Our TCFD, TNFD and other sustainability disclosures

Sustainability concerns, including climate and nature, are fundamental to our business and integrated in everything we do.

Our activities are so reliant on the natural environment that assessing and managing the risks, opportunities, dependencies and impacts we have in relation to climate change and nature is integral to our entire business model, therefore disclosures in relation to these issues are integrated throughout our report to reflect the way we think about these issues. Other material matters are integrated in the same way, including cyber security, financial risk management, affordability and vulnerability, health, safety and wellbeing, responsible business in our supply chain, and equity, diversity and inclusion.

As mentioned on page 03, we have adapted our business model to follow the four-pillar structure that links the Task Force on Climate-related Financial Disclosures (TCFD), Task Force on Nature-related Financial Disclosures (TNFD) and International Sustainability Standards Board (ISSB) recommendations. To assist readers with finding the disclosures of interest to them, this page shows where disclosures can be found throughout the report, and these are colour-coded and icon-indicated throughout for easy identification, as demonstrated in the table below.

	TCFD Where to find our TCFD disclosures		TNFD Where to find our TNFD disclosures		OTHER Where to find our Other disclosures	
	Pages	Topic	Pages	Topic	Pages	Topic
Governance	50–59 130–138 58	Company-wide governance Further detail on board and management committees, including structure responsibilities and meeting frequency Section 172(1) Statement				
	52 52	Board oversight of climate-related risks and opportunities Management role in assessing and climate-related risks and opportunities	53	Board oversight and management role in managing and assessing nature-related dependencies, impacts, risks and opportunities	53–55	Governance around other risk and opportunities of material interest
Strategy	38 39–41 28–31	Strategic priorities Planning horizons : what we mean by short term, medium term and long term Our approach to materiality assessment				
	42–44 43–44 44 45–47 71 241	Climate risks and opportunities identified over short, medium and long term Impact of climate-related risks on our strategy and planning Use of climate-related scenarios Net zero transition plan Our risks most sensitive to climate change Climate-related financial planning	49	How nature influences our approach, strategy and planning, and the resilience of our strategy to different scenarios, with adaptive planning	49	Other risk and opportunities of material interest that influence our approach
Risk and opportunities	60–69	Our approach to identifying , assessing and managing risks and opportunities including our principal risks, common themes, most significant event-based risks, and new and emerging risks and opportunities				
	70 71 71 71	How we identify and assess climate-related risks Management of climate-related risks Integration of climate-related risks into our risk management processes Our risks most sensitive to climate change	72	How we identify, assess and manage nature-related risks, and how this is integrated into our risk management processes	73	How we identify, assess and manage other risks other risk and opportunities of material interest
Metrics and targets	76–83 83 84–111	Metrics and targets for assessing general company performance, and assurance of those metrics Short, medium and long-term targets Operational performance for 2022/23				
	81 93–95 81	Metrics and targets used to assess climate-related risks and opportunities Energy and carbon report with scope 1, 2 and 3 greenhouse gas (GHG) emissions Targets used to manage climate-related risks	82	Metrics and targets used to assess and manage nature-related dependencies, impacts, risks and opportunities	82	Metrics and targets in relation to other risks and opportunities of material interest to stakeholders

Strategy

In this section you will find:

- Our purpose and strategic priorities
- Short, medium and long-term planning horizons
- Our strategy for managing climate-related risks and opportunities and net zero transition plan
- Our strategy for managing nature-related and other risks and opportunities

Our purpose

Why we are here

Providing great water for a stronger, greener and healthier North West

Our purpose highlights how environmental, social and governance (ESG) considerations are integral to everything we do.

As shown on pages 18 to 19, each step in our water cycle and every aspect of our activities is aligned with delivering our purpose, and this is what drives us to create value for all of our stakeholders.

Our strategic priorities

How we deliver our purpose

Improve our rivers

We are a sector leader in minimising pollution, and continue to protect bathing waters across the North West. River health in the UK has received a lot of public interest. The industrial legacy and high rainfall in our region means we have a bigger task than many to deliver the significant reduction in storm overflow activations required by the Environment Act 2021. This will form a significant component of our 2025–30 business plan, and we are accelerating investment with good progress already made.

Read our **Better Rivers case study** on page 90

Provide a safe and great place to work

We invest in our colleagues' training and development, and maintain high levels of health, safety and wellbeing. We want to attract, develop and engage great talent across the organisation, we support and encourage a diverse and inclusive culture, and we want colleagues to be empowered to contribute to making things better. To facilitate this, we are launching new 'Call it out' and 'Tell me' initiatives, which enable everyone to raise topics directly with the CEO and receive a response within 48 hours.

Read about our **performance for colleagues** on pages 96 to 102

Spend customers' money wisely

We continuously challenge ourselves to improve cost efficiency in a sustainable way, so we can keep customer bills as low as possible in the long term without compromising on service or resilience. We look to minimise whole-life cost and deliver the best value solutions, using Systems Thinking and innovation to find better ways of working, leveraging partnerships and driving value in our supply chain, capitalising on digital and automation opportunities, and removing areas of duplication or waste.

Read about our **financial performance** on pages 112 to 119

Create a greener future

We are committed to protecting nature and biodiversity, and reducing water consumption. We have six carbon pledges underpinned by ambitious science-based targets and a net zero transition plan. We generate around a quarter of our energy from bioresources and through partners. We are looking at how we can make the best use of our land to deliver clean energy, be that through our pledges to create woodland and restore peatland, or increasing our renewable energy generation capacity.

Read about our **net zero transition plan** on pages 45 to 47

Deliver great service for all our customers

Delivering great service means continually improving our ways of working, for example, improving water quality, minimising interruptions, leakage and sewer flooding, and supporting customers with affordability and vulnerability. Engagement helps us understand what matters most to customers and we act on their feedback. This can be seen in the way we redesigned our bills based on customer research, and the early investment we are making to improve customer and environmental performance faster.

Read about our **performance for customers** on pages 96 to 103

Contribute to our communities

We work closely with communities across the North West and we want to ensure we are visible and trusted. We actively engage and make use of partnerships to drive value for communities, such as our participation in the Love Windermere initiative. With much to deliver in the years ahead, we have appointed regional stakeholder managers for each of the North West's five counties to help manage these relationships and ensure we can deliver our planned improvements with minimal disruption.

Read about our **performance for communities** on pages 104 to 111

Our planning horizons

We plan for long, medium and short-term horizons to deliver our purpose in a sustainable way.

Our approach to planning

We take an integrated approach to everything we do. To help us create and prioritise our plans, we consider:

- what the material issues are, both in terms of the level of interest to stakeholders and the effect they may have on our ability to create value;
- our assessment of risks and opportunities;
- our environmental, social and governance (ESG) commitments, including our net zero transition plan; and
- how our plans will fit with our Systems Thinking approach.

Read more about **our materiality matrix** on page 29, **our risk management** on page 60, and **our net zero transition plan** on page 45

We undertake planning for long, medium and short-term horizons.

Long-term planning looks out 25 years and more. This helps us identify what we need to do to manage risks and opportunities that may arise, building resilience to ensure we can provide our essential services to customers far into the future.

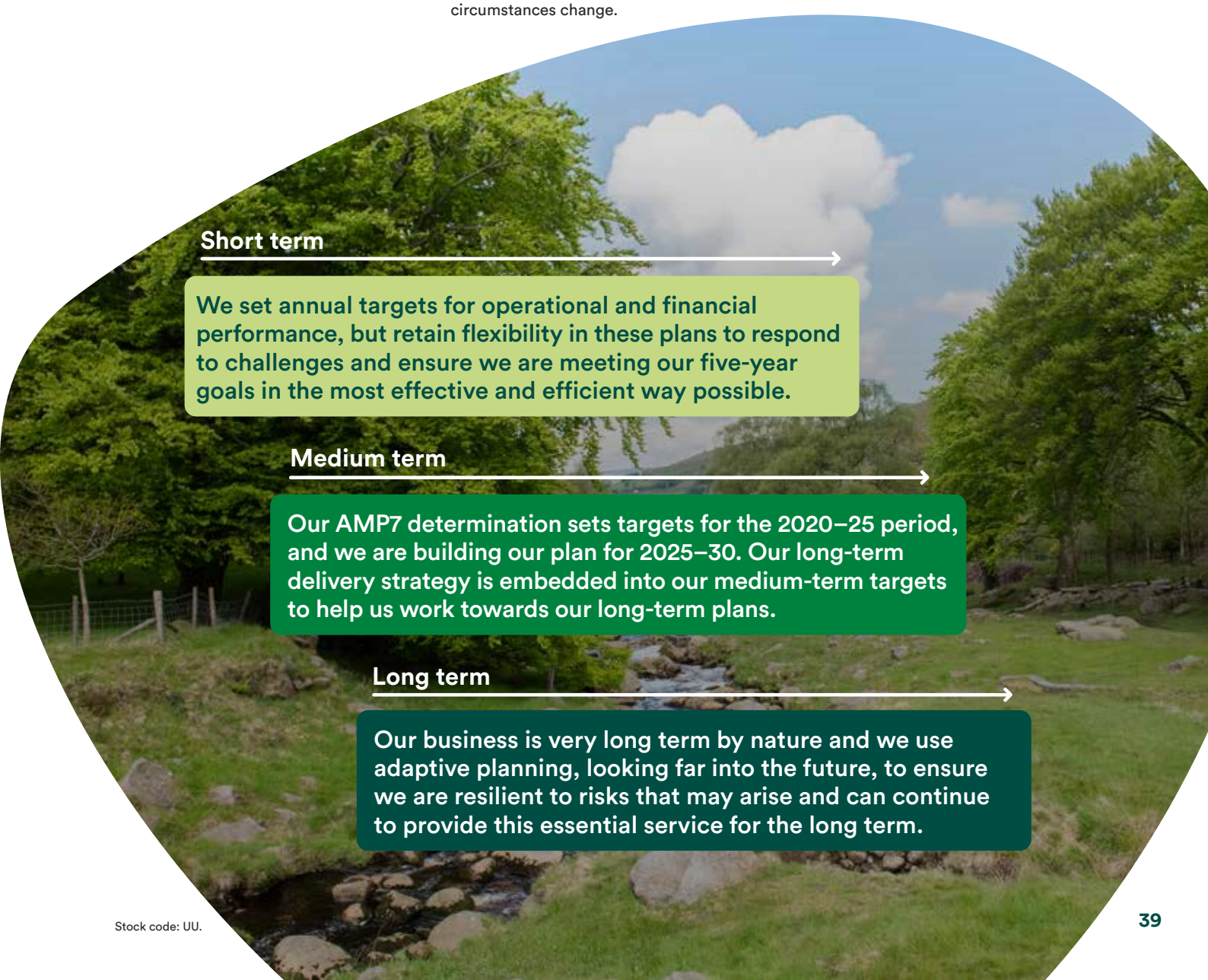
Medium-term planning covers how we will deliver the commitments of our final determination for the current regulatory period (AMP7), as well as our non-regulatory activities, and our plans for the next five-year period (AMP8), so this currently extends out to 2030.

Short-term planning, for the next financial year, enables us to monitor and measure progress against our longer-term targets. We retain flexibility in our one-year plans to meet our five-year targets in the most effective and efficient way as circumstances change.

Metrics and targets

We set targets across each of these planning horizons, with our shorter-term targets helping us to ensure we are on track to deliver our longer-term ones. The metrics we track include key risk indicators, enabling us to adapt our plans to meet changing conditions, and performance metrics to continuously assess how we are doing against our targets. We use a wide variety of performance metrics, both operational and financial. These help us to measure the value we are creating for all of our stakeholders, and we have selected three operational key performance indicators (KPIs) for E, S and G, as well as monitoring various other performance metrics of interest to these stakeholders.

Read more about **our metrics and targets** on pages 76 to 83



Short term

We set annual targets for operational and financial performance, but retain flexibility in these plans to respond to challenges and ensure we are meeting our five-year goals in the most effective and efficient way possible.

Medium term

Our AMP7 determination sets targets for the 2020–25 period, and we are building our plan for 2025–30. Our long-term delivery strategy is embedded into our medium-term targets to help us work towards our long-term plans.

Long term

Our business is very long term by nature and we use adaptive planning, looking far into the future, to ensure we are resilient to risks that may arise and can continue to provide this essential service for the long term.

Our planning horizons continued

Our adaptive planning approach ensures we are able to respond to risks and opportunities that may arise in the short term or far into the future.

Short-term planning

We set annual, measurable targets, but retain flexibility to enable us to respond to challenges that may arise.

Short-term planning helps us work towards our medium and long-term goals and provides us with measurable targets so we can continually monitor and assess our progress.

Before the start of each financial year, which runs from 1 April to 31 March, we develop a business plan that is reviewed and approved by the board. This sets our annual targets to deliver further improvements in service delivery and efficiency, and help towards our longer-term goals.

Medium-term planning

Aligned to the commitments in our AMP7 determination and our plans for AMP8.

The majority of the group's activities sit in our regulated water and wastewater business, so our medium-term planning mostly sets out how we will deliver against the commitments in our final determination from Ofwat for each five-year period, and our plans for the next one.

To ensure we deliver for all stakeholders, including customer preferences and environmental requirements, we align our plans to these priorities in line with key published methodologies.

Long-term planning

We plan far into the future to ensure we can respond to risks and opportunities that may arise.

To maintain a reliable, high-quality service for customers long into the future, we need to anticipate and plan for things that may impact on our activities. This includes monitoring the age and health of our assets, keeping track of innovations and advancements in technology, and looking at current and predictive data from various sources to track key risk indicators (e.g. economic forecasts, expectations for population growth, climate and weather predictions, legal and regulatory consultations and changes).

Performance against these annual targets determines the bonus percentage that is awarded to executive directors and colleagues right through the organisation.

To avoid encouraging short-term decision-making and ensure management is focused on the long-term performance of the company, executive directors are also remunerated through a long-term incentive plan (LTP). This assesses three-year performance and includes return on regulated equity (RoRE), a basket of customer measures, and our carbon pledges.

Read more about the **annual bonus and LTP** in our remuneration report on pages 170 to 203

Executive directors hold regular business review meetings with senior managers across the business to track progress against our annual targets.

It is vital that we retain flexibility within this short-term planning so we can adapt to meet challenges that may arise during each year, and deliver high-quality and resilient services to customers in the most effective and cost-efficient way possible.

This may involve bringing enhancements forward to deliver improvements for customers early, investing further into the business to maintain service, or delaying projects to occur later in the regulatory period to prioritise expenditure and focus our time on dealing with unexpected challenges that arise.

The severe freeze-thaw we experienced this year demonstrates how we adapt our short-term plans to focus efforts on immediate challenges. Read more on page 48 about the actions we took to maintain services during this time, the impact on our activities, and how we are still managing the aftermath of this extreme weather event.

The challenges presented by COVID-19 in 2020 were another example that showed why this flexibility was crucial and how effectively we managed this significant and sudden change.

Our medium-term plans are designed to help us work towards our long-term delivery strategy, build and maintain resilience, and fulfil our purpose.

We engage in extensive research to ensure our plans are robust and balanced, targeting the best overall outcomes for all our stakeholders.

Following scrutiny and challenge from Ofwat, we receive the final determination, which sets the price (in terms of total expenditure recovered through customer bills), service level, and incentive package that we must deliver over the five-year period. This includes an expected return to meet financing costs.

Adaptive planning is important in meeting our medium-term targets in the most effective and efficient way. During the current 2020–25 period we have adapted our total expenditure (totex) in two ways.

First, we accelerated our capital programme, with around £500 million of totex brought forward over the first three years, delivering improvements early and making a strong start to our plans.

Second, we extended our totex by £765 million to deliver customer and environmental improvements, accelerating delivery of the Environment Act 2021 and improving performance against customer outcome delivery incentives (ODIs).

Our strategy helps us create value for our stakeholders by delivering or outperforming the final determination. We publish an annual performance report (APR) in July of each year, which reports our performance in a format that is comparable across the sector. This includes Return on Regulated Equity (RoRE), which comprises the base allowed return and any out/underperformance.

Our **APR** will be available at **unitedutilities.com/corporate/about-us/performance/annual-performance-report**

Information on **companies' regulatory performance** can be found at **discoverwater.co.uk**

We review this information as part of our long-term planning and risk management processes, through which we assess and manage opportunities and risks such as climate change, population growth, a more open, competitive market, water trading, more stringent environmental regulations, developments in technology, and combining affordable bills with a modern, responsive service.

Our website has a dedicated section where we examine key long-term challenges and how we will focus our resources and talents to meet them.

Read about **our future plans** at **unitedutilities.com/corporate/about-us/our-future-plans**

You can find our long-term plans, such as:

- Water Resources Management Plan – setting out the investment needed to ensure we have sufficient water to continue supplying customers, taking into account the potential impacts of climate change, covering a 25-year period and considering consumption and climate forecasts out to 2080;
- Drought plan – setting out the actions we will take to manage drought risk, updated every five years; and
- Adaptation report – setting out the current and future predicted impacts of climate change on the business and our proposals for adapting to a changing climate.

Our long-term delivery strategy out to 2050 is embedded into our plans for AMP8, and we are developing a Drainage and Wastewater Management Plan – examining the risks around flooding, pollution, storm overflows, and wastewater treatment over a 25-year period – that will be published in 2024.

We use whole-life cost modelling and maintain a robust financing structure to ensure we can invest efficiently to meet our long-term plans. Our training and development, graduate and apprenticeship programmes, and work with schools to encourage STEM careers, all helps to ensure we retain the skills we need in the North West to continue delivering these plans.

TCFD Climate strategy: How climate-related risks and opportunities impact the organisation's businesses, strategy and financial planning.

Summary

- Twin track approach of adaptation and mitigation to address climate change and manage both physical and transitional risks in a sustainable and resilient way.
- Further developed our strengths in long-term and adaptive planning to manage uncertainties and ensure a low regrets approach.
- Built relationships with key suppliers to reduce environmental impact by sharing best practice and collaborating on how to reduce GHGs and improve resilience.
- Assessed the carbon impact of our DWMP, WRMP and PR24 plan to minimise impact while enhancing environmental and social value and resilience.

Most material climate-related risks – risk score(1) of 9+ in our 2021 adaptation report

We already experience the impacts of climate change with increasingly frequent or more extreme cold snaps and heatwaves and changes to rainfall.

TCFD risk type	Climate trend	Leading to	Horizon ST	Horizon MT	Horizon LT	Resulting in...
Physical – acute	Cold snaps	Reduced effectiveness of biological processes in wastewater treatment	●	●	●	Pollution events
		Leaks and thus increased volumes of calls	●	●	●	Pressure on our emergency response
	Extreme events	Increasing frequency and duration of loss of power within a treatment process	●	●	●	Service disruption
	Heatwaves	Causing work environments to become intolerable	●	●	●	Risk to health, safety and wellbeing
		Resulting in increased reservoir misuse	●	●	●	Risk to health, safety and wellbeing
Physical – chronic	Increased rainfall	Sewer capacity exceeded	●	●	●	Sewer flooding, pollution incidents, customer impact
		Flooded assets	●	●	●	Service disruption and asset damage
		Restrictions on ability to recycle biosolids to land	●	●	●	Adverse effect on supply and demand of biosolids to agriculture
		More storm overflow activations	●	●	●	Pollution and perception of pollution of rivers and bathing waters
		Runoff polluting water sources	●	●	●	Water quality deterioration
		Increased soil movement causing pipe systems to move leading to fractures	●	●	●	Service disruption and asset damage
		More runoff from agricultural land	●	●	●	Raised nutrient loads in water sources
		Increased use of rising mains	●	●	●	Supply interruptions and energy use
		Decreasing raw water quality	●	●	●	Impact to treatment and costs
		Floods, accidents and landslips	●	●	●	Disruption to transport and supply lines
	Hotter, drier summers	More severe and frequent moorland/ forestry fires	●	●	●	Water demand and quality stresses, risk to catchment health
		Promotion of cyanobacteria and actinomycetes growth	●	●	●	Taste and odour compound formation
		More NW tourism and access of UU land	●	●	●	Increased risk of damage to land and catchments
	Lower average summer rainfall	Reducing water resources	●	●	●	Supply interruptions
		Shock load from first flush when it rains	●	●	●	Pollution
		Blockages in the sewage system	●	●	●	Sewer flooding and pollution
		Political pressure regarding water use priorities	●	●	●	Supply interruptions and impact to reputation
	Rising sea levels	Coastal flooding	●	●	●	Asset failures
Transitional	Moving to a net zero economy	Decarbonisation of the UK electricity grid	●	●	●	More intermittent power generation
		The need to adopt new technologies driven by a change in legislation and standard practice	●	●	●	Change in operational processes and capabilities
		Legislation, taxation, and decarbonisation targets	●	●	●	Higher energy costs and greater regulatory duties
		Changes in social expectations	●	●	●	Demand for further progress
		Water use change including increased abstraction by other catchment users	●	●	●	Pressure on water resources

(1) Risk score is the product of score (between 1 and 5) for likelihood and consequence.

Key: ● Low <8 ● Medium 8 to 12 ● High 12+

Climate-related risks and opportunities impacts

Climate risks and opportunities are assessed using the same planning horizons, materiality and risk assessment as other matters. As our assets typically have long, even very long, lifespans, our planning horizons look longer into the future, in some cases as far as 2080.

Our services being intrinsically linked to the natural environment, it is not surprising that many of our most material climate risks are physical risks. The weather directly and indirectly constrains our ability to deliver our services which is why climate change will exacerbate the impact of existing challenges such as sewer flooding, asset flooding and asset deterioration.

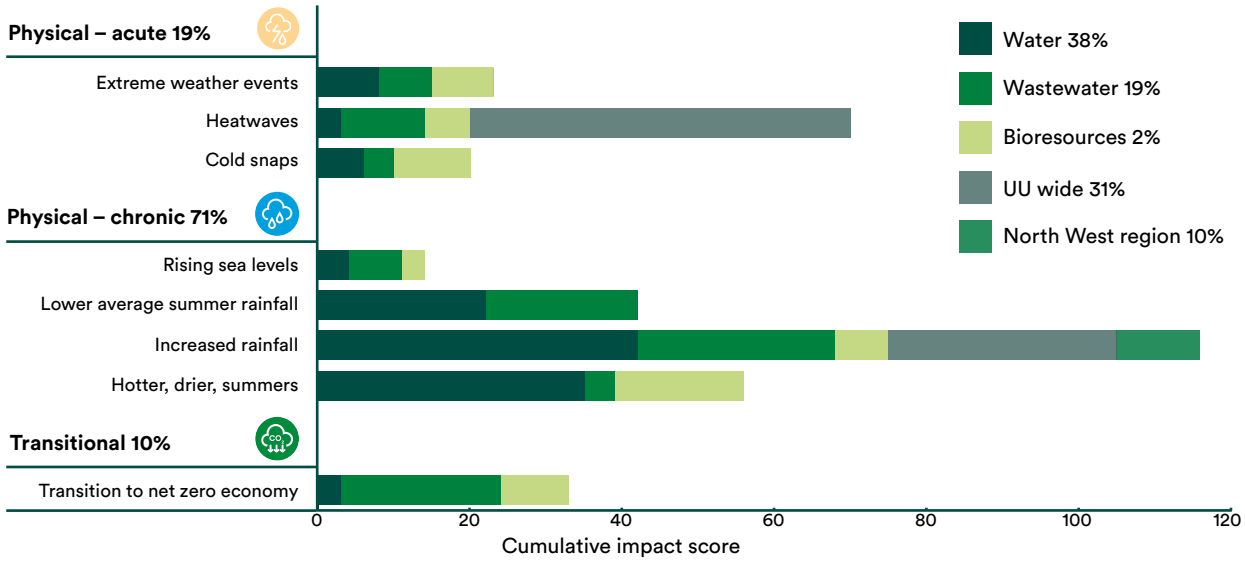
The North West region has 28 per cent more rainfall than the average for England and Wales. This, together with our significantly higher proportion of combined sewers, puts more pressure on our sewerage and treatment infrastructure, and in turn creates greater risk from sewer flooding and/or activations of storm overflows.

We have quantified the impacts of the physical climate risks (see 2021 Adaptation progress report) using the highly respected and relevant Met Office UK Climate Projections 2018 (UKCP18). For our assessment we chose the Met Office climate projections for the representative concentration pathway, RCP 6.0, which has an emissions peak occurring in 2080 and an expected 3.0–3.5°C increase in global mean temperatures from pre-industrial levels. We chose this as it is widely recognised to be the most likely pathway that supports effective planning.

To assess the magnitude of the transitional risks we have adopted a more qualitative approach though for risk assessment and mitigation planning we have used the carbon values (£ per tCO_2e) for use in policy appraisal, provided by the UK Government (BEIS).

Climate-related risks by business area and region and TCFD risk category – from 2021 adaptation report

The chart below shows the cumulative impact/consequence scores of the assessment of climate-related risks in the 2021 adaptation progress report. These risks are also those that have been considered in the preparation of the financial statements, see page 241. Percentages are of the total cumulative score for the business area and region or TCFD risk category.



Addressing the impact of climate change in our planning

Predicting the effects of climate change is multifaceted and complex. There is considerable uncertainty about how our processes, people and infrastructure will respond to the challenges of both climate and demographic changes. We address the challenge of uncertainty by using adaptive planning to shape our plans for the long term (25+ years) while remembering our short-term needs and financial and regulatory constraints. An adaptive approach allows us to prepare for the future without knowing the exact scale and impact that climate change poses on our services. This means we can be agile as climate science and technology advance, as legislation develops and our customer and stakeholder expectations evolve.

Our public Water Resources Management Plan (WRMP) and Drainage and Wastewater Management Plan (DWMP) address this multidimensional challenge by using detailed and extensive models to test how resilient our services would be against a wide range of possible future demands from population growth and movement, economic trends and patterns of water use. Understanding these potential impacts allows us to adapt our plans to improve performance and resilience across key topic areas such as water supply, leakage, sewer flooding and pollution.

Our ability to pre-empt compound physical impacts to our system, and have various recovery tactics, is increasingly vital in effective climate change adaptation. We are addressing how to plan for when multiple different extreme weather events occur in a short time frame. An example of such a cascade effect is the dry and hot summer of 2022 being followed by a winter with freeze-thaw challenges.

To address compound issues, we stress test our WRMP by building weather scenarios that combine together pairs of worst examples of weather that have happened in the past, for instance, a dry winter like 1984 being followed by a 1995/96 style summer. We then model how our current assets and systems would cope.

As well as combining impacts in our modelling, we are also attempting to deliver compound benefits in our controls by designing interventions that have multiple benefits. For instance, sustainable drainage systems (SuDS) to slow down or divert rainwater runoff both reduce the risk of sewer flooding and optimise wastewater treatment capacity and also provide an opportunity to deliver wider social value in the community and local environment.

TCFD

Climate strategy continued

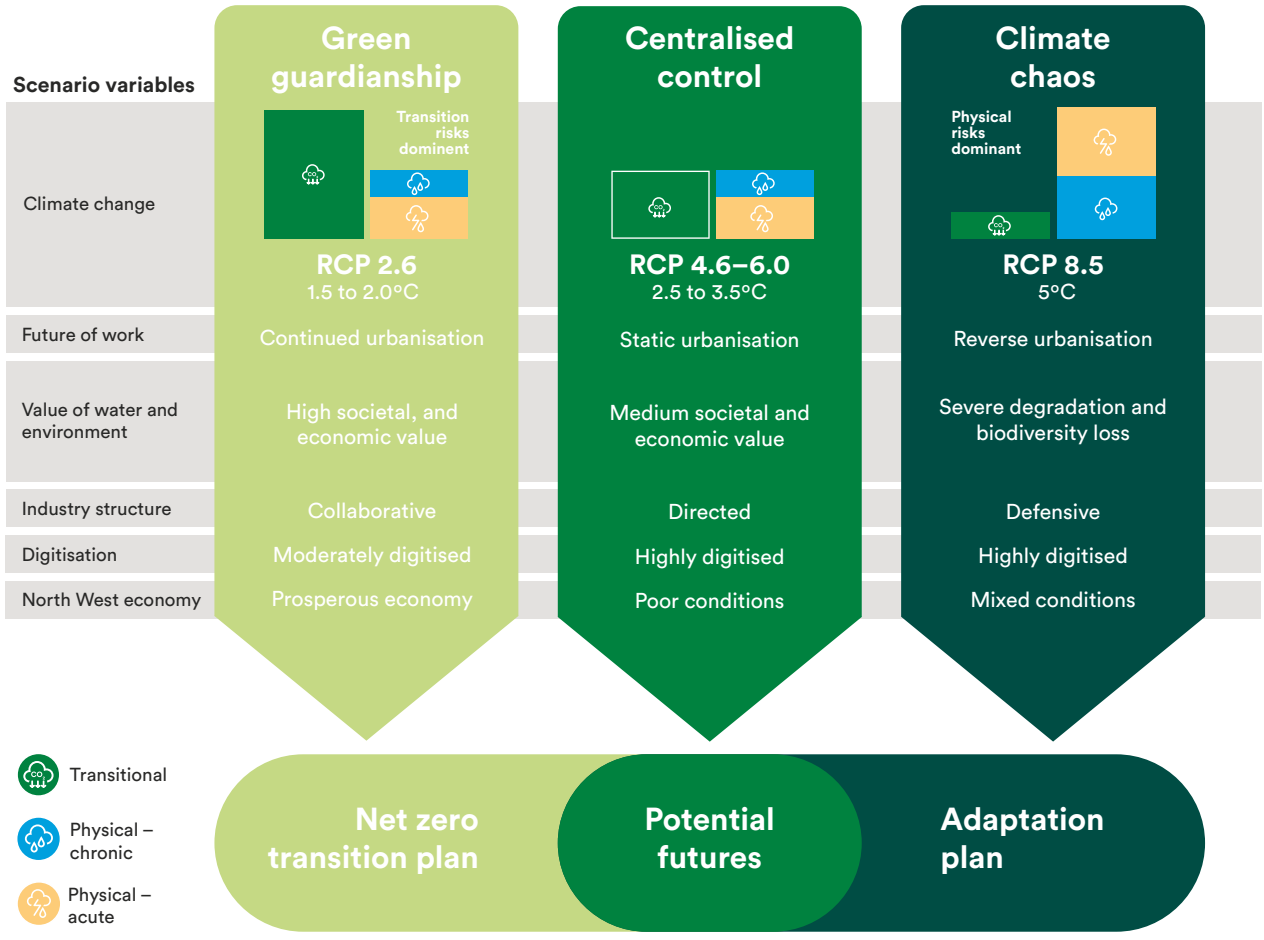
Using scenario analysis to test resilience

In developing our long-term strategic plans, and seeking customer feedback on those plans, we have used potential scenarios of the future encompassing wide ranges of environmental, regulatory, technological and societal possibilities. To simplify the interaction of multiple factors while retaining an expansive scale of uncertainty about the future, the three company-wide alternative scenarios for 2050 have different values or descriptions for the most relevant factors such as the water industry structure, the North West economy, water value to customers and climate change. These scenarios are named 'green guardianship', 'centralised control' and 'climate chaos'.

The scenarios recognise climate change as one of the most critical factors and use RCPs 2.6, 4.5 and 8.5 (GHG concentration pathways adopted by the Intergovernmental Panel for Climate Change) to describe how well climate change has been mitigated by society in each case. This in turn gives the relative climate risks in each scenario. In the extreme climate scenario of 'climate chaos' the physical risks are substantial and provide a worst case from which to base our adaptation planning. At the other extreme, 'green guardianship', the challenges of providing water and wastewater services in the North West are determined primarily by transitional risks. For instance, the risk from an electricity supply from a UK grid that is based on low-carbon but intermittent power generation and therefore is more vulnerable to power outages.

These imagined future scenarios have brought challenges and ambitions into sharp focus and encouraged reconsideration of the relative priorities in our business plans. For example, our latest plans now include even greater focus on further reducing water use and preventing storm overflow activations and flooding.

Climate and societal scenarios



Future focus

- Publish more details behind our net zero transition plan.
- Continue to improve our assessment of climate-related risks and opportunities.
- Embed low-carbon and climate-adjustable approaches in our long-term delivery strategies and PR24 business plans.

Read our adaptation progress report on our website at unitedutilities.com/corporate/responsibility/environment/climate-change/

Read our net zero transition plan on pages 45 to 47

TCFD

Our net zero transition plan

Our net zero transition plan

Our transition plan to contribute to, and prepare for, a rapid global transition towards a low-emission economy is based on our established climate change mitigation strategy. This has four pillars: vision and visibility; ambition and commitment; demonstrating action; and beyond here and now. Between them, these pillars define our principles, priorities and approach.

Vision and visibility

Demonstrating integrity and leadership in carbon reporting and disclosure.

Vision and visibility are the foundations of our climate change mitigation strategy and thus our net zero transition plan. We have a strong track record of sustainability reporting, having disclosed our GHG emissions for nearly 20 years. We are committed to reporting in the most open and transparent way possible, aiming to be recognised as among the best in the UK. We have responded to the CDP climate change questionnaire since 2010 and use this as our benchmark of leadership. We were proud that our 2022 response was rated as A-, putting us in the leadership category.

We publish our GHG emissions and underlying energy use in our annual report as required under the Companies Act 2006 and follow the 2019 UK Government Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance. Our reporting is supported by robust governance and accountability mechanisms. Since 2007, our greenhouse gas inventory has undergone independent, third-party verification by Achilles Group, confirming our reporting is compliant with the international carbon reporting standard (ISO 14064) and certified as compliant with the CarbonReduce programme.

We are dedicated to understanding how every aspect of our operations contributes to our emissions. Our vision is to ensure we consider the climate in all our operational and strategic decision-making and to influence strategy and behaviours by including in remuneration schemes and carbon pricing in our six capital value framework.

Ambition and commitment

Playing our part to mitigate climate change and lower our greenhouse gas emissions to help make the North West a better place to live now and in the future.

An important element of our approach is to demonstrate our ambition and encourage others to contribute by making public commitments. In 2020 we made six carbon pledges as part of our commitment to tackling climate change and we are making good progress. See page 92 for more details.

Central to our pledges was to set science-based targets for all emission scopes. United Utilities is proud to be the first UK water company to have targets approved by the Science Based Targets initiative (SBTi), a collaboration that defines and promotes global best practice in science-based target setting. SBTi assessed and verified our four science-based targets in July 2021 and commended our ambitious 1.5°C aligned scope 1 and 2 target.

Our four targets are:

SBT1 – 42 per cent reduction of scope 1 and 2 emissions by 2030 from a 2020 base year;

SBT2 – increase annual sourcing of renewable electricity to 100 per cent;

SBT3 – 66 per cent of suppliers by emissions within scope 3 capital goods will have science-based targets by 2025; and

SBT4 – 25 per cent reduction of scope 3 emissions (other categories) by 2030 from a 2020 base year.

These near-term targets are intended to deliver an emissions reduction pathway consistent with the 1.5° ambition of the Paris Agreement. The SBTi Net Zero Standard was launched late 2021 and we will validate our long-term net zero ambition to this standard when we revise and revalidate our near-term targets in advance of 2025.

Demonstrating action

Reducing our environmental impacts through delivery of transformation strategies and culture change.

Our action plan to achieve the long-term ambition of 'net zero by 2050' (in line with the UK Government) is set out on the next page with the hierarchy below. We are already working on, and delivering on, actions in all themes to:

- **reduce** through the efficient use of resources;
- **replace** processes and resources with more sustainable alternatives;
- **remove** GHGs from the atmosphere;
- **collaborate** to tackle emissions in the supply chain; and
- **innovate** to address current technological or market gaps.

Our priority in the medium term will be to reduce our emissions through these actions before we purchase any credits to offset the residual emissions to net zero.

TCFD Net zero transition plan

GHG emissions scopes

Our net zero transition plan addresses all three emissions scopes.

Scope 1 – emissions from activities we own or control

Wastewater and sludge processes cause approximately 70 per cent of our scope 1 emissions as the gases released, nitrous oxide (N_2O) and methane (CH_4), have much greater global warming potentials than carbon dioxide (CO_2). Our process emissions are currently estimated as a direct function of the population whose wastewater we treat. This means that, even if we achieve a 100 per cent green fleet and eradicate all fossil fuel use, along with the global water industry we still have the gigantic challenge of process emissions to tackle.

Scope 2 – emissions from electricity and heat purchased

Our scope 2 emissions have reduced since we began to measure them in 2005/06 from 360 $ktCO_2e$ to 261 $ktCO_2e$ (location-based) and 0 $ktCO_2e$ (market-based). This is a combination of the ongoing decarbonisation of the UK grid, maintaining our energy requirements in the face of substantial growth and policy to buy REGO backed renewable electricity supplies.

We have ambitions to substantially increase our self generation and energy resilience by using our land for development of renewables and other clean technologies.

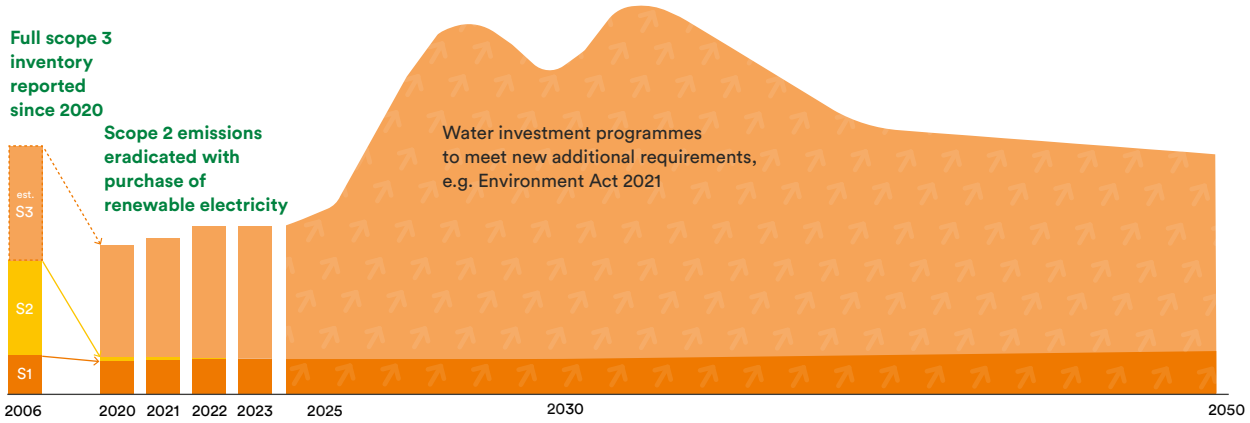
Scope 3 – emissions from our value chain

Scope 3 emissions are proportional to our business activities. This means if our infrastructure development activity increases, for instance as a result of a prescribed environmental programme as is expected for AMPs 8 and 9, then our emissions will also substantially increase. This increase could be mitigated by the use of nature-based solutions and low-carbon material replacements, but it is by no means certain these technologies and processes will be market ready in time.

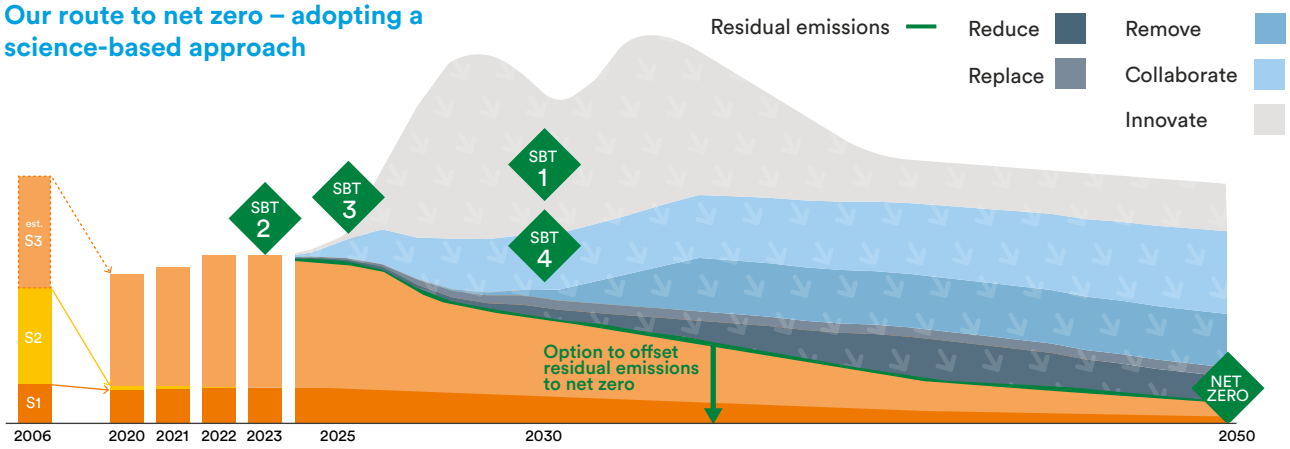
Action plan	Short term including recent progress	Medium term	Long term
Reduce through the efficient use of resources	• Colleague campaign 'Use Less, Save More' • Achieved ambitious targets for percentage of waste to beneficial reuse	• Optimise wastewater processes for GHG • Careful delivery of environment improvement programmes	• Continual search for efficiency opportunities
Replace processes and resources with more sustainable alternatives	• **Renewable electricity sourcing** • Substantial renewable energy generation capacity and capability • 60%+ sludge processing by low GHG advanced digestion	• Grow further renewables capabilities and capacity • Bioresources planning and investment to increase sludge processing capacity • **Electric vehicles rollout and trials for HGVs**	• Replace fossil fuels with alternatives e.g. hydrogen • Nutrient recovery initiatives • Continual stretch for sustainability informed by latest innovations
Remove GHGs from the atmosphere	• Woodland creation – planning and first planting schemes • Peatland restoration – schemes started	• **550ha woodland creation** • **1000ha peatland restoration**	• Growing benefits from created woodlands • Carbon capture, use and storage
Collaborate to tackle emissions in the supply chain	• Comprehensive scope 3 reporting • **Encourage SBTs for capital delivery partners**	• Inform national approach to water environmental improvements • Enriched sustainability criteria for suppliers • Quantify emissions using product/activity data	• Collaborate to decarbonise our infrastructure programmes and wider supply chain
Innovate to address current technological or market gaps	• Carbon categories in United Utilities Innovation Labs • CEO challenge improvement projects on carbon	• Low-carbon capital delivery options e.g. nature-based solutions and low-carbon concrete • Process emissions monitoring • Nutrient recovery research	• Transformation in water and wastewater processing e.g. nature-based solutions • Opportunities for circular economy • Eradicate use of remaining fossil fuels

Actions in green text directly link to our six carbon pledges

Our emissions challenge – large growth pressures from environmental obligations



Our route to net zero – adopting a science-based approach



Our plan to net zero is a science-based approach focused on reducing emissions as the first priority whilst growing our programmes that store carbon, such as peatland restoration and woodland creation, and working with our supply chain to share and develop sustainable development practice. We may purchase credits in the medium to long term to offset residual emissions and achieve net zero.

We will go beyond emissions reductions and include sustainable use of natural resources and increased application of the waste hierarchy and the principles of a circular economy in our processes and physical infrastructure.

We will also enable, encourage and reward action to protect and enhance the natural environment and promote the value of ecosystem services across our business and supply chain.

Beyond here and now

Innovating across our processes, technology and culture

We are not only concerned with things we can do now to reduce our reportable emissions. Our strategy pillar of 'beyond here and now' allows us to reflect on the challenge to influence emissions regardless of whether those emissions are part of our inventory To deliver our net zero transition plan we will be innovative, challenge standards and drive climate change mitigation by understanding and joining in relevant research to develop new technologies and practices. For instance, we are investigating what operational interventions we can make that will reduce process emissions.

We have recently launched our fifth Innovation Lab, a 12-week programme that provides successful applicants with the opportunity to test their solutions to our business challenges in a live environment. The programme is designed to 'look for ideas where others aren't looking' – in other sectors, other countries and with suppliers that are often small, start-up businesses, just starting on their idea development or business growth journey.

We will continue to explore opportunities to innovate across processes, technology, standards and culture and we will lead by example and deliver outcomes in partnership whilst we inform and influence future developments affecting the environment.

Read more about **innovation at United Utilities,** including how we are using innovative solutions to tackle the sustainability challenges we face, at **unitedutilities.com/corporate/about-us/innovation**

> “Key lessons learned from previous incidents meant we entered the 2022 freeze-thaw with improved capabilities as a result.”

TCFD **Climate case study**

Resilience in the face of an already changing climate

With the trend of more extreme weather events set to continue, we must plan, adapt and prepare, to strengthen our operational resilience.

In December 2022 we experienced a severe cold snap, when air temperatures fell below freezing and remained at or below freezing for ten days, reaching a low of -12°C on 15 December, before rising rapidly to 14°C by 19 December. This was a more sustained freeze and more rapid thaw than other recent freeze-thaw events in 2009, 2010 or 2018, and tested our preparedness, response and service recovery.

Freeze-thaw incidents present several challenges which can threaten to disrupt the service we provide to customers, such as frozen pipework on our mains and in customer properties, increased leakage following the thaw and subsequent increases in water demand.

We use Met Office data to assess the risks of weather-related events occurring and to act as an early warning system to trigger preparations for such an event. This approach identified, on 5 December, the risk of a weather-related event occurring and led to detailed preparatory work, including:

- encouraging customers to prepare their homes, with our ‘Prepare, Insulate, Protect, Easy’ awareness campaign;
- undertaking winter checks on targeted key assets on our system where we expected the impact to be greatest; and
- establishing a key task team, using our incident management procedure, to provide central co-ordination during events.

The immediate impact of the freeze-thaw was significant. A total of 22,464 customers were off supply for more than 12 hours, with the largest proportion of them in the Lancaster and Morecambe area. We very much regret the short-term service interruption some customers experienced, but because of our proactive management of the situation we were able to mitigate the impact to some extent. For example, ahead of and during the loss of supply we were able to provide clear information to local stakeholders, ensure that there were adequate bottled water supplies in the area and take steps to protect vulnerable customers through our Priority Services offering.

Within 48 hours of the thaw commencing, demand for water rose to 20 per cent above normal December levels and reached a peak of 2,200 megalitres per day, significantly higher than the peak following the 2018 ‘Beast from the East’. This was largely due to water being lost through leakage, both from elevated leakage on our own network and significant bursts on customer pipework and plumbing. Our teams and partners worked around the clock to fix damaged pipes, and we deployed our water tankers to target sensitive non-household customers such as schools, hospitals and prisons.

Management of the incident continued over the Christmas period to ensure that issues were fully resolved until the incident was formally closed on 3 January 2023. Overall, we consider that key lessons learned from previous incidents meant we entered the 2022 freeze-thaw with improved capabilities as a result.

Read more about **the financial impacts of the incident** on pages 99 and 112

Governance

In this section you will find:

- Our culture and core values
- How the organisation is governed by the board and its principal committees
- Governance of key risks and opportunities, including nature and climate-related disclosures, and our commitment to equity, diversity and inclusion
- How we engage with stakeholders and consider their views in decision-making, including our Section 172(1) Statement

Our culture and core values

Culture

Our culture drives the interactions we have with our stakeholders, and our commitment to responsible business and sustainability is reflected in the way we measure and report the value we create as a business. Metrics are monitored and targets set for the greener, stronger and healthier ambitions within our purpose, closely aligned to ESG.

Read more about **the value we create** on pages 76 to 79 and **our performance** on pages 84 to 111

When assessing culture, we look at four categories – our core values, our purpose, our strategic priorities, and our people. We monitor a number of key metrics relating to our people, such as engagement, health and wellbeing, diversity, and development.

Read more about **our culture and how the board monitors this throughout the year** on page 135

Our culture is underpinned by three core values, which cascade down the business from the board to every one of our colleagues, guiding how we expect our people to behave in a way that drives a high performance and innovative culture.

Core values

Our core values demonstrate the way we work, and we want to ensure these are clear and easy for all our colleagues to apply to every situation. We have redefined our core values to reflect the things we believe are most important to help us deliver our purpose of providing great water for a stronger, greener and healthier North West.

Do the right thing

First and foremost, as a responsible business, we want our people to always focus on doing the right thing.

This means always putting safety first, delivering for the benefit of our stakeholders, championing fairness, acting with courage and speaking up if they come across anything that doesn't feel right.

This is vital for building and maintaining trust with the public and our stakeholders, and for delivering our purpose: doing the right thing for the natural environment helps us to create a greener North West; doing the right thing for customers, communities, colleagues and suppliers helps us to build a stronger and healthier North West.

Make it happen

We are focused on supporting each other and working as a team to make things happen, taking accountability and putting progress over perfection. We want to celebrate successes, for individuals and for the company, and learn when we don't get things right first time.

This can already be seen across the business, for example:

- Enabling and fostering new ways of working through our Innovation Lab process.
- Being able to act quickly and capitalise on pockets of efficient financing opportunity.
- Our decisions to accelerate investment where we can deliver improvements for customers and the environment faster.

Be better

Ultimately, everything we do is about improving things and creating a better tomorrow for everyone. We want to be better as a company, and this means encouraging our colleagues to live this value as well.

We want our people to be curious, ambitious, and solution-focused, seeking out new and innovative ways to deliver our services more efficiently and effectively.

We want to ensure we are learning from the best people that are available to us, which is why we embrace equity, diversity and inclusion, collaboration and partnership opportunities, innovation and best practice ideas from other companies, other industries, and the wider world.

Remuneration linked to sustainability performance

Part of being a responsible business and delivering our purpose involves making sure our executive, and colleagues, are remunerated in line with our performance for a number of stakeholders, measuring against sustainability metrics rather than purely financial performance.

Bonus measures drive remuneration for all colleagues, and the executive are also remunerated against longer-term performance targets through the Long Term Plan (LTP).

Bonus and LTP remuneration are both linked to service and delivery for customers and the environment, as well as financial targets. This includes customer satisfaction, customer outcome delivery incentives (ODIs), carbon measures, and effective and efficient delivery of our capital programme.

Read more about **our bonus and LTP** in the remuneration report on pages 170 to 203

We are a purpose-led organisation and our strategy, which is set and governed by the board and its committees, helps us deliver our purpose and create sustainable value for all of our stakeholders.

Read more in our **corporate governance report** on pages 122 to 207, including individual reports of board committees

Governance structure

Our governance structure is set out in the diagram below and more information can be found on page 130, including the roles of each committee in ensuring progress against our six strategic priorities.

The board retains overall responsibility, but delegates certain roles and responsibilities to its principal board committees, allowing them to probe deeply and develop a more detailed understanding. The main responsibilities of board committees can be found in the corporate governance report on pages 126 to 207, and these pages include our reporting against the UK Corporate Governance Code. We operate our business in line with the management standards to which we maintain certification, including quality (ISO 9001), environment (ISO 14001), asset management (ISO 55001), health and safety (ISO 45001), and customer vulnerability services (ISO 22458).

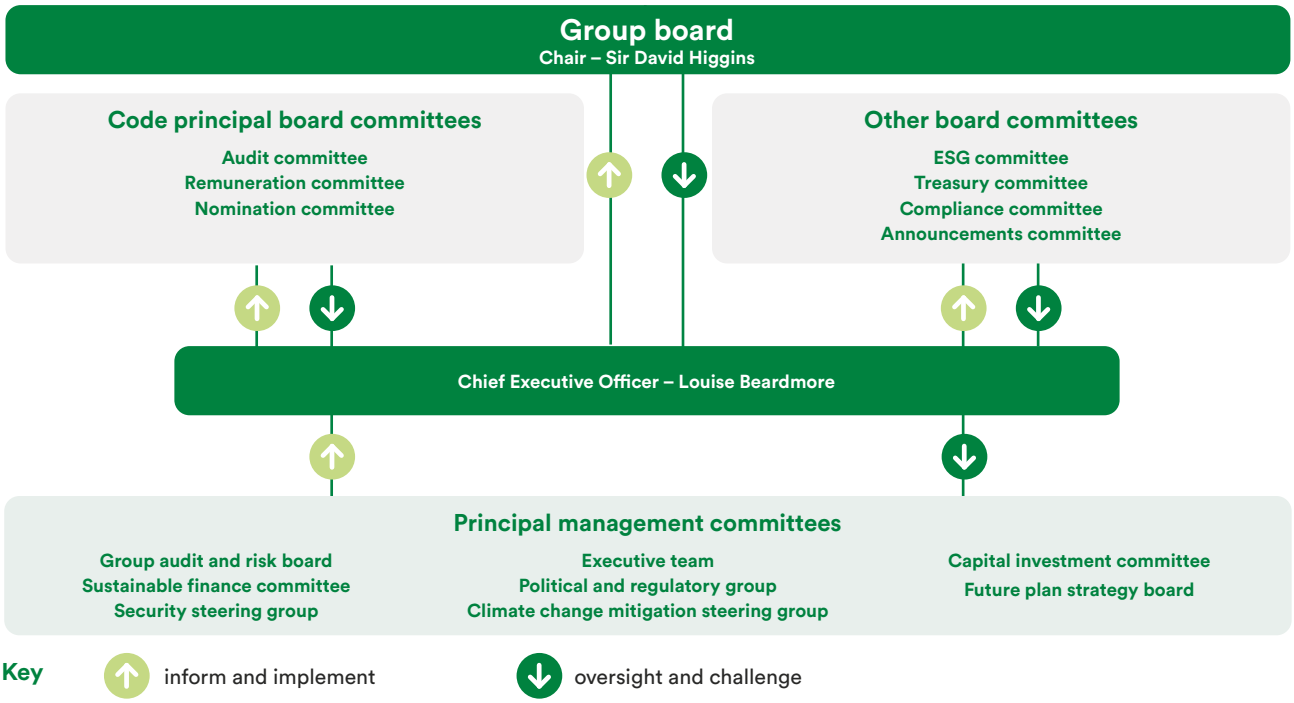
The board committees report back to the board on what was discussed at their meetings, decisions taken, and, where appropriate, make recommendations on matters requiring board approval.

The executive team, comprised of senior managers that report directly into the Chief Executive, is responsible for implementing our strategy and for the day-to-day running of the business and other operational matters. It holds two scheduled meetings each month, one focusing on day-to-day performance and the other focusing on matters of a strategic nature, along with weekly informal 'scrums'.

Through the principal management committees, senior managers discuss the needs of the business, raise issues, identify and delegate appropriate actions, monitor progress of key performance measures, and ensure any lessons learnt are implemented. The Chief Executive provides a report, covering financial and operational performance, to the board at every scheduled meeting.

There are then further layers of focus at management and business unit level, all of which feeds up through the committees and, ultimately, to the board through this structure. For example, pages 52 and 60 describes how these layers operate in relation to risk management.

Governance structure of the board and its committees and the principal management committees



Governance

Governance and reporting process for risk management

The board ensures its oversight of risk remains effective, and in compliance with the UK Corporate Governance Code, through a number of established reporting routes. The board receives a comprehensive update on our risk profile every six months, including the nature and extent of risk exposure of the most significant event-based risks, relative to the inherent principal risks and new and emerging risks. In addition, specific risk topics are reported to the board to support decision-making, enabling it to:

- decide on an acceptable level of risk, relative to risk appetite and tolerance, to deliver on the group's strategy;
- ensure appropriate controls and mitigation are in place, and test the appropriateness of plans;
- report externally on the long-term viability of the company in an informed manner; and
- monitor and review the effectiveness of risk management procedures and internal control systems.

Risk-specific governance and steering groups manage individual risks. The operational risk and resilience board provides oversight of asset and operational process, risk and resilience capability, contributes to the business risk assessment process and escalates risks and issues to the group audit and risk board (GARB). The executive-led GARB focuses on: the adequacy, effectiveness and performance of governance processes; risk management and internal control; monitoring compliance and assurance activities; identification of emerging themes and trends; and resilience across the group. Supported by company secretariat and the corporate audit teams, the audit committee reviews the effectiveness of risk management and internal controls before these are agreed by the board.

TCFD Governance around climate-related risks and opportunities

Summary

- The board and its committees have oversight and scrutiny of climate change matters, including tracking delivery of our carbon pledges, science-based targets, and review of the climate-related risks.
- Climate-related governance is fully integrated within board and management committee responsibilities, supported by our director-led climate change mitigation steering group and cross business working groups.
- Carbon measures are included within the executive remuneration framework and are key components of the environmental performance metrics.
- Public disclosures are complemented through conversations with investors and participation in climate-related indices and assessments. Leadership ratings in both climate change (A-) and supplier engagement (A) for CDP 2022.

Board oversight of climate-related risks and opportunities

The climate and natural environment are critical to our purpose to provide great water, therefore climate matters are monitored closely by our board and the principle committees as a core part of their duties and agenda. The role of the board of directors is to set, review and guide the strategy of the group ensuring the long-term success of United Utilities for customers, investors and wider stakeholders. Climate-related issues play a significant role in determining what is sustainable and responsible for the environment and customers.

The board provides oversight of climate-related matters in the business through our business model, where we:

- consult and plan for short, medium and long-term horizon;
- deliver the outcomes set out in our regulatory contract;
- create long-term value for a range of stakeholders; and
- review and measure our progress.

Our CEO, Louise Beardmore, has responsibility to manage the group's business and to implement the strategy and policies approved by the board and has accountability to the board for climate matters. Louise, as new CEO, is an active and vocal champion with respect to environmental topics and initiatives and she passionately promotes the need for both pace and scale of action to adapt and mitigate climate change.

This year, climate change matters have been discussed by the audit committee in its review of carbon commitments risk and the introduction of the enhanced audit and assurance framework. The remuneration committee covered climate through endorsing continuing the link between long-term incentive outcomes and the delivery of carbon pledges.

Considerations in respect of the impact of climate change risk on the measurement basis of the assets and liabilities of the group are included within the notes to the financial statements (Accounting Policy note, page 241).

Management role

The CEO has ultimate responsibility for the group's preparedness for adapting to climate change and driving our mitigation strategy and does so through chairing all relevant management committees. Our CFO, Phil Aspin, has executive responsibility for risk management and has made climate change and ESG core to the business. The executive management team, through its groups and committees (see structure on page 130), is tasked with assessing and managing the climate-related risks and opportunities and enacting the mitigating actions, for example by ensuring the company has the necessary financial resources and skilled people are in place to achieve its climate-related objectives.

The high value we place on climate and the environment is seen by the fact that most of our board and management committees contribute to our 'create a greener future' strategic priority. This illustrates that climate-related matters influence both day-to-day and strategic decision-making and behaviours, for instance, how we respond to the high costs of energy by focusing on efficiency and maximising use of our self-generated electricity and introducing climate-related criteria into supplier selection evaluations.

Future focus

- Continued communication and engagement programme with all stakeholder groups.
- Deploy whole-life carbon costing using an internal carbon price aligned to government carbon values.

See how **climate-related matters are considered within our governance structure** on page 130

Read more about **our committees including how often they meet and ESG skills** on pages 134 and 144

Engaging with our stakeholders

We actively engage with stakeholders to build and maintain trust and ensure we create long-term value for all. Strong, constructive relationships help us understand what matters most to them. The following pages detail how we engage with stakeholders who influence what we do and benefit from the value we create (in dark blue), and those who just influence what we do (in grey), across a range of ESG issues. Our materiality matrix on page 29 details stakeholder priorities and how these affect our ability to create value.

Our stakeholder relationships are subject to robust governance to ensure stakeholder insights are taken into account in decision-making at executive and board level. The board's ESG committee has stakeholder engagement and reputation as one of its standing agenda items, and the chair of the independent customer challenge group (YourVoice) attends board meetings to provide its perspective. Our Section 172(1) Statement on pages 58 to 59 provides examples of some of the ways stakeholder views have influenced key board decisions during the year.

Colleagues

Our colleagues are the face of the company and we could not deliver our services without them, so maintaining productive relationships built on trust is vital to delivering our purpose. Colleagues know our business better than anyone, with a diverse range of views and experience, making them well placed to help us identify new ways of working and opportunities for improvement.

How we engage

- Annual opinion survey enabling confidential feedback
- Regular manager one-to-one meetings providing two-way engagement
- Colleague Voice panel providing a link to the board
- Monthly trade union forums

Top three material issues

- Colleague engagement
- Diverse and skilled workforce
- Health, safety and wellbeing

Communities

Our work puts us at the heart of local communities, places where customers and colleagues live and work. We want to support them to be stronger and increase understanding of the impact and contribution our work has on everyday life. We balance decisions based on often competing stakeholder interests and look to develop collaborative and partnership solutions where feasible.

How we engage

- Face-to-face meetings with local and parish councils to discuss projects
- Online portals for large capital projects to get the views of communities where we are working
- Facilitated workshops with partners to scope out solutions
- Public events across the region to promote sustainable uses

Top three material issues

- Land management, access and recreation
- Supporting communities
- Trust, transparency and legitimacy

Customers

To deliver value for customers, we need to understand their short-term issues, and longer-term expectations of us as their water company. As expectations change, we need to evolve our services to ensure we meet them. We actively seek feedback on what customers think about us so we can make our services better and address the issues that matter.

How we engage

- Contacts through our operational call centre and social media channels
- Visits to customer properties to resolve issues. Direct customer research on our service provision
- Face-to-face engagement with groups representing vulnerable customers, such as MIND

Top three material issues

- Drinking water quality
- Customer service and operational performance
- Affordability and vulnerability

Environment

We depend on the environment and have a key role in protecting and enhancing it across the North West. We engage with interested groups such as environmental regulators, non-governmental organisations, campaigners and local communities to find the best ways to tackle environmental issues, like climate change and land management. Working together is often the best way to find the right solution.

How we engage

- Meetings with national and regional environmental regulators, such as the Environment Agency
- Customer research to shape our investment plans
- Events such as our Environmental AGM
- Partnerships where we have common interests

Top three material issues

- Storm overflows
- Climate change
- Water resources and leakage

Investors

It is important that investors have confidence in the organisation and how it is managed. We provide regular updates to debt and equity investors and meet with many top investors to establish two-way dialogue about matters of interest to them. Increasingly, this includes environmental, social and governance (ESG) updates alongside financial and performance data.

How we engage

- Capital market days and investor roadshows
- Annual general meeting open to all shareholders
- Direct dialogue with relationship banks and credit agencies
- Participation in investor-led ESG ratings and indices

Top three material issues

- Customer service and operational performance
- Financial risk management
- Corporate governance and business conduct

Suppliers

We rely on suppliers to deliver our services. Good relationships help ensure projects are delivered on time, to good quality, at efficient costs. Awareness of issues in the supply chain means we can address them together and become more resilient. Supplier engagement can also help us identify and realise innovative approaches and solutions.

How we engage

- Directly through supplier relationship management process and United Supply Chain (USC)
- Setting challenges through our Innovation Lab
- Supplier databases such as Achilles, to assess market opportunities

Top three material issues

- Trust, transparency and legitimacy
- North West regional economy
- Responsible supply chain

Media

The media is influenced by stakeholders' interests, and in turn influences them through what it reports. Many people receive their information about us and our activities from traditional and/or social media, so it is important that coverage is fair, balanced and accurate. This requires effective two-way dialogue between the company and the media, and we provide media training to key senior managers to facilitate this.

How we engage

- 24/7 press office available to respond to media requests and publish content for direct media use
- Dedicated social media team covering multiple channels
- Active media and social monitoring focused on the company and sector

Top three material issues

- Storm overflows
- Customer service and operational performance
- Trust, transparency and legitimacy

Politicians

Politicians influence the long-term national water strategy and environmental priorities, matters that affect how all businesses operate, and champion issues raised by their constituents. Local government, elected representatives and devolved administrations provide insight into shared social, environmental, economic and governance issues across the North West.

How we engage

- Direct engagement with regional and national politicians across the spectrum, and working groups with devolved administrations and local authorities on common interests
- Direct engagement with parish councils linked to planning applications
- Responding to enquiries through our corporate affairs team

Top three material issues

- Political and regulatory environment
- Customer service and operational performance
- Affordability and vulnerability

Regulators

Through proactive, constructive engagement with economic, quality and environmental regulators, we understand requirements and deliver against commitments over specified time periods, aiming to meet or exceed the expectations they have of our business. We actively engage in events such as workshops and respond to consultations to contribute towards the policy and regulatory framework in which we operate, covering customer, economic, environmental, social and governance matters.

How we engage

- Regular meetings with all regulators on objectives and performance
- Responses to consultations and contributing to policy debates on how regulation could evolve

Top three material issues

- Political and regulatory environment
- Customer service and operational performance
- Resilience

Risks and opportunities

In this section you will find:

- Our approach to identifying, assessing and managing risks and opportunities
- Our principal risks, common themes, and most significant event-based risks
- Our management of climate, nature and other risks of material interest
- New and emerging risks and opportunities

Our risk and resilience framework

We have a robust risk and resilience framework for the identification, assessment and mitigation of risk.

Our approach to risk and resilience

Successful management of risks and uncertainties enables us to deliver on our purpose to provide great water and more for a stronger, greener and healthier North West and be more resilient across our corporate, financial and operational structures. A key objective of our approach to risk and resilience is to support the sustainable achievement of the strategic priorities that underpin our vision to be the best UK water and wastewater company:

- Provide a safe and great place to work;
- Deliver great service for all our customers;
- Improve our rivers;
- Create a greener future;
- Spend customers' money wisely; and
- Contribute to our communities.

Our risk and resilience framework provides the foundation for the business to anticipate threats to delivering an effective service in these challenging times, and to respond and recover effectively when risks materialise.

Key components of the framework include:

- an embedded group-wide risk management process, which is aligned to ISO 31000:2018 risk management guidelines;
- a board-led approach to risk appetite, based on strategic goals;
- a strong and well-established governance structure giving the board oversight of the nature and extent of risks the group faces, as well as the effectiveness of risk management processes and controls; and
- a portfolio of policies, procedures, guidance and training to enable consistent, group-wide participation by our people.

Continuous improvement is a key feature of the framework, which incorporates a maturity assessment model to identify areas to enhance. Based on risk management capabilities relative to five levels of maturity, a recent assessment has supported the development of a road map of improvements. This includes the enhancement of non-financial assessment criteria by aligning to the six capitals (see page 34) to ensure a consistent consideration of key stakeholders and areas of value; an improved focus on control; and the continued development of tactical appetite and tolerance statements.

Identifying opportunities

Factors from both the internal and external business environment may give rise to opportunities that will positively affect our performance and future prospects. The identification, analysis and management of upside as well as down side risk will further support the achievement of the strategic priorities, with our Systems Thinking approach and culture of innovation being a fundamental component (see pages 62 to 63).

Governance and reporting process

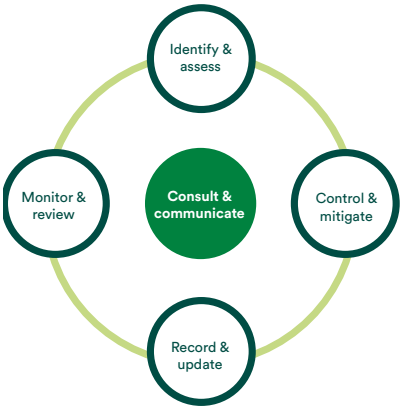
The risk management and governance and reporting process, as summarised on page 52, can be represented by the following diagram:

Risk appetite and tolerance

Focused on supporting decision-making, the risk appetite and tolerance framework consists of a package of measures. The General Risk Appetite represents financial limits against which event-based risks are compared at each full and half-year assessment and reporting cycle. In parallel are a series of strategic statements which align directly to the principal risks (see pages 64 to 65). Each statement reflects the strategic intent, strategic priority, relevant stakeholders and governance, but fundamentally emphasises the attitude to risk taking and control relative to four descriptors:

- **Averse:** A strong opposition to accept risk within business strategy or operational activity.
- **Prudent:** A reluctance to accept risk within business strategy or operational activity, but careful acceptance within tight boundaries.
- **Moderate:** Willingness to accept risk with regard to business strategy or operational activity provided this is within reasonable limits.
- **Accepting:** Willingness to accept risk with regard to business strategy or operational activity.

As a regulated company providing essential public services, none of the principal risks have risk accepting as a strategic direction or approach. Underpinning each strategic statement, and currently under development, are a series of more tangible tactical statements with specific levels and limits.



How we identify and assess risk

We have a number of mechanisms in place to identify risk. These include a risk universe, cross-business horizon scanning forums, consultation with third parties and comparison with National Risk Registers. Each risk is event based and is sponsored by a senior manager who is responsible for the ongoing analysis of the corresponding causal factors, consequences and the control effectiveness, taking account of both the internal and external business environment. This process quantifies the likelihood of the event occurring and the full range of potential impacts from a minimum (best case) to a maximum (worst case). Comparing this position against the desired target state, in combination with the strengths, weaknesses and gaps of the control environment, supports the decisions for further mitigation as appropriate. Risks are assessed both bottom-up, through the biannual business assessment process, and top-down through review of the risk profile at the executive group audit and risk board (GARB), executive performance meeting and the group board. This approach ensures reporting reflects the risks facing the company, serves to calibrate the most significant risks from a financial and reputational context and enables assessment of the risks relative to our appetite.

Risk profile

The business risk profile is based on the value chain of the company, with the ten principal risks representing inherent risk areas (primary and supportive) where value can be gained, preserved or lost relative to the performance, future prospects or reputation of the company. Underpinning the principal risks, the profile consists of approximately 100 event-based risks, each of which is allocated to one of the ten inherent risk areas based on the context of the event, enabling the company to consider interdependency and correlation of common themes (see pages 64 to 65) and control effectiveness.

Principal risk heat map

The heat map provides an indicative view of the current risk exposure (likelihood of occurrence and most likely impact) of each of the principal risks relative to each other.

Seven of the principal risks have remained relatively stable in the last 12 months with the following principal risks demonstrating an increase in exposure:

- **Finance** due to current economic conditions and uncertainty;
- **Conduct and compliance** due to the potential for increased penalties; and
- **Political and regulatory** due to increased public and political interests in the water sector and societal expectations.

Read more about **our principal risks** on pages 64 to 65 and **new and emerging risks** on pages 74 to 75

Risk exposure
An indication of the current exposure of each principal risk relative to the prior year. Decreased Stable Increased

Principal risks

1. Water service
2. Wastewater service
3. Retail and commercial
4. Supply chain and programme delivery
5. Resource
6. Finance
7. Health, safety and environmental
8. Security
9. Conduct and compliance
10. Political and regulatory

Risks and opportunities

Fostering a culture of innovation

We embrace technology and seek innovative solutions to create opportunities that help us tackle the challenges we face and continue improving performance.

This is at the heart of our Systems Thinking approach, as set out on page 63.

We use a variety of methods to find novel ideas and solutions from different sources, internally and externally, including idea scouting, learning from other water companies across the world, and from other industries.

Culture

Our core values drive an innovative culture, and we encourage innovation at all levels inside the business, such as our CEO Challenge programme where graduates work in groups to find novel ways to tackle challenges that we face as a business and present these back for consideration and implementation.

Innovation Lab

Our Innovation Lab, currently undergoing its fifth programme, encourages suppliers to bring us innovative ideas and allows them to test solutions in a live environment, helping us find solutions where we may not otherwise have looked.

AMP7 innovation fund

Recognising the service and efficiency improvements that innovation can offer, Ofwat has established an innovation fund through which companies bid for funding for innovative projects.

We have been involved in successful bids to influence over £80 million of projects, leading on seven totalling £28.2 million. This includes the Catchment Systems Thinking Cooperative where we are working with others to revolutionise the way crucial data about the water environment is shared, with a particular focus on river health. We have already delivered one leading project and expect to complete a second in 2023.

Working with others to find mutual benefit solutions

We do not operate in isolation and we recognise that working with others can create significant opportunities to identify and develop better solutions.

This co-operative approach can take many different forms, such as summits that bring people from a variety of different organisations together to discuss and formulate ideas, co-creation of solutions with customers or other interested parties, and forming partnerships to tackle issues of mutual interest together.

Affordability and vulnerability summits, and the Hardship Hub

This year we hosted our first vulnerability summit and fourth affordability summit, bringing together a mix of organisations from across the North West, including debt advice charities, the Department for Work and Pensions (DWP), councils, housing associations and other utility companies, to discuss what more can be done to support people who are struggling. Our first affordability summit led us to develop the Hardship Hub, a platform that helps debt advisers gain and share knowledge on local support schemes, allowing them to help people more quickly and easily.

Future rivers forum

We partnered with The Rivers Trust to host a Future Rivers Forum in November 2022, looking at how we can address the challenges that face rivers in the North West, such as climate change, population growth and pollution. This is a problem that cannot be solved in silos; it needs practical, collaborative action. Industry leaders from a variety of sectors worked together to produce solutions and tangible actions that will progressively reduce negative impacts to river health. This is one of many areas where we are working with others to improve river water quality, including recruiting river rangers through our Better Rivers plan.

Love Windermere

We are a part of the Love Windermere partnership, led by the Environment Agency, which is working to better understand the factors affecting water quality and develop long-term plans to maintain and improve water quality in the lake while balancing the needs of nature, the community and the local economy.

This plan will set out a road map for environmental protection that could be replicated across the UK, and considers the way that farmland is managed around the lake, how rainwater drains from built-up areas, and the way that wastewater systems and private septic tanks are managed.

Diversity and inclusion summit

In April 2022 we hosted our first diversity and inclusion summit, bringing lots of organisations and businesses together to share ideas and best practice to help grow more inclusive workplaces and communities across the North West.

Severn-Thames transfer scheme

Working with others goes beyond our region, and we are collaborating with other water companies on a national water trading scheme as part of the national strategy for managing the risk posed by increasing dry weather, and doing so in a way that minimises the carbon impact.

Systems Thinking

Our Systems Thinking approach is a key area of continuing opportunity. This enables us to better manage our end-to-end water and wastewater systems, optimising our decision-making and moving away from the traditional reactive approach to address problems proactively before they affect customers. This creates long-term value, improving our asset reliability and resilience, reducing unplanned service interruptions, and delivering cost savings.

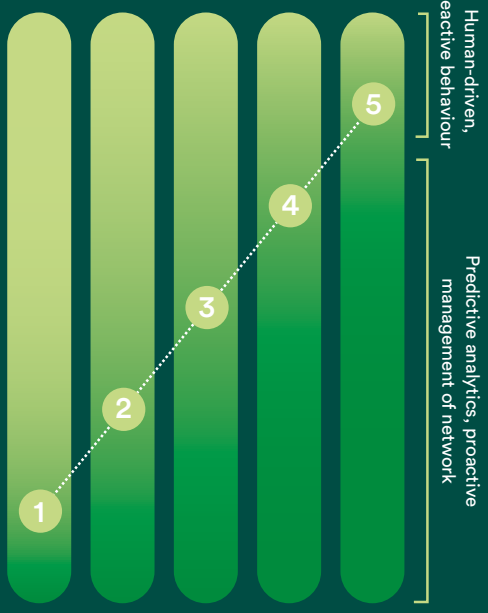
Systems Thinking capability maturity

We assess new opportunities against five capability maturity levels.

At the lower levels there is a high degree of human intervention and reactive behaviour.

At the higher levels there is a high degree of predictive analytics, use of artificial intelligence to process vast amounts of data, joined up decision-making across the system, and higher levels of automation.

It requires time and investment to reach the higher levels, and we are at different levels in different areas of our business as we continue to embed and progress our approach.



1 Maturity level 1
Event-led human-driven analytics

2 Maturity level 2
Centralised view of system performance

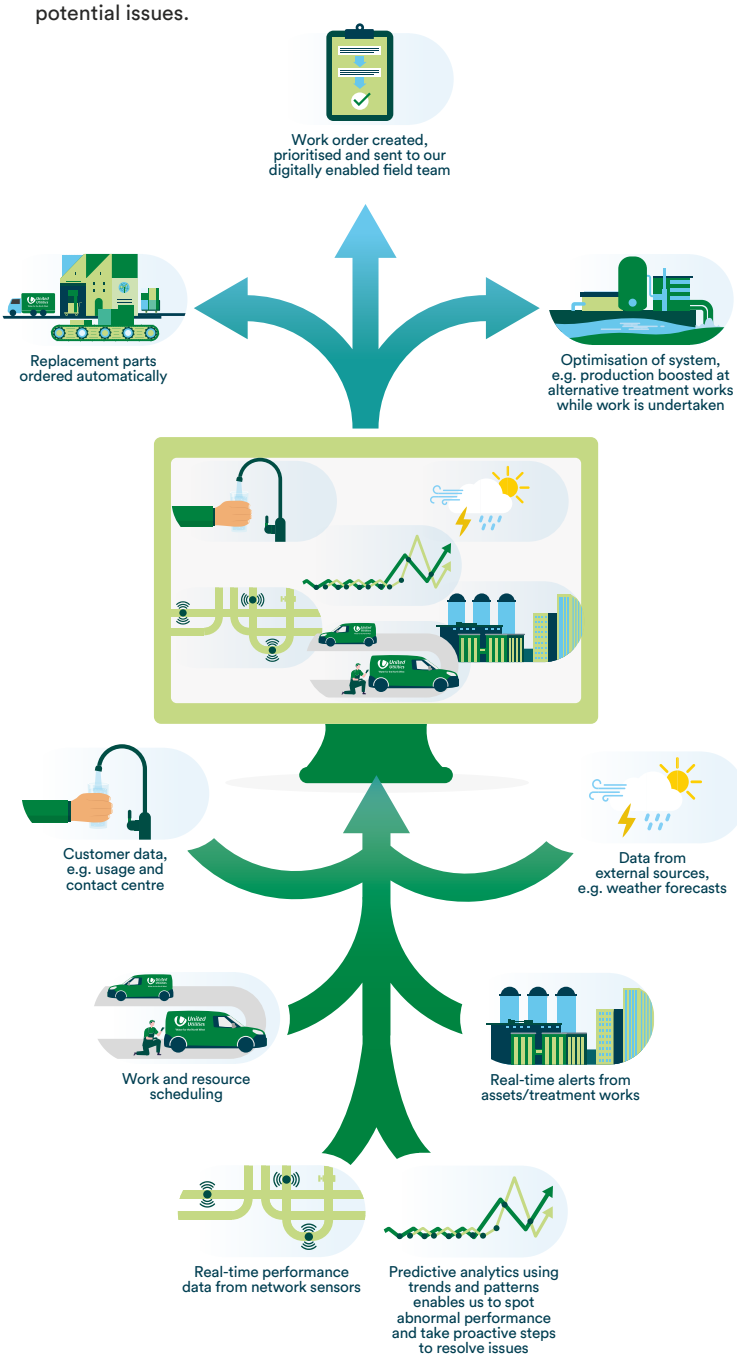
3 Maturity level 3
Technology-enabled, standardised analytics and insight

4 Maturity level 4
Machine-led system analytics and system management

5 Maturity level 5
Machine intelligence provides full system control

Central system management from our Integrated Control Centre

Systems Thinking involves looking at the entire system and all of its linkages, rather than individual assets or sites in isolation, to find the best all-round solutions. Our digital backbone sends vast amounts of real-time data to our Integrated Control Centre (ICC), from which we plan, monitor and control our operations. We also factor in other source data such as weather forecasts and customer demand, and at the higher capability maturity levels we use artificial intelligence and machine learning to identify trends and anomalies that could signal potential issues.



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Risks and opportunities

Our principal risks

Risk exposure
An indication of the current exposure of each principal risk relative to the prior year.

Decreased | Stable | Increased

Inherent risk area (principal risk)[1]	Strategic priority	Sponsor(s)	Principal risk description	Causal themes (Drivers/influences)
1 Water service		• Chief operating officer	A failure to provide a secure supply of clean, safe drinking water and the potential for a negative impact on public confidence in water supply.	• Asset health • Demographic change • Extreme weather/ climate change • Legal and regulatory change • Technology
2 Wastewater service		• Chief operating officer	The failure to remove, treat and return water and sludge to the environment.	• Asset health • Demographic change • Extreme weather/ climate change • Legal and regulatory change • Technology
3 Retail and commercial		• Customer services director • General counsel and company secretary	Failing to provide good and fair service to domestic customers and third-party retailers or a failure of, or issue in relation to, non-regulated interests.	• Asset health • Culture • Economic conditions • Legal and regulatory change • Technology
4 Supply chain and programme delivery		• Capital delivery, engineering and commercial director	The potential ineffective delivery of capital, operational or functional processes/ programmes including change.	• Economic conditions • Legal and regulatory change • Technology
5 Resource		• People director • Health, safety and wellbeing and estate services director • Chief operating officer	The potential failure to provide appropriate resources (human, technological or physical) required to support business activity.	• Asset health • Culture • Economic conditions • Extreme weather/ climate change • Legal and regulatory change • Technology
6 Finance		• Chief financial officer	The potential inability to finance the business appropriately.	• Asset health • Demographic change • Economic conditions • Legal and regulatory change • Technology
7 Health, safety and environmental		• Environment, planning and innovation director • Health, safety and wellbeing and estate services director	The potential harm to colleagues, contractors, the public or the environment.	• Asset health • Culture • Extreme weather/ climate change
8 Security		• General counsel and company secretary	The potential for malicious activity (physical or technological) against people, assets or operations.	• Asset health • Culture • Economic conditions • Technology
9 Conduct and compliance		• Corporate affairs director • General counsel and company secretary	The failure to adopt or apply ethical standards, or to comply with legal and regulatory obligations and responsibilities.	• Asset health • Culture • Demographic change • Economic conditions • Extreme weather/ climate change • Legal and regulatory change
10 Political and regulatory		• Corporate affairs director • General counsel and company secretary • Strategy, policy and regulation director	Developments connected with the political, regulatory and legislative environment.	• Economic conditions • Legal and regulatory change

Notes

(1) Principal risks: based on the value chain of the company, principal risks represent inherent areas where value can be can be gained, preserved or lost. Water, wastewater (including bioresources) and retail and commercial areas are the primary inherent risk areas with all other areas being supportive or contributing activities.

Our strategic priorities

Improve our rivers | Create a greener future | Provide a safe and great place to work | Deliver great service for all our customers | Spend customers' money wisely | Contribute to our communities

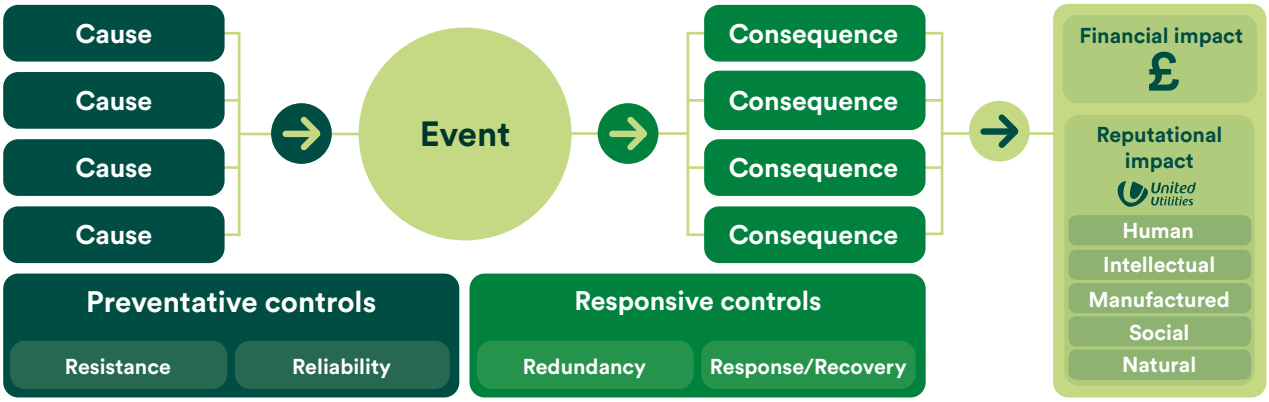
Consequence themes	Appetite and tolerance[2]	Control/mitigation	Top five event-based business risks (*most significant risks – see pages 68 to 69)
• Customers • Environment • Investors	**Water** Averse	• Strict quality controls and sampling regime • Physical and chemical treatment with automation • Cleaning, maintenance and replacement of assets • Water resources and production planning • Pressure/flow management and leak detection • Integrated network and response capability	• Failure of Haweswater Aqueduct* • Water sufficiency* • Dam failure* • Failure to treat water • Failure of the distribution system (leakage)
• Customers • Environment • Investors	**Wastewater** Prudent **Bioresources** Moderate	• Physical/chemical treatment and sampling/testing systems • Customer campaigns • Odour management • Drainage and wastewater management plans • Wastewater network operating model • Cleaning, maintenance and replacement of assets • Better Rivers programme	• Wastewater network failure* • Recycling biosolids to agriculture* • Failure to treat sludge* • Wastewater treatment • Mersey Valley Sludge Pipeline
• Customers • Investors	**Retail** Moderate **Commercial** Moderate	• Customer-focused initiatives • Best practice collection techniques • Customer segmentation • Priority Services scheme • Data management and data sharing • Non-regulated operation governance	• Cash collection • Customer experience • Wholesale revenue collection • Failure to maintain meters • NAV market obligations
• Communities • Customers • Environment • Investors • Suppliers	**Supply chain** Prudent **Programme delivery** Moderate	• Category management • Supplier relationship management • Capital, change and operational programme management • Engineering technical specifications • Portfolio, programme and project risk management	• Security of the supply chain • Price volatility • Unfunded developer programmes • Dispute with supplier • Deliver partner failure
• Colleagues • Customers • Investors	**Resource** Moderate	• Adoption of effective technology • Multiple communication channels • Training and personal development • Talent, apprentice and graduate schemes • Change programmes and innovative strategies • Maintenance, replacement or renovation of assets	• Failure of digital systems • Employee relations • Quality of critical data • Land management • Digital licensing
• Colleagues • Customers • Investors	**Finance** Prudent	• Long-term refinancing • Liquidity reserves • Counterparty credit exposure and settlement limits • Hedging strategies • Sensitivity analysis • Monitoring of the markets	• Totex efficiency challenge* • Credit ratings* • Erosion of pension scheme surplus* • Financial outperformance* • Unavoidable additional taxes
• Colleagues • Communities • Environment • Investors • Suppliers	**Health, safety and wellbeing** Averse **Environment** Averse	• Strong governance and management systems • Certification to ISO 45001 and ISO 14001 • Benchmarking, auditing and inspections • Targeted engagement and improvement programmes • Carbon reduction initiatives • Self-generation of green energy	• Carbon commitments* • Disease pandemic* • Occupational health exposure • Process safety • Minor injuries
• Colleagues • Communities • Customers • Investors • Suppliers	**CNI and SEMD** Averse **Other** Prudent	• Physical and technological security measures • Strong governance, inspections and audits • Security authority liaison and NIS compliance • System and network integration • Business continuity and disaster recovery • Incident support service	• Cyber risk* • Terrorism* • Criminality • Fraud • Data protection
• Colleagues • Communities • Customers • Environment • Investors • Suppliers	**Legislation** Averse **Other** Prudent	• Ethical supply chain, diversity and inclusivity policies • Data classification and levels of authorisation • Stakeholder engagement activities • Audits and peer reviews • Governance, risk assessment and horizon scanning • Brand comparisons and dashboard of culture metrics • Regulatory reporting	• Water Plus • Procurement compliance • Bribery risk • Non-regulated asset • Corporate governance and listing rules compliance
• Colleagues • Customers • Environment • Investors	Cannot be determined due to no genuine choice or control	• Consultation with government and regulators • Consultation and communication with customers • Governance, risk assessment and horizon scanning • Development of regulatory policy and strategy	• Price Review 2024 outcome* • Upstream competition (bioresources) • DPC delivery of HARP • ASHE index • Upstream competition (water resource)

[2] Appetite and tolerance: Averse: A strong opposition to accept risk within business strategy or operational activity. Prudent: A reluctance to accept risk within business strategy or operational activity, but careful acceptance within tight boundaries. Moderate: Willingness to accept risk with regard to business strategy or operational activity provided this is within reasonable limits. Accepting: Willingness to accept risk with regard to business strategy or operational activity.

Risks and opportunities

Common themes

As illustrated in the diagram below, each of the event-based risks has multiple causes and consequences, which in turn lead to financial and/or reputational (non financial) impact. Preventative and responsive controls, which incorporate the four components of resilience (resistance; reliability; redundancy; and response/recovery), are applied to reduce the likelihood of the event occurring and limit the impact if the event were to materialise. New and emerging circumstances in respect of causes, consequences and controls make the profile multifaceted and dynamic. Analysis of the profile highlights common themes, notably associated with the causes and consequences. These common themes can then be considered more holistically, which combined with the analysis of the strengths, weaknesses, gaps and interdependency of control across the business, enables a more integrated approach to risk management.



Common causal themes

The event-based risks include multiple causal factors, which individually, or in combination, could drive or influence the risk event to occur. Categorisation illustrates seven common causal themes:

- **Asset health:** General use, exposure to natural hazards, pressure and load all contribute to the deterioration of assets. In addition, other factors such as technological obsolescence and operating assets beyond their optimal capacity to cope with increased demand (population growth and/or climate change) also affect asset health. Asset health is a cross-business risk as it can affect operational efficiency and resilience.
- **Culture:** Embedded through processes, reward mechanisms, values and behaviours, corporate culture cuts across the majority of risks including: service delivery; recruitment and talent management; colleague engagement; security; and our reputation to multiple stakeholders. In an increasingly challenging business environment, our focus is to continue to embed a culture of delivering benefit to customers and communities, taking accountability and seeking new and innovative ways to deliver our services more efficiently and effectively.
- **Demographic changes:** Population growth/shift and evolving age profiles can impact the capacity and capability of water and wastewater treatment and network assets, can affect demand on water resources, and increase uncertainty in relation to pension obligations.
- **Economic conditions:** Macro events can have multiple financial implications, including: lower revenue; reduced cash collection; increased operational cost through inflationary pressures; and increased cost of borrowing.
- **Extreme weather/climate change:** Our water resources, asset base and operations can generally cope with extreme weather conditions, although they can become overwhelmed in intense situations. Climate change projections highlight increased temperatures, rainfall, wind and more frequent extreme variations in weather patterns. Climate change will affect both our capacity and capability for service delivery, and the environment that we strive to protect and enhance. It is therefore a key focus and we are committed to the principles set by the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) – see page 05.
- **Legislative and regulatory change:** Changes in, or the interpretation of, legislation and regulation can have implications for our business model, asset base and ways of working.
- **Technology:** Increased automation, system integration and artificial intelligence, against the backdrop of Systems Thinking, provides competitive advantage and improves efficiency and user experience for our colleagues, suppliers and customers. However, there is an increased capital requirement to keep pace with technological change, challenges in short-term adaptability of the workforce, and data and security threats as systems converge.

Common consequence themes:

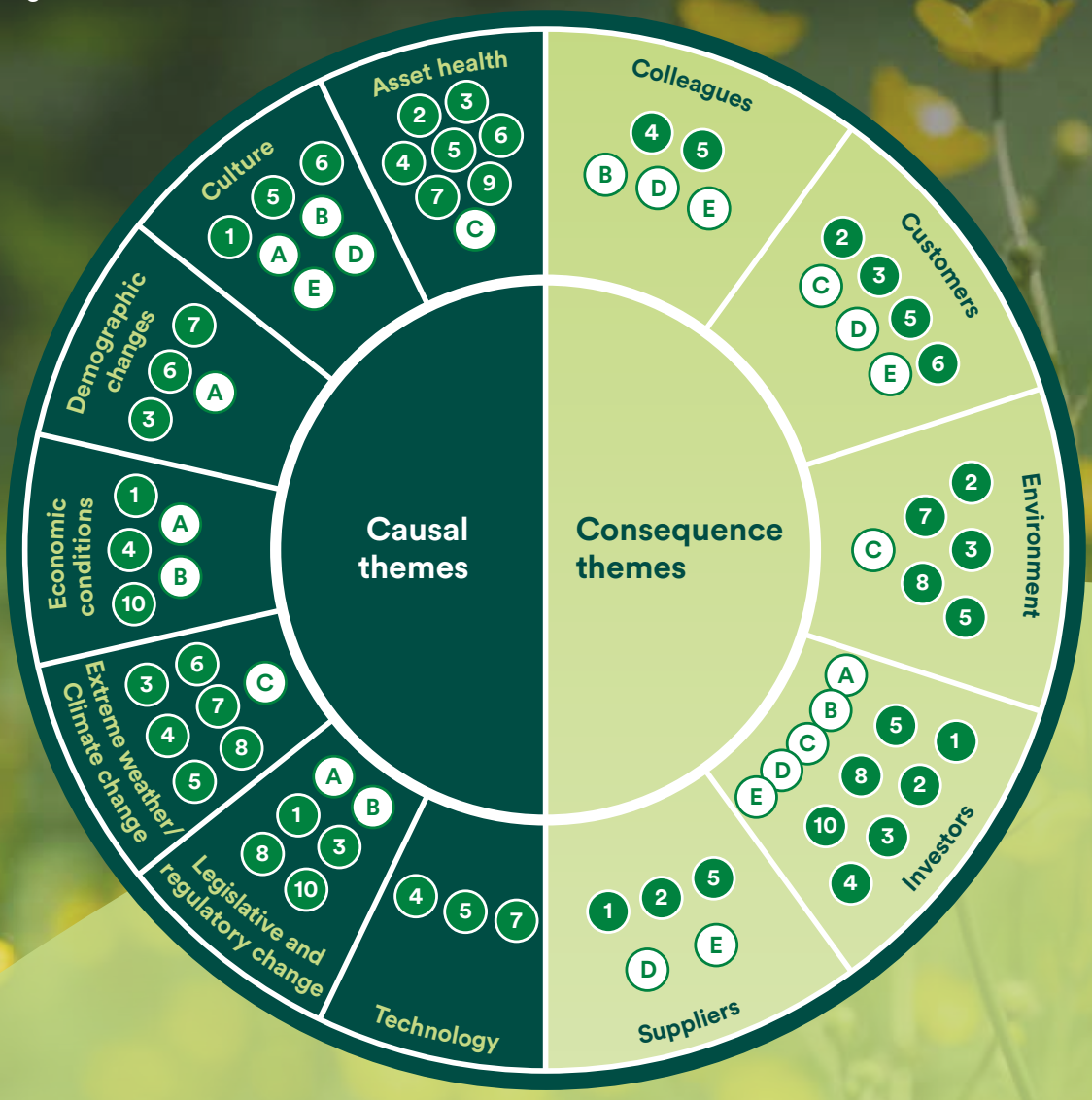
Each consequence is analysed for the financial and reputational (non-financial) implications relative to multiple stakeholders. Categorisation of the consequences illustrates five common impact themes:

- **Colleagues:** Our colleagues are fundamental to delivering our service requirements as well as our strategic objectives. Equally, our colleagues can be affected by multiple risks across the business, but primarily in relation to employment and health, safety and wellbeing risks.
- **Customers:** Customers are impacted through our service offering, the quality of their experience when dealing with us, and how our operational and capital schemes affect them in the community.
- **Environment:** Our assets, operations and capital programmes can have a significant impact on the environment in both rural and urban settings. As a major land owner and operator of a large fleet of vehicles, the way we manage these also has environmental implications.
- **Investors:** The vast majority of risks in the profile have financial implications that could affect shareholder investment in the short and long term. Reputational impact associated with ethics, environmental protection and efficiency is also relevant for investors' interest in the company.
- **Suppliers:** The safety of working conditions, economic conditions, asset health, and contractual arrangement can all affect the effectiveness, sustainability and resilience of our suppliers and partners who are crucial to meeting our objectives and ensuring effective service.

The company's most significant event-based risks

Mapping of common themes to the most significant group risks

The diagram below illustrates how the common themes (causal and consequence) relate to the company's most significant event-based risks, demonstrating how new and emerging circumstances can not only influence the risk exposure, but also focus attention for control and mitigation.



Most significant event-based risks

1. Price Review 2024 outcome
2. Failure of the Haweswater Aqueduct
3. Wastewater network failure
4. Totex efficiency challenge
5. Cyber
6. Water sufficiency
7. Carbon commitments
8. Recycling of biosolids to agriculture
9. Failure to treat sludge
10. Credit ratings

- A Erosion of pension scheme surplus
- B Financial outperformance
- C Dam failure
- D Disease pandemic
- E Terrorism

Key

- Top ten ranking risks relative to likelihood and impact
- High impact, low likelihood risks

The company's most significant event-based risks continued

The most significant event-based risks represent the ten highest-ranked risks by exposure (likelihood of occurrence of the event multiplied by the most likely financial impact) and those risks which have been assessed as having a significantly high impact, but low likelihood. Depending on the circumstances, financial impacts will include loss of revenue, additional or extra cost, fines, regulatory penalties and compensation. Reputational impact relative to our multiple stakeholders and the five non-financial capitals is also assessed, reported and considered as part of the mitigation.

Summarised below are the top ten ranking risks (1–10), and those assessed as having high impact, but low likelihood (A–E):

1. Price Review 2024 outcome

Risk exposure: The capacity and capability to develop a business plan that creates value for customers, communities, and the environment that is sustainable and resilient for the long term relative to the unique characteristics of the region we serve, in light of multiple influencing factors – notably changing demographics, climate change and asset health.

Control/mitigation: We have established cross-cutting work streams and theme owners to identify the products and evidence required for the submission and we will maintain a close dialogue with Ofwat throughout the process.

Assurance: Extensive customer research and several external providers have been commissioned for technical optioneering. Second line assurance is provided through a dedicated price review team and a PR24 programme board. There is a blend of internal audit and external assurance focused on the quality of the submission.

2. Failure of the Haweswater Aqueduct

Risk exposure: The Haweswater Aqueduct is a key asset with current low resilience due to deterioration, with failure potentially resulting in water quality issues and/or supply interruptions to a large proportion of the United Utilities customer base.

Control/mitigation: A capital project to replace the tunnel sections of the aqueduct has already commenced with the completion in November 2020 of one section. The remaining sections are due to be replaced as part of Haweswater Aqueduct Resilience Programme (HARP).

Assurance: Technical and geological advice and modelling have been sought throughout the programme development, with second line assurance including engineering technical governance. Independent assurance is provided by internal audits and external assurance over the HARP procurement process.

3. Wastewater network failure

Risk exposure: Blockages, operational issues or inadequate hydraulic capacity relative to population growth, extreme weather, asset health, and legal/regulatory change, resulting in unpermitted storm overflow activations, sewer flooding and environmental damage.

Control/mitigation: Preventative maintenance and inspection regimes, customer campaigns, sewer rehabilitation programme and Better Rivers programme.

Assurance: Second line assurance provided by wholesale assurance, engineering technical governance and flood review panel. Subject to regular internal audits and external assurance of regulatory reporting.

7. Carbon commitments

Risk exposure: The capacity and capability to decarbonise water and wastewater activity to meet commitments and legal obligations across the various time horizons of 2030, 2035 and 2050 in light of expected population growth pressures and uncertainty regarding the required technological advances to decarbonise operational activity.

Control/mitigation: In the near-term we are creating woodland, restoring peatland and have initiatives to address process and energy emissions. We are working with suppliers and industry partners to better understand and optimise decarbonisation opportunities and pathways.

Assurance: First line assurance by carbon team using water industry team for technical support and guidance. Climate change mitigation steering group and corporate risk framework provide second line assurance. Our science-based targets, energy and carbon reporting are subject to external assurance and verification.

8. Recycling of biosolids to agriculture

Risk exposure: Represents various impact scenarios including operational failures, increased restrictions or total ban of recycling biosolids to agriculture. The risk considers the Environment Agency's interpretation of the Farming Rules for Water regulations and the increasing threat to recycling a large proportion of biosolid to land.

Control/mitigation: Treatment, sampling and testing regimes ensure that sludge meets acceptable standards for application with formal service level agreements between wastewater and bioresources. We work closely with farmers, land owners and contractors to ensure regulations such as Farming Rules for Water and the standard operating procedures are met.

Assurance: Bioresources production planning team undertakes first line assurance against UK Biosolids Assurance Scheme (BAS) accreditation, and other codes of practice such as the safe sludge matrix which certifies our recycling activities. Second and third line assurance is also undertaken by the assurance and internal audit teams respectively.

9. Failure to treat sludge

Risk exposure: Relates to the interdependency between wastewater and bioresources treatment activity in light of changing demographics, asset health and legislative/regulatory change such as the Industrial Emissions Directive (IED) now applying to biological treatment of sewage sludge.

Control/mitigation: We look to maximise our treatment capacity by adopting a Throughput, Reliability, Availability and Maintainability (T-RAM) approach for our facilities. We also undertake a digester and tank clean programme, regular testing and analysis of sludge, and balance capacity and demand through the bioresources production planning team.

Assurance: Bioresources production planning team undertakes first line assurance against UK Biosolids Assurance Scheme (BAS) accreditation, and other codes of practice such as the safe sludge matrix which certifies our treatment. Second and third line assurance is also undertaken by the assurance and internal audit teams respectively.

A. Erosion of pension scheme surplus

Risk exposure: The potential for the pension scheme funding to increase because of life expectancy rates leading to additional contributions.

Control/mitigation: Constant monitoring combined with hedging against interest rates, inflation and growth asset risk.

Assurance: Policy and oversight is led by the pensions review management group, taking into account advice from accountancy and law firms. Pension governance is subject to periodic internal audits.

B. Financial outperformance

Risk exposure: Failure to achieve financial outperformance due to macroeconomic conditions and efficiency challenges, impacting the cost of debt and delivery of the company business plan.

Control/mitigation: Interest rate and inflation management, ongoing monitoring of markets and regulatory developments, and sensitivity testing as part of our company business planning process relative to assumed periods of low inflation both in isolation and in conjunction with the realisation of severe but plausible risks.

Assurance: First line assurance is undertaken by the finance team as part of the company business planning process, with second line assurance undertaken at monthly executive level meetings. Further oversight is provided by the group board and treasury committee and third line assurance is provided through cyclical internal audit reviews.

C. Dam failure

Risk exposure: Uncontrolled release of a significant volume of water from reservoirs due to flood damage, overtopping, earthquake or erosion leading to catastrophic impacts downstream.

Control/mitigation: Each reservoir is regularly inspected by engineers. Where appropriate, risk reduction interventions are implemented through a prioritised investment programme.

Assurance: Various sources of second line assurance, including supervising engineers, dam safety group, assurance team and regular board reviews. Independent assurance is provided by panel engineers and internal audit.

Key

Top ten ranking risks relative to likelihood and impact

High impact, low likelihood risks

TCFD Climate-related risk

4. Totex efficiency challenge

Risk exposure: Totex efficiencies designed for AMP7 are under significant challenge through a combination of factors including supply chain issues, inflationary pressures, and additional investment to deliver performance improvements.

Control/mitigation: Integrated Business Planning (IBP), risk-based investment prioritisation and the company business planning process all contribute to efficient delivery of services and the capital programme. In addition, there are number of executive led initiatives to realise efficiency opportunities.

Assurance: First line assurance is undertaken through monthly price control meetings, with the strategic programme board, monthly executive performance review meetings and quarterly business reviews providing second line governance and assurance. Third line assurance is undertaken through cyclical internal audits.

5. Cyber

Risk exposure: Data and technology assets compromised due to malicious or accidental activity, leading to a major impact to key business processes and operations.

Control/mitigation: Multiple layers of control, including a secure perimeter, segmented internal network zones, access controls, constant monitoring and forensic response capability.

Assurance: Security measures reflect multiple sources of threat intelligence. The security steering group provides second line assurance, with independent assurance provided by cyclical internal audits and various technical audits by external specialists.

6. Water sufficiency TCFD

Risk exposure: Water sufficiency is one of the most sensitive risks to climate change, with the increased frequency of hot and dry weather being evidence of changing circumstances. Extended periods of low rainfall and exceptionally hot weather, with accompanying increased customer demand, impacts our water resources which can result in the need to implement water use restrictions.

Control/mitigation: We produce a Water Resources Management Plan (WRMP) every five years, which forecasts future demand and water availability under repeats of historic droughts, adjusted for climate change. A statutory Drought Plan is also developed every five years, setting out the actions we will take in a drought situation.

Assurance: The WRMP and Drought Plan are subject to various second and third line assurance activities prior to publication.

10. Credit ratings

Risk exposure: Credit ratings below internal targets, due to deterioration in financial and/or operational performance and/or external factors (such as inflation), resulting in more expensive funding.

Control/mitigation: Continuous monitoring of markets, and the management of key financial risks within defined policy parameters.

Assurance: Second line assurance provided by financial control and quarterly business reviews, with oversight provided by the treasury committee. The treasury function is subject to regular internal audits.

D. Disease pandemic

Risk exposure: Serious illness in a large proportion of the UK population, with consequences to our workforce, the wider supply chain and macro economy.

Control/mitigation: We have a pandemic contingency plan which is regularly reviewed and was updated to reflect lessons learned from COVID-19. The plan includes multi-channel communication with non-pharmaceutical interventions.

Assurance: The assurance team undertakes second line assurance, with internal audit undertaking various reviews.

E. Terrorism

Risk exposure: A significant asset to be compromised by terrorist activity leading to loss of supply, contamination and/or pollution.

Control/mitigation: A risk-based protection of assets in line with the Security and Emergency Measures Direction (SEMD) and close liaison with the Centre for the Protection of National Infrastructure (CPNI), regional counter terrorist units, local agencies and emergency services.

Assurance: Security measures are reviewed on a regular basis by our internal asset owners in conjunction with the central security team. Second line assurance is provided by the cross business security steering group. In addition, internal audit undertakes cyclical audits with external technical assurance being delivered by specialists.

Risks and opportunities

TCFD

How we identify, assess and manage climate-related risks and opportunities.

Summary

- The company operates a mature risk and resilience framework for the identification, assessment and management of all risks.
- We have both physical and transitional climate risks in our corporate business risk profile, including seven of our most significant event-based risks, see pages 68 to 69.
- Climate change is fully integrated across our overall corporate risk management system with climate change identified as both a material issue (see page 30) and one of our most prominent causal themes of event-based risks.
- Our 2021 climate change adaptation report available on our website includes a comprehensive climate change risk assessment of both physical and transition risks and opportunities. The most material of these are presented on page 42 and it is clear how these risks are key drivers to our strategies and business planning.
- We published our 2022 Drought Plan.

Climate risk identification and assessment

We have a mature risk and resilience framework for the identification, assessment and management of risks that is described on pages 60 to 69. Following recognition of climate change as a material issue, a special review of all event-based risks in our business risk profile was carried out to ascertain which risks in our business risk profile are sensitive to climate change. The risks identified as most sensitive are outlined on the next page, along with our 2023 assessment of their current likelihood and impact. Long-term likelihood and impacts at 2050 and 2100 are also shown and are based on the Met Office climate projections using the most likely global emissions scenario known as RCP 6.0, in which emissions peak around 2080 and average temperatures will have risen to between 3 and 3.5°C by 2100.

Incorporating longer-term climate change impacts explicitly into our corporate risk framework has raised the profile of climate change. This enabled the board to consider our appetite and tolerance, choosing to mitigate and control the risks from within existing risk management processes and with the same thresholds for materiality.

We consider both physical risks that impact our operations, assets or resources, and transitional risks, and those associated with the transition to a low-carbon economy, such as evolving policies, regulation and legislation. We use a variety of approaches to assess risks such as PESTLE, to ensure complete coverage of external influencing factors, and complex and detailed models to use Met Office UK climate projections to understand the impacts on water resources and drainage and wastewater management.

In our quantification of the significance of different risks we also recognise that some risk events may happen multiple times so we compare impacts over a long-term (typically 40-year) horizon. This accentuates where interdependencies of climate change and other demographic changes influence the frequency of events as well as the consequences.

Managing climate-related risks

We have a clear understanding of the risks in the short and medium term but to help us manage uncertainties and ensure a low regrets approach, we are maturing our strengths in long-term and adaptive planning and considering the uncertainty associated with particularly complex issues including climate change, but also population growth, technology and abstraction reduction needs.

In preparing our latest climate change adaptation report, we assessed the organisation's resilience to physical outcomes of climate change, such as hotter, drier summers and more extreme weather events. Over 90 risks were noted that might impact a single business area, for instance wastewater, and we also identified business-wide risks, interdependencies and transitional risks. The most material of these physical and transitional climate risks are also presented in the table on page 42 to show how climate trends lead to business challenges and can result in consequences to customers or the environment. By recognising the causes and consequences, and assessing the likelihood and the severity of impact (both financial and reputational) should the event occur, we are able to prioritise climate-related risks and take proactive and early action to manage these risks and reduce the frequency and severity.

The actions being undertaken to manage these climate risks are described in the third climate change adaptation report. We are applying a Systems Thinking approach to provide great water for a stronger, greener and healthier North West. This means that interventions to address one risk have multiple benefits. For instance, sustainable drainage systems (SuDS) to slow down or divert rainwater runoff both reduce the risk of sewer flooding and optimise wastewater treatment capacity. Green infrastructure solutions such as SuDS provide an opportunity to deliver wider social value in the community and local environment.

Our public Water Resources Management Plan (WRMP) and Drainage and Wastewater Management Plan (DWMP) are examples of where adaptive planning are used to shape our plans for the long term (25+ years) while staying aligned with our short-term needs. In these plans we describe how we have used complex models to test how resilient our services would be against a range of possible future climate change and demand scenarios (population growth and movement, economic trends and patterns of water use). Understanding these impacts allows us to adapt our plans to improve performance and resilience across key topic areas such as water supply, leakage, sewer flooding and pollution.

Integration of climate-related risks into our risk management framework

We are maturing our understanding of risk and uncertainty to build and maintain long-term resilience across the corporate, financial and operational structures of the group. Planning for the long term allows us to deliver further environmental and social value, for example, through prioritising sustainable drainage and monitoring impacts before investing in more traditional assets; or carrying out modelling and investigations to ensure we spend customers' money wisely as we look to create a stronger, greener and healthier North West.

Future focus

- Produce our PR24 business plan with full integration of carbon reduction and climate resilience priorities.
- Improve our long-term strategic plans for water resources and drainage, integrating advanced climate change analysis to shape our investment and operational approaches in the short, medium and long term.
- Learn more about the profile of risk events, their causes and consequences, and to identify opportunities to improve our capacity and capability.
- Further embed climate change impacts into corporate decision-making tools and processes.

Read our **climate change adaptation report** on our website at **unitedutilities.com/corporate/responsibility/environment/climate-change/climate-change-adaptation**

Our event-based risks most sensitive to climate change[2]

TCFD risk categories

Chronic physical risk – changing trends in weather patterns, such as rising temperatures, sea level and rainfall.

Acute physical risk – chance of severe weather events, such as storms, heat waves and floods.

(1) One of the top ten ranking event-based group risks (see pages 68 to 69).

(2) Global emissions scenario RCP 6.0.

Control effectiveness

Controls are the activities we undertake to reduce the long-term risk or realise the opportunity.

- Mostly sufficient
- Somewhat sufficient
- Largely insufficient to mitigate risk

Water sufficiency event[1]

Prolonged dry periods can cause supply challenges. Warmer temperatures intensify these pressures because of increased water usage and evapo-transpiration.

Controls

Reduce leakage.

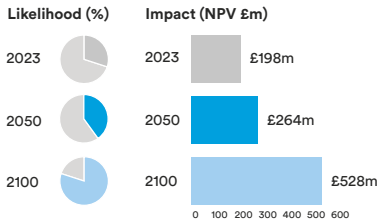
Support customers to use less water.

Install more meters in domestic properties.

Develop new sources of water, particularly boreholes.

Long-term water resources management planning.

Facilitate water trading between the North West and other regions of the UK.



Failure of wastewater network[1]

More frequent and intense storms can overload the wastewater network and lead to severe sewer flooding or storm overflow activations. Urbanisation makes this worse due to quick runoff from hard surfaces.

Controls

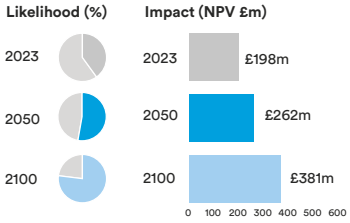
Increase combined sewer capacity and build stormwater holding tanks.

Implement and encourage 'slow the flow' and sustainable drainage solutions.

Support customers to use sewers responsibly.

Use technology to monitor and better control flows in the sewer system.

Install flood protection devices to at-risk properties.



Land management[1]

Deterioration in land quality due to climate change has both direct and indirect impacts. Hotter, drier summers lead to fire, flood, subsidence and landslip events which in turn have associated health, safety and environmental impacts.

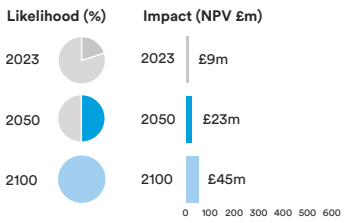
Controls

'Catchment Systems Thinking' and proactive land management, including nature-based solutions.

Deliver net gain in biodiversity from our construction projects.

Directly restore peatland and woodland.

Work in partnership with farmers, regulators and others to improve upland watercourses.



Failure to adequately treat wastewater

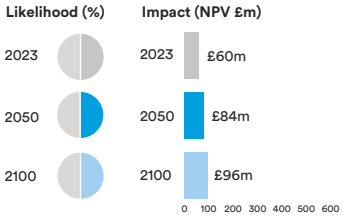
Extremely heavy rainfall, which is projected to happen more often, can exceed our wastewater treatment works capacity and result in activations of overflows to prevent flooding of assets, streets and homes.

Controls

Investment to meet legislated environment and treatment capacity requirements.

Inclusion of climate change growth parameters in long-term adaptive plans.

Controls for failure of wastewater network will support this risk.



Failure of above-ground water and wastewater assets (flooding)

Operational sites can be flooded from sea, river or surface water sources. Climate change is expected to increase the likelihood of flooding due to average winter rainfall being projected to rise, frequent storm events and rising sea levels.

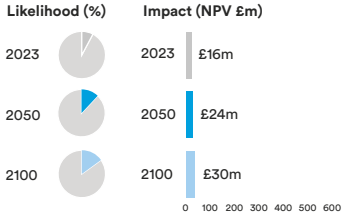
Controls

Install permanent flood defences at most flood-prone sites.

Improve flood forecasting capabilities.

Build better network connectivity to maintain water supplies during floods.

Invest for quick after-flood recovery.



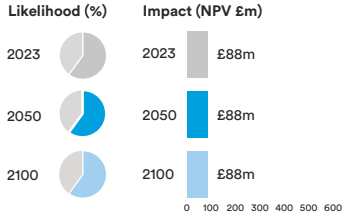
Recycling of biosolids to agriculture[1]

Water logging resulting from more persistent rainfall will limit options for recycling biosolids to land for a greater part of the year. Uncovered sludge stores and stockpiles will be more vulnerable in persistent wet, winter weather, increasing the risk of environmental pollution from runoff.

Controls

Additional storage capacity.

Contingency planning for alternative methods for sludge disposal, e.g. incineration.



Risks and opportunities

New and emerging risks and opportunities

We define new risks as those which have not previously been apparent and are expected to have long-term implications for the group and/or sector. We consider emerging risks to be those which are growing, developing, becoming more apparent or prominent. The emerging status of a risk can therefore relate to either newly established or existing risks.

Horizon scanning activity is a key feature of the risk and resilience framework. It is undertaken routinely as part of external research and benchmarking, the assessment of event-based risks, and through dedicated forums such as the new and emerging risk forum and the compliance working group.

Where there are high levels of uncertainty, or the circumstances are too complex to quantify, we classify and retain new and emerging risks as watching briefs. Where there is more understanding, assumptions can be applied to the assessment of causal factors (drivers/influencers), consequences (immediate, knock-on and cascading outcomes), and control effectiveness (strengths, weaknesses or gaps) which will be reflected in the quantification of the likelihood and/or impact.

Recent assessments of new and emerging risks can be categorised into three areas, notably economic conditions, security and legislative/regulatory change.

Economic conditions: continue to be a challenge due to high inflation and scarcity of critical resources.

- **National scarcity of resource:** The AMP8 capital programme is expected to be significantly larger than in AMP7 across the whole water sector, which, compounded by investment programmes in other industries (i.e. nuclear and rail), may result in high levels of competition for resources with implications to delivery.
- **Price volatility:** Although there has been stabilisation over the last 12 months, inflationary pressure over multiple commodities continues to be a factor with energy the most volatile.
- **Security of the supply chain:** In addition to the increase in competition for resource and geo-political tensions, scarcity of some critical goods and services in the supply chain continues to be a challenge.
- **Supplier viability:** The medium and long-term sustainability of suppliers is an emerging risk due to ongoing inflationary pressures combined with increasing scarcity across the supply chain.
- **Credit rating:** While underlying credit quality is not a concern, the impact of high inflation on finance expense results in the potential for credit agency thresholds to be breached when combined with other factors such as additional investment spend to meet environmental and service improvements over and above price review allowances.
- **Cash collection:** Inflationary pressure is having a significant impact on the cost of living, which may affect customers' ability to pay bills.

Geopolitical: in addition to influencing economic conditions, geopolitic tensions continue to have an emerging effect on the security of critical national infrastructure and energy resilience.

- **Cyber:** The rising tensions between Russia and the West have been reflected in the quantification of the cyber risk. As a result, increased security measures have been applied which include security operations teams on extended high alert and the rapid deployment of technical blocking of critical indicators of compromise.
- **Energy resilience:** There is an increasing external threat of planned and unplanned outages, and voltage quality from national grid that could affect technological and operational assets.

Legislative/regulatory change: Increased public and political interest in the water sector and changes to societal expectations is leading to a number of developments.

- **Storm overflow activations:** Overflow activations are subject to the environmental permitting regime, however we understand and share the increased public and political interest in water quality and the focus on the impact of activations. We are therefore committed to addressing the situation and have already reduced overflows over the last two years. We are initially tackling those assets with the highest frequency of activations, and have received draft approval from Ofwat to accelerate funding to deliver further improvements faster. We have also introduced new river rangers to help with these important improvements and we are in the final stages of planning for further significant activation reductions in AMP8. However, the scale and complexity of changing the design, configuration and operation of process and network assets is significant and will pose new and emerging risks in their own right.
- **Pollution risks:** In April 2023, Defra issued a consultation with regards to variable monetarised penalties which includes a potential significant increase in the penalty cap.
- **Recycling of biosolids to land:** A total ban on recycling biosolids to agricultural land already exists in some European countries. Adoption of this approach by the UK Government would result in significant change of assets and operations.
- **Plastics and forever chemicals:** There is increased attention on single-use plastic, microplastic (plastics less than 5mm) and perfluoroalkyl and polyfluoroalkyl substances (PFAS) commonly known as 'forever chemicals', with their presence in the environment being linked to the water cycle.

Material litigation

The group robustly defends litigation where appropriate and seeks to minimise its exposure by establishing provisions and seeking recovery wherever possible. Litigation of a material nature is regularly reported to the group board. While our directors remain of the opinion that the likelihood of a material adverse impact on the group's financial position is remote, based on the facts currently known to us and the provisions in our financial statements, the following three cases are worthy of note:

- In relation to the Manchester Ship Canal Company matter reported in previous years, a hearing was held in the Court of Appeal in 2022 and the main additional points raised by MSCC were dismissed, although MSCC were granted leave to appeal to the Supreme Court. The final appeal was heard in early March 2023 and the Court's decision is awaited. This may provide further clarity in relation to the rights and remedies afforded to the parties and others in relation to discharges by water companies into the canal and other watercourses.
- As reported in previous years, in February 2009, United Utilities International Limited (UUIL) was served with notice of a multiparty 'class action' in Argentina related to the issuance and payment default of a US$230 million bond by Inversora Eléctrica de Buenos Aires S.A. (IEBA), an Argentine project company set up to purchase one of the Argentine electricity distribution networks which was privatised in 1997. UUIL had a 45 per cent shareholding in IEBA which it sold in 2005. The claim is for a non-quantified amount of unspecified damages and purports to be pursued on behalf of unidentified consumer bondholders in IEBA. The Argentine Court has recently scheduled various hearings to receive the testimony of fact witnesses and experts (starting in May).UUIL will vigorously resist the proceedings given the robust defences that UUIL has been advised that it has on procedural and substantive grounds.
- A Letter Before Action was received by UUW in February 2023 in respect of potential collective proceedings before the Competition Appeal Tribunal. We are informed that the Proposed Class Representative (PCR) is intending to bring a claim on behalf of a class comprising consumers of UUW (on an opt-out basis) who have allegedly been overcharged for sewerage services as a result of an alleged abuse of a dominant position. We have been informed that the PCR also intends to bring the claim against United Utilities Group PLC, as the ultimate parent company of UUW. Proceedings have not yet been issued.

Metrics and targets

In this section you will find:

How we create value for our stakeholders in the short and long term.

How we create value more widely, including contributing to the UN SDGs.

How we measure the value that we create, including climate and nature-related metrics.

Some key short, medium and long-term sustainability-related targets.

How we create value for customers

Short term

- We focus on providing continuous, resilient and reliable water and wastewater services for customers, ensuring clean water is available at their taps when they need it, and wastewater is taken away when it goes down their drains.
- When customers need to contact us, we are helpful, friendly and supportive, talking and listening to them so that we can understand and meet their expectations.
- We maintain bills that are good value for money, providing help and support for those who are struggling to pay.

How we create value for colleagues

Short term

- We have a strong focus on health, safety and wellbeing and aim to ensure all colleagues go home safe and well at the end of the day.
- We invest in training and development to enable our colleagues to grow their skills and to keep them motivated.
- Listening to our colleagues helps to create an engaged workforce, increasing job satisfaction, and through colleague communications and conferences we update our people on business developments so they feel part of a team.

Long term

- Investing in the development of current, and future, colleagues means we will have a workforce with the right skills for the future.
- Health, safety and wellbeing extends to mental as well as physical health. We promote awareness of stress and other mental health issues, promoting an all-round healthy lifestyle in the long term which, in turn, reduces the burden on healthcare services.
- We provide pension offerings that support colleagues in later life.
- Promoting equity, diversity and inclusion means we have a workforce that truly represents the region.

How we create value for suppliers

Short term

- We spend significant amounts of money with our suppliers each year to help deliver maintenance and enhancement projects across our asset base, and this helps support thousands of jobs in our region.
- Paying suppliers on time gives them confidence in us and allows companies to maintain cash flow and become more resilient.
- While our operations and suppliers are mainly UK and European, they work closely with us to address human rights, in particular modern slavery.

Long term

- Supporting jobs through our supply chain in the short term catalyses the development of skills and jobs in the North West, providing a stimulus to benefit the regional economy in the long term.
- Working together to develop technologies means we can identify solutions that will make our services better in the future.
- We act with integrity, giving suppliers confidence in the way we do business, which translates to transparency and fairness for our suppliers.

How we create value for our stakeholders

Long term

- Our water and wastewater services make a major contribution to the long-term health and wellbeing of customers in the North West.
- Through long-term financing and the regulatory framework, we are delivering multi-million pound infrastructure projects to improve services and resilience for the long term. We ensure the cost of this is shared fairly and affordably between those that benefit now and in the future.
- Providing additional help to vulnerable customers builds long-term trust.

How we create value for the environment

Short term

- We meet increasingly stringent environmental consent levels, which help to improve the quality of rivers and bathing waters and so support tourism in the region.
- Our investment in renewable energy generation is reducing our carbon footprint and contribution to climate change.
- We have invested in new infrastructure, such as our West Cumbria project, to allow us to transfer water around the region more efficiently to avoid depletion of individual water sources.

Long term

- Promoting campaigns to educate the public and younger generations on water usage helps protect this valuable resource and reduce usage now and for years to come.
- We innovate and invest in new technologies to solve environmental challenges for future generations.
- We manage our land in a way that safeguards habitats and protects wildlife that makes its home in rivers and other water bodies.
- We plan far ahead to ensure our activities and investment enhance the long-term resilience of the rural and urban environment in our region.

How we create value for communities

Short term

- We look after beautiful rural landscapes and pockets of urban green space, and open much of our land to the public, supporting regional tourism and offering communities health and wellbeing benefits through access to relaxation and recreation.
- Working in partnership with others means we can accomplish more in tackling mutual issues, such as partnering to engage people with nature and river improvements.
- Our operations and projects are often near homes and businesses, and we engage with these communities to build understanding and trust.

Long term

- Our graduate and apprentice programmes ensure we have a diverse and skilled talent pipeline providing opportunities across the region.
- Managing land responsibly means we leave the North West environment in a better condition for future generations.
- We work with teachers and children to raise awareness about water and the natural environment, giving the next generation an understanding of the true value water brings and how we can all play our part in protecting the services nature provides.

How we create value for investors

Short term

- Since many of our investors are pension funds, charities and colleagues, the income we provide through dividends benefits millions of people every year.
- We are committed to high ethical standards of business conduct, strong corporate governance and doing the right thing so investors can have confidence in the way we do business.
- We maintain a high level of quality and transparency in what we report.
- Our focus on innovation drives continuous improvements, enabling us to be at the frontier of our industry.

Long term

- The majority of shares in our company are typically held for the long term, and we provide an appropriate return to investors through a combination of short-term dividend income and long-term growth.
- We plan far into the future and invest in our infrastructure to ensure sustainability.
- We manage risk prudently so investors can have confidence in our stability and resilience in the round.
- We link investor returns to our environmental and social projects through our sustainable finance framework.

How we create value more widely

As well as the direct value we create for our stakeholders and for the North West, our activities create wider value and contribute towards common goals.

The Sustainable Development Goals (SDGs) comprise 17 global goals to be achieved by the year 2030, and were adopted by a summit of the United Nations (UN) in 2015. They are designed to be the blueprint to achieve a better and more sustainable future for all.

Our approach to responsible business aligns quite naturally with the goals and we have identified nine that are most material to our business and where we contribute the most. We contribute to the delivery of a wider selection of the SDGs through our investment projects and these are described in our sustainable finance framework.

6 Clean water and sanitation

Part of our purpose is to provide great water. This is the reason we exist, ensuring customers in the North West have safe, resilient and affordable water and wastewater services.

This includes avoiding wasting water, and we promote water efficiency through campaigns, advice, education and free water saving gadgets for customers.

We protect and enhance water-related ecosystems across our region through initiatives such as our Catchment Systems Thinking approach.

Links to material issues:

- Customer service and operational performance
- Drinking water quality
- Storm overflows

SUSTAINABLE DEVELOPMENT GOALS

Read our sustainable finance framework on our website at unitedutilities.com/globalassets/z_corporate-site/investor-pdfs/sustainable-finance-framework-2020-final.pdf

Working with SMEs and start ups

Our Innovation Lab process creates a unique opportunity for small and medium-sized enterprises (SMEs) and start ups, who we would otherwise not have worked with, to develop and test their products and ideas in a live customer environment.

Contributing to public finances

We paid total taxes of £229 million this year, including business rates, employment taxes, environmental taxes, and other regulatory service fees such as water abstraction charges. These help to fund essential public services across the country.

Dividend income for a diverse investor base

We have a number of pension funds and charities among our shareholders, as well as a high proportion of retail shareholders and many of our colleagues holding shares under our share scheme, meaning the dividends we pay are relied on by millions of people.

8 Decent work and economic growth

We are a significant contributor to the North West economy. Our daily operations provide direct, indirect and induced employment for 22,700 people. We provide training and development opportunities in safe, secure working environments, graduate and apprentice opportunities, programmes for young people experiencing difficulties securing employment, offer equal opportunities to all, and value diversity among our colleagues.

Links to material issues:

- Affordability and vulnerability
- Health, safety and wellbeing
- Diverse and skilled workforce

1 No poverty

The North West contains more areas of extreme deprivation than any other region in England.

We have a sector-leading package of affordability support, and have helped over 330,000 households so far in the last three years. We are also strong supporters of the Consumer Council for Water's drive to implement a national social tariff.

Links to material issues:

- Affordability and vulnerability
- North West regional economy
- Customer service and operational performance

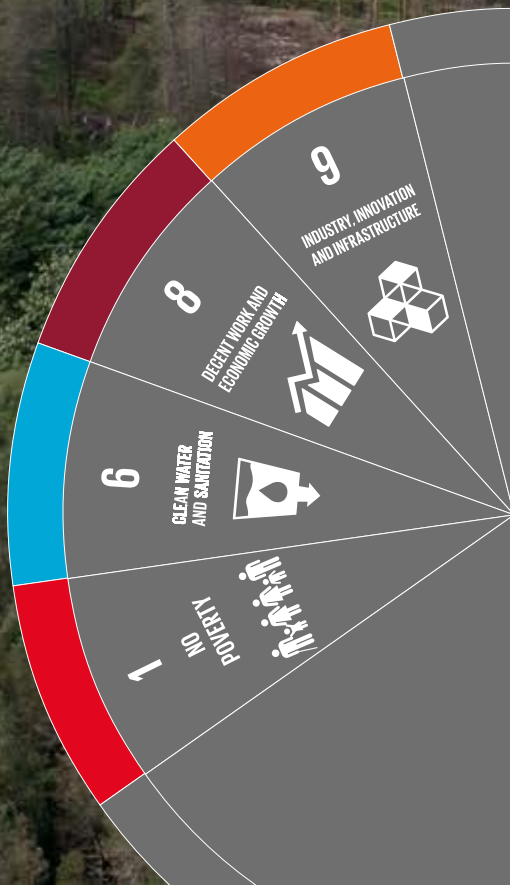
9 Industry, innovation and infrastructure

We invest heavily in infrastructure, including plans for over £4 billion between 2020 and 2025 to improve the performance and resilience of our assets and operations to impacts such as those arising from climate change.

We embrace innovation, especially in an increasingly digital world, to ensure the region where we operate has reliable, sustainable and resilient infrastructure, now and into the future.

Links to material issues:

- Resilience
- Innovation
- North West regional economy



Charitable activities

Over the past 12 months our colleagues have raised £52,818 for our company charity, Macmillan Cancer Support.

We support and encourage colleagues by providing up to three days' paid volunteer leave per year, matching individual colleague fundraising efforts to any UK-registered charity up to £200 per person per year, and covering the admin fees of payroll giving, or 'Give As You Earn'.

Bringing people together

We have undertaken a number of initiatives that bring people together across a variety of organisations and different industries to share ideas and best practice and drive improvements that go wider than our region and our customer base, like our summits for affordability and for diversity and inclusion, and the Hardship Hub which enables debt advisers to help more people and find cross-industry help more quickly all in one accessible place.

Mitigating climate change

We are committed to playing our part in securing the global goal to curb climate change to no more than 1.5°C, and we set out on pages 45 to 47 our transition plan to reach net zero by 2050, including our six carbon pledges underpinned by ambitious science-based targets.

11 Sustainable cities and communities

We use our understanding of customer needs and priorities to deliver services that meet their expectations and engage with communities to enhance participation in what we do. We plan at least 25 years into the future to prepare for increases in the population and new housing that will need connections for water and wastewater services. We are exploring ways to do this using natural solutions to manage water and wastewater, such as Sustainable Drainage Systems (SuDS).

Links to material issues:

- Customer service and operational performance
- Resilience
- Supporting communities

12 Responsible consumption and production

We are committed to sustainably managing natural resources, including reducing leakage and encouraging and supporting customers to reduce water consumption. We generate renewable energy and high quality fertiliser from bioresources, and 98 per cent of our waste goes to beneficial use.

Links to material issues:

- Resilience
- Climate change
- Water resources and leakage

13 Climate action

Responding to the climate emergency is an imperative for us all and building a greener North West is a key ambition of our purpose and one of our strategic priorities. Delivering against our carbon pledges and science-based targets, while ensuring that our activities and the North West region are resilient to the impacts that a changing climate might bring, is key to our long-term planning.

Links to material issues:

- Climate change
- Resilience
- Responsible supply chain

14 Life below water

We are sector leaders in minimising pollution, look after 29 bathing waters in the North West, and have made good progress, with significant further ambitions, on improving river water quality, which has a knock-on impact on our oceans. This includes reducing storm overflow activations and addressing nutrient imbalance.

Links to material issues:

- Storm overflows
- Natural capital and biodiversity
- Environmental impacts

16 Peace, justice and strong institutions

We run our business in a responsible manner, and doing the right thing is one of our core values.

We maintain high standards in corporate governance and ethical standards of business conduct – those systems and processes through which our organisation is managed, controlled and held accountable. We are committed to open, honest and transparent corporate reporting.

Links to material issues:

- Trust, transparency and legitimacy
- Political and regulatory environment
- Corporate governance and business conduct

Metrics and targets

Return on Regulated Equity (RoRE)

Return on regulatory equity (RoRE) relates to our regulated entity, United Utilities Water Limited, and measures the regulatory returns (after tax and interest) that companies have earned by reference to the notional regulated equity (which is calculated as 40 per cent of the regulatory capital value (RCV), while the other 60 per cent of the RCV is notional net debt).

RoRE comprises a base allowed return, which is set by Ofwat, plus or minus any out or under performance earned. It is reported on an annual and cumulative basis throughout each asset management period (AMP).

As well as being a key regulatory measure, RoRE is one of our financial KPIs and executive remuneration is linked to our RoRE performance through its inclusion in the Long Term Plan.

The three key areas through which we can earn a higher RoRE are:

- delivering efficiency savings versus our cost allowance (total expenditure (totex) outperformance);
- earning outperformance payments for service delivery against our performance commitments (customer outcome delivery incentive (ODI) rewards); and
- raising finance at a lower cost than the industry allowed cost of debt (financing outperformance).

The main areas that could detract from RoRE, therefore, are:

- overspending versus our total cost allowance (totex underperformance);
- incurring underperformance payments for failure to meet our performance commitments (customer ODI penalties); and
- incurring higher finance costs than the industry allowed cost of debt (financing underperformance).

RoRE can also be higher or lower as a result of the outturn tax position versus the allowance.

Our efficient financing has given us a history of financing outperformance. We strive to deliver efficient costs, but our strategy for AMP7 has been to prioritise operating performance and ODI rewards over totex savings, as this drives better long-term value for all our stakeholders.

KPIs and other stakeholder metrics

Our key performance indicators

We measure our performance against a selection of key performance indicators (KPIs), both operational and financial. Bonuses (for executive directors and colleagues right through the business) and long-term incentives for executive directors, are closely aligned to many of our operational and financial KPIs.

Operational KPIs

We have redefined our operational KPIs this year to align with our purpose and strategic priorities, and in doing so this also provides alignment with environmental, social and governance (ESG) matters. More detail on these can be seen on pages 10 to 11.

Financial KPIs

We have selected financial KPIs that assess both profitability and financial sustainability, including income statement, balance sheet, and shareholder performance metrics. We have made one amendment to our financial KPIs this year, exchanging low dependency pension schemes (which we have already fully satisfied) with return on regulated equity (RoRE). More detail on these can be seen on pages 12 to 13.

Our other performance indicators

Our KPIs are by no means the only measures by which we monitor and assess our performance. We report against many other metrics both internally and externally. As discussed on pages 56 and 57, our stakeholder engagement gives us a view of what matters most to them. We report on a selection of material ESG measures on pages 84 to 109 based on the issues shown to be of highest interest to our stakeholders, including climate and nature-related metrics. These measures relate to the group unless stated otherwise in the performance tables where they relate to the regulated entity, United Utilities Water Limited. We regularly report on numerous ESG performance measures on our website at **unitedutilities.com/corporate/responsibility/our-approach**

Assurance of performance metrics

All these performance indicators have received an appropriate level of assurance, such as independent third-party verification, regulatory reporting assurance processes, or through our own internal audit team. The performance tables on pages 85 to 109 state what level of assurance has been obtained for each metric, and the sections of this report that have received external assurance are marked as such on the relevant pages, including the figures in our energy and carbon report and our remuneration report. These audit opinions can be found on our website at **unitedutilities.com/corporate/responsibility/our-approach/esg-performance**

Our annual performance report (APR)

Performance against our regulatory contract is monitored and assessed each year, and reported within the annual performance report (APR), as required by our economic regulator Ofwat. We include several regulatory performance measures within this report. Our APR provides more details, as well as further narrative, about our regulatory performance during the year.

There is financial information contained within the APR. This relates only to the regulated company, United Utilities Water Limited, and its appointed activities, and is calculated in accordance with the regulatory accounting framework. This differs from IFRS reporting, and a reconciliation to IFRS reporting is provided in the APR. For the purposes of clarification, our financial KPIs relate to performance at the group level, and are calculated within the definitions given in this report. Our previous year APRs are available on our website, and the APR for 2022/23 will be published in July 2023.

Our **annual performance report (APR)** will be available on our website from 15 July at **unitedutilities.com/corporate/about-us/performance/annual-performance-report**

TCFD

Climate-related metrics and targets used to assess and manage climate-related risks and opportunities

Summary

- United Utilities was the first UK water company to have targets verified by the SBTi, including for scope 3 emissions. We have now achieved SBT 2 as 100 per cent of our annual electricity purchased is from renewable sources.
- We have made progress on SBT 1 reducing absolute scope 1 and 2 emissions by 3.6 per cent (gross) compared to our baseline year 2019/20 and SBT 3 where 23 per cent of our suppliers of capital goods (by emissions) have set their own science-based target.
- UK Government carbon values (BEIS) are used in our risk assessments and our planning for medium and long-term investments, including PR24.

Metrics to assess climate-related risks

Our vulnerability to climate-related risks is determined by two factors: the physical and transitional impacts we experience and the control measures we have put in place to manage the risks and realise opportunities. To manage our physical risks effectively we must track and understand patterns of weather, and weather events, and learn how they can affect us operationally. To do this we have been working with the Met Office to use both their short-term forecasts and longer-term projections in our planning, modelling for up to a 4°C change in global temperature. We monitor factors relating to transitional risks, including energy pricing (of both fossil fuels and low carbon alternatives), carbon pricing (through purchasable credits, offsets and certificates), and the marketplace for the availability and cost of alternative fuelled vehicles, batteries and for emerging technologies to reduce process and fugitive emissions.

Performance metrics: climate-related risk management

We manage our climate-related risks by putting in place controls such as those as set out on page 71 and in Appendix A.3 of the 2021 climate change adaptation report, published on our corporate website. The effectiveness of these controls is seen in our operational performance metrics. The following metrics are recognised as examples of those key to our resilience to a changing climate and are reported in the annual performance report:

- Leakage;
- Per capita consumption;
- Flooding incidents, risk and resilience;
- Storm overflow activations;
- Risk of severe restrictions in a drought;
- Sewer collapses;
- Water service supply and resilience; and
- Low water pressure areas.

Note that, as a regulated business, climate-related opportunities are limited to ways we can avoid costs, rather than generate revenue.

Performance metrics: Science-based targets

We have a strong track record of playing our part to mitigate climate change and have reduced scope 1 and 2 emissions by over 70 per cent since 2005/06, largely through our substantial investment in renewable power generation and green energy procurement. Our ambition and commitments are based on international guidance and climate science and we were delighted in July 2021 that our four near-term science-based targets were verified by the Science Based Targets initiative (SBTi). Since October 2021, the remainder of our purchased electricity has been on a renewable tariff backed by Renewable Energy Guarantees of Origin certificates, meaning that in the future 100 per cent of our purchased electricity will be from renewable sources – enabling us to deliver on our carbon pledge and our SBT. The SBTi Net Zero Standard was launched in late 2021 and we have committed to validate our 2050 ambition to this standard when we revise and revalidate our near-term targets in advance of 2025.

As well as our company-specific science-based targets, we share the UK water sector ambition for a subset of operational emissions to be net zero from 2030. Note that this target has a smaller scope than SBTi and allows use of purchased credits, using agreed offsetting principles.

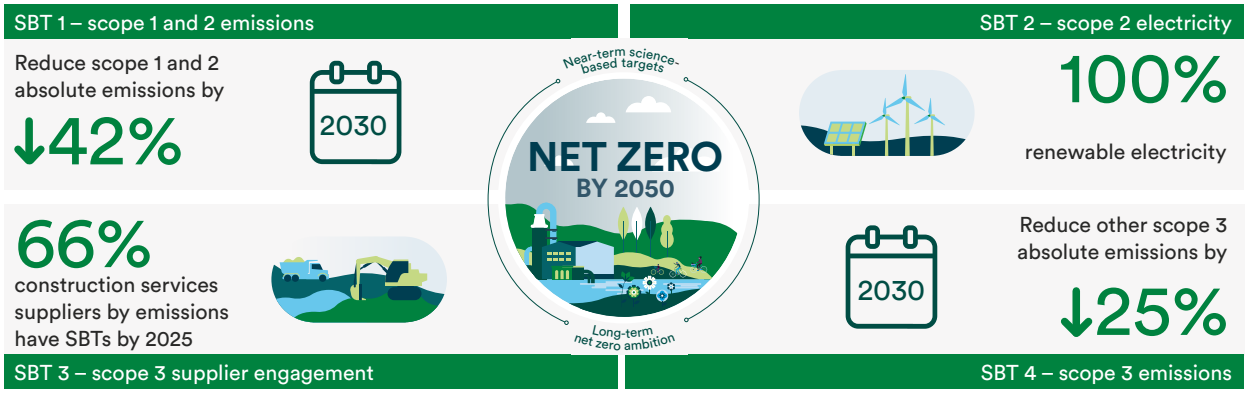
Future focus

- Continue our collaboration with suppliers so that we can increase the proportion of our scope 3 emissions that are estimated using volume of product purchased rather than spend.
- Attempt to inform national approach to water investment programmes arising from public pressure and the new Environment Act 2021.
- Work to validate our long-term net zero ambition to the new SBTi Net Zero Standard.

Read about **progress to deliver our six carbon pledges** on page 92

Read our **streamlined energy and carbon report including 2022/23 greenhouse gas emissions** on pages 93 to 95

Read more about our **2022/23 environmental performance** on page 89



Future targets

This page sets out some of the climate-related, nature-related and other sustainability targets we have set ourselves over the short, medium and long term.

Short term	Medium term	Long term
TNFD 2023: Monitor all storm overflows and make real-time data on their operation available to the general public	TNFD 2025: Improve water quality in 1,315 kilometres of rivers across the North West	OTHER 2025: 100 per cent of targeted suppliers signed up to United Supply Chain
TCFD 2028: 100 per cent green fleet	TCFD 2025+: Work to enable future national water trading	OTHER 2025: >220,000 customers registered for our Priority Services scheme
TCFD 2030: Reduce scope 1 & 2 greenhouse gas (GHG) emissions by 42 per cent and scope 3 GHG emissions by 25 per cent	TCFD 2030: Restore 1,000 hectares of peatland and create 550 hectares of woodland	TNFD 2035: Deliver our service using natural capital in a sustainable, efficient and resilient way
TNFD 2050: Help reduce water demand to 110 litres per person per day	TCFD 2050: Net zero GHG emissions aligned to the Paris Agreement's ambition to limit global warming to 1.5°C	OTHER 2045: Install additional water meters to achieve coverage of around 75 per cent of households
TNFD 2050: Reduce leakage by 50 per cent	TNFD 2050: Reduce to an average of no more than 10 activations per storm overflow	OTHER 2070: Eliminate lead pipes

Progress against our carbon pledges

In 2020 United Utilities made six pledges that set out our initial priorities in the global goal to curb climate change to no more than 1.5°C. Our progress meeting these pledges is below.

Pledge 1

42% reduction of scope 1 & 2 emissions from our 2020 baseline by 2030

Our progress

↓ 3.6% Confident of meeting pledge

We are making good progress towards our pledge and SBT, having made a year-on-year 1.5 per cent reduction from 2021/22. Progress is not expected to be linear while we have emerging challenges that drive increasing emissions.

2019/20: 138,961 tCO_2e Baseline
2022/23: 133,930 tCO_2e 3.6% reduction

Pledge 2

100% renewable electricity by 2021

Our progress

100% Pledge met

Since October 2021 all electricity we use is renewable. Around 25 per cent of our needs are renewably generated directly by us or with partners and the remainder is purchased on a renewable tariff backed with REGO certificates. We are working on plans to increase the energy we can self-supply through new investment in renewable capacity and storage.

Pledge 3

100% green fleet by 2028

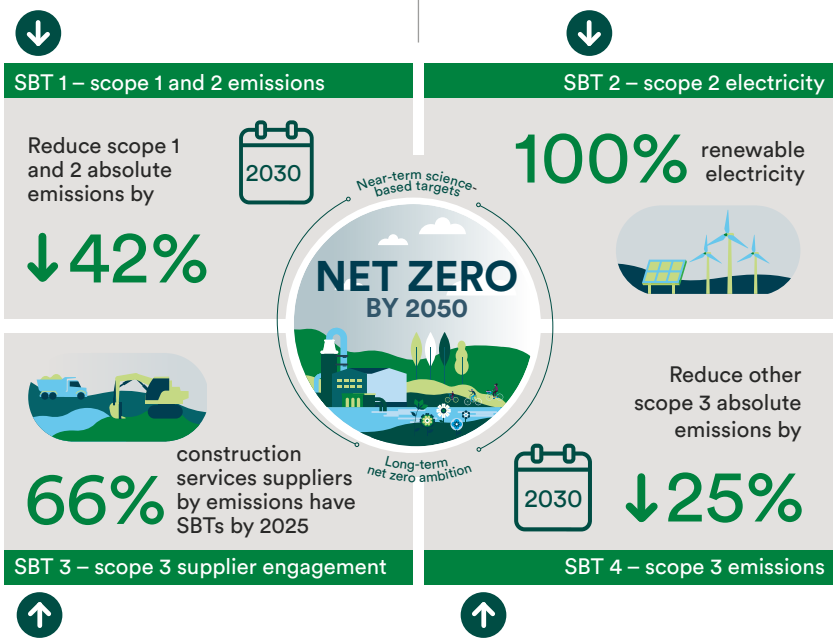
Our progress

33 vehicles Confident of meeting pledge

Our initial focus has been on understanding the travel patterns of our fleet. With this insight we have begun the delivery of the required charging infrastructure, the purchase of an initial 200 electric vehicles and are continuing to explore options for HGVs.

We are also supporting colleagues to switch to electric with a salary sacrifice scheme.

Remuneration: LTP



Pledge 4

1,000 hectares of peatland restoration by 2030

Our progress

585ha Confident of meeting pledge

We have peatland restoration activities across the North West at different stages of maturity including the 2000ha improved through our 2005–15 SCaMP projects. We have 585ha currently under restoration towards meeting this pledge.

Remuneration: LTP

Pledge 6

Set a scope 3 science-based target by 2021

Our progress

SBTs verified July 2021 Pledge met

We have two science-based targets which between them cover all our relevant scope 3 emissions. 29 per cent of our scope 3 emissions are from our construction services partners delivering infrastructure as part of our AMP7 business plan. We are working with our partners to reduce the emissions from building these projects by supporting their own environmental ambitions and encouraging them to set their own science-based targets. 23 per cent of these suppliers (by 2022/23 emissions) have set SBTi verified science-based targets for their organisation and approximately 60 per cent more have either made an SBTi or other public commitment statement to set targets that are science-based.

Remuneration: LTP

Pledge 5

Plant one million trees to create 550 hectares of woodland by 2030

Our progress

37ha Confident of meeting pledge

Weather and tree disease slowed our planting progress but we have two well established nurseries and plans for more and have identified hundreds of sites for new and 'replanted' woodlands.

Remuneration: LTP

TCFD

Energy and carbon report

The Companies Act 2006 (Strategic Report and Directors' Reports) Regulations require us to publish this energy and carbon report applying the 2019 UK Government Environmental Reporting Guidelines, including the Streamlined Energy and Carbon Reporting Guidance (SECR).

We use the financial control approach so our energy and carbon accounting is aligned with the consolidated financial statements for United Utilities Group PLC for 1 April 2022 to 31 March 2023. This includes subsidiaries listed in section A8 on page 286.

Our greenhouse gas inventory, including the underlying energy data summarised below, has undergone independent third-party verification by the Achilles Group to the requirements of Toitu CarbonReduce programme.

	2022/23 GWh	2021/22 GWh	2020/21 GWh	2019/20 GWh
Energy use				
Electricity	**818.8**	803.3	807.3	802.3
Natural gas	**33.6**	33.8	40.0	38.3
Stationary fossil fuels (Gas oil, kerosene, diesel)	**59.8**	50.5	36.5	50.8
Stationary low carbon fuels (HVO, LPG)	**<0.1**	<0.1	0	0
Energy for transport (from fuel used or distance travelled)	**71.7**	72.6	67.5	65.5
Total energy used	**983.9**	960.2	951.3	956.9
Electricity purchased				
Grid renewable	**655.7**	611.0	591.4	602.9
Grid standard tariff[1][2]	**<0.1**	22.3	47.8	40.8
Total purchased	**655.7**	633.3	639.2	643.7
Renewable energy generated				
CHP	**123.0**	133.8	127.6	121.5
Solar	**46.4**	47.8	50.7	42.6
Wind	**5.1**	4.8	5.3	5.7
Hydro	**6.9**	7.2	6.9	6.8
Biomethane[3]	**14.5**	15.9	14.8	14.2
Total generated	**195.9**	209.5	205.3	190.8
Renewable energy exported				
Electricity	**18.3**	23.5	22.4	18.1
Biomethane[3]	**14.5**	15.9	14.8	14.2
Total exported	**32.8**	39.4	37.2	32.3

(1) Non half hourly metered supplies were on a standard tariff up to the end of September 2021. The emissions were 289g CO_2e/kWh in 2019/20, 178g CO_2e/kWh in 2020/21 and 188g CO_2e/kWh in 2021/22. Non half hourly supplies moved to a new supplier on a 0g CO_2e/kWh renewable tariff on 1 October 2021.

(2) The residual electricity on a standard tariff is associated with default tariffs for recently adopted sites.

(3) Biomethane generated and exported to grid is expressed as an electricity equivalent.

Energy strategy

Our energy management strategy has four objectives:

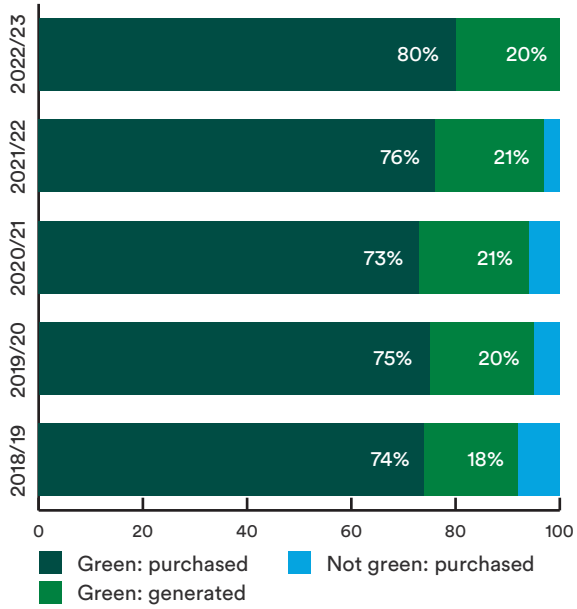
- Efficient use of energy;
- Maximising self-generation and direct supply opportunities;
- Reducing costs (through time of use); and
- Supply resilience to ensure we can deliver our services.

In 2021/22, we set a record for renewable energy generation of 210 GWh through a focus on end-to-end performance of our bioresources operations, which produce electricity, heat and biomethane.

Each year we serve a growing population, driving increased energy use as we strive to achieve environmental performance targets. We seek to mitigate this through our energy management programme and in recent years have maintained consistent energy use in the face of these considerable upward pressures.

100 per cent green electricity transition

Since October 2021 100 per cent of our electricity used has either been renewably generated on site or its purchase backed by REGO (Renewable Energy Guarantee of Origin) certificates.



Energy efficiency actions taken

Our approach to energy efficiency is based on continuous improvement of:

- people – optimising ways of working;
- systems – improving visibility of use and analysis of data systems; and
- technology – targeted investment to remove technological inefficiencies.

Our Energy Management Programme is now firmly established and working well after activities were restricted during COVID-19. The programme carries out site-based workshops and develops ways of working to optimise operations at sites and local areas and is underpinned by e-learning packages and a comprehensive energy performance reporting and analysis capability.

To support reporting and analysis, we have invested over recent years to capture data from our fiscal meters and have installed thousands of sub-meters. The resulting data is used to identify opportunities, assess impacts and benefits of trials and maintain good performance. We are use analytics to identify optimisation interventions, such as pump specification.

We have a dedicated investment programme to implement targeted energy solutions in current operations. Examples invest-to-save projects include pump optimisation, time-of-use actions and improved control of wastewater treatment. We are also working to ensure energy and chemical efficient outcomes from our capital programme.

TCFD Greenhouse gas emissions inventory

Our greenhouse gas inventory (including all the underlying energy data) has undergone independent third party verification by Achilles group and is certified to the requirements of the Toitu CarbonReduce programme, as aligned to the GHG Protocol Corporate Accounting and Reporting Standard (2015) and the international carbon reporting standard ISO 14064, Part 1:2018. The assurance certificate and report can be found at **unitedutilities.com/corporate/responsibility/environment/climate-change**

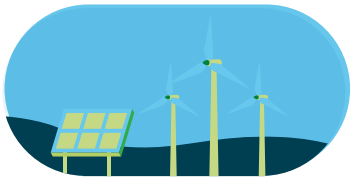
Emissions are calculated by estimating the individual greenhouse gases that result from all United Utilities' activities, converted into a carbon dioxide equivalent (tCO_2e). Emissions have been estimated using the UK water industry Carbon Accounting Workbook. v17 (CAW v17), the 2022 UK Government GHG conversion factors for company reporting and CEDA Global '22 (Comprehensive Environmental Data Archive) factors. We report scope 1, 2 and all relevant scope 3 emissions.

Scope 1

Emissions from activities we own or control, e.g. burning fossil fuels, wastewater and sludge processing.

Scope 2

Emissions from purchased electricity including for use in vehicles.



Scope 3

Emissions from our value chain, e.g. sludge disposal, business travel and products and services.

Scope 1 & 2 greenhouse gas emissions		2022/23 tCO_2e	2021/22 tCO_2e	2020/21 tCO_2e	SBT baseline 2019/20 tCO_2e
Scope 1:					
Direct emissions from burning of fossil fuels		**21,339**	19,207	17,371	15,247
Process and fugitive emissions – including refrigerants		**94,915**	96,020	98,569	96,186
Transport: Company-owned or leased vehicles		**17,665**	16,507	16,634	15,739
Scope 2:					
Purchased electricity – generation	Market-based[1]	**9.3**[5]	4,201	8,507	11,789
	Location-based[2]	***126,813***	*134,492*	*149,030*	*164,521*
Purchased electricity – vehicles	Market-based	**1.7**	0.04	0	0
	Location-based	***1.7***	*0.04*	*0*	*0*
Total scope 1 & 2 emissions (Gross)	Market-based	**133,930**	135,936	141,081	138,961
	Location-based	***260,734***	*266,226*	*281,604*	*291,693*
Emissions reduction from					
Renewable electricity exported[3]		**-1,310**	-4,317	-4,184	-3,979
Biomethane exported[4]	*Location-based*	***-9,360***	*-10,283*	*-9,725*	*-9,302*
Green tariff electricity purchased	*Location-based*	***-125,746***	*-133,197*	*-138,015*	*-164,210*
Total scope 1 & 2 emissions (Net)	Market-based	**132,620**	131,619	136,897	134,982
	Location-based	***124,318***	*118,429*	*129,680*	*114,202*

(1) Market-based figures use emission factors specific to the actual electricity purchased. If electricity is on a standard grid tariff they are calculated using factors from suppliers' published fuel mix disclosures.

(2) Location-based figures use average UK grid emissions to calculate electricity emissions and are shown in *italics*.

(3) Exported electricity emissions use the average UK grid emissions factor for both market and location-based totals.

(4) Exported biomethane was sold with green gas certificates so has zero emissions reduction benefits in market-based accounts.

(5) The residual market-based electricity emissions is associated with default tariffs for recently adopted sites.

Scope 3 greenhouse gas emissions	2022/23 tCO_2e	2021/22 tCO_2e	2020/21 tCO_2e	SBT baseline 2019/20 tCO_2e
Category 1: Purchased goods and services[6]	**250,189**	292,946	271,871	213,442
Category 2: Capital goods[6]	**138,182**	112,498	95,968	128,286
Category 3: Fuel and energy-related emissions[7]	**53,487**	58,948	42,599	45,262
Category 4: Upstream T&D – sludge transport[7]	**35**	103	1,119	3,374
Category 5: Waste generated in ops: including sludge disposal[7]	**27,454**	25,458	26,333	27,936
Category 6: Business travel: public transport, private vehicles and hotel stays[7]	**1,486**	1,138	1,226	3,508
Category 7: Employee commuting and homeworking[8]	**5,336**	4,066	4,108	4,231
Total scope 3	**476,169**	495,158	443,224	426,039
Scope 3 SBT measure (excluding category 2)	**337,987**	382,660	347,256	297,753

(6) For Category 1 and 2 we use CEDA Global '22 (an EEIO (environmentally-extended input-output) inventory) to estimate emissions based on the £ spent by spend category.

(7) Category 3, 4, 5 and 6 use company activity records and UK Government conversion factors.

(8) Category 7 uses EcoAct models to estimate emissions from employee commuting and homeworking based on company FTE figures and home, site, hybrid working patterns.

United Utilities' greenhouse gas emissions intensity

As in previous years, we report the regulated emissions kilograms CO_2 equivalent per megalitre treated (using the location-based method as calculated in the CAW v17), as these are common metrics for our industry.

We also state our scope 1 plus 2 emissions (market-based) as tonnes CO_2 equivalent per £million revenue.

Regulated emissions per megalitre water treated (kg)

2022/23	**101.4**
2021/22	106.91
2020/21	118.51

Regulated emissions per megalitre sewage treated (kg)

2022/23	**158.76**
2021/22	144.21
2020/21	152.26

Scope 1 and 2 emissions (gross) per £m revenue (tCO_2e)

2022/23	**73.4**
2021/22	73.0
2020/21	78.0

Scope 1 and 2 emissions (net) per £m revenue (tCO_2e)

2022/23	**71.4**
2021/22	70.7
2020/21	75.7

Scope 1 emissions

Wastewater and sludge processes cause approximately 70 per cent of our scope 1 emissions as the gases released, nitrous oxide (N_2O) and methane (CH_4) have much greater global warming potentials than carbon dioxide (CO_2). Our process emissions are currently estimated as a direct function of the amount of wastewater we treat. We are undertaking research with other UK water companies to better quantify these emissions from measured values and to find ways to reduce or capture those emissions for beneficial use.

Scope 2 emissions

Our market-based scope 2 emissions are negligible as our agreed supply contracts are REGO backed renewable tariffs.

Scope 3 emissions

Most of our scope 3 emissions are in GHG Protocol categories 1 (products and services) and 2 (capital goods); the latter being those provided by our construction services suppliers. We currently calculate category 1 and 2 emissions using records of the amount we have spent. This provides an indicative estimate but is determined by the scale of our investment programme rather than our design choices. We are working internally and with supply chain partners to enhance our data and systems so that we can calculate these emissions based on types and quantities of materials used, thereby showing the full impact of our management decisions.

The next highest category is indirect emissions from fuel and energy use. Electricity and fuels used at our operational sites make up 90 per cent of this quantity, so our clean energy and renewable generation ambitions will reduce these as well as scope 1 emissions.

Fuel and energy 21,339 tCO_2e + 54,487 tCO_2e

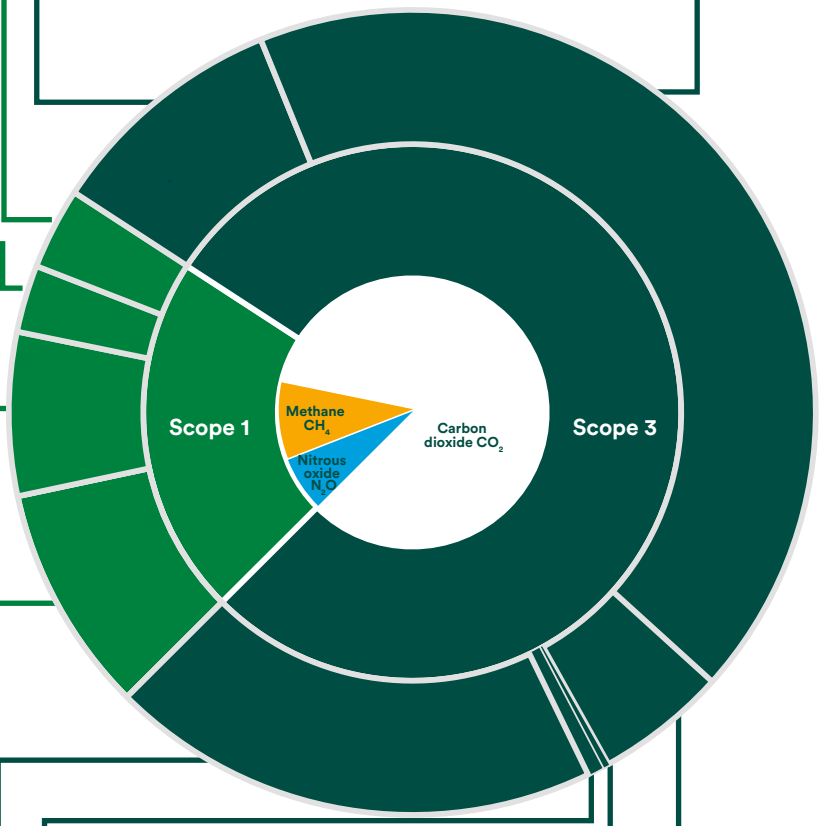
Fuel and energy emissions include scope 1 emissions from burning of fossil fuels such as kerosene in our treatment processes and also scope 3 emissions associated with the losses from well to tank and in transmission and distribution. We are investigating and trialling ways to reduce our use of fossil fuels through both efficiencies and use of alternative low emission fuels.

Purchased goods and services 250,189 tCO_2e

We currently estimate our emissions from purchased goods and services based on the records of the amount we have spent using CEDA Global '22. This gives us a comprehensive but indicative estimate of scope 3 emissions. We are looking to change key emission categories, such as those from chemicals, to a product-based or supplier-based emissions factor which will enable us to make operational and purchasing decisions based on the carbon impact. To do this, however, we are reliant on our suppliers carrying out and publishing life-cycle carbon assessments.

Transport 17,665 tCO_2e

We made a ten-year green fleet commitment in 2018 to convert our fleet to low-carbon fuels. We have begun our investment in electric vehicles and are exploring options to fuel HGVs, including hydrogen and HVO.



Sludge processing 38,886 tCO_2e

Processing of sludge releases methane. Half of our facilities use advanced digestion which captures more of this methane to power and heat our processes or generate electricity. This reduces the methane lost as an emission.

Wastewater processing 55,665 tCO_2e

The biological processes used in wastewater treatment produce N_2O and CH_4 both potent GHGs. Emissions are approximately proportional to the size of the communities producing the wastewater. Recent monitoring studies show that they may be far higher than the UK water industry currently estimate, but further knowledge will enable mitigation.

Capital goods 138,182 tCO_2e

We have a significant capital programme to develop our water and wastewater services infrastructure and this construction will drive substantial emissions.

Employees – commuting and homeworking 5,336 tCO_2e

Estimated based on our colleagues numbers and ways of working (office/site based or hybrid) using EcoAct's UK models.

Business travel 1,486 tCO_2e

Public transport, private vehicles and hotel stays.

Sludge transport 35 tCO_2e

Contracted sludge transport.

Waste (biosolids to land) 27,454 tCO_2e

97 per cent of these emissions are from disposal of sludge biosolids to agricultural land. Recent UKWIR data shows that the industry estimation method is likely to be significantly overestimating these emissions.