

2022

# eMISSION POSSIBLE PLAN

Our pathway to net  
zero emissions





## TRANSITIONING TO NET ZERO

Climate has always been a factor in Icon Water's planning.

This is a summary of our eMission Possible Plan - our pathway to net zero emissions for mitigating climate change.

Water is intrinsic to life, and as such Icon Water has an important role to play in managing and protecting the region's water supply. With the world on track to reach upwards of 3°C warming by 2100 if global commitments are not strengthened, the impacts of climate change pose a very real threat to our environment and to the essential services we provide. We are committed to taking action to improve sustainability for our environment, leaving a positive legacy for the future. This is a critical decade for the environment, and an emergency we cannot ignore.

This plan:

- Complements our Climate Change Adaptation Plan released in 2020, which strengthens our resilience to the climate emergency we face
- Supports our commitment to the United Nations Sustainable Development Goals
- Outlines our involvement in the United Nations Race to Net Zero campaign.



**Ray Hezkial, Managing Director, Icon Water**

*"As a collective, we have an obligation to future generations and ourselves as custodians of one of our planet's natural resources, and I believe our legacy as an industry will ultimately be measured by our sense of urgency in protecting it."*

# KEY ELEMENTS OF OUR PLAN

## 1. Our commitment to net zero

We are committed to achieving net zero emissions by 2045, with interim targets every five years to ensure we make consistent progress to our target.

## 2. What is included

We have a focus on eliminating our scope 1 and scope 2 emissions as a priority, adding scope 3 emissions when data availability allows us to do so.

## 3. What we are already doing

We have already halved our greenhouse gas emissions since 1990 levels mainly through hydro and solar installations, energy efficiency initiatives and ACT achieving 100% renewable electricity.

## 4. Our emissions profile

Our emissions represented a little over 1% of the ACT's total emissions in 2021. A significant proportion of our emissions come from our wastewater treatment process with nitrous oxide and methane emissions a key challenge for the water industry.

## 5. Our approach

We have taken a four step values-based approach to net zero considering technical feasibility, operational suitability and cost of the carbon abatement options available to us. This pathway may change as technologies emerge and mature over time.

## 6. Our pathway to net zero

We intend to reach net zero through a range of decarbonising initiatives in accordance with the carbon hierarchy. Addressing fugitive emissions from our wastewater treatment, greening our NSW electricity use, switching to zero emission vehicles and sequestering carbon for our residual emissions only.

## 7. Next steps

We will take action now to eliminate our emissions through fully-costed options, collaboration with key partners, delivery of innovative trials and continual focus on providing high quality services to our customers.

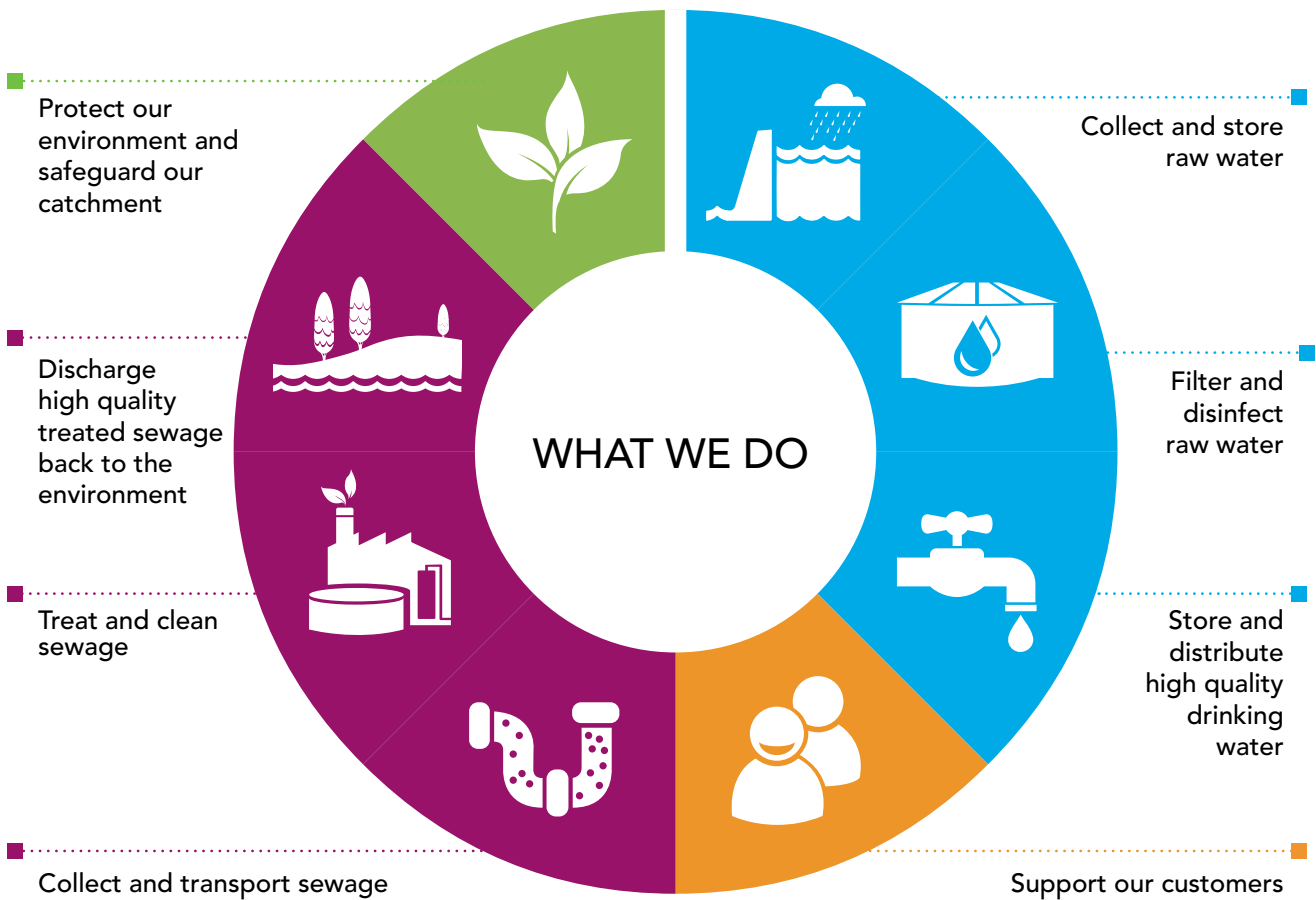
### Indicative timeline of activities











# OUR BUSINESS

As the ACT's supplier of essential water and sewerage services we operate the region's network of dams, water treatment plants, wastewater treatment plants and water and sewage pumping stations. Therefore, we have a responsibility to ensure what we do protects our community and our environment.

We recognise that by seeking and investing in low or zero carbon solutions over time, we can help drive market changes, minimise exposure to carbon price signals, improve our climate change resilience and deliver sustainable value to our customers, consistent with their expectations.




# OUR ASSETS

							
278 GL	3,400km	25	2	50	3,400km	27	4
Combined dam capacity	Network of water pipes	Water pumping stations	Water treatment plants	Reservoirs	Network of sewer pipes	Sewage pumping stations	Wastewater treatment plants

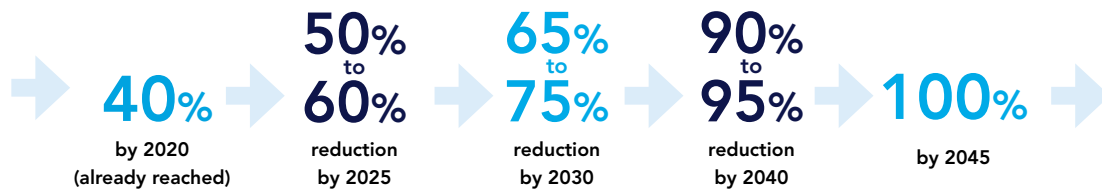
# OUR COMMITMENT TO NET ZERO

This plan highlights our commitment to achieve net zero emissions by 2045 based on 1990 emission levels. This aligns with the ACT Government target within the ACT Climate Change Strategy 2019-2025, global efforts to limit the threshold to a 2°C world by 2100 and customer sentiment.

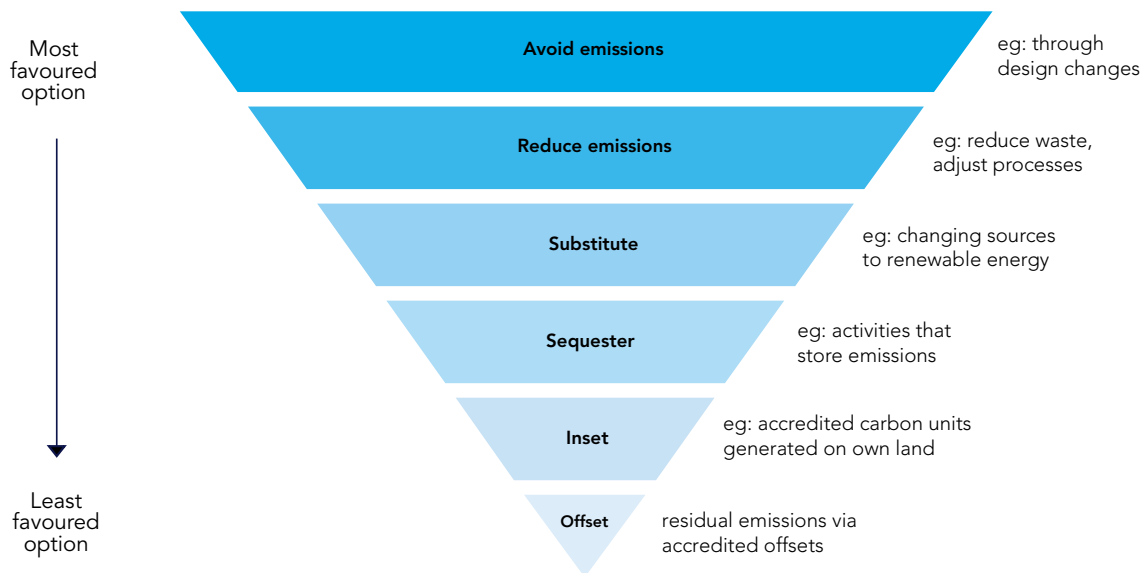


There is community support for accelerating to net zero greenhouse gas emissions and achieving **greater environmental sustainability** while limiting impacts on customer prices.

We align with the interim targets of:



We will prioritise the reduction of emissions and only use insets and offsets for residual emissions that are not able to be eliminated, in accordance with the carbon hierarchy.



Every five years, we will review and report on our progress towards our net zero goal and look for opportunities to speed up our transition if that is feasible. We will review our actions on an annual basis through our environmental management system.

We are proud to have partnered with 14 Australian and New Zealand water utilities to become a member of the United Nations (UN) Race to Zero campaign<sup>1</sup>. Our net zero by 2045 target was declared at the Conference of the Parties 26 (COP26) Climate Change Conference in Glasgow in November 2021.

<sup>1</sup>The Race to Zero is a UN campaign that aggregates commitments to become net zero, absolute zero, or climate positive from a range of leading networks and initiatives across the climate action community.

# WHAT IS INCLUDED

Greenhouse gas emissions refer to the release of a number of gases that contribute to the greenhouse effect, which is causing climate change.

<b>CO<sub>2</sub></b>	<b>PFC<sub>s</sub></b>	<b>CH<sub>4</sub></b>	<b>SF<sub>6</sub></b>	<b>N<sub>2</sub>O</b>	<b>HFC<sub>s</sub></b>
Carbon dioxide	Perfluorocarbons	Methane	Sulphur hexafluoride	Nitrous oxide	Hydrofluorocarbons

We are committed to reducing all greenhouse gas emissions that we produce. These emissions are generally divided into scope 1, scope 2 and scope 3, outlined below.

## Scope 1

DIRECT



Company facilities    Company vehicles    Treatment process

ICON WATER

## Scope 3

INDIRECT




Investments    Leased assets    Use of sold products    Processing of sold products    Transportation & distribution

DOWNSTREAM ACTIVITIES

## Scope 2

INDIRECT



Purchased electricity, steam, heating and cooling for own use

UPSTREAM ACTIVITIES

## Scope 3

INDIRECT



Purchased goods & services    Capital goods    Fuel & energy related    Transportation & distribution    Waste from operations    Business travel    Employee commute    Leased assets

Based on infographic from [planA Academy](#)

**Scope 1** emissions are produced as a direct result of an activity onsite. For Icon Water, this refers to emissions from backup diesel generators at our sites, fugitive emissions that are produced and released from our wastewater treatment process, and fuel used by our company vehicles.

**Scope 2** emissions are those associated with the use of fossil fuel-based electricity and fuels. Since the ACT achieved 100% renewable electricity in October 2019 through the ACT Climate Change Strategy, our only scope 2 emissions originate from grid electricity used at our NSW sites.

**Scope 3** emissions relate to the embodied emissions from upstream and downstream activities, for instance embodied emissions in chemicals used by the business or staff travel from home to work.

Currently this plan does not include scope 3 emissions. We will include scope 3 emissions when data availability allows them to be measured more effectively. This will require a focus on collaborating with our suppliers on the decarbonisation of their supply chains.

## WHAT WE ARE ALREADY DOING

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We have been actively tackling emissions reduction and have already halved our emissions from 1990 levels from the following activities. This was helped in part, by ACT electricity becoming 100% renewable.

### Renewable energy

We have built upon our renewable energy portfolio with the addition of solar arrays at our major sites and four mini-hydroelectric generators, with total generation capacity of ~4MW of renewable energy.

### Energy and emission reduction

Our primary focus is on reducing our emissions by avoidance, efficiency and substitution. We incorporate emissions reduction considerations into all our capital works projects. We have switched fuels at our main wastewater treatment plant (WWTP) to a lower carbon alternative which has saved around 50% of fossil fuel related emissions at the plant. We have improved the energy efficiency of our largest water pump station and realised efficiencies during office building refurbishments.

### Circular economy

We have a strong emphasis on resource recovery and reuse. We consider waste as a resource and recirculate materials where possible. This helps to reduce our use of virgin materials and the disposal of used materials to landfill, cutting carbon in the process.

- We use [recycled glass sand](#) as pipe bedding material.
- We have processes to dry the soil and slurry we dig up so it can be repurposed as backfill in our excavations.
- We create an [agricultural product](#) from our wastewater treatment biosolids called Agri-Ash, used by local farmers as a soil enhancer. By generating Agri-Ash, we keep 16 tonnes of material out of landfill every day.
- If your water meter needs to be replaced, where we can't reuse them, we make sure they are recycled.

Through our everyday operations, we recycle other materials including steel, brass, copper, concrete and many more.

### Carbon insets

We have rehabilitated 785 hectares with native forestry in NSW to generate carbon credits, providing important habitat for native fauna. In 2015, we granted approval for another 66 hectares to be planted for the Federal Government's 20 million trees program. These nature-based solutions bring additional benefits to soil improvement and local biodiversity.

### Fleet

We operate a fleet of commercial vehicles including three hybrid cars. We utilise an integrated vehicle management system which helps to reduce idling, optimise vehicle use and encourage efficient driving behaviour to minimise fuel use and emissions.

### Partnering with the community

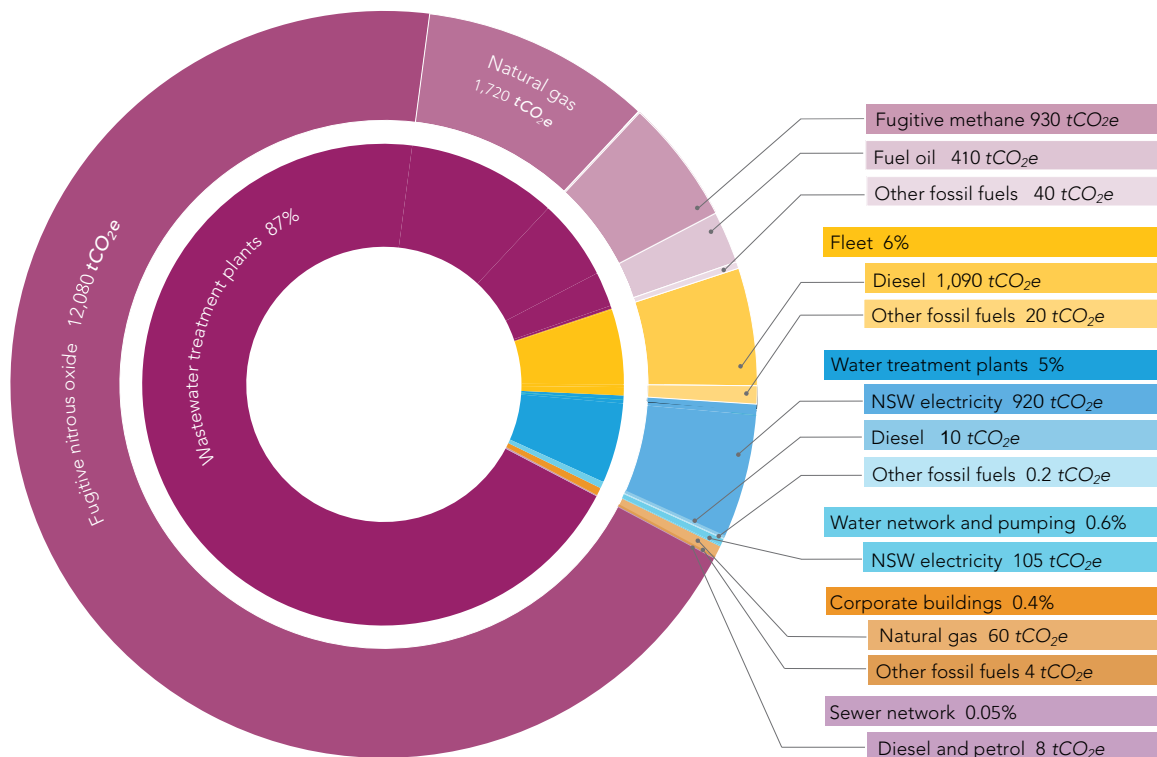
We have led trials and studies with many like-minded partners and industry peers, to provide innovative approaches to emissions reduction. This includes feasibility studies on floating solar as well as trialling our water treatment solids as composting material which will not only sequester carbon but keep the resource out of landfill and deliver a valuable landscaping material for the community.

### Data management

Our emissions are reported annually using data captured by our energy and emissions reporting system. We are collaborating with peer utilities to monitor emissions and share experiences to improve performance.

## OUR CURRENT EMISSIONS PROFILE

We complete emissions inventories each year and in 2021 we generated 17,530 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e). This represents a little over 1% of the ACT's total emissions. We have found that our wastewater treatment accounts for a significant proportion of our total emissions. This is mainly due to nitrous oxide (N<sub>2</sub>O), a particularly potent greenhouse gas that is produced and released through the biological treatment of sewage.



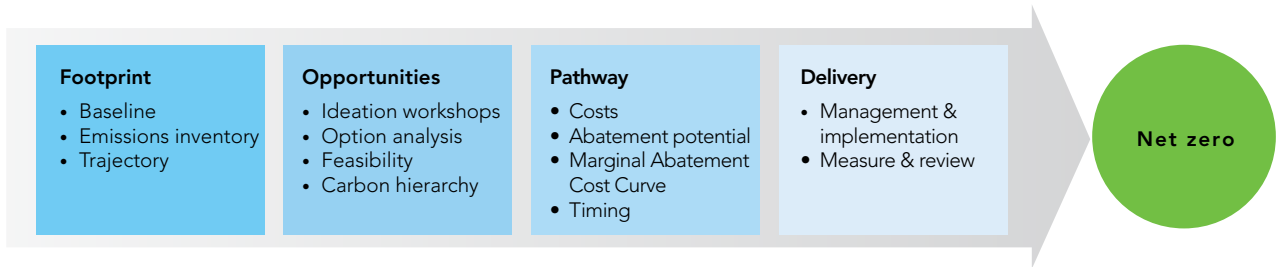
With the majority of our scope 2 emissions already addressed by the ACT Government's move to renewable electricity, we can concentrate on reducing process emissions from our WWTP.

Process emissions are not easy to address and tackling them is an industry-wide challenge. A key issue is that N<sub>2</sub>O fugitive emissions generated at the plants are currently estimated using emissions factors from current reporting protocols. These emissions factors are fixed and do not change regardless of the type of treatment process or how the plant is operated. However, in practice, measured emissions from wastewater treatment plants can vary widely. As a result, we have a research and monitoring project underway in collaboration with the University of Queensland and peer utilities which will measure actual N<sub>2</sub>O emissions to accurately inform our emissions abatement strategies.



# OUR APPROACH

We took a four step, values-based approach in developing our net zero pathway considering technical feasibility, operational suitability and cost of the carbon abatement options available to us.



We considered a wide range of abatement ideas that were collected via internal workshops. Options selected include technologies that serve business needs, consider our licence requirements, accelerate our emissions reduction and allow us to continue to provide high quality water and wastewater treatment. Where possible, we have included opportunities that would be required for other business purposes and align with critical infrastructure needs.

We compared the economic cost of emissions abatement of each of the feasible options in the marginal abatement cost curve below and prioritised those that deliver the optimal decarbonising business outcomes. We recognise that technology and infrastructure options will develop over time, and we will assess and prioritise each accordingly during future reviews of the plan.



Each block in the diagram represents an individual carbon abatement activity. For each block, the width indicates the amount of potential emissions abatement (tCO<sub>2</sub>) while the height estimates the cost of the carbon emissions abatement (\$/tCO<sub>2</sub>). Lowest cost options are shown on the left hand side and graduate to higher cost options on the right hand side while negative cost options are shown below the line. This provides a useful visual tool to prioritise preferred options.

# OUR PATHWAY TO NET ZERO

This shows indicative carbon abatement activities, going forward, to assist us in reaching net zero:

Carbon hierarchy	Available abatement activities
 <p>Avoid</p>	<p>Saving water through our network</p> <p>We will continue to encourage our community to use water wisely through education and will continue to explore smarter networks as this avoids emissions generated through the production of high quality drinking water. This will help us to sustain reduced emissions as well as adapt to our changing climate.</p>
 <p>Avoid &amp; Reduce</p>	<p>Wastewater treatment plant emissions reduction</p> <p><b>Secondary treatment:</b> We will investigate and install new technologies within the secondary treatment process at our largest WWTP. Advanced monitoring and control equipment will assist to minimise fugitive emissions through process adjustments, whilst removing pollutants to protect our waterways and providing safe water to downriver communities.</p> <p><b>Solids management:</b> We will continue to recover and reuse valuable resources including energy and nutrients from sewage sludge. Over the next decade major state-of-the-art infrastructure and monitoring will be built to reduce fugitive emissions and expand resource recovery.</p>
  <p>Avoid &amp; Reduce</p>	<p>New wastewater treatment plant with low emissions technologies</p> <p>A new wastewater treatment plant has been identified as an option to cater for Canberra's growing population. Design choices will have a strong focus on reducing our impact on climate change through low emissions treatment technologies and advanced monitoring and control.</p>
 <p>Substitute</p>	<p>Water treatment plant efficiencies</p> <p>We will identify and implement opportunities to reduce our use of grid electricity at our largest NSW site.</p>
 <p>Substitute</p>	<p>Zero emission vehicle fleet</p> <p>We will transition our passenger light and heavy vehicles to zero emission vehicles as feasible options become available.</p>
  <p>Substitute</p>	<p>NSW Greenpower™ and renewable energy</p> <p>We will purchase Greenpower™ for a proportion of grid electricity used at our NSW sites and utilise our large-scale generation certificates generated by our solar arrays for the rest, while the grid decarbonises.</p>

# OUR PATHWAY TO NET ZERO



Insets

## Carbon planting/credits

We will continue to manage our existing carbon planting and invest in generating more carbon credits through a future carbon forest with a focus on rehabilitating land that is currently underutilised. This will address the residual emissions that are not able to be eliminated due to technology gaps and ensure we maintain our net zero target beyond 2045.

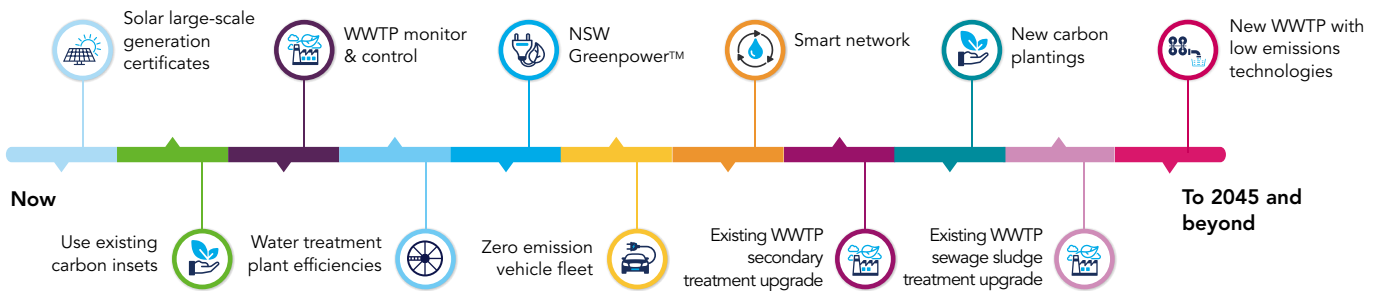


Offsets

## Carbon offsets

We will investigate investing in other types of accredited carbon offsets that bring additional environmental or social benefits to address residual emissions only.

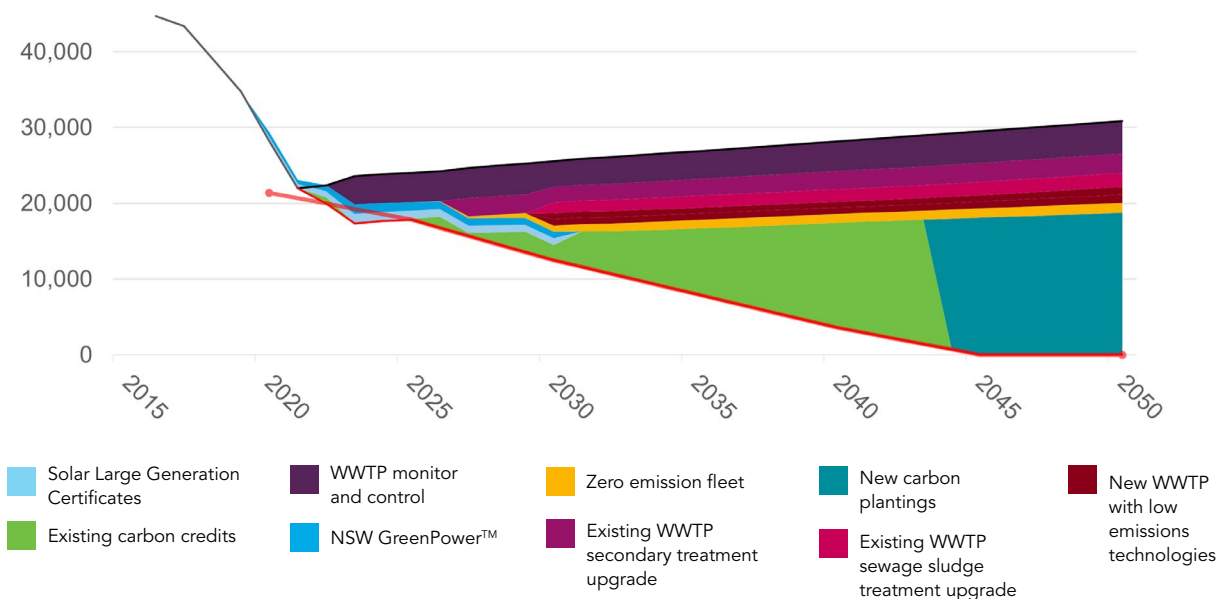
## Indicative timeline of activities



## How we will reach our net zero target by 2045 and beyond

Our emissions would grow in line with population growth if we took no action to decarbonise. Our effort, through the activities in this plan, shows we are committed to achieving our net zero target and to tackle climate change in pursuit of a global warming below 2°C by 2100.

Emissions tonnes CO<sub>2</sub>e



## NEXT STEPS

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The plan will evolve over time as new information and technologies become available and as we learn the outcomes of our initiatives. This is essential for us to remain on track to achieve our net zero target. Key next steps include:

### Technology and innovation



- We will learn from our fugitive emissions research and monitoring project and revise our wastewater treatment plant abatement strategies and pathway in line with our findings.
- We will keep abreast of latest advancements in decarbonising technologies and associated pricing.
- We will monitor our emissions abatement projects to verify their actual reduction meets expectations and report on our emissions profile annually.

### Financial



- We will peer review our cost analysis for each activity and implement based on fully costed business cases.
- We will closely watch carbon prices and policies.
- We will consider opportunities to influence change and make ethical investments that help tackle climate change, such as investing in green finance.

### Collaboration

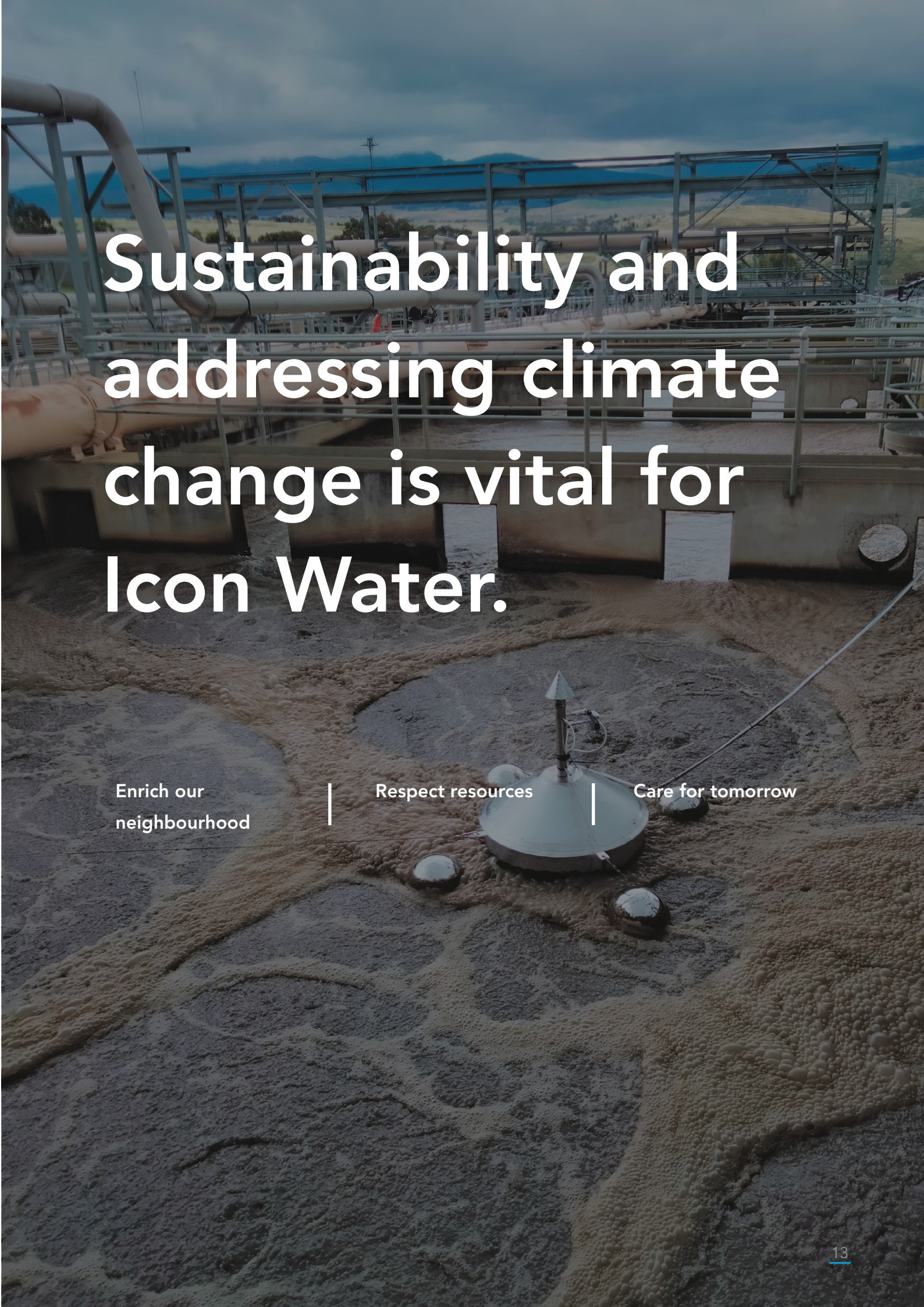


- We will work collaboratively with regulators, engage with peer water utilities and experts and partner with like-minded organisations to achieve our target.
- We will drive and participate in innovative trials and demonstration projects, encourage co-investment and seek shared funding opportunities.
- We will publish our successes and share lessons learned on our net zero journey across the water industry and with our staff and our community.
- We will assess our scope 3 emissions from our supply chain in preparation for including scope 3 emissions in a future plan.

Adam Lovell, Executive Director, Water Services Association of Australia, 2021 (WSAA)

*“Climate change is already causing irreversible harm, but it also creates opportunities. The urban water industry is at the cutting edge of many innovations to reduce its carbon footprints like producing renewable energy, harvesting the valuable resources that can be recovered through wastewater treatment...and transitioning to electric vehicles.”*

*“Congratulations to all the Australian and New Zealand water utilities for this show of commitment and leadership on climate change, the most important issue of our time.”*

A photograph of a water treatment plant. In the foreground, there are large circular aeration tanks filled with brown, foamy water. A central mechanical device with a vertical shaft and a conical top is visible in one of the tanks. In the background, there is a complex network of metal pipes, walkways, and structural steel. The sky is overcast and grey. The overall scene is industrial and focused on water processing.

# Sustainability and addressing climate change is vital for Icon Water.

Enrich our  
neighbourhood

Respect resources

Care for tomorrow

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TTY for Hearing Impaired

133 677

Language assistance

13 14 50, 24 hours

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Nếu cần thông dịch viên, hãy gọi đến số trên đây

#### Disclaimer

The eMission Possible Plan was informed by various analyses completed in 2021 based on information available at that time. Icon Water Limited has taken reasonable steps to ensure the currency and accuracy of the information contained in this publication. However, Icon Water acknowledges that this is a dynamic area and actions to be applied to achieve our net zero goal will need to be adaptive around changes in circumstances such as emerging technologies, carbon policy context or accelerating climate change and as such may vary from those depicted in this publication.

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