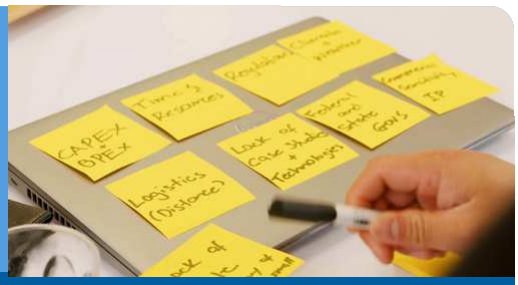
Wannon Water embarked on an ambitious project to integrate circular economy principles into its operations. They intentionally took a systems-, place-based and design thinking approach to guide the project and work within their wider regional network enabling collaboration across the value and supply chain. The aim was to transition the organisation and the region towards sustainable resource management by focusing on knowledge building, understanding, and collective impact. The project was catalysed by strategic seed funding from the Victorian Department of Energy, Environment and Climate Action, designed to accelerate industry innovation, reduce barriers, and build investment certainty in circular economy opportunities.

The initial challenge was determining where to begin, a common issue among Victorian water authorities and local councils. A survey in March 2023 revealed that most participants were at the early stages of their circular economy journey, highlighting the need for a comprehensive roadmap.

Image credit: Wannon Water

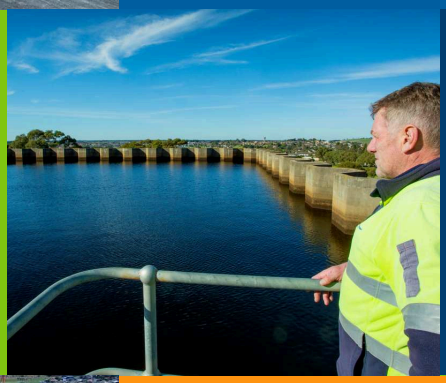
The Circular Economy Roadmap and Toolkit set a clear strategic direction, endorsed by executive management, ensuring consistent expectations across the organisation. Key measurable impacts to date include:

Inclusion of circular economy principles in Wannon Water's corporate plan and strategic documents



Successful executive buy-in and support for circular economy activities

Completion of a life cycle mapping case study for water meters



Feasibility assessment for alum sludge recovery

Implementation of a pump snoring trial across applicable sites.

This award-winning initiative framed Wannon Water's circular economy vision within the broader regional context, aligning priorities with government, community, and industry. The project advanced innovation practice, promoting a trial-and-error approach to problem-solving and encouraging collaboration across functions. The project's enduring legacy lies in its role as a catalyst for regional collaboration and collective action. By convening diverse stakeholders and fostering cross-sectoral partnerships, Wannon Water has laid foundations for those ready to take up the challenge of a transition to a circular economy (Wannon Water, 2023).

Images credit: Wannon Water

Sustainability or 'green bonds' are a financial instrument geared towards investment in sustainability projects and represents a shift of investor sentiment towards projects with 'green' credentials and nature-based solutions. Globally there is huge appetite from investors for green bonds and demand currently exceeds supply in this US$2.8 trillion market (CBI, 2023).

There are two main types of green bonds:

- Proceeds bonds, as the name suggests, fund projects with dedicated environmental and/or social benefits
- Sustainability-linked bonds do not finance particular projects, and instead finance the general functioning of an issuer that has explicit sustainability targets that are linked to the financing conditions of the bond.

The use of green bonds can promote the development of Nature Positive initiatives.

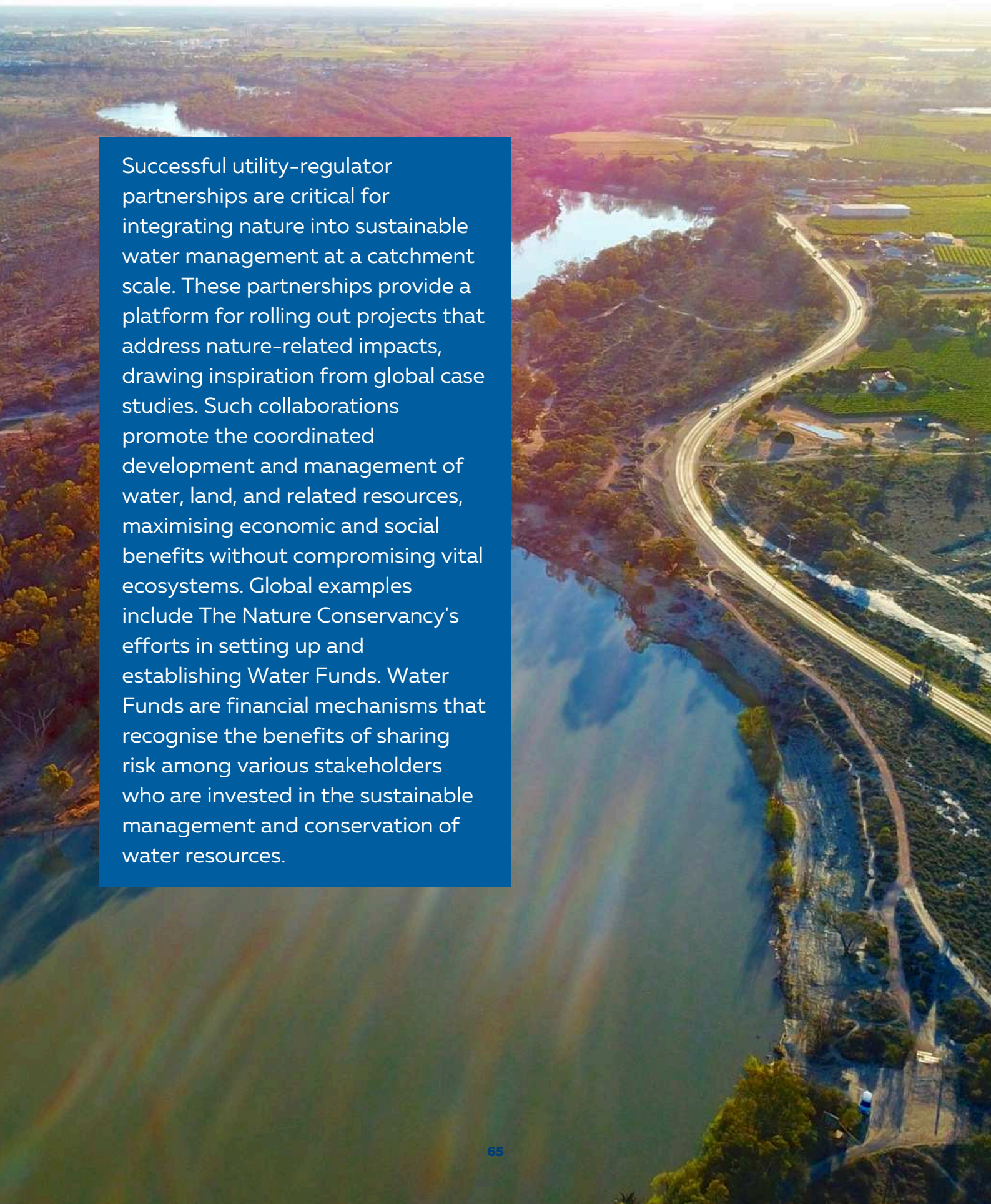
Case Study 23

GREENING USING SUSTAINABILITY BONDS

NEW SOUTH WALES GOVERNMENT

The NSW Sustainability Bond Programme, established in 2018, enables the NSW Government to issue green, social, and sustainability bonds to finance projects that deliver significant environmental and social benefits. This program supports the state's efforts to meet the United Nations Sustainable Development Goals and is overseen by TCorp and NSW Treasury's Office of Social Impact Investment.

Key projects Sydney Water has funded through the programme include the Lower South Creek Treatment Program, Green Square Trunk Stormwater Improvement, and various waterway naturalisation and stormwater improvement projects. Collectively these projects amount to $460 million invested. These projects contribute to sustainable water and wastewater management, improving environmental outcomes and supporting the circular economy.

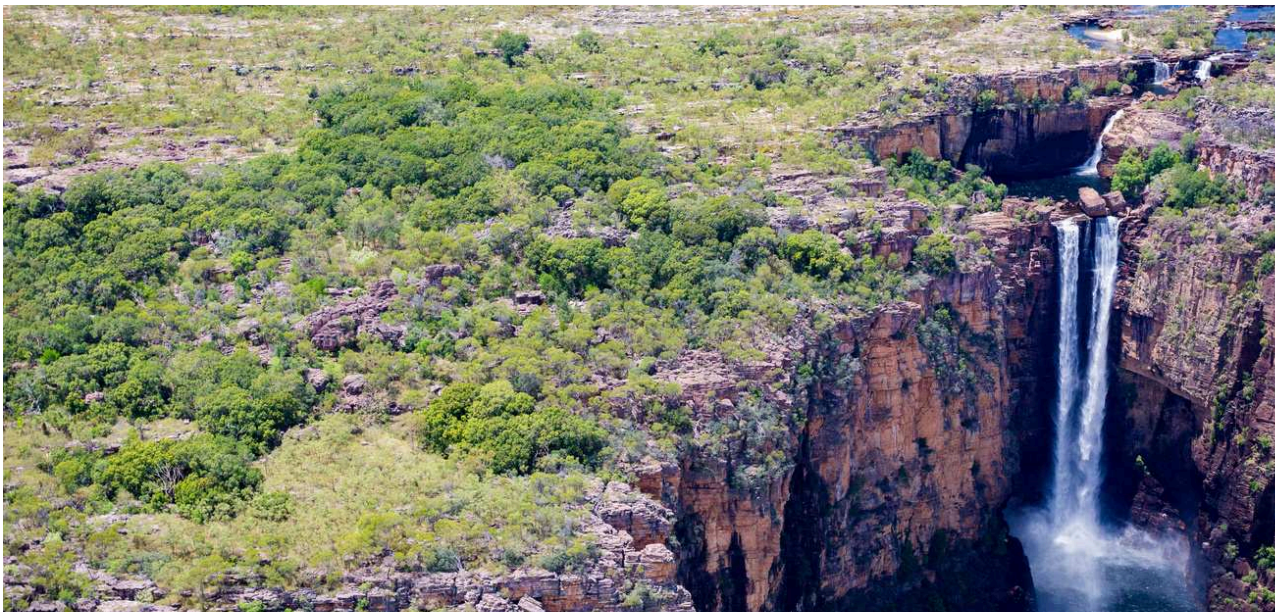


Successful utility-regulator partnerships are critical for integrating nature into sustainable water management at a catchment scale. These partnerships provide a platform for rolling out projects that address nature-related impacts, drawing inspiration from global case studies. Such collaborations promote the coordinated development and management of water, land, and related resources, maximising economic and social benefits without compromising vital ecosystems. Global examples include The Nature Conservancy's efforts in setting up and establishing Water Funds. Water Funds are financial mechanisms that recognise the benefits of sharing risk among various stakeholders who are invested in the sustainable management and conservation of water resources.

Case Study 24

ESTABLISHING WATER FUNDS AS COLLECTIVE ACTION STRUCTURES TO INVESTMENT FOR IMPACT

THE NATURE CONSERVANCY



The Nature Conservancy has designed and established over sixty Water Funds as financial and governance structures designed to pool resources from various stakeholders to invest in and deliver sustainable catchment management and conservation (The Nature Conservancy, 2024). By leveraging collective action, Water Funds play a crucial role in enhancing water quality, securing water supply, and fostering ecological health. Traditional infrastructure solutions, while necessary, often prove insufficient, economically unfeasible, or too narrowly focused to address the multifaceted challenge of water security. Water Funds compliment traditional infrastructure by focusing on the conservation and restoration of natural ecosystems that provide vital water-related and other ecosystem services.

Water Funds recognise the interconnectedness of stakeholders within a catchment. By pooling resources, sharing risks, and establishing common and legitimised objectives, these programs foster collective action among diverse entities, including water utilities, agricultural sectors, industrial users, local and regional government, and local communities. This collaborative approach ensures that all beneficiaries contribute to and benefit from the conservation efforts, creating a sense of shared responsibility and mutual gain.

The governance structure of Water Funds typically includes a board of directors or a steering committee representing all key stakeholders. This ensures inclusive decision-making and accountability. Regular meetings, transparent financial management, and clear communication channels are established to maintain stakeholder engagement and trust.

Each Water Fund is unique due to its focus on local challenges; however, in many successful Water Funds, water utilities play key roles. For example:

The Portland Water District (USA) provides match funding towards conservation easements and land purchase deals by local land trusts, funds extensive water quality monitoring, and takes active steps to conserve its own land in the watershed.

The City of Cape Town (RSA) funds the long-term maintenance of areas that have been cleared of invasive eucalyptus trees, helping restore the local ecosystem while also improving water supply to the region's dams at one-tenth the cost of grey infrastructure alternatives like desalination.

The Pajaro Valley Water Management Agency (USA) provides direct water bill discounts to agricultural landowners based on how much measured infiltration they provide through recharge basins, to support sustainable groundwater use.

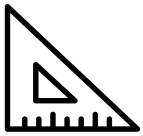
The Milwaukee Metropolitan Sewer District (USA) hosts, manages and delivers a watershed management program focused on reducing flooding.

And finally, in the case of the recently launched **Norfolk Water Fund, Anglian Water (UK)** plays a key role as a seed funder, decision-maker, implementation-designer, and fundraiser.

REPORTING AND MEASURING NATURE POSITIVE

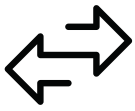
To enable business action on nature-related risks, there is global consensus to build on existing climate reporting frameworks. The Taskforce on Nature-Related Financial Disclosures (TNFD) has developed a risk management and disclosure framework, including recommendations for organisations to assess, report and act on their nature-related dependencies, impacts, risks and opportunities (TNFD, 2023). The International Sustainability Standards Board has commenced work to consider the TNFD recommendations and the key components of Nature Positive reporting (TNFD, 2024).

Key components of Nature Positive reporting



Measured baseline: A clear, agreed baseline year is essential for reporting outcomes. The Nature Positive community should reach a consensus on a static baseline, ensuring that the absolute net positive impact on nature is achieved.

Clearly defined targets: Externally disclosed, SMART nature-related targets are necessary to determine required metrics and indicators for monitoring and to operationalise nature across an organisation. These targets should address material issues posing the greatest risk to nature and be reported publicly.



Addressing trade-offs: Trade-offs arise when favouring one ecosystem service or stakeholder preference over another. Clear stakeholder engagement is essential to understand local community challenges. In Australia, partnerships with Traditional Custodians are crucial, including cultural values in benefit assessments where appropriate.

Progress to targets: A 'Nature Positive contributions or accounting registry' can help businesses publicly report on their progress. Public platforms must avoid 'double-counting' and focus on credible outcomes rather than processes.

Actions taken: Reporting should include metrics, data collection, and disclosed results. Immediate action and measurable outcomes are needed to halt and reverse nature loss within the short timeframe available. Reporting on impacts, mitigation actions, and further steps taken towards Nature Positive goals is crucial for sector-level learning and momentum.

Challenges faced: Disclosure should focus on assumptions, actions undertaken, outcomes achieved, and barriers faced, particularly for businesses with extensive supply chains. This approach will help identify sector-based challenges and drive transformative change.

While the International Sustainability Standards Board considers the TNFD recommendations, there are other frameworks available for reporting on Nature Positive:

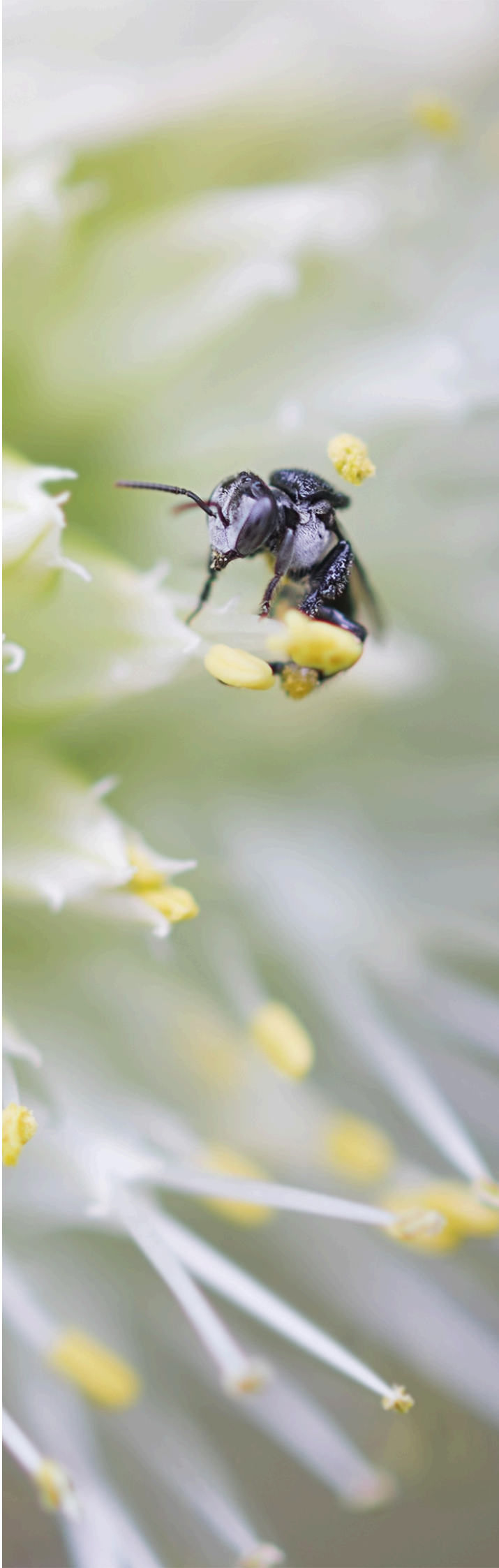
- **Sector-specific guidance:** Business for Nature offers sector guidance with priority actions for the water utilities and services sector (2023).
- **The LEAP approach:** Prepares organisations for disclosures, identifying and assessing nature-related issues (TNFD, 2023).
- **IUCN Global Standard for Nature-Based Solutions:** A framework for verifying, designing, and scaling up Nature-based Solutions (IUCN, 2020).
- **Accountability for Nature:** A comprehensive summary of nature-related frameworks, assessing their uses for different sectors (Tin et al., 2024).

Support tools for identifying and measuring benefits

Recent guides and tools that support the implementation and measurement of Nature Positive are predominantly based on Nature-based Solutions (NbS) and resource management projects. They include:

- **Benefit Accounting of Nature-Based Solutions for Watersheds Guide V2:** Expands on Nature-based Solutions activities across habitats, suggesting updated methods for estimating or measuring Nature-based Solutions benefits and introducing tools for valuation, applicable to freshwater Nature-based Solutions (Brill et al., 2023).
- **IWA Decision Support Tool:** Provides a comprehensive overview of NbS applications in domestic wastewater management, highlighting benefits and technical information to support decision-making (Acuna et al., 2023).
- **The Natural Capital Handbook (CSIRO)**: Provides practical guidance for corporate natural capital accounting, impact, dependency, and risk/opportunity assessment and reporting (Smith et al., 2023).
- **Ecological Knowledge System for the Nature Repair Market:** Supports habitat condition assessment and biodiversity co-benefits calculation (DCCEEW, 2024).
- **Healthy Country, Healthy People project (Australia):** Explores the relationship between landscape health and Indigenous health, demonstrating benefits from investment in Indigenous natural and cultural resource management (Burgess et al., 2007).

By leveraging these tools and frameworks, water utilities can develop robust strategies for addressing nature-related risks, seizing opportunities to restore and regenerate nature, and achieving Nature Positive outcomes.



Nature Positive Plan for Australia

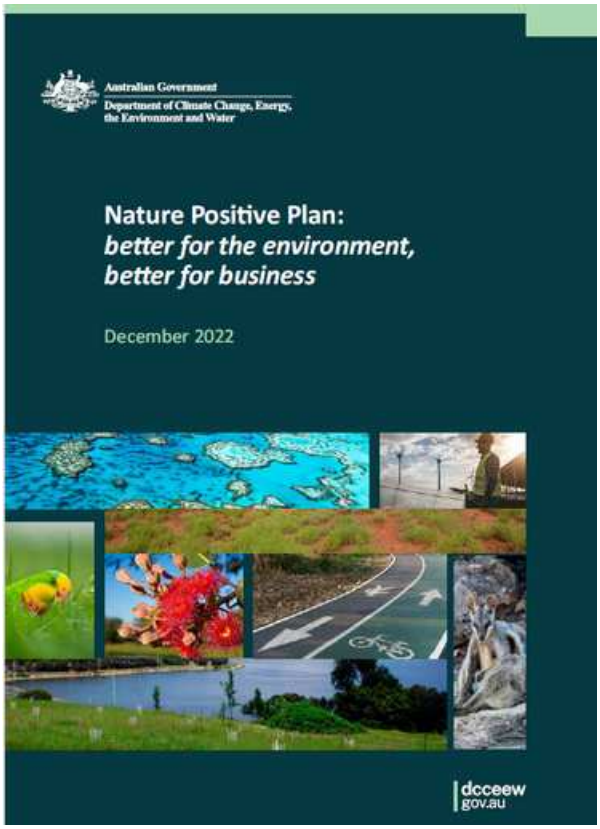


Image credit: DCCEEW

Australia is grappling with a rapid and sustained decline in the quality of its natural environment, as underscored by the State of the Environment Report 2021. This deterioration is compounded by the pressures of climate change, habitat loss, invasive species, pollution, and resource extraction. A recent independent review found that Australia's environmental law was not working for the environment, business or the community.

Australia's Nature Positive Plan intends to reform Australia's environmental laws and better protect, restore and manage Australia's unique environment. The Plan also supports Australia's international biodiversity commitments by proposing a wide range of actions aimed at reversing biodiversity loss, while improving efficiency and accountability.

The Plan is based on three principles:

1. Delivering better environmental protection and laws that are Nature Positive.
2. Speeding up decisions and making it easier for companies to do the right thing.
3. Restoring integrity and trust to systems and environmental laws.

1 **Better environment and heritage outcomes**

Establishing National Environmental Standards

Partnerships with First Nations to improve environmental management and protect cultural heritage

Improve the national environmental law's coverage of climate, water and nuclear actions

2 **Faster, better decision-making and clear priorities**

Accreditation arrangements based on National Environmental Standards

Regional plans to guide sustainable development and environmental restoration

Reform environmental offset arrangements

Establish a nature repair market

Improve and streamline processes

3 **Accountability and trust**

Establish an independent Environment Protection Agency

Establish and independent environmental information office to provide access to high-quality environmental information

Traditional Owners will have more control over Commonwealth National Parks

Collaboration across the Australia, state and territory governments

SUPPORTING THE TRANSITION TO NATURE POSITIVE

Water is inherently dependent on nature. In the coming years we will witness an increasing demand for tangible actions that deliver benefits for people, nature, and climate. The water sector has an opportunity to make a real impact by supporting the transition to Nature Positive.

Water sector actions

As demonstrated by the focus areas for the water sector to support Nature Positive, the sector has the capability, expertise and commits to achieving Nature Positive outcomes by:

Strengthening economic and environmental resilience through smarter and better use of water, infrastructure, and holistic delivery of Nature Positive outcomes.

Conserving water by reducing water loss in our networks and encouraging our customers to value efficient and effective water use.

Supporting healthy waterways to restore and regenerate ecological and community values.

Identifying and implementing opportunities to finance, implement and scale Nature Positive initiatives.

Implement circular economy principles in managing resources including water, waste, energy and natural capital, to foster the transition to a more circular future.

Leveraging our unique advantage in water management to improve climate adaptation and urban liveability through green, cool and healthy environments which enhance nature in urban environments.

Engaging with customers and partner with communities and other sectors to build understanding of the trade-offs and cascading risks arising from our interdependencies, to achieve a balance between climate change costs and outcomes, including the needs of future generations.

Building and maintaining relationships with nature conservation organisations to collaborate on initatives.

Applying a partnership and stewardship approach with First Nations peoples to our shared challenges in water resource management.

Government action

Integrate Nature Positive outcomes into the new National Water Agreement
The new National Water Agreement will address the water challenges of today and the future. Integrating Australia's ambition for Nature Positive, as well as the circular economy and net zero, into the new National Water Agreement, will enable the water sector to support healthy environments and communities.

Develop detailed national environmental standards
Establish and share comprehensive standards related to freshwater quality, ecosystem health, and sustainable water use that directly impact the water sector. This ensures alignment with national environmental objectives and enhances the health of Australia's waterways and habitats.

Create sector-specific guidelines
Under the oversight of the to-be-established federal environmental protection agency, develop tailored guidelines addressing unique challenges in water management. This includes resource recovery, water recycling, and infrastructure development, ensuring effective and sustainable water management practices.

Enhance data sharing and protection mechanisms
Establish structured data-sharing mechanisms between the to-be-established federal environmental protection agency, Environment Information Australia, the water sector and other related agencies (e.g. the Bureau of Meteorology). This facilitates evidence-based decision-making and innovation, leveraging publicly-accessible environmental data for improved water quality monitoring and climate adaptation strategies.

Integrate water resource management in regional plans
Include explicit provisions for integrating water resource management and infrastructure development into regional planning processes. This supports sustainable development and environmental restoration, contributing to Nature Positive outcomes.

Strengthen partnerships and participation with First Nations communities
Enhance engagement and support the formation of partnerships with First Nations communities to incorporate Indigenous knowledge in water and land management practices. This collaboration supports the active integration of cultural and ecological objectives, enriching environmental strategies.

Support and better enable restoration actions
Provide clear methodologies and criteria for calculating restoration contributions. This ensures transparency and predictability for the water sector, enabling effective habitat restoration and integrated environmental management practices.

Integrate climate change and circular strategies with nature
Incorporate specific climate change adaptation and mitigation strategies into the legal framework of the water and environmental reforms and implementation. There is significant potential to drive more effective and efficient outcomes through benefit and value stacking. The reform and implementation must recognise the water sector's role in resilience against climate impacts as essential for achieving environmental restoration.

Expand protected areas through promoting sustainable land management
Recognise, expand and protect areas of high biodiversity value, focusing on the management and restoration of land adjacent to and connecting priority areas. This supports the protection of aquatic ecosystems and aligns with biodiversity goals.

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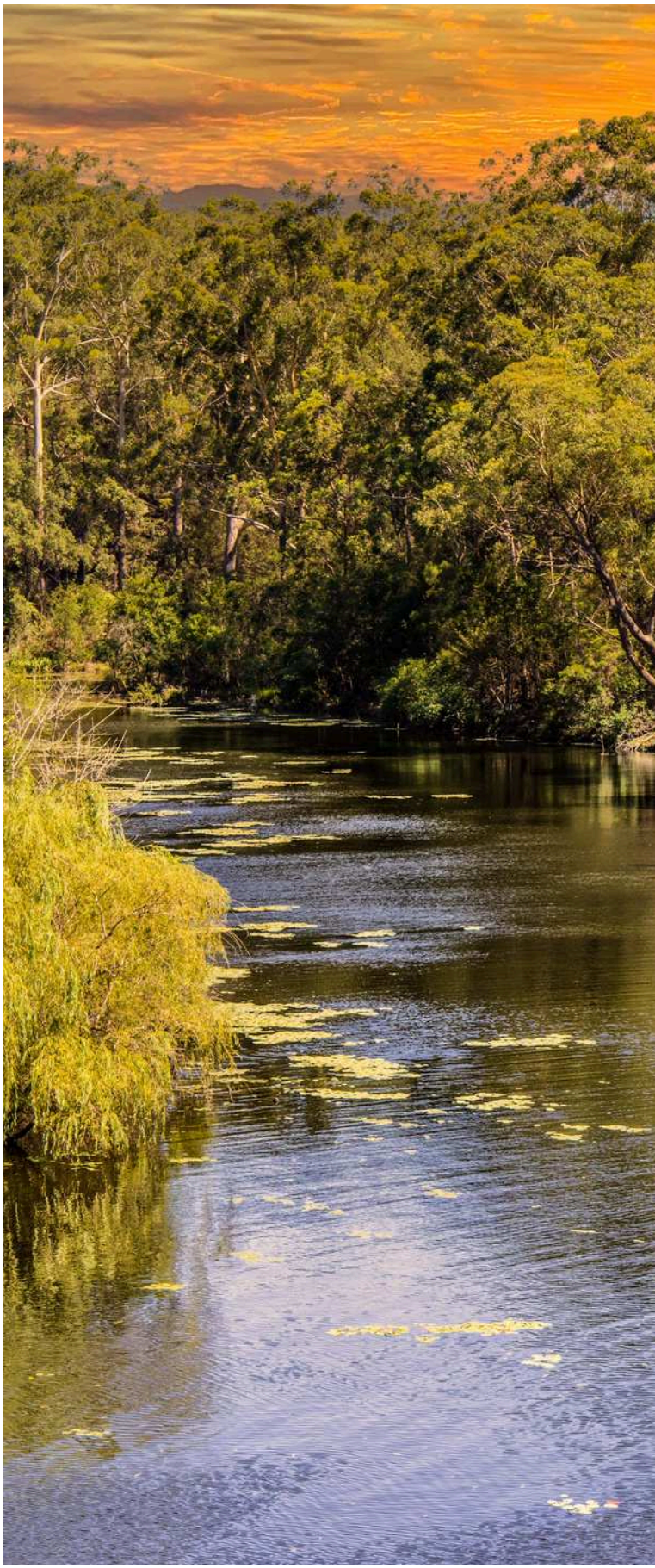

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