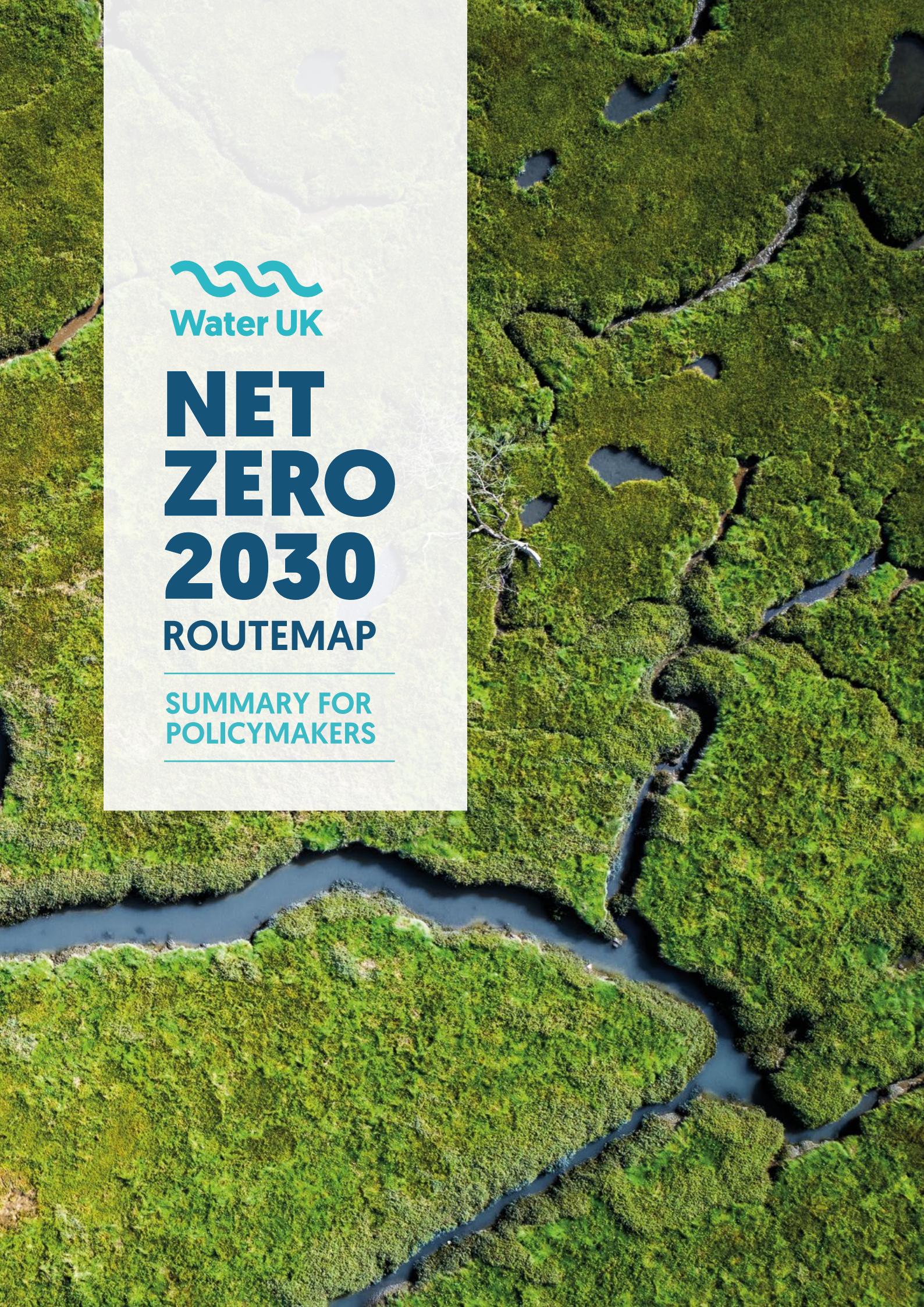
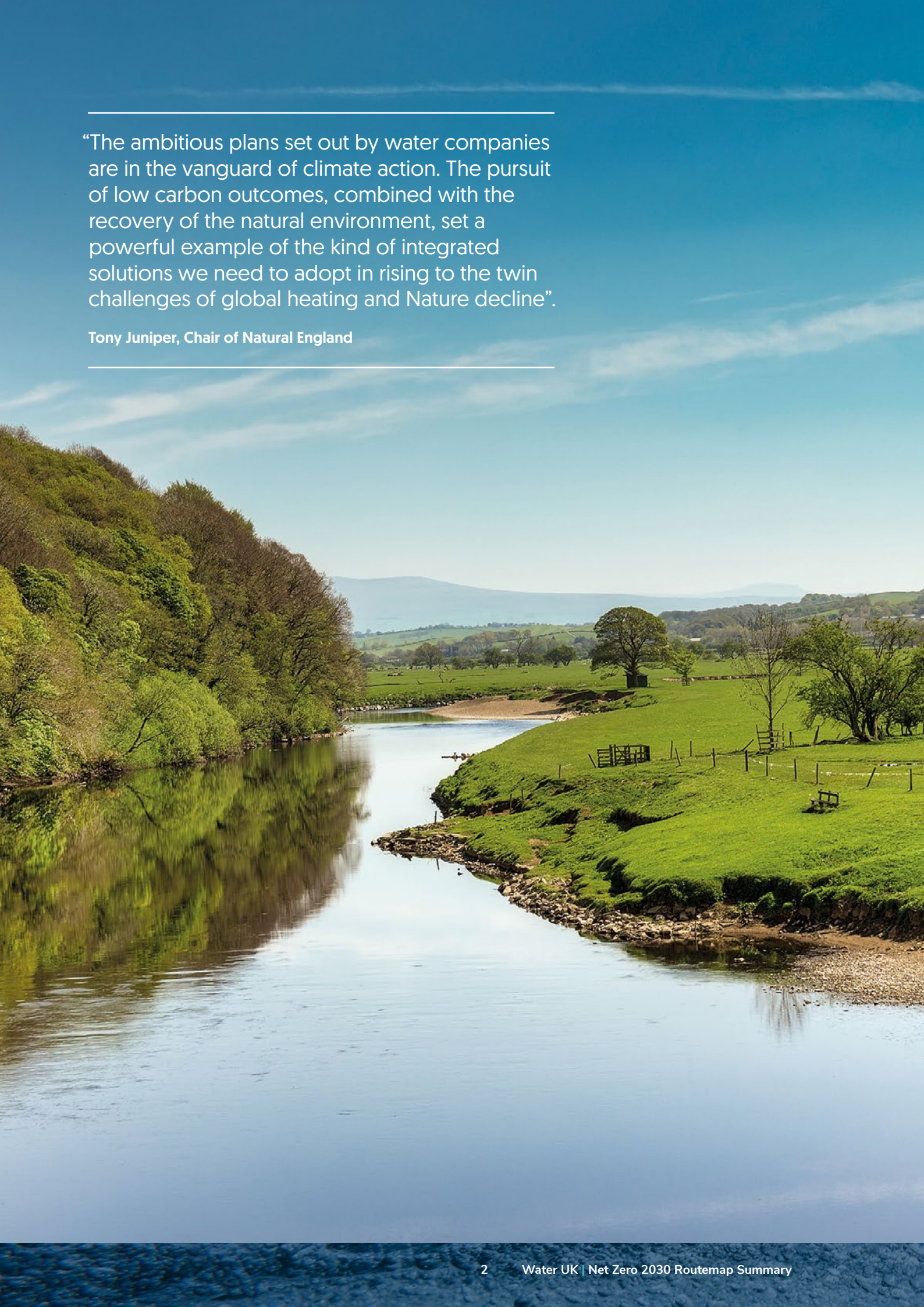


Water UK

# NET ZERO 2030 ROUTEMAP

## SUMMARY FOR POLICYMAKERS



"The ambitious plans set out by water companies are in the vanguard of climate action. The pursuit of low carbon outcomes, combined with the recovery of the natural environment, set a powerful example of the kind of integrated solutions we need to adopt in rising to the twin challenges of global heating and Nature decline".

**Tony Juniper, Chair of Natural England**

# Contents

# Foreword

This year, our assumptions of security were torn down. Record-breaking temperatures, storms, and flash-flooding - all in the shadow of pandemic - have shown us what a vulnerable society looks like. A vulnerability that grows with each tonne of carbon we emit.

Our water supplies have also been tested. A matter of weeks after almost 5,000 homes were flooded, the combination of an exceptional May Bank Holiday heatwave and lockdown saw demand increase by up to 40% in some places – volatility that our infrastructure was never designed for.

We will see more of this. And by 2050 climate change and population growth could leave England short of 3.4 billion litres of water each day.

In response, we have a plan. We are building the resilience of our supplies by cutting losses through leaks and planning bold projects to move water around the country. We are preparing for floods with new investment plans that set climate-ready standards for drainage. And we are tackling our own carbon contribution by targeting zero net operational emissions by 2030, twenty years before the economy as a whole. We want this effort to set the bar for other infrastructure, utility and energy-intensive industries.

Water companies' three million tonnes annually of gross operational emissions constitute about a third of the UK's greenhouse gases from industrial and waste management processes. Tackling these is enormously complex, particularly where biological processes are involved, and we haven't yet invented all the techniques and equipment we will need. So this is a genuinely ambitious target – though one based on a solid understanding of the challenge ahead.

With the right support in place, we could be one of the most cost-effective sectors to decarbonise, serving as an important demonstration of the art of the possible as the UK pursues its wider ambitions to achieve net zero in 2050.

It is with this in mind that we explore in the pages that follow the opportunities and challenges ahead of us. We outline our 10-point plan, comprising six commitments by industry, and four recommendations for policymakers that will help protect customer bills and keep investment costs down while supporting the development of nature-based solutions that support wider biodiversity.

I hope by reading this you will see that our determination – even before we have all the answers - is clear. Working in collaboration with government, our regulators, workforce, suppliers and others, we will deliver this plan decisively, openly, and quickly. We're ready.

**Christine McGourty, CEO, Water UK**

# Executive summary

Water companies are not like other businesses. We provide a vital public service hinged on major infrastructure and yet we're also a large landowner and custodian of the natural environment, including the rivers and seas that provide over 28 million homes and businesses with drinking water and take our waste.

In 2019, the UK government was the first major economy to make a legally binding commitment to reach net zero by 2050. In the same year, every water company in England agreed a 'Public Interest Commitment' that reflected our public purpose, setting five demanding goals including a pledge to reach net zero on operational emissions by 2030. As we look towards COP26 in November 2021 and the urgent need for green measures to support the economy after Covid-19, water companies have reconfirmed their commitment. This document and its accompanying Routemap set out our plan for getting there in the first ever, whole-sector, voluntary endeavour to reach such a demanding target.

By joining forces in this way, we've estimated that we could save up to 10 million tonnes of greenhouse gas by reaching net zero two decades ahead of the UK government's legally binding target of 2050. To do this, we estimate a potential capex investment of £2-4bn — a figure that will become clearer as individual companies develop their own detailed plans.

**10m**
**tonnes**

Estimated greenhouse gas savings

**£2-4**
**billion**

Estimated investment

# 2030 Imagined: our transition to net zero

Expert analysis and consultation with stakeholders confirms there is no single solution that achieves net zero on its own so it's clear that a broad combination of approaches and collaboration between water companies, policymakers and the supply chain will be needed.

By 2030 we aim to see:

### 1. Low emissions vehicles

100% of fleet passenger vehicles are electrified and 80% of commercial vehicles (LGVs and HGVs) converted to alternative fuels to cut carbon and air pollution.

### 2. Water and energy saving

New strategies to tackle leakage and help customers save water, alongside smarter and more efficient networks and catchments.

### 3. Process emissions

Targeting a reduction of up to 60% from our 2018-19 baseline by 2030, with monitoring of emissions to inform research and detailed pathways ahead of PR24.

### 4. Renewable power

Up to 3GW of new solar and wind power coupled with energy efficiency measures and suitable storage to provide up to 80% of sector demand, relieve pressure on grid generators, and minimise the need for offsets.

### 5. Green gas

Biomethane from sewage waste is injected into the grid to heat up to 150,000 homes, use in hard to decarbonise sectors, or to generate low-carbon power when generation from renewables is low.

But even those highly challenging actions won't be enough to reach net zero, and our plans also include:

**Restoring native habitats**: 20,000 hectares of owned peatland and grassland are restored and 11 million new trees are planted. These nature-based measures will help achieve a just transition by reducing demand on treatment, providing an important sink for the hard to abate activities like process emissions, restoring habitats, and reducing flood risk.

**Targeting innovation** — process emissions are highly uncertain and tackling them quickly is a significant global challenge. We don't have all the answers yet and finding efficient retrofit solutions is a big priority for our innovation strategy.


**Offsetting residual emissions** — even in the most ambitious of our pathways, achieving net zero will include purchasing suitable offsets to counter emissions that cannot be tackled directly by 2030. The development of a robust UK market for businesses to procure carbon offsets will be a key part in helping the sector manage any emissions that cannot yet be eliminated.

**Our Routemap is a bold commitment to get to net zero as a sector and sets out how we plan to start with low-regrets moves, develop detailed regional plans that will address the big challenges, and protect customers.**

# The challenge and opportunity of decarbonising water

The UK water industry manages a significant network of interconnected assets, including over 7,000 treatment sites and enough buried pipework to reach to the moon and back. Every day we deliver 15 billion litres of water to customers and treat the sewage from over 28 million properties. Moving and treating water is an energy intensive process leading to millions of tonnes of greenhouse gas emissions each year.

A rising population and climate change mean that without action our emissions would actually increase, as we move and treat more water. Decarbonisation elsewhere, such as the possible development of a hydrogen economy, would also require new sources of water supply, further generating carbon. Finally, there are big uncertainties about some parts of our emissions, like those from biological processes, and we have not yet invented all the techniques and tools we will need.

But there are 'win win' decarbonisation opportunities that will also help the wider UK economy. For example, the sector is already a significant producer and user of green fuels (e.g. biogas) and of low carbon electricity. If we can get the framework right with regulators and government then we can deploy these at huge scale and with greater speed, while also testing emerging technologies and approaches that others in the economy can then duplicate.

Our historic performance since 2011 is set out in detail in Section 3 of our Routemap. The analysis shows that the sector has reduced emissions by 45% since 2011 by taking action in areas such as renewable power, biogas and energy efficiency, but the pace of change will need to increase to reach net zero.

28m
Properties served

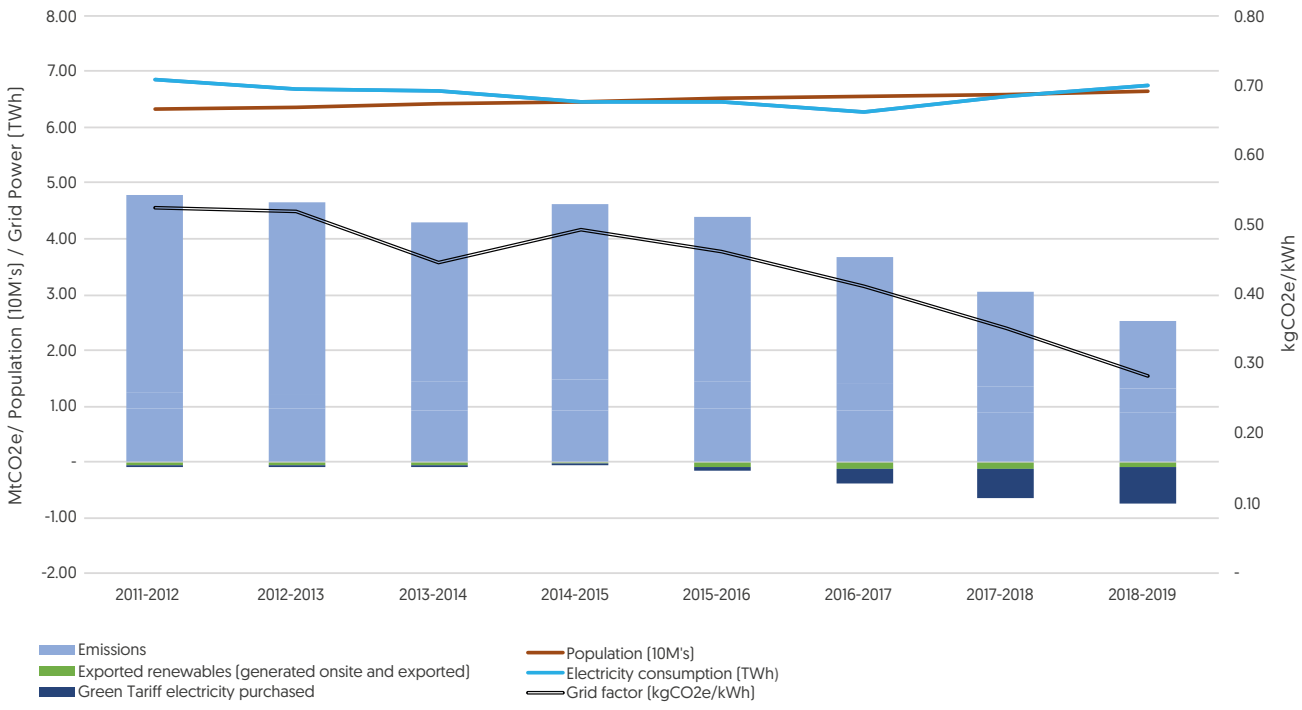
7,000
Treatment sites

15bn
litres
Daily water use

## Historic emissions (2011-19)

Since 2011, emissions have reduced by 45% to around 2.4MtCO2e with most of the easiest actions now having been taken by water companies.

Efficiency measures within the sector have helped us to keep pace with population growth and additional treatment demands. Procurement choices around power have also accelerated reductions alongside the decarbonisation of the UK electricity system.




**Source:** Data from CAW summary sheets from 2011-12 to 2018-19. Where individual year data was not available this was filled based on the nearest year's data from each company

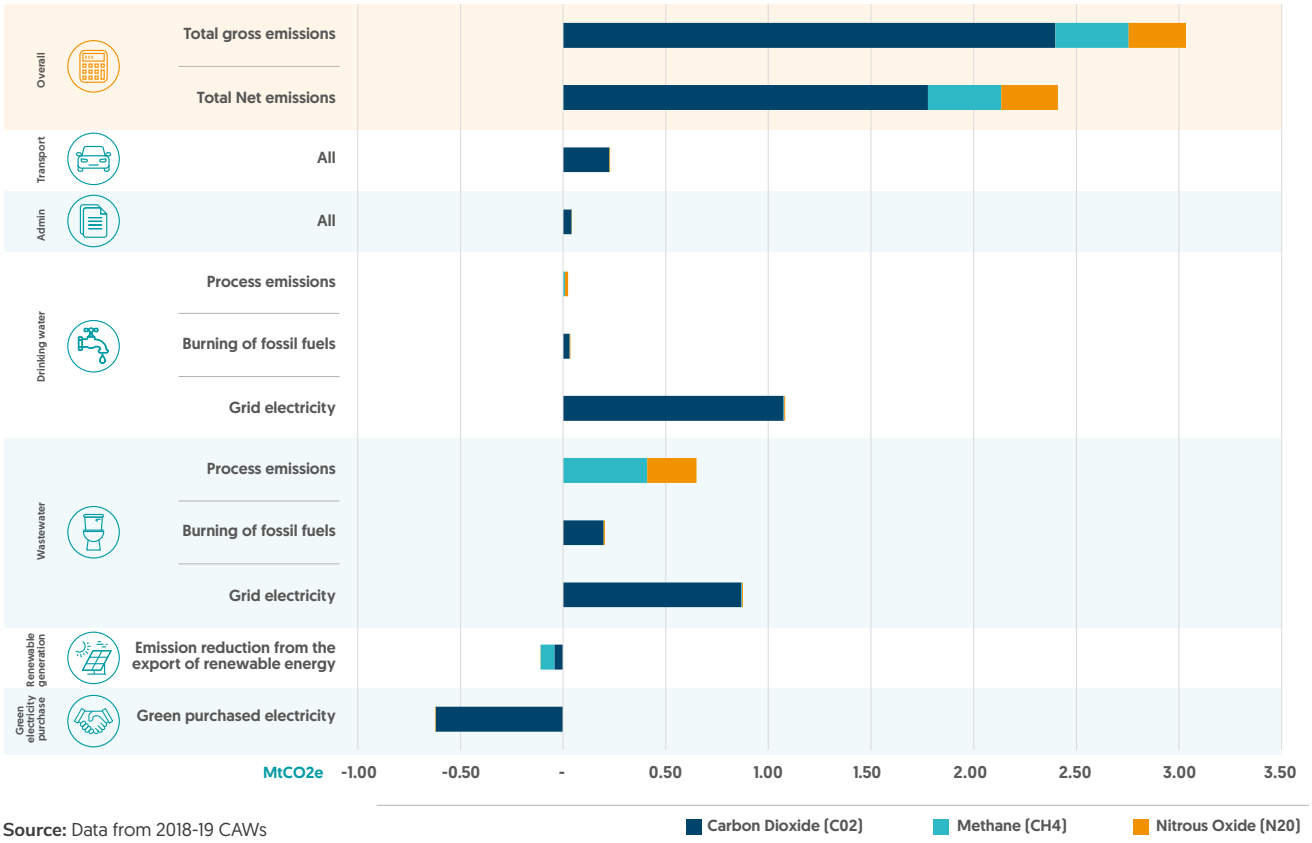
**Figure notes:**

- Grid emissions factor intensity units are not labelled on either axis, but are presented to the correct scale in the Figure and actual values are included within the associated data labels.
- Population increases from 66.3 million to 66.5 million between 2011 and 2019 (ONS population data).

## Sources of our operational emissions (2018-19)

The main sector emissions are attributed to carbon dioxide (CO2) primarily from grid electricity, and methane (CH4) and nitrous oxide (N2O) emissions from wastewater and sludge treatment processes.

These emissions are offset by the purchase of green electricity, and the generation of renewable fuels such as biomethane and renewable power.




**Source:** Data from 2018-19 CAWs

Protecting customers and the impact on bills will be an essential part of the transition. We must also find ways of overcoming the uncertainties inherent in addressing climate change. Much of the science needed to inform decisions is still developing around the world, and key areas such as natural sequestration and process emissions are still largely uncertain. Work by UKWIR is underway to understand the impacts of the updated 2019 IPCC guidance and identify if a more sector-specific approach to process emissions estimation can be developed.

We share with other sectors the need to achieve behaviour change of potentially unprecedented scale and pace. The Climate Change Committee suggests this could represent nearly two-thirds of measures across the whole economy; in water however, changed behaviours can lead to service impacts that are hard to predict. The Sixth carbon budget and the government's net zero strategy will be important for resolving some of this uncertainty, particularly in areas where decarbonisation measures span economic sectors.

"Stepping up to becoming net zero by 2030 is a big challenge for one of the most energy-demanding services that society demands from our natural environment."

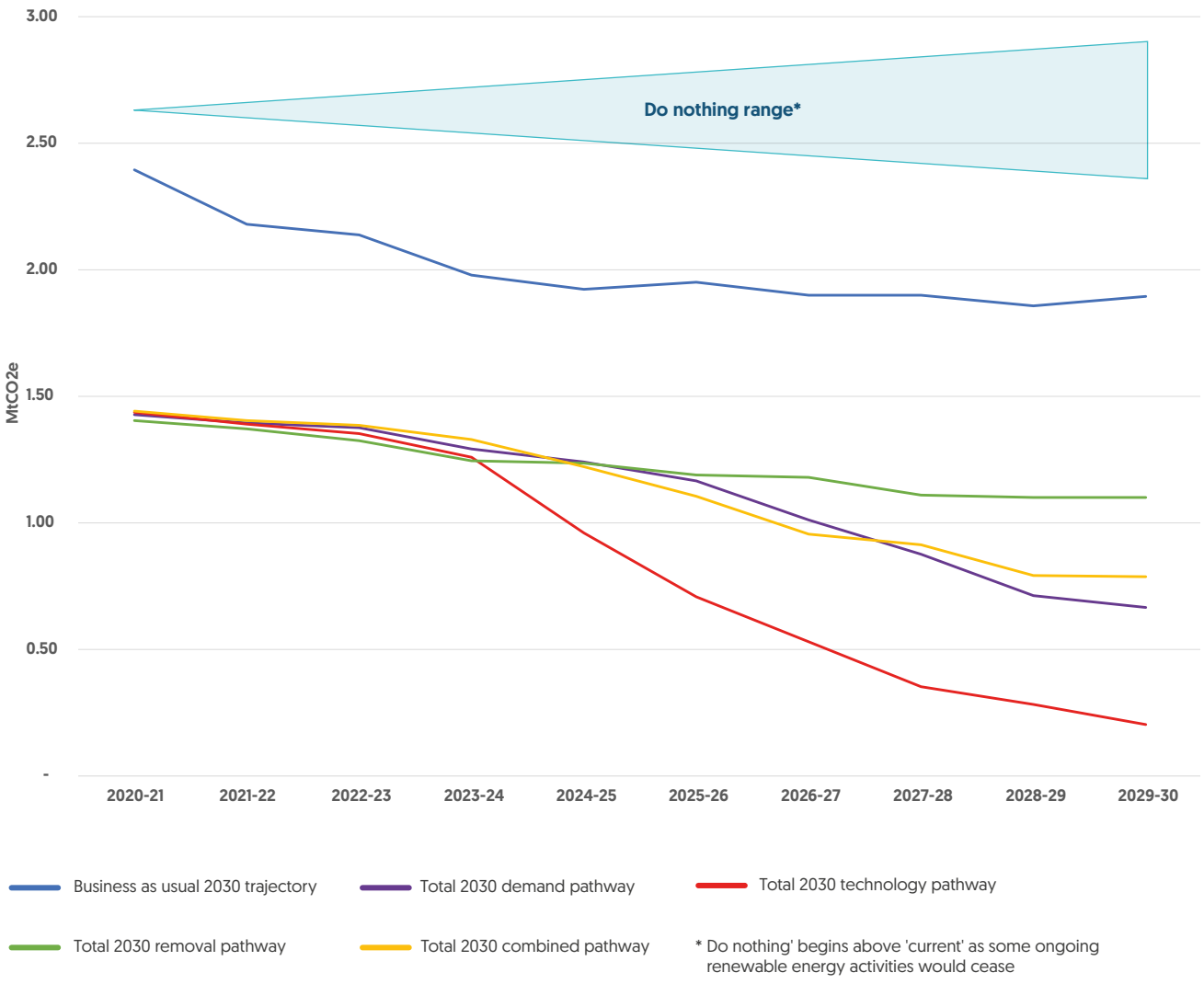
**Darren Moorcroft, CEO, Woodland Trust**

# The road to net zero

Using sector-level operational emissions data, the Net Zero 2030 Routemap provides a view of what our journey to net zero by 2030 may look like. We do this by sketching a number of weighted scenarios for the sector and a more likely combined sector pathway. All pathways are challenging, demonstrating the leadership role the sector has adopted to achieve net zero by 2030, and require a range of enablers and true collaboration across the water sector value chain.

The pathways have been built around a plausible specific scenario, identifying the associated decarbonisation interventions and assigning the maximum carbon reduction potential to the intervention along with an ambitious deployment rate. This approach is intentionally stretching, reflecting the need for action to reduce emissions at sector level, and testing the pathway to establish its maximum potential. A final 'combined' pathway has also been modelled to demonstrate how different elements from the three different pathways could be brought together to give a more balanced view of implementation costs and carbon reductions for the sector as a whole.

| Pathway | Key focus for decarbonisation |
|---|---|
| **Demand led** | Pathway focuses on managing demand for water and wastewater services by accelerating and going beyond existing 2030 commitments (e.g. leakage, PCC). |
| **Technology led** | Pathway focuses on accelerating technological innovations in the most emissions-intensive areas. |
| **Removals led** | Pathway focuses on accelerating nature-based solutions that increase carbon sequestration both on company land and elsewhere in the UK. |



Our analysis confirms that the rapid scaling-up of existing measures could more than double our rate of decarbonisation from 30% by 2030 in the BAU trajectory to between 63-96% depending on the mix of decarbonisation interventions. For many interventions we can rely on scaling-up mature technologies that already have a long pedigree in the water industry. However, this does not take away from the level of change that will be required by water companies, including:

1. **Greater effort to save precious water** — water companies accelerating leakage reduction by up to 7% beyond existing 2030 forecasts coupled with per capita consumption falling by a further 6 litres/head/day as a result of consumer goods labelling and other demand-side efficiency measures

2. **Rapid deployment of renewable energy generation** — making use of the changing power market to invest in approaching up to 80% of some companies' daily demand with solar and wind power for our electricity needs, and biogas from wastewater for our process heat

3. **Delivering greater energy efficiency** — going further than ever, with programmes to identify equipment renewals in energy intensive areas such as blowers for process treatment, pumps capable of higher efficiencies operating in smarter networks, new biogas boilers providing low-carbon heat at the times our treatment needs it most

4. **Greater export of energy to others** — more export of power and biomethane at times when we have a surplus, reducing costs for our customers, and helping others decarbonise

5. **Deploying new vehicles** — transitioning operational and maintenance vehicles away from fossil fuels, by working with vehicle manufacturers to boost the availability of suitable vans and heavy goods vehicles that run on low carbon fuels such as electricity and biogas

6. **Tackling process emissions** — deploying new measures to directly monitor our process emissions to inform global emissions reporting methodologies and designing measures to mitigate the impacts ahead of 2050, as well as searching for new solutions

7. **Planting trees and restoring habitats** — laying the foundation for sequestration of carbon for decades to come by changing to carbon-retaining uses of our land and working with partners to manage improvements at catchment-scale

8. **Deploying natural solutions** — meeting the challenges of growth and new treatment demands using nature-based solutions as the first choice

9. **Developing offsets** — identifying the best opportunities for decarbonisation in the UK and supporting the development of a robust UK market for businesses to procure offsets to counter hard to abate emissions such as from wastewater treatment

Our sector-level analysis shows that the changes above can decarbonise the sector by up to 95% over the next decade. Our analysis also shows that the changes are interconnected with other sectors in almost all cases, and the pace of transition will be influenced by UK-wide policy changes in areas such as water saving, energy, and transport. Achieving net zero will be extremely challenging by 2030, but our analysis confirms that if the key enablers are addressed within UK net zero policy, a sector-leading transition could be delivered within a decade.

As government develops its net zero strategy, our analysis highlights a number of areas where existing policies can be improved to accelerate and reduce the risk of this transition while bringing other benefits. Improved policy will also protect consumers by enabling an efficient transition and reducing the overall cost. Our separate commitment on customer vulnerability will ensure that the transition outlined in our pathways focusses on the most cost-effective measures and that the vulnerable are not left behind.

Decarbonisation will also change how new targets and standards are met by the industry. Instead of relying on traditional carbon-intensive processes and concrete as the default, it is essential that we focus on making natural solutions the first choice for new assets and future needs. Greater use of nature-based solutions will restore degraded landscapes, create more woodlands, and improve habitats to help tackle the biodiversity crisis while spreading the investment cost fairly across society. Water's transition delivers net zero two decades ahead of other sectors and enables investment to flow into a green recovery bringing multiple benefits for climate change, biodiversity, and social wellbeing.

At an individual company level, the transition to net zero will reflect the diversity in each company's area, such as differing operational requirements and local decarbonisation opportunities. Detailed planning will need to reflect both the national policy landscape, and more localised factors such as existing electricity grid constraints and earlier moves towards a hydrogen economy in some parts of the UK. Individual company plans will set out in more detail how net zero will be delivered in harmony with the plans of key regional stakeholders, such as electricity distribution network operators, local authorities, and environmental NGOs.

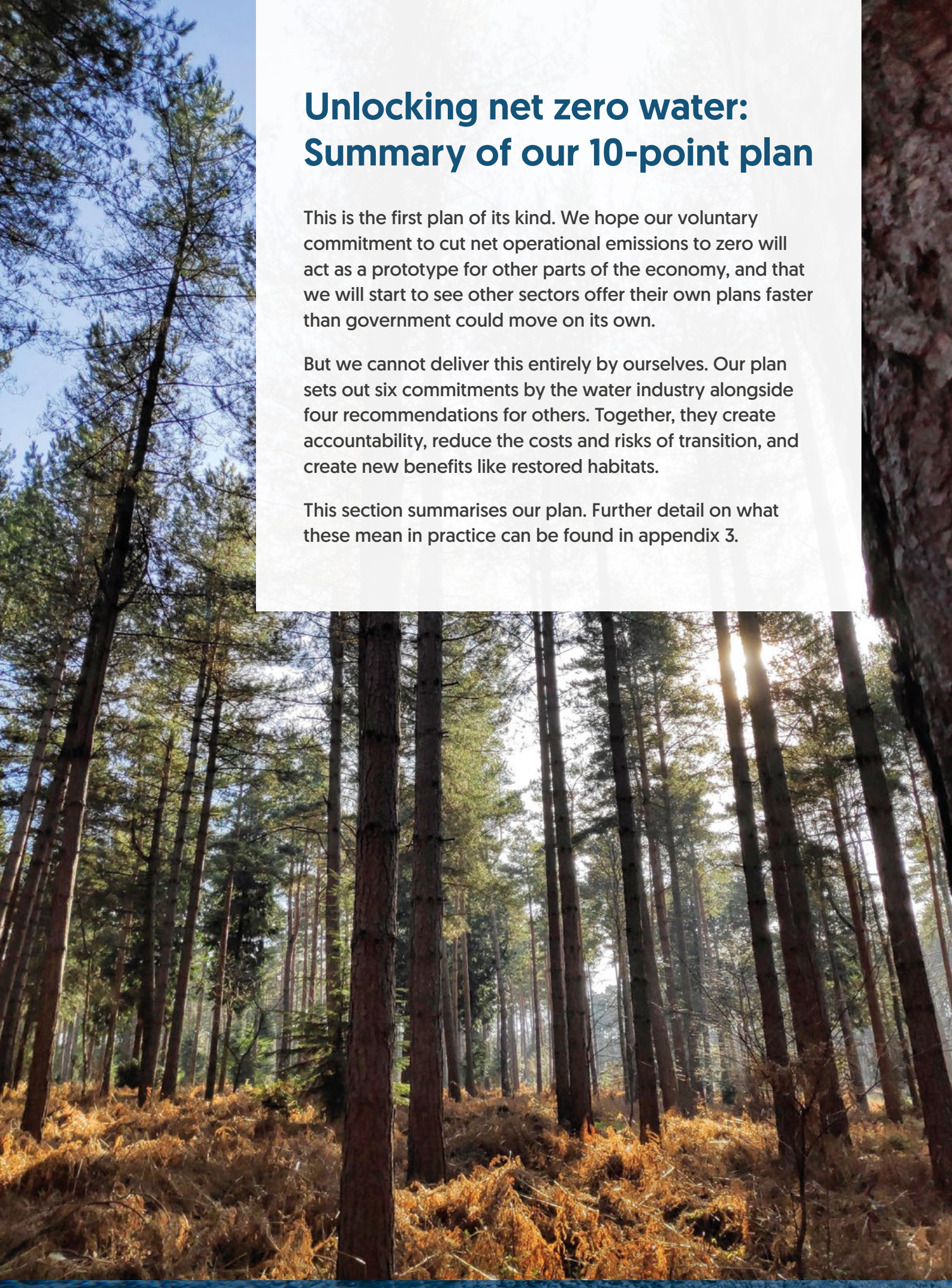
By 2030, the above changes will make the sector leaner and greener by building on our past successes and attracting more green finance. By taking the approach in our Routemap, the sector makes a direct and early contribution to the government's carbon budgets in the run up to 2050, supports decarbonisation in other sectors, and reduces the large innovation risks faced elsewhere in the economy. Accelerating the water sector to net zero by 2030 will act as a blueprint for other sectors and economies to follow.

# Unlocking net zero water: Summary of our 10-point plan

This is the first plan of its kind. We hope our voluntary commitment to cut net operational emissions to zero will act as a prototype for other parts of the economy, and that we will start to see other sectors offer their own plans faster than government could move on its own.

But we cannot deliver this entirely by ourselves. Our plan sets out six commitments by the water industry alongside four recommendations for others. Together, they create accountability, reduce the costs and risks of transition, and create new benefits like restored habitats.

This section summarises our plan. Further detail on what these mean in practice can be found in appendix 3.



## OUR COMMITMENT

### 1 Protect our customers

We will deliver maximum benefit at the lowest possible cost by prioritising investments in efficiency, delivering new sources of revenue such as renewable generation, and by accessing alternative sources of investment, including government schemes and cheaper sources of green finance. We will deliver against our Water Poverty Public Interest Commitment to support a just transition ensuring the vulnerable are not left behind.

### 2 Leadership and collaboration

We will prioritise net zero in decision-making, and ensure senior leaders are empowered and supported to develop, champion and deliver the net zero ambition right across the industry. We will join forces with our supply chain to build partnerships and innovation — and help, learn from and challenge water companies and other utilities around the world to match our ambition and pace.

### 3 Urgent action

We will bring together our decarbonisation work into a sector-wide transition programme that will accelerate the progress of companies and partners. The programme will initiate actions like research on 'long lead-in time' items (e.g. emissions from biochemical processes), while also helping advance 'low regret' options as quickly as possible (e.g. energy efficiency, renewables, land-use changes, and alternative fuels).

### 4 Progress in every region of England

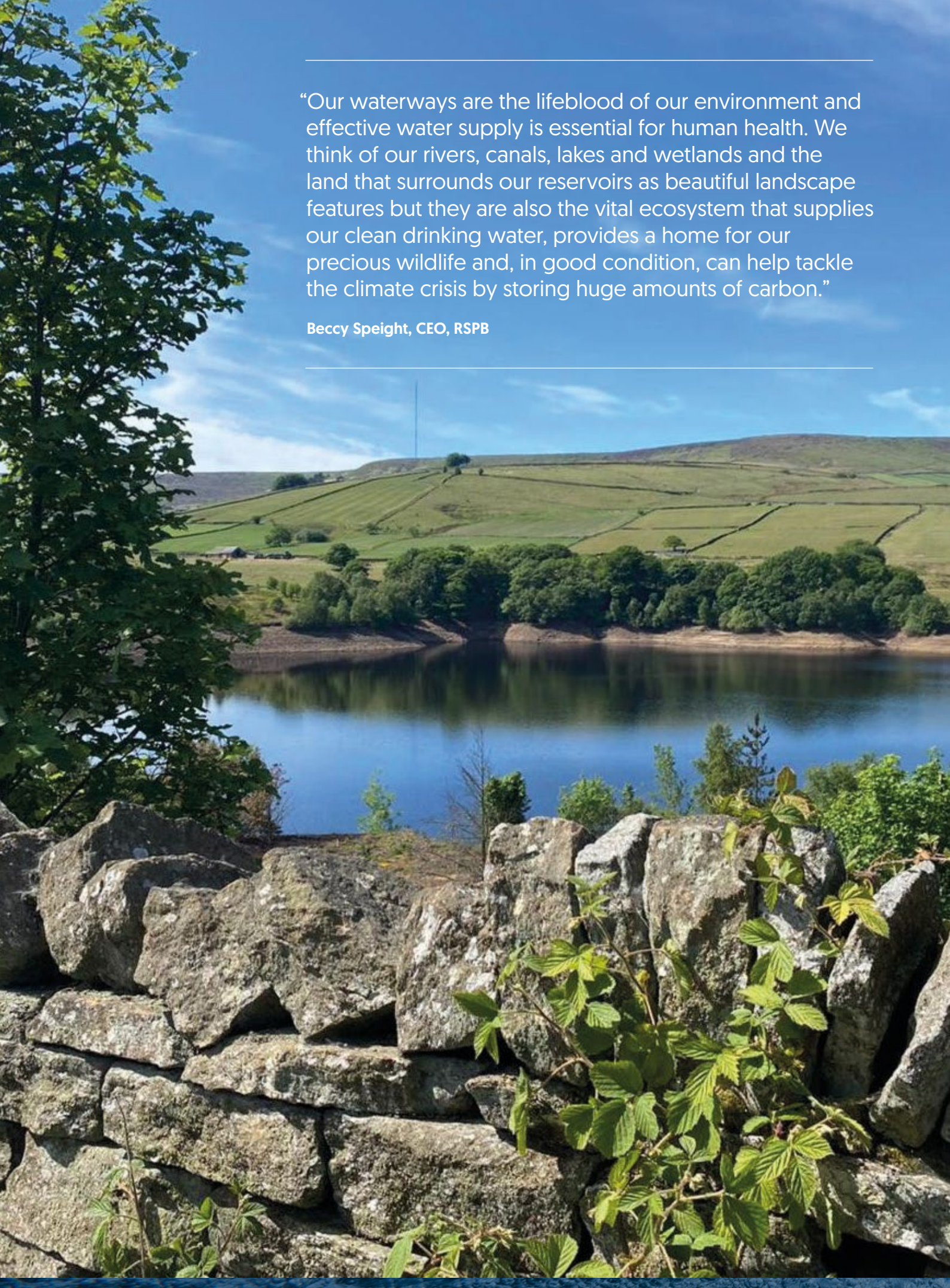
Every water company in England will use the Routemap to develop their own net zero action plans and publish them by end July 2021. These will build on the sector-wide analysis to reflect opportunities and challenges within their region. Companies will outline their expected future emissions and will take into account the UK's overall decarbonisation strategy, sector-specific analysis, and local climate and biodiversity goals, opportunities, activity, and constraints.

### 5 Transparency

In addition to individual action plans, we will publish an annual Sector Emissions Report, and work towards accreditation of our reporting by recognised standards. We will also convene a Net Zero Expert Panel, with membership drawn from outside water companies, to provide advice and challenge on plans and performance.

### 6 Green jobs and skills

We will work across the water sector, with other utilities and with cities and regions to develop new or enhanced training programmes, apprenticeships and other schemes to ensure we have the right skills for supporting the transition, and where possible to provide opportunities for skilled staff from carbon-intensive industries to apply their skills to the sector. We are also ready to support the green economic recovery post-Covid, building on the £50bn of investment already planned over the next five years.



"Our waterways are the lifeblood of our environment and effective water supply is essential for human health. We think of our rivers, canals, lakes and wetlands and the land that surrounds our reservoirs as beautiful landscape features but they are also the vital ecosystem that supplies our clean drinking water, provides a home for our precious wildlife and, in good condition, can help tackle the climate crisis by storing huge amounts of carbon."

**Beccy Speight, CEO, RSPB**

## RECOMMENDATIONS

### 7 An economy-wide transition strategy from government

Government must use next year's Net Zero Strategy to take a comprehensive, joined-up view about priorities, opportunities and impacts, rather than making isolated judgments about individual technologies or sectors. For example, if hydrogen emerges as an alternative fuel then water demand would increase 15-20%; meanwhile, there is huge potential for sewage biomethane to help decarbonise some heavy industries. This joined-up approach would be helped by implementing the National Infrastructure Commission's recommendation to align regulators' duties on carbon to bring maximum focus and reflect the need for new ways of regulating to meet climate goals.

### 8 Government policy that prioritises carbon

Government can make a series of straightforward policy changes at zero or near-zero cost that would accelerate decarbonisation while also alleviating other risks like drought.

For example, a mandatory water efficiency label for white goods, plus minimum standards, would be the single most effective way we can cut water waste and bills. This should be coupled with improvements to building regulations to ensure new homes achieve a design standard of no more than 100 litres of water use per person per day, and mandatory Sustainable Drainage Systems (SuDS) standards that would cut the carbon associated with unnecessary treatment of surface water while also cutting pollution.

### 9 Prioritise net zero innovation

We encourage all of those involved in the water industry to build on the new Innovation Strategy to help solve 'hard to reduce' areas like process emissions. We would like to see new collaborations bringing to market technologies and approaches quickly and at scale. We will work with the new Centre of Excellence to ensure maximum progress across the sector, as the challenge in some areas is high, complex, and subject to significant uncertainties.

### 10 Enable more nature-based solutions

Our analysis demonstrates huge potential for nature-based solutions and 'catchment-first' approaches to replace carbon-intensive infrastructure. The ongoing work of regulators to encourage these is welcome, but we need much greater ambition and pace to make that happen. That means a shift before 2025 to 'catchment by default' approaches to achieving water quality targets, which can then be built on in the second half of the decade through significant reforms to the Water Industry National Environment Programme. This should also be supported through the rapid implementation of a UK market for carbon offsets and land use change.

# Appendix 1: Our approach

Water UK and its members have been working with leading independent experts at Ricardo and Mott MacDonald to review the sector's progress to date and prepare the Net Zero 2030 Routemap.

The Routemap has been developed by considering possible futures for the sector in the form of pathways to net zero that involve different combinations of decarbonisation options. The pathways have been designed to help water companies to understand how a variety of changes in future market forces including policy, incentives and availability of funding could gradually change the course of action for the sector.

Through this expert analysis, it is clear that there is no single solution that achieves net zero on its own so we're looking ahead to a combination of changes that will collectively transform how water companies plan, invest and operate in future.

**The Routemap development process**

The Routemap has been developed using ten years of company data using the Carbon Accounting Workbook, which is a tool provided by UKWIR (UK Water Industry Research) to provide UK water companies with a consistent and transparent approach for accounting greenhouse gas emissions from their operations. The granular level of data is unique for an economic sector and puts us on a firm footing for the development of a framework approach that companies can use to build out their own net zero action plans to 2030.

A key step in the Routemap process was the definition of the sector's 'business-as-usual' (BAU) trajectory towards 2030, which takes account of the current plans and commitments that are already in place. This trajectory includes key assumptions and forecasts for population growth and other changes in demand, as well as incorporating anticipated external factors such as grid decarbonisation forecasts and the impact of the mass electrification of transport.

The BAU trajectory confirms that the interventions deployed by the sector have mitigated some external factors such as population growth, however without a significant change in approach, emissions in 2030 would still represent more than 60% of the baseline.

In alignment with national and international net zero policies, our expert consultants have used an emissions reductions hierarchy to ensure that credible decarbonisation interventions are prioritised before pursuing the route of offsets, which we consider as a route to addressing residual emissions only. This also has the benefit of encouraging more cost negative/cost neutral efficiency interventions to reduce demand prior to the implementation of new technologies that would involve additional investment.

Our Routemap is the first step on that journey and will inform the companies' own detailed plans that reflect their own circumstances and customer research.

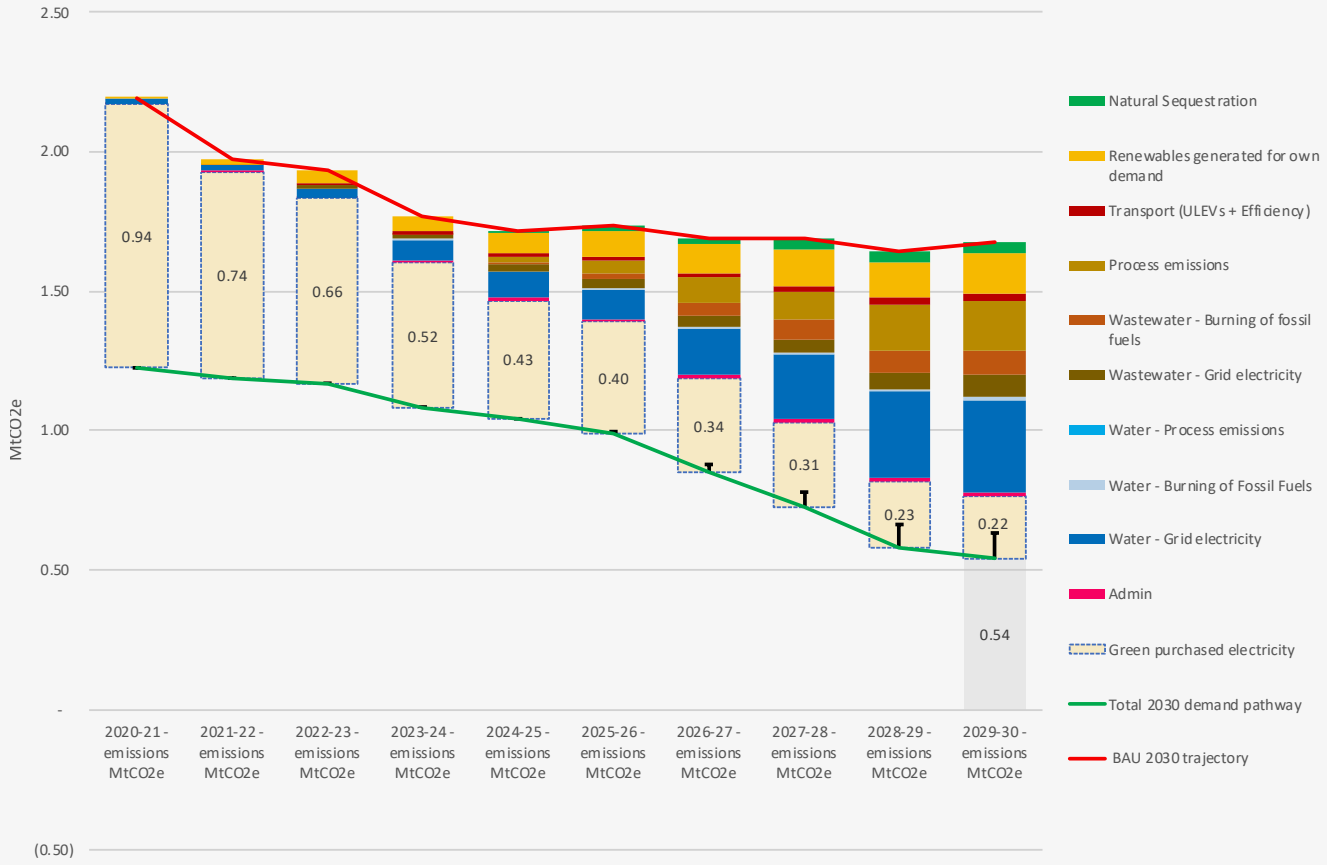
# Appendix 2: Our three pathways

To identify and test potential routes for the sector to reach net zero by 2030, pathway analysis has been used to consider three possible scenarios. Each of these scenarios reflects an alternative future in which emphasis is placed on particular interventions or clusters of interventions. This approach provides strategic direction to the whole sector and illustrates how individual companies with particular opportunities might transition within a net zero water industry. Each pathway also quantifies the likely residual emissions that the sector would need to offset to reach net zero.

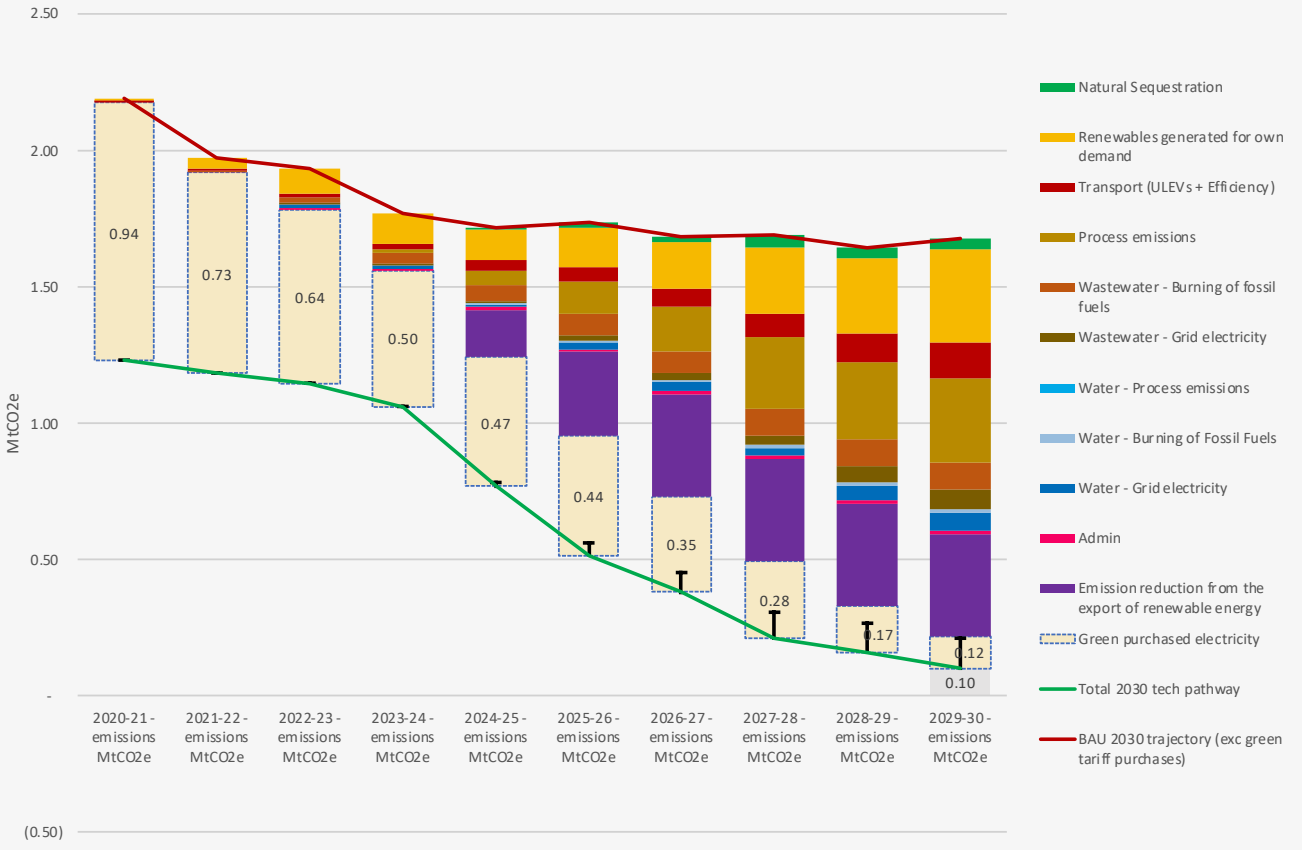
Each pathway considers a number of actions under the control of the sector that would need to be taken as well as enablers required to be implemented by stakeholders external to the sector. The scale of the net zero challenge means that the water sector cannot do this on its own and a collaborative approach will be required across the supply chain, government and regulators.

**See section 4.3 of the Routemap for more detail about the pathways.**

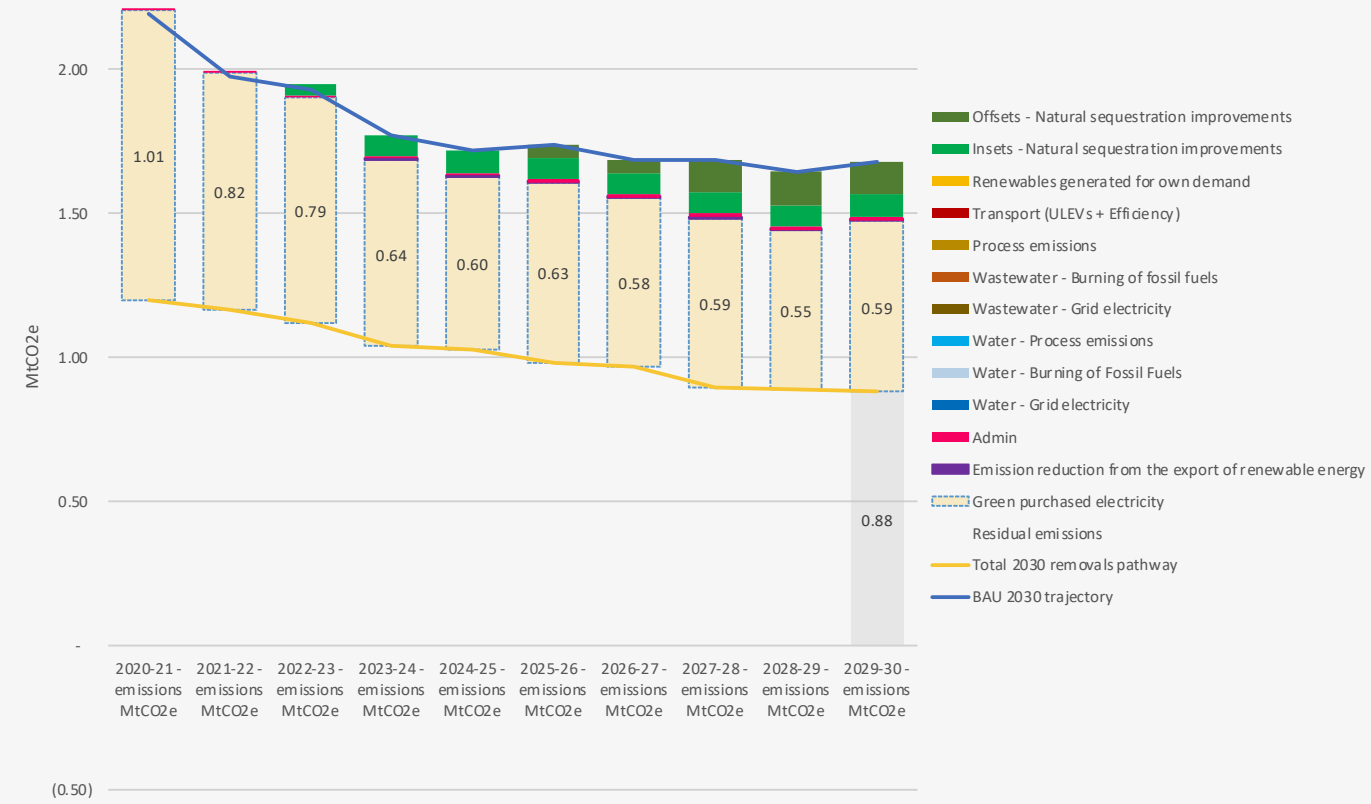
**Timeline graph showing deployment of decarbonisation actions for demand pathway**



## Timeline graph showing deployment of decarbonisation actions for technology pathway




## Timeline graph showing deployment of decarbonisation actions for removal-led pathway



# Appendix 3: Our 10-point plan in detail

As the first plan of its kind, the water industry's commitment to net zero operational emissions represents a major step forward for sector-driven decarbonisation, but it's not something we can deliver on our own.

Our plan makes six commitments. Then, in order to deliver those at lowest cost and risk, and get as much benefit as possible, we make four recommendations for our stakeholders.

**OUR COMMITMENTS**

**1. Protect our customers**

Our plans will protect customers by focussing on an efficient and just transition to net zero. We will:

- Deliver against our Water Poverty Public Interest Commitment and work on ensuring bill affordability – including as a result of pressure from Covid-19 - to ensure that the vulnerable are not left behind
- Take a 'least cost' approach that maximises opportunities to generate new income or improve efficiency. This will include projects on biomethane, energy storage, and demand side response programmes; we will also deliver programmes to save water, carbon and bills, building on our Water's Worth Saving campaign and recent confirmation of the lowest levels of leakage on record.
- Minimise the cost of debt-financed investment by establishing a sector Net Zero Finance Taskforce to build on the sector's reputation for climate-related reporting and a high credibility destination for green finance.
- Use non-billpayer funding to support decarbonisation wherever that is an option by prioritising and helping develop alternative sources like government grants (for example, to decarbonise heat and plant trees). This is possible as, based on the Routemap's early work, reducing water sector emissions may cost £100/$tCO_2e$ compared to the Committee on Climate Change's estimates of more than £200/$tCO_2e$ for switching to hydrogen and applying CCS.
- Advocating for our customers in the decisions of others, for example by joining forces with other large power consumers to build a stronger case for including capacity upgrades in electricity network operators' plans as part of their regulatory settlements, thereby reducing the costs of adding new renewables to the national grid.

**2. Leadership and collaboration**

We commit to putting net zero at the centre of our priorities and decision-making. Many companies already have strong arrangements in place for delivering decarbonisation, and we will build on these to ensure consistent:

- Executive sponsorship and Board oversight, with senior leaders empowered to develop, champion and deliver decarbonisation plans, supported by the right expertise and skills.
- Support for transforming our infrastructure design and construction capabilities, working in collaboration with the supply chain to build the sector's capability to deliver lower-carbon and nature-based projects.
- Support, encouragement and challenge for other sectors. We will collaborate with water companies around the world, and other sectors sharing similar challenges (for example, methane from biological processes or fugitive emissions). We will learn from each other and challenge each other to deliver. We want to see as many sectors as possible start taking effective action.

**3. Urgent action**

We commit to taking fast action to reduce emissions, because delay is environmentally and financially costly. We will:

- Bring decarbonisation work into a new sector-wide transition programme to support and accelerate the work of companies and partners; draw on insight from other sectors; provide strategic engagement with regulators; and ensure we make efficient use of specialist resources across the sector.

- Identify in company-specific plans where we can take fast 'low regrets' options. This will focus on getting economic measures delivered, like increased biomethane injection, energy efficiency, renewables, land-use changes, and alternative fuels during AMP7.
- Get going early on 'long lead-in' time items, where work (including research or innovation work) is needed most urgently. This particularly applies to the most uncertain areas such as process emissions reductions and developing a robust framework for nature-based offsetting.

**4. Progress in every region of England**

Every water company in England will use the Routemap to develop individual plans. We will:

- Publish initial plans for each company before end July 2021. Each plan will reflect the opportunities and challenges in each geographic area. Plans will include projections of future emissions, actions planned by the company, risks, and priorities for innovation. They will take into account the UK's overall decarbonisation strategy, any local climate and biodiversity activities and targets, and the opportunities and constraints (e.g. land availability) in each place.
- Use the water industry's unique Carbon Accounting Workbook to provide common metrics across companies and inform the broader transition programme.
- Learn from the best examples of plans from within the water sector, and from other sectors and countries, ensuring that plans are credible, clear, efficient and practical.
- Join up with other regional and local decarbonisation partnerships to maximise impact and share information and effort in regions and cities.

**5. Transparency**

We believe transparency will give confidence stakeholders, while also helping us access the best ideas and insights into our plans. Therefore, to better inform our decisions, and support engagement with regulators, partners like the supply chain, and our customers, we will:

- Work collaboratively with regulators to create standardised GHG reporting requirements for operational emissions for companies' Annual Performance Reports. In parallel, we will develop new arrangements for considering and tracking capital carbon emissions, for which a sector-wide reporting methodology is required.
- Work towards accreditation in 2021 for our operational emissions reporting from a recognised standard (e.g. ISO140064 on greenhouse gas reporting and the GHG Protocol). It is very unusual for a sector to work together on accreditation, and we are working through the technical implementation of how to do this. We will further develop and expand the Carbon Accounting Workbook (CAW) to support this work.
- Publish an annual sector-wide emissions report. Starting next summer, we will provide public updates on the overall position of the sector. This will sit alongside the publication of individual company plans, to be published by the end of July 2021. We will also encourage other sectors to be equally transparent with their data and forecasts, to inform our planning for net zero, and help find the most efficient solution for society as a whole.
- Convene an Expert Panel this year to advise the industry on its detailed plans, hold the sector to account on its performance, and ensure annual reports provide stakeholders with detailed insight into our progress towards net zero in 2030.

Many water companies already report data required by the Government's November 2020 decision to implement the recommendations of the Taskforce on Climate-related Financial Disclosures. Where there are any gaps, we will close those rapidly, and in advance of legal requirements.

### 6. Green jobs and skills

The development of a skilled workforce will be a critical step in the delivery of a net zero transition that leaves no one behind. We will:

- Enhance our approach to apprenticeships across the sector. As part of our Social Mobility Public Interest Commitment, industry over the next twelve months will strengthen its approach to apprenticeships to increase opportunities for green jobs in the water industry. This will be led by a small number of companies and rolled out more widely over coming years.
- Propose new 'green recovery' plans to build skills, growth and environmental gains. We have identified projects that would generate big environmental and economic gains locally and through the supply chain.
- Commit to our people's skills. We will ensure our people have the right skills to contribute to Net Zero and sustainability through training and lifelong learning. This also means every water company employee will understand their own contribution to the local and global environment. We will also look for opportunities to attract skilled staff from declining carbon-intensive industries to apply their skills to the sector.
- Support supply chains. We will construct our plans, and engage with suppliers, in a way that provides the confidence needed to invest in their own capabilities.

## OUR RECOMMENDATIONS

### 7. An economy-wide transition strategy from government

As government prepares its net zero strategy in the run-up to COP26, it should take a holistic view about priorities, opportunities and costs right across the economy, and the impacts that one sector's strategy will have on others. Like other industries, our progress will be affected by actions of others and this cannot happen in an uncoordinated way. We therefore need:

- Leadership from government to ensure the UK Net Zero Strategy looks right across the economy to identify all of the most cost-effective abatement opportunities, the wider benefits for biodiversity and air quality, and the links between individual sector strategies. For example, shifting the energy sector to hydrogen could increase demand for water supply by 15-20%, at a time when droughts will make sourcing water more energy intensive.
- Support for cross-sector delivery. For example, there could be more recognition by government for the role of biomethane as a way of decarbonising 'hard' industries like industrial heat and heavy transport, and as source of low-carbon power during low wind and solar generation. This potentially offers very low cost, sustainable abatement.
- Defra to show leadership by ensuring a consistent approach to water decarbonisation across government and water sector regulators, and its assessment and prioritisation as an environmental benefit. This should include how new policies, standards, strategies and projects are appraised and selected, while allowing for innovation and locally-tailored solutions. We are ready to discuss this further.
- Government to implement the recommendation of the National Infrastructure Commission to align regulators' duties on carbon and consider extending this to the Environment Agency. This would bring maximum focus to the issue and reflect the need (recognised by other regulators in England and further afield) that regulation must be flexible around an outcome to meet climate goals.

### 8. Government policy that prioritises carbon

Government and regulators have the power to make changes at no or almost no additional policy cost that would significantly accelerate and de-risk the achievement of net zero emissions. For example, water efficiency and producer responsibility policies could reduce the use of water companies' chemicals and energy, as well as reducing future droughts, pollution, and plastics.

The Environment Bill offers an ideal platform for making some of these changes, while others could be implemented through Statutory Instruments. We therefore call on government to:

- Introduce a mandatory labelling scheme for water-using appliances like washing

machines and dishwashers, backed by minimum performance standards. As well as protecting against drought by saving water, this will reduce the total energy and chemicals (and hence carbon) used in water treatment processes. It would also take millions of tonnes out of annual household emissions.

- Change Part G of Building Regulations to stop the constantly-increasing stock of water-inefficient homes. Building Regulations should apply a 'fittings-based' approach and require all dwellings, fixtures, and appliances to meet water efficiency and quality standards to achieve 100 litres/person/day, reducing the carbon cost of water treatment. Tighter standards in new homes can readily be achieved using existing products that meet customers' needs at little or no extra cost. Applying a single efficiency standard in new homes across the country creates a simple, level playing field for developers.
- Introduce mandatory Sustainable Drainage Systems (SuDS) standards to provide certainty for developers. Defra's non-statutory SuDS standards should be placed on a statutory footing and aligned with the water industry's Design and Construction Guidance. This should be accompanied by the implementation of S42 of the Flood and Water Management Act 2010 so that all sewers, including SuDS which meet the definition of sewers, are adopted by water companies. This would end uncertainty for developers, increase the number of SuDS, cut the carbon footprint of unnecessary treatment of surface water, and reduce sewer overflows into rivers.
- Enact Schedule 3 of Flood and Water Management Act 2010 to ensure greater use of natural surface water management techniques, like swales, green roofs, wetlands and balancing ponds. Use of such techniques will cut the carbon emissions associated with unnecessary treatment of surface water at sewage works.
- Reduce the number of sewer blockages from wet wipes and other 'unflushables'. This can be achieved through new producer responsibility obligations, reducing energy-intensive treatment processes needed to treat blockages and the flooding they cause. A scheme should be introduced that requires any product marketed as flushable to meet the water industry's 'Fine to Flush' standard. All other products should be labelled as 'Do Not Flush' at point of use to avoid disposal via the sewer. Manufacturers of wet wipes should be required to pay the full costs of labelling, awareness raising and clean-up before 31 December 2024 to align with or exceed the ambitions of the EU Single Use Plastics Directive.

**9. Prioritise net zero innovation**

Particularly given the urgent need for innovation on 'hard to reduce' areas like process emissions, we will encourage all partners to build on the sector's new Innovation Strategy, which emphasises carbon, to:

- Make carbon a priority for companies' and stakeholders' innovation work. It is already embedded into the Innovation in Water Challenge, and we will encourage other stakeholders (including Research bodies) to focus on the challenge of water decarbonisation.
- Champion specific decarbonisation areas for focused innovation, such as process emissions, new forms of sludge treatment and hydrogen production. We will work with the new Centre of Excellence once in place to ensure we maximise progress across the sector.
- Supply chain organisations should work with us to encourage new innovations to reach market quickly and at scale. This will include identifying companies' priorities for new processes, digital tools and smart approaches.
- Regulators and potential customers of circular economy products should work with us to help scale-up technologies such as anaerobic digestion in order to recover greater value from waste streams.
- Support further research on verifying the carbon benefit of potential land use changes, such as the draw-down benefits of biosolids and other land-based measures such as grassland restoration to inform sector and national thinking.

**10. Enable more nature-based solutions**

Our analysis demonstrates that a significant shift towards nature-based solutions and catchment management by default is an essential part of any

efficient move towards net zero emissions. We will also require some element of offsetting to account for the residual emissions from biological processes.

We welcome the ongoing work of regulators to encourage the deployment of nature-based solutions. However, government and regulators will need to enable a step-change, potentially including through legislation, if we are to avoid inadvertently locking the industry into further carbon intensive solutions that will constrain progress.

We recommend:

- Decarbonising the Water Industry National Environment Programme (WINEP) by moving to 'catchment management by default'. Our decisions about environmental projects should use criteria that properly integrate and prioritise carbon reduction, and start from the premise that control of pollution at source is usually better than cleaning it up at the ends of pipes. We should start allowing more catchment management approaches wherever possible now, and further build on it as WINEP is reformed in time for 2025. As a minimum, this should include a review of how environmental permitting can promote natural solutions within existing legislation, development of a natural sequestration assessment framework to account for wider biodiversity benefits, and implementation of a UK Chemicals Strategy that strengthens control of pollution at source.
- Beginning work now on the statutory barriers to further deployment of nature-based solutions. For example, the Urban Wastewater Treatment Directive currently prescribes significantly carbon-intensive solutions in cases where that may not be the best outcome, and Environmental Permitting will need to be applied with flexibility to enable NBS at scale.
- Recognising the huge importance of farmers and the future Environmental Land Management Scheme. We need to condition the provision of public money to meaningful and value-adding environmental services by landowners, supported by a robust set of minimum environmental standards backed by stronger powers and more resources for the Environment Agency. Equally, water companies are ready to build on their many successful partnerships with landowners to maximise benefits for the environment, health and society. We will otherwise continue to spend chemical and energy emissions on unnecessary treatment of both drinking water and sewage.
- Adopting the Oxford Offsetting Principles within government to align and accelerate implementation of a UK market for carbon offsets. Government should also draw on the insights of the Taskforce on Scaling Voluntary Carbon Markets, launched by COP26 Special Envoy Mark Carney.
- Ensuring statutory reporting requirements specifically account for nature-based carbon credits for example including habitat work completed using recognised codes within SECR.
- Creating partnerships with other large landowners. As a large landowner, with c.300,000 acres of land collectively, we want to collaborate with others to share insight on the benefits of land use changes and inform the development of UK markets for sequestration.

Water UK is the representative body and policy organisation for water companies across the UK. Together, our members provide drinking water to nearly 64 million people every day.

The Net Zero 2030 Routemap has been developed as part of our Public Interest Commitment, which included a pledge by English water companies to achieve net zero carbon emissions by 2030.

Supported by Anglian Water, Northumbrian Water and Yorkshire Water, it has been developed in partnership with leading experts at Ricardo and Mott MacDonald under the guidance of a sector-wide Net Zero Steering Group. We have also consulted with a large number of external stakeholders and are grateful for the extensive comments, advice, insights and constructive challenge from the many individuals that have provided their time.

To read the Net Zero 2030 Routemap in full, go to **www.water.org.uk/Routemap2030**

Water UK