

SPRING 2026

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INFRASTRUCTURE INTELLIGENCE

# THE FUTURE OF WATER

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## Welcome to the latest edition of *Infrastructure Intelligence* magazine

In this, our third issue, we lift the lid on that essential resource for life: water.

The tide is turning for the water sector. The biggest overhaul of regulation since privatisation has been announced, unprecedented levels of investment are being made and a pipeline of new projects will reshape our water supply.

All of this is leading a major transformation in how water is managed, controlled and delivered. Driven by pressures from climate change, population growth and ageing infrastructure, there is a lot to do.

The sector must also work on its image. The Independent Water Commission's review, chaired by Sir Jon Cunliffe, described the sector as "broken". Intense public criticism over poor performance, sewage spills and underinvestment have led to a loss of public trust.

A radical reset of the sector, including the scrapping of Ofwat and the creation of a single "super-regulator", means the coming years will be a time of intense activity.

In this issue, we take a closer look at work already underway – investment in the Asset Management Period 8 (AMP8), the completion of the Thames Tideway Tunnel and the pipeline of major projects that are bringing innovation to how we manage our water supply.

We talk to Ofwat about the changes that are coming, and to some of the industry's key players who are making a difference to projects across the country.

While the water sector has come in for much criticism, it is one that is often widely taken for granted. Many of us rarely think about it until problems arise. We turn on a tap and water is there, giving the impression of an abundant supply, in fact, a water shortage is a genuine reality for the UK.

In writing this latest magazine, I have been struck by a common thread that has linked the people to whom I have spoken. Water is an industry with real heart. Its people are passionate about making a difference. And the drive to change, innovate and build a better future is there – by the bucket load.



**Karen McLaughlan**  
Editor  
*Infrastructure Intelligence*

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Our next II magazine will focus on the Future of Skills. Having the right people in place is critical if we are to deliver on the country's economic ambitions.

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# STANDING AT THE CROSSROADS OF WATER REFORM



BY MARIE-CLAUDE HEMMING, POLICY DIRECTOR AT THE ASSOCIATION FOR CONSULTANCY AND ENGINEERING (ACE) AND THE ENVIRONMENTAL INDUSTRIES COMMISSION (EIC)

The UK's water sector is at a turning point. Pollution incidents are no longer background noise and rising bills are felt in every household. Radical reform is needed, but change must be grounded in long-term investment and innovation, not piecemeal fixes or substantial penalties. We know that short-term approaches only fuel boom-and-bust cycles and leave underlying problems untouched.

### Regulation must deliver the system we need

The Water White Paper is the start of the journey towards change. We now wait for publication of a Transition Plan, with an accompanying interim Strategic Policy Statement for Ofwat and ministerial direction for the Environment Agency. This will set out how changes will happen and who will be responsible.

The new regulator announced to replace today's fragmented oversight could be transformational, but only if it has real authority. For decades, economic regulation, environmental protection and drinking-water standards have existed in silos. The result: slow decisions, unclear accountability and systemic failures allowed to fester.

The regulator must be future-proofed, not constrained by the past. That means clear accountability for long-term outcomes: substantial expertise across engineering, environmental science, climate resilience and digital infrastructure, stable multi-year settlements and a culture that rewards innovation rather than punishes risk.



News that a chief engineer will sit inside the new single water regulator sounds positive, bringing back the hands-on checks of water infrastructure Ofwat has failed to provide.

Integrated water management must sit at the heart of reform. Supply, wastewater, river health, flood risk and land use are interconnected; managing them as separate pieces undermines efficiency, resilience and environmental outcomes. The regulator has the opportunity to embed this systems thinking approach, which aligns planning with catchment boundaries and joins up environmental, consumer, and investment priorities.

Government action will now determine whether reform delivers real change or remains a missed opportunity.

#### Delivering on public demand

The Environment Act 2021 set ambitious statutory targets for nutrient pollution, leakage reduction, and water efficiency. They reflect what the public wants: cleaner rivers, fewer spills, and a water system that uses resources wisely.

Building on these commitments, the newly published Environmental Improvement Plan (EIP) identifies the water sector as a central focus for environmental improvement, setting out measures to tackle pollution from sewage discharges and combined storm overflows. These include new mine water treatment schemes, diffuse pollution interventions, and catchment studies, alongside interim targets to reduce storm overflow impacts. The EIP also aims to restore chalk streams and cut water leakage significantly by 2027 and 2032.

Yet we know that targets are meaningless without delivery. We need predictable, long-term investment programmes so companies can modernise efficiently, regulatory incentives that reward genuine improvement, and planning that recognises that land use, agriculture, and urban development shape water quality as much as treatment works.

The expertise to do this already exists within our membership. However, we can only succeed within a regulatory and investment framework that enables delivery.

#### Resilience requires action, not reaction

The UK's water infrastructure asset base is aging, with many pipes, pumping stations and treatment works long past their design life. Population growth, more complex wastewater and climate pressures intensify the strain. Without proactive maintenance, modern asset management and planned renewal, we know that the system becomes prone to leaks, pollution and outages, resulting in costly emergency repairs rather than building resilience.

A truly resilient network must be long-term and include smart and connected infrastructure and investment in both grey and green solutions. Integrated water management also strengthens resilience, ensuring that interventions in one area support the wider network and environment rather than creating isolated gains.

#### Accountability must be balanced with delivery

Public anger drives demand for stronger enforcement. But penalties

**"What is required now is regulatory foresight, stable long-term investment, and political commitment to genuine reform."**



alone will not fix failing infrastructure and risk diverting resources away from improvements.

Companies must face firm accountability but also clear, funded pathways to compliance and improvement. They need approvals for major upgrades, access to capital, freedom to innovate, and confidence in a long-term, committed investment pipeline.

#### Three principles for lasting reform

We believe that there are three

overarching principles to deliver the change we truly need.

**1. Long-term certainty:** Water infrastructure demands planning over decades. Stable, multi-period investment frameworks allow the sector to plan strategically, recruit skilled workforces and deliver efficiently.

**2. Innovation at the centre:** The UK must lead in environmental and engineering innovation. Regulation should enable digital

asset management, advanced monitoring, nature-based solutions, circular economy practices, and new treatment technologies.

#### 3. Coherent, cross-government policy:

Water intersects climate, agriculture, housing, biodiversity, and energy. Fragmented policy produces fragmented results. Integrated water management ensures that investment, regulation and planning reinforce one another and deliver real benefit in all areas.

The UK has a chance to build a world-class water system that is fit for the twenty-first century. The expertise to deliver this transformation already exists within our membership.

But industry cannot do it alone. What is required now is regulatory foresight, stable long-term investment, and political commitment to genuine reform.

The government's White Paper has the potential to turn today's challenges into opportunities for renewal, protecting the environment, restoring public confidence, and securing a sustainable water future for generations to come. Let us all come together and hope this ambition comes true.



How do we deliver the infrastructure Britain needs – faster, smarter and sustainably? The Delivering Infrastructure 2050 conference will unite CEOs, engineers, policymakers and investors at Savoy Place, London on 30 June 2026 to shape the future of UK infrastructure. More details on page 47.

# THE BIG WATER RESET

KAREN MCLAUCHLAN, EDITOR OF *INFRASTRUCTURE INTELLIGENCE*, CONSIDERS THE WAY FORWARD FOR THE WATER SECTOR FOLLOWING PUBLICATION OF THE GOVERNMENT'S "ONCE-IN-A-GENERATION" PLAN TO OVERHAUL THE SYSTEM

Six months on from the water sector's day of reckoning, a way forward for the industry has been announced.

The government's long-awaited Water White Paper has been published, setting out clear powers for a new regulator, delivering tougher oversight and stronger accountability for water companies.

Published by the Department for Environment, Food and Rural Affairs (Defra) the document *A New Vision for Water* puts the water industry on the path for transformation.

Rewind to summer 2025 and publication of the Independent Water Commission's report into the water sector marked a watershed moment for the industry.

Chaired by Sir Jon Cunliffe and, with extensive public input from more than 50,000 responses over a period of nine months, the final report, published in summer 2025, laid out 88 recommendations to overhaul the way water is regulated, governed and delivered – with a call to rebuild England's "broken" water sector.

It proposed sweeping reforms, ending the days of Ofwat and replacing it with a new integrated water regulator. The report also covered managing the competing demands on water, how water companies are governed and how critical water infrastructure remains resilient both now and in the future. On publishing the report, Cunliffe said: "This sector requires fundamental reform on all sides."

The government gave its initial response last year. It confirmed plans to scrap Ofwat, with a new regulator taking responsibility of water functions across Ofwat, the Environment Agency, Natural England and the Drinking Water Inspectorate, ending complexity that it said gets in the way of delivering for customers. The government described it as "the biggest overhaul of water regulation in a generation".

The White Paper has now outlined the government's stance on the report's 88 points and shown the strategic direction the sector will take to end fragmentation.

For the first time in two decades, a chief engineer will sit inside the new single water regulator, bringing back hands-on checks of water



infrastructure. The government says this ends the days of water firms "marking their own homework" which has resulted in crumbling pipes and unreliable services.

Inspections without notice, regular MOT-style checks and compulsory water efficiency labels on appliances are among other key measures in the government's overhaul of the water industry.

Environment secretary, Emma Reynolds, said reforms will bring "tough oversight, real accountability and no more excuses".

"Water companies will have nowhere to hide from poor performance, customers will get the service they deserve and investors will see a system built for the future," she added. "This builds on the tough action we've already delivered, from record investment to banning unfair bonuses."

It is the start of the journey. A Transition Plan is still to come with an accompanying interim Strategic Policy Statement for Ofwat and ministerial direction for the Environment Agency, to set out how changes will happen and who will be responsible.

Clarity and confirmation of the way ahead has been broadly welcomed by industry.

ACE Group – which comprises the Association for Consultancy and Engineering (ACE) and the Environmental Industries Commission (EIC) – says the strategy is a "step-change" in delivery for the water industry.

Kate Jennings, chief executive, said: "We welcome the government's Water White Paper and its focus on building a resilient, forward-looking water system. The priorities for our members have always been rapid delivery of long-term water planning, strong governance,

and a central role for engineering and environmental features in design, appraisal, and assurance. This White Paper is a step-change in meeting that.

"Our sector has global expertise in turning these ambitions into practical, cost-effective solutions. With clear delivery mechanisms and close collaboration with government and industry, the UK can strengthen water resilience while supporting growth and high-quality jobs and our members will be integral strategic delivery partners in achieving the aims of the white paper."

Tim Knobbs, head of profession for water at WSP, said: "The need for reform in the water sector is clear, and the White Paper's emphasis on understanding and valuing the systems we're privileged to steward is welcome. As custodians of ageing but essential infrastructure, ensuring these systems remain adapted and resilient for future generations must remain our starting point."



**"Water companies will have nowhere to hide from poor performance, customers will get the service they deserve and investors will see a system built for the future."**

**Emma Reynolds, environment secretary**



**"If we align capability, investment and accountability in the right way, this can be the moment the sector moves decisively from reactive fixes to resilient, future proof water services."**

Tim Knobbs, WSP

"The proposed 'MOT-style' health check and stronger engineering oversight will help build a much clearer picture of asset condition, capacity and capability – supporting long term, data-led decisions that keep performance at the forefront.

"To turn ambition into delivery, skills and capability are the real unlock. We need a broader and deeper skills base that brings together knowledge of older assets with new digital tools and technologies, while attracting the workforce of the future. And as we move forward, it's important to recognise the dedication of those who have kept services running through a challenging regulatory era.

"If we align capability, investment and accountability in the right way, this can be the moment the sector moves decisively from reactive fixes to

resilient, future proof water services."

Water UK, the trade association for the water industry, said the White Paper is a "welcome step". It added: "The focus must now shift from diagnosis to delivery. Our country will not have the environment it wants or the economic growth it needs until a new water regulator is established. Interim leadership should be appointed as soon as possible. We cannot afford for any more long-term decisions to be taken by a system everyone knows has failed. The need for major reform has long since been agreed. Delivery now needs to catch up."

Chris Walters, Ofwat interim CEO, said the creation of a new water regulator for England will bring "renewed focus, improve the sector for customers, investors and the environment and rebuild trust".

He added: "In the meantime, our work continues. We have eight enforcement investigations into water companies looking at compliance with the customer-focused licence condition, wastewater treatment, the delivery of environmental schemes and supply resilience. We are already working closely with Defra and our partner regulators as the government develops the new body, ensuring the sector moves towards a more integrated and resilient future.

"We are also overseeing the delivery of record levels of investment and 30 major infrastructure projects to improve the resilience of our water supplies and will continue to act within our current powers to protect customers and the environment, while ensuring a smooth and effective transition to the new regulatory model." [II](#)



## THE WATER WHITE PAPER: WHAT CHANGES ARE COMING?

**A 2026 Transition Plan:** Will be published to set out the path to the new system along with an interim Strategic Policy Statement for Ofwat and ministerial direction for the Environment Agency detailing how changes will happen and who will be responsible

**A new water reform bill:** This will bring forward the legislation needed to enable the system to take effect

**A new integrated regulator:** To be established along with the appointment of a chief engineer

**MOT-style checks:** Water company infrastructure will require health checks on pipes, pumps and more – putting prevention first

**Fast action:** A new Performance Improvement Regime will give the regulator power to act fast and fix failures

**Stronger inspection powers:** Including "no notice" inspections

**Customers first:** Creation of a new independent water ombudsman

**Savings:** Roll-out of smart metering and mandatory efficiency labels on items like dishwashers and washing machines – saving more than £125m on water and energy bills over the next decade

**Unity:** Reforms will bring councils, water companies, farmers and developers together to deliver joined-up local plans to tackle river pollution, water resources and housing growth

**Long-term direction:** Clearer direction, better joined-up regional water planning function and a long-term stability objective

**Attracting investment:** Making water a more attractive and reliable sector for investors seeking stable and fair return



**"Together, we can make water one of Britain's greatest success stories once again: cleaner rivers for our children to enjoy, resilient infrastructure that powers economic growth, and a public that trusts the system serves them well."**

Emma Reynolds, environment secretary



# WHAT'S NEXT FOR OFWAT?



REGULATION OF THE UK'S "BROKEN" WATER INDUSTRY IS SET FOR A MAJOR SHAKE-UP. CHRIS TAYLOR-DAWSON, OFWAT'S SENIOR DIRECTOR FOR MAJOR PROJECTS AND MARKETS, EXPLAINS WHAT THIS TURNING POINT MEANS FOR THE SECTOR

England's water sector is facing the greatest overhaul in more than a generation.

The Independent Water Commission (IWC), chaired by Sir Jon Cunliffe, set out its recommendations for reforming the UK's "broken" water industry in summer 2025.

The fragmented, overlapping and inflexible nature of the regulatory system has called for the scrapping of Ofwat – the Water Services Regulation Authority – and replacing it with a new single regulator.

Described by government as "the biggest overhaul of the water sector since privatisation", Ofwat and its functions will be merged with those

across the Environment Agency, Natural England and the Drinking Water Inspectorate.

Change of this scale will take time and the government's much-anticipated White Paper has now outlined the way ahead. But full structural reform is likely to take around two years.

Chris Taylor-Dawson, Ofwat's senior director for major projects and markets, says it's a "critical reset moment" for water. He says there is much work to be done to repair the "significant" erosion of public confidence in the water industry.

"The Independent Water Commission's final report rightly sets a new direction for the water sector

with the formation of a new regulator in England," he said.

"We need to ensure industry collectively delivers better outcomes for customers and the environment. We are creating a single controlling mind under a new regulator."

"I think Ofwat and all the regulators have done their best under the previous regulatory structure, but it had limitations. The structure did not act as fast as it could have to prevent failure and there has been a significant loss of public trust in the water sector. It is a situation that must be turned around."

Taylor-Dawson says Ofwat is now committed to working with the government and other regulators to

ensure a "smooth transition" to a new body in England, as well as working with the Welsh government following the recent announcement to set up a dedicated standalone system.

"This work is going to take time. It requires legislation – which we all know doesn't happen overnight," he explained.

"And at the same time there is a huge amount of work that must be delivered for the Asset Management Period 8 (AMP8), enforcement and regulation of water companies and major projects. That work hasn't gone away."

He added: "But when it comes to performance, it's clear companies need to do better on issues such as leakage, sewage bills and flood resilience, and we've got to work together to tackle that loss of trust – and capital investment underpins all of those improvements."

Next steps include the government fast-tracking key recommendations from the IWC via the recently published Water White Paper – a milestone on the journey to clear powers for the new regulator, delivering tougher oversight and stronger accountability for water companies.

Taylor-Dawson says the IWC's report was "largely as expected", adding that strategic planning of water and waste water was something Ofwat had called for – with the review recommending a regional approach.

"There is a balance to be struck between investment rates that are credible and deliverable and the impact on customer bills of this level of investment. Overlaid on top is the reality that we are in a cost-of-living crisis, and the bill consequences of investment are very sensitive."

"But this is a reset moment for the sector that absolutely needs to happen."

Outside the regulatory changes, Taylor-Dawson says this is already a "very significant" time for the water sector.

But while the IWC report found much to criticise, the sector's £50bn major projects pipeline and trailblazing schemes such as London's 25km super sewer – the Thames Tideway Tunnel – are positive indicators of what can be achieved.

"There's a huge amount to do over the next 10 to 15 years," Taylor-Dawson added. "The pipeline currently contains around 30 projects, and £2bn of that work has already been approved through the Ofwat price review."

"The pipeline is about creating additional water capacity. By 2055, if we don't do anything over and above what we're already doing, there will be a shortfall of about one-third of today's existing supply – five billion litres."

Multiple factors are behind the increase in demand.

"We need to leave more water in the environment to support healthy rivers and habitats – which accounts for half the demand," explained Taylor-Dawson.

"A quarter of the increase is to improve resilience to drought – which is particularly pertinent given the summer we've just had and our need to respond to climate change. The rest comes from housing and business growth."

Of the five billion litres that will be needed, around two-thirds will come from reducing demand, reducing leakage and encouraging us all to use less via a water efficiency campaign.

"Reducing demand is about hearts and minds and changing behaviour is never easy," he added. "But it's vital, as the huge investment will only make up around a third of the projected supply deficit."

Consultation is under way on several major projects, including plans for Oxfordshire's new reservoir – the South East Strategic Reservoir Option (SESRO).

"A tranche of projects will be going into planning in the next 12 to 18 months," Taylor-Dawson added, "and getting ready to go out to procurement."

"Feedback from investors is that they are not prepared to take planning risks. They will invest, but only once planning has been achieved, so we must make sure that happens."

But while major projects are challenging, Taylor-Dawson said the pipeline is also a massive opportunity.

"These are rewarding projects that need huge capability and expertise. Some of that is in the industry, but not enough. There's also an incredible opportunity to take the learning from one project on to the next – 'repeat, do better' must be our ambition."

"One of the reasons I took the role at Ofwat was the opportunity to work on building and transforming capability and expertise in delivery of something that is fundamentally good for the country."

"It's really exciting and I wanted to be a part of it. This is not just a blip on the radar: this a sustained programme of investment with huge support behind it to make it happen." II





# THAMES WATER'S £20BN VISION TO BUILD A RESILIENT AND SUSTAINABLE LONDON



ANDREW POPPLE, DIRECTOR OF DELIVERY FOR THAMES VALLEY AT THAMES WATER, EXPLAINS WHY A GROWING POPULATION AND A CHANGING CLIMATE IS DRIVING THE WATER FIRM'S BIGGEST UPGRADE IN 150 YEARS

Thames Water is carrying out the biggest ever upgrade to its network. A record-breaking £20bn investment programme is upgrading water and wastewater services, reducing pollution, tackling leaks and protecting supply for the future.

But for the water company serving the capital, it is a task that comes with unique challenges.

A dense, historic – and ever expanding

– community makes the job logically tough. Many of Thames Water's assets are old, including parts of the original Victorian-era sewer system built by Sir Joseph Bazalgette in the 1850s and 1860s.

Under-invested over previous decades, being landlocked has also served it badly when environmental programmes have focused on investment to improve coastal bathing water in the past.

And, today, Thames Water also faces its own financial problems, tackling debts of almost £18bn.

Andrew Popple, director of delivery for Thames Valley at Thames Water, said mammoth investment is already under way.

"Thames Water's capital delivery has grown significantly, with Asset Management Period 7 (AMP7) being the largest to date and AMP8 set to be even

larger, requiring an increase from £1bn to £3bn per year in investment over the next 18 months to two years," he said. "AMP9 is expected to be larger still.

"We're managing more than 1,000 projects costing from a few hundred thousand pounds right up to major schemes valued at £50m to £250m."

He added: "The scale of investment and the ramp-up required is immense. There are risks around that, such as the supply chain and having the right people in place. But it is also very exciting; we are making a difference to people's lives and the environment.

"London is busy, and we really do appreciate the impact our work can have – digging up roads to replace water pipes and reduce leakage – but at the same time it's vital that we get on and do that work."

Major schemes include building a brand new sewage treatment works at Guildford and a £400m investment at two water treatments sites in London – Coppermills and Hampton. Thames Water is replacing around 550km of watermains as part of its major AMP8 investment plan (2025-30), focusing on old, leaky pipes to improve supply and reduce water loss.

Once final testing has been completed, Thames Water will become the operator of the capital's new "super sewer" – the 25km Thames Tideway Tunnel, built beneath London to prevent 95% of sewage spills into the tidal Thames.

The mammoth feat of engineering is already transforming the quality of water along the River Thames and dealing with surges of sewage when downpours hit the capital.

**"The scale of investment and the ramp-up required is immense."**



Popple said: "At the time of planning, some people were worried about disruption from such a project, that it was going to be noisy and make a mess during construction. Now everyone can see benefits, environmentally and economically. It is a successful project that has been delivered incredibly well."

While the construction and financing of the tunnel was carried out by Tideway (Bazalgette Tunnel Limited), Thames Water has invested in Beckton Sewage Treatment Works (STW) to cope with flows coming from the tunnel.

The UK's largest sewage treatment works, built in 1864, has been upgraded to ensure it can treat the sewage of up to 4.4 million customers and accommodate flows from the Thames Tideway Tunnel.

Upgrades are also being made at Thames' sewage treatments works at Mogden and Beckton, which are being upgraded to handle increased capacity due to city growth and to integrate with the Tideway Tunnel's output.

Situated to the north of Twickenham, Mogden was built between 1931 and 1935 at a cost of £1.7m and covers an area of 55 hectares.

Popple says people do not always appreciate the site and complexity of such assets.

"Mogden is a massive site. It was built at a time when it was surrounded by fields – hence it was originally called a sewage treatment 'farm'. Now it is surrounded by houses, which makes upgrading and modernising the

treatment works very challenging as we don't have the same option to expand our footprint like our other sites in the Thames Valley."

Consultation is also under way on the development of a new reservoir near Abingdon, as part of a long-term water resource management plan involving multiple water companies.

Thames Water has been making headlines during 2025 for its financial situation: with the company struggling with decades of debt accumulation, dividend extraction and underinvestment in aging infrastructure.

Popple says Thames Water remains liquid, has secured necessary funding through recent drawdowns and continues to invest as planned, regardless of potential changes in ownership, with both private and creditor-led ownership options under consideration.

"Thames Water is committed to meeting the regulatory settlement from Ofwat, which mandates a minimum investment of £20.5bn for the current period. We are heads down and getting on with the work that needs to be done. Our customers still have an expectation of what they want from Thames Water."

More change is coming for the sector with the creation of a new regulator following the Independent Water Commission's recommendation to scrap Ofwat. Popple said it can be a "challenge" to deal with multiple regulators and stakeholders, and there is a need for more coordinated decision-making to avoid conflicting requirements.

"The regulator is changing and we need to see that happen," he added. "It is important to bring all of those voices together. In a few years' time we will be heading into PR 29, the next major price review (2029-35). We will have to see if this can be done with a new regulator in place."

As for future challenges, recruitment, skills and strategic planning are key concerns. "People and supply chain are our biggest risks at the moment," added Popple. "We have a very willing and supportive supply chain, but given the scale of the investment across the country – not just in water but also in the nuclear and renewables sectors – there's huge demand. We need to look at the programmes of work to make sure the supply chain can give us the best value and deliver things at the right time."

"But that also means there are huge opportunities, especially for recruitment. We do appreciate we probably have quite an ageing workforce. So, our apprenticeship and graduate programmes are hugely important."

The complexity and necessity of water sector investments is vast, not just for Thames Water but also across the sector. But Popple says it all boils down to ensuring supply of one of life's fundamental ingredients: water.

"When people turn on the tap the water is there for them," he said. "You flush the toilet and it goes away, the right way. We provide more than 2.5bn litres of drinking water and take away around 5bn litres of waste water every day. We are working hard to keep doing that successfully." [II](#)

## THAMES WATER – WHERE INVESTMENT IS TAKING PLACE

Thames Water is carrying out its biggest upgrade in 150 years with a record-breaking £20bn investment aimed at fixing leaks, reducing pollution and protecting water quality.

Much more than just maintenance, the work is upgrading water and wastewater services for generations to come. With more than 140,000km of water pipes and sewers, work will improve the network for 2030 and beyond.

### Highlights include:

- Replacing more than 500km of water mains to boost resilience and reduce leaks
- Installing more than a million smart meters over the next five years
- Investing £5bn to upgrade hundreds of sewage treatment works
- Upgrading stormwater systems to reduce storm overflows

Major projects are also bringing investment and resilience to Thames Water's business.

### These include:

**Thames Tideway Tunnel:** The 25km, £4.5bn super sewer, delivered by Tideway, is providing crucial support to the capital's sewage system.

**White Horse Reservoir:** Proposals for a new reservoir near Abingdon in Oxfordshire. Thames Water launched a £5.7bn tender notice in January 2026 to bring a contractor on board to build the site, previously known as the South East Strategic Reservoir Option (SESRO).

**The Teddington Direct River Abstraction (TDRA) project:** A vital new drought resilience project for London.

**The Thames to Affinity Transfer (T2AT):** Moving water by underground pipeline from the River Thames to Affinity Water's region.

**Relocating Guildford sewage treatment works:** Enabling development of Weyside Urban Village, including 1,500 new homes. The new site should be operational in spring 2027.



# HOW A £4.5BN 'SUPER SEWER' IS SAVING THE THAMES



ROGER BAILEY, CHIEF TECHNICAL OFFICER  
AT TIDEWAY, EXPLAINS HOW THE NEW  
15-MILE TUNNEL BENEATH THE CAPITAL  
HAS BECOME THE INGENIOUS SOLUTION  
TO LONDON'S FILTHIEST PROBLEM

When it rains, it pours.

Until recently that was the case for London's old and overwhelmed sewerage system. But not any more, thanks to the Thames Tideway Tunnel.

London's combined sewage system handles human waste and rain run-off. But the capital's population has outgrown the infrastructure and, until recently, when the rain came it completely overwhelmed London's network, triggering overflows of sewage into the River Thames.

A new Thames Tideway Tunnel – a cavernous concrete tube as wide as three London buses – now stretches for 25km below the capital. It sits ready and waiting to store sewage overflows when the heavens open and the network fills up, until it can be processed.

As well as keeping 95% of waste out of the river and drastically cutting

pollution, the tunnel scheme is making the Thames cleaner for wildlife and people. It has created new public spaces allowing people to enjoy the river like never before and future-proofed London's sewage system in an era of growing population and climate change. It is reconnecting London with its river.

Roger Bailey is chief technical officer at Tideway – the consortium of contractors who have built the £4.5bn tunnel. An engineer, he has been part of the project since 2012 and has been instrumental in defining the project requirements and agreeing the technical interaction between Tideway and the existing Thames Water sewer network.

He says it has been a "privilege" to be part of such a unique project.

"Tideway is extremely worthwhile – we are cleaning up the river, taking away people's sewage and whatever

else they chuck down the toilet. But it's also a project that has gone right through the heart of London, changing the face of the city along the river. That's a huge responsibility."

"My team has been responsible for the big picture design, making sure what was agreed at the beginning is being followed through by all parties so at the end the project works as it's supposed to and gives the right outcomes."

Planning for the Thames Tideway Tunnel was approved back in 2014, with construction starting two years later at two dozen sites from Acton in west London to Abbey Mills Pumping Station in Stratford, East London.

More than 20 deep shafts – some as wide as the dome of St Paul's Cathedral – were constructed across London to divert sewage flows and to lower tunnelling machines into the ground to complete four years of digging by 2022.

Image: Tideway

## THAMES TIDEWAY TUNNEL THE FACTS

**Cost:** £4.5bn

**Length:** 25km (or 15 miles) running from West to East London

**Size:** 7.2m wide – the size of three London buses – and up to 67m deep

**Capacity:** A combined capacity of  $1.6 \text{ m}^3$  to protect the entire tidal Thames

**People:** Around 25,000 individuals have worked on the project – including tunnellers, engineers and divers – contributing 40 million work hours

**Overflow impact:** Will reduce combined sewer overflows by 95% annually

**Equipment:** Six tunnel boring machines were used on the project – four on the main tunnel and two on smaller connection tunnels – custom built at a cost of up to £10m each

**Environmental impact:** Has provided habitats for aquatic wildlife and diverse ecology for London

**Timeline:** The Thames Tideway Strategic Study was created in the early 2000s. Planning was approved in 2014 and construction began in 2016. Tunnelling began in 2018. It has taken eight years to construct

**New additions:** Three acres of new areas of riverside public realm created to connect the capital's residents and visitors with the river more closely

**Today:** The tunnel is now working, intercepting, storing and transferring waste from the River Thames

**The future:** The Thames Tideway Tunnel will protect the river for at least the next 120 years



Concrete 'lid' lifted into place over the shaft at Abbey Mills Pumping Station in Stratford, marking completion of underground construction in March 2024

With some of the system coming on line in 2024, the tunnel became fully functional in 2025, connecting with Thames Water's existing 7km Lee Tunnel. At the time of our interview the tunnel had already successfully captured 12 million tonnes of sewage, with Bailey waiting for "a really big storm" to test the system before full operation and final handover to Thames Water.

A booming population and stinking sewage problem is nothing new for London. By the 1850s the capital had a population of more than 2.5 million – and unsanitary habits had turned the Thames into a toxic, disease-laden soup.

In the hot summer of 1858, "the Great Stink" spurred the government into action and engineer Joseph Bazalgette was asked to provide a solution. The

brick-lined tunnels he built still form the basis of London's sewers today.

The Victorian sewers were designed to serve four million people. Today, more than double that number send waste into the capital's sewers daily, with London's population estimated to increase to 16 million by 2160.

It has meant that when it rained, the system filled up rapidly, and Bazalgette's sewers could not drain it away quickly enough, leading to overflows into the river.

The Thames Tideway Tunnel has fixed the problem, providing a gigantic holding chamber for the surge of sewage when the rain does fall.

The financing and construction of the tunnel has also earned praise.

Successfully funded using the Regulated Asset Base (RAB) finance method – where investors earn a stable, regulated return on their capital – this method is now being adopted by the government to take forward new nuclear power projects, such as Sizewell C.

Bailey says the project's "robust framework", transformational health and safety programme and ambitions for high standards, good communication with stakeholders and a hands-on approach to management have been among the key ingredients for successful delivery.

"To do that amount of civil engineering through the heart of London and still maintain good relations with your neighbours is a sign we have done a really good job," he said.

"We have always strived to be an exemplar provider, answer anybody's questions, have an open door and explain what we are doing. And I think it's paid off."

As well as completing the tunnel below ground to deliver long-term environmental benefit, the project has created wider social impacts above ground. These include using the Thames to transport materials, bringing jobs and skills back to the river, supporting communities through employment and creating new public spaces in and around the Thames.

Bailey says the project has gone "above and beyond" to leave a lasting legacy.

"When we started out, we talked about creating world-class public realm, creating local employment and increasing use of the river. It's not been about just scraping over the bar; we have totally embraced that ambition and delivered a knockout result.

"We managed to get all our contractors equally enthused in those legacy goals which has helped us maintain a positive tailwind."

Bazalgette's overhaul of London's sewerage system changed the look and character of the city with the creation of the Chelsea, Victoria and Albert Embankments.

Similarly, Tideway set out to create new areas of public realm to connect the capital's residents and visitors with the river more closely than previously possible.

"It's a project that has gone right through the heart of London, changing the face of the city along the river. That's a huge responsibility."

Three acres of new public realm along the route of the Thames at seven different locations have been created. Parts of the new spaces at Victoria and Chelsea Embankments and at King Edward Memorial Park will be "floodable" at high tides, giving Londoners the first opportunity of its kind to dip their toe in what will be a cleaner River Thames.

February 2026 will mark Bailey's 14th year on the project. In the next six to 12 months he will transition off the project, handing over to a new team that will take Tideway into the future.

But with huge investment taking place across the water sector, he hopes to share his experience with other key projects.

"Tideway has been an amazing project; I've really enjoyed it. But I'm not bowing out of working just yet. I would like to bring some of the benefits of how we have worked on Tideway to help other projects that are just getting going."

"What we've done isn't rocket science. I think we've just been purposeful, deliberate and disciplined about what we set out to do."

For all who live and work in London, there may be little thought of this incredible feat of engineering as they flush the loo, sending sewage out of sight and out of mind.

But a cleaner Thames, new places to spend time and a cleaner London will be daily reminders of the importance of the super sewer. [II](#)



King Charles and Tideway CEO Andy Mitchell tour the site in May 2025

# WHY WE MUST REVERSE THE FLOW AND EMBRACE ONE WATER

THE HOLISTIC APPROACH OF INTEGRATED WATER MANAGEMENT IS CRUCIAL FOR THE FUTURE OF INDUSTRY, PEOPLE AND THE PLANET. THE ENVIRONMENTAL INDUSTRIES COMMISSION'S WATER GROUP PUT THE ISSUE IN THE SPOTLIGHT AT ITS RECENT ROUNDTABLE EVENT



Image: iStock

From source to supply and beyond, the way we manage water needs to change.

Integrated Water Management (IWM) is slowly growing in the UK – driven by government policy, pilot projects and increasing awareness of climate change impacts such as drought and flooding.

A collaborative process that considers the water cycle as a whole, it brings together water supply, wastewater and stormwater management into one integrated management approach, while also influencing urban development to deliver multiple benefits for communities and the environment.

And it's change that is needed. For generations we have taken water from upstream and dumped it downstream when we are done with it, in a world of fragmented infrastructure and land management. But to protect this most critical resource and to make changes to reverse the flow will take effort by government, industry – and all of us.

Climate change, a growing population and increasing urbanisation are putting increasing strain on our water resources. Aging Victorian infrastructure is struggling to cope, and demand for water is only going to increase in the years ahead.

Marie-Claude Hemming, director of

The Integrated Water Management roundtable was organised by the Environmental Industries Commission's (EIC) Water Group. The group brings together EIC members working in this crucial space, including multi nationals and waste and water specialists.

It informs EIC's thought leadership in this area, producing innovative yet tangible proposals to encourage innovations in water. It also responds to government consultations, holds events, writes articles for industry press and regularly welcomes policymakers and industry experts as guests.

policy at the Environmental Industries Commission (EIC), said: "IWM will benefit the UK as climate change, population growth and urbanisation put increasing strain on water resources.

Wetter winters and drier summers are making floods and droughts more frequent, while aging infrastructure struggles to cope. By managing the whole water cycle – from rainfall to rivers and reuse – IWM ensures water is used efficiently and risks are better controlled.

**"IWM will benefit the UK as climate change, population growth and urbanisation put increasing strain on water resources."**

"At the same time, pollution and environmental decline demand a joined-up response. IWM brings together water companies, councils, farmers and communities to create sustainable, nature-based solutions that improve water quality, reduce flooding and boost resilience."

The EIC's Water Group tackled the multifaceted issue of IWM at its recent roundtable discussion event.

Simon Spooner, associate director at AtkinsRéalis and vice chair of EIC's Water Group, explained the complexity of the problem.

"We've got separate network infrastructure and land management; there's so many different sources of pollution and sources of resources, but they're not coordinated. So how do we reorganise the regulatory system to have joint catchment scale outcomes, coordinated plans and systems thinking?

"We need to move to circular economy principles, distributed solutions, natural flood management, natural resources management and engaging with natural partners as well as business partners."

Change on this scale will take a significant shift in regulation and control.

Phil Aldous, visiting professor at the University of Surrey with more than 40 years' experience of working in the water industry, said: "Governance is one of the issues that is vital to get this to work – the governance of who takes responsibility for what, and who has overall decision making, is going to be absolutely key."

And integration needs to begin at government level if a new way of working in the water sector is to be achievable. While changes to planning



(L) Chair: Michael Symons, Jacobs  
(R) Vice chair: Simon Spooner, AtkinsRéalis

have been announced to bring forward a target of 1.5million new homes – the vision needs to look further ahead.

Aldous added: "We need to think beyond the need for any type of new infrastructure, like mass house building, and consider the wider associated demands in an integrated way. For instance, flood defence, drainage, sewerage and water supply: we need to integrate policy development across areas, as well as the management of the whole environment across air, soil and water."

Michael Symons, head of flood risk management for Jacobs in the UK and chair of EIC's Water Group, said it is important to have a clear goal at the start if IWM is to succeed.

"We need recognition in legislation and organisation, from central government down, that water is a cycle. We all know that. We're all taught that as soon as we start studying it, but our systems at the moment don't recognise that. There's a disconnect between supply, use and waste and the environment that wraps it all up. It's not set up to reflect the reality of what water is and how we should be respecting it."

But what policy changes are needed to make IWM a reality? The Independent Water Commission's review of the sector positioned integration as a core

recommendation. The government's White Paper has since announced major change to end the "piecemeal approach" to water planning and provide stronger leadership and direction. But does it go far enough?

Hannah Spencer, operations manager at the Future Water Association, said: "There was a lack of a water vision in the Cunliffe Report. We've seen how powerful that can be in the energy sector, which has an overarching vision and stakeholders within that work towards it."

"When we're looking at buy-in for IWM, there's obviously got to be the policy makers, but I think the public are a massive part of how we're going to manage water going forward. Their understanding of where it comes from and where it goes is so vital, especially with the 1.5 million homes initiative adding stress to our water systems."

When it comes to change, that will also mean having more of the right people to implement new projects and policies – at a time when the water sector faces a skills shortage.

Duncan Ker-Reid, technical director at Buro Happold, said: "There are eight billion people around the world all focusing on getting access to water as a necessity for life. I think we need to have the ability to listen to how other

people are meeting their challenges. "If we think we have the solution to our problems by looking just inside our environment, then there may be areas that we're missing out on, or new ideas that we're not leveraging. It's about not just building our own skills but also listening and making use of the global knowledge economy."

While the UK is clearly at the early stages of the journey towards IWM, time will bring change.

Aldous said: "I think the pace of change needs to have a lot more momentum behind it, which means a lot more government support. Let's be really radical and say that some licences to operate might be at risk if we don't change, because at the end of the day, population growth and climate change are catching up with us faster."

Spooner added: "I think we have an enormous opportunity right now, but we must have a vision of where we want to go with a coherent plan of how to deliver it.

"This big vision will take a hundred years to achieve; this is not a quick fix. This is total change in our whole infrastructure approach. But we've done that before; we can do it again." <sup>ii</sup>



The Water Group's roundtable, held in London



## INTEGRATED WATER MANAGEMENT

### WHAT IS IT?

- Integrated Water Management (IWM) is a collaborative approach to land and water governance, embracing the whole water cycle from source to sea
- IWM uses circular economy principles, distributed solutions, natural flood management, natural resources management and engages with natural partners as well as business partners
- It integrates social, environmental and economic factors to deliver coordinated management of water storage, supply, demand, wastewater, flood risk, water quality and the wider environment
- Unlike traditional approaches, which treat these systems separately, IWM connects them to make sure water is used efficiently, sustainably and equitably

### WHAT ARE THE BENEFITS?

- Joined-up governance and coordinated plans across the system
- Increases the total amount of water in the system and strengthens resilience to climate shocks
- Circular, economy-driven thinking
- A move away from siloed budgets and boundaries
- Protects the living biosphere that sustains us and reduces consumption

### WHAT ARE THE CHALLENGES?

- Regulatory systems will need to change
- Local infrastructure and land use will need to adapt
- Change will take decades
- Engagement from the public will be crucial
- Bridging the skills gap – and learning from other countries
- Everyone needs to be engaged in the process of transforming the large-scale network infrastructure as well as local infrastructure, buildings and land



Proposals for a new reservoir in the Cambridgeshire Fens

# RAPID ACTION IS SECURING WATER SUPPLY FOR FUTURE GENERATIONS



**CHERYL STEVENTON, DIRECTOR AT RAPID, EXPLAINS HOW NEW LARGE-SCALE INFRASTRUCTURE AND A DRIVE TO COLLABORATE WILL ACHIEVE WATER RESOURCES RESILIENCE**

While many of us might complain that it rains a lot in the UK, we are facing a water shortfall – projected to be a massive five billion litres a day by 2055.

So it is critical that we deliver new water supply infrastructure, including reservoirs, water transfers, recycling and desalination.

Since its inception in 2019, the Regulators' Alliance for Progressing

Infrastructure Development (RAPID) – an alliance between water regulators Ofwat, the Environment Agency (EA) and the Drinking Water Inspectorate (DWI) – has made major progress to drive forward solutions that contribute to resilient water supplies, enhance the environment and deliver value for money.

Following analysis of the feasibility of nationally strategic supply schemes,

its programme was increased to 28 projects in the Price Review 2024 which could unlock around £50bn of investment in the long-term.

"We're at a tipping point for investment in the water sector," said Cheryl Steventon, director at RAPID. "It's a really exciting time. We have a strong programme of projects and there are so many opportunities – not just for water but more widely for jobs, social value, economic growth and environmental impact."

RAPID works on projects costing more than £200m up to multi-billion-pound transformational infrastructure schemes. Steventon says having early-stage conversations to assess feasibility is crucial.

"We aim to develop feasible projects, encourage partnerships and think outside the box for novel solutions. RAPID was created to address regulatory barriers in large infrastructure projects for water supply. We want to achieve long-term water resources resilience."

"We have 28 projects currently, quite a few are robust and at the pre-planning stage. They will then move into post-planning, and we will look at the kind of competitive model they'll be going out with and enter agile delivery."

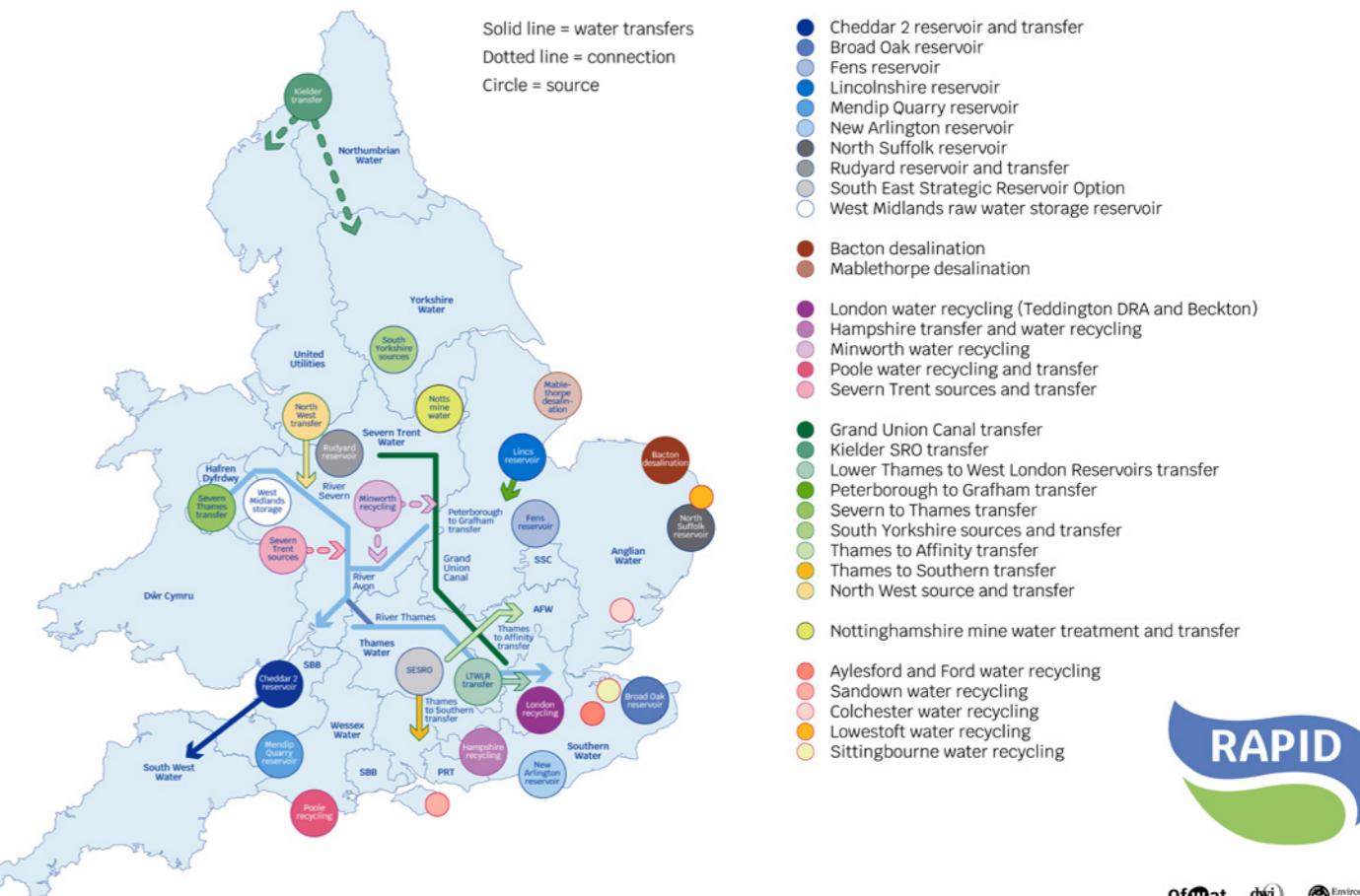
The supply deficit RAPID projects seek to address is based on the need to remove less water from the natural environment, climate change and population and economic growth. RAPID projects

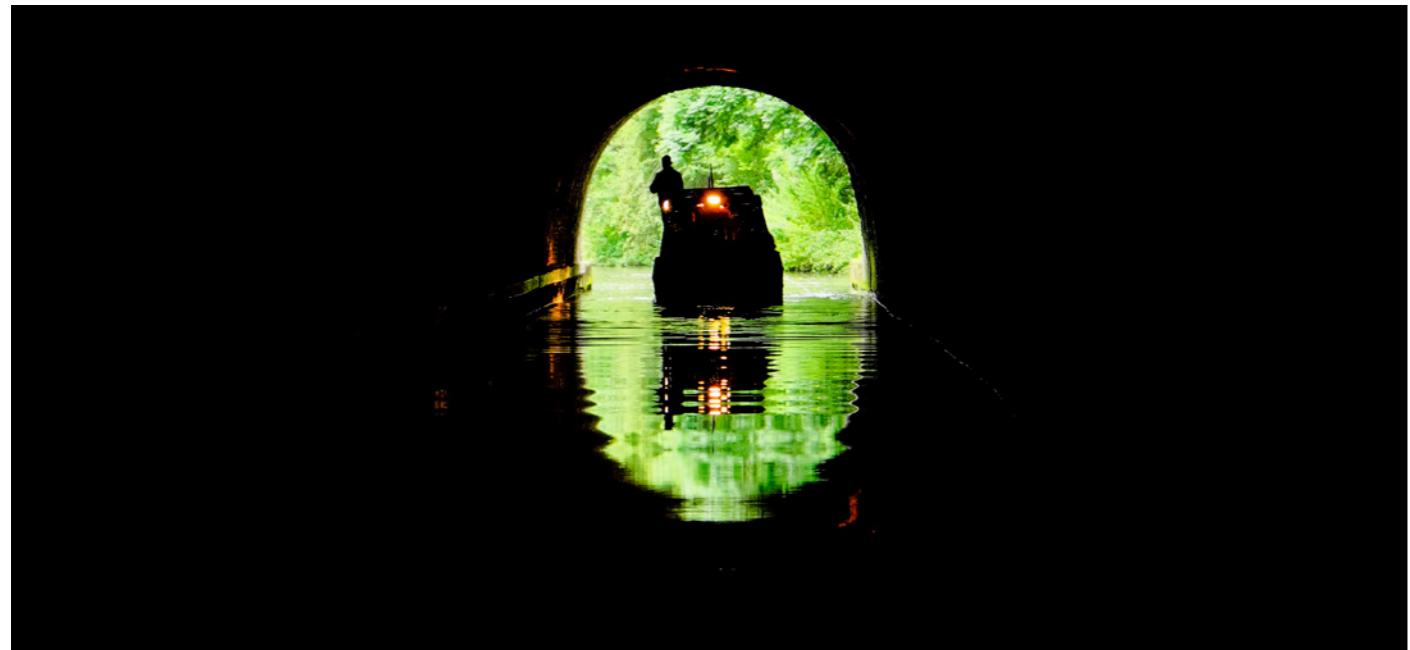
will address around one third of the projected five billion litres per day shortfall by 2055, with reductions in household and business use and fixing leakages addressing the other two-thirds.

Delivery models such as Direct Procurement for Customers (DPC) and Specified Infrastructure Projects (SIPR) Regulations (SIPR) are making the process more competitive and attractive to new investors and supply chain partners.

DPC has been used on the Haweswater Aqueduct Resilience Programme (HARP), a £3bn overhaul of the crucial Haweswater Aqueduct, that carries water from Cumbria to 2.5million customers in Greater Manchester and Lancashire, nearly 5% of England's population. London's "super sewer",

## Solutions in the RAPID programme





the Thames Tideway Tunnel, has been delivered under SIPR.

"You've got to do things differently," added Steventon. "It's about attracting new investment with good, strong projects but at the same time delivering value for money for customers. It is a very viable pipeline and getting a lot more interest from the sector and supply chain."

While regulatory change is coming for the sector, with the government having announced the end of Ofwat and the creation of a single regulator, Steventon says RAPID's collaborative approach is already seen as a "precursor" to the way things will work together in the future.

"The government is behind the pipeline of projects," she added. "It's a key part of its growth agenda. So whatever the name ends up being above the door, we need more water and the programme of projects to do that."

While it may be decades before some of the largest new water infrastructure projects come online, Steventon said

keeping up the pace of development is key – especially with growing demand from other expanding industrial sectors.

"Water is an essential resource and somewhat undervalued at times because it is taken for granted.

"It touches not only every person, but every environment as well. We are guardians of that environment, both in taking the water out sustainably and returning it in a sufficient state at the end.

"It's also integral to areas of growth for the country – data centres need water for cooling, hydro generation and nuclear power need water and new towns and homes will need more supply – and have it taken away.

"We are becoming increasingly dry as a country, especially to the East. So there are a lot of challenges, but water is a sector with many deeply committed, passionate people.

"That's why RAPID is so important. You're bringing everybody together to look at a problem and find a solution. I am confident we will get there." [II](#)

**"We're at a tipping point for investment in the water sector. It's a really exciting time."**



Fens Reservoir

## MAKING A BIG IMPACT ON WATER

### The RAPID pipeline of projects includes:

**Fens Reservoir:** A joint project between Anglian Water and Cambridge Water in Cambridgeshire to secure supplies to meet the needs of future generations. It will supply enough water for up to a quarter of a million homes every year.

**White Horse Reservoir:** A proposed reservoir near Abingdon in Oxfordshire to help supply around 15million people across the South-East and to play a critical role in tackling expected water shortages.

**Severn to Thames Transfer:** Moving water from the River Severn to the River Thames either by a new pipeline or by restoration of the Cotswold canals working with Severn Trent, United Utilities and Thames Water.

**Teddington Direct River Abstraction (TDRA):** A Thames Water project to abstract water from the River Thames upstream of Teddington Weir, replacing it with highly treated recycled water from Mogden Sewage Treatment Works via a new tunnel. The TDRA project could provide up to 75million litres of water each day during periods of prolonged dry weather.

**Mendips Quarry:** Minerals will be extracted from the quarry until the end of 2040, at which point the area will be available for repurposing as a reservoir to supply customers of Wessex Water and Bournemouth Water. It could, in future, be extended to include other areas.

**Cheddar 2 Reservoir:** Plans for a second Somerset reservoir which will provide around 20million litres per day of drinking water by 2035–36 during the summer months – enough to supply water to approximately 100,000 people daily.

**Desalination:** Anglian Water is proposing two new desalination plants in the East of England. The cost of the projects is estimated at £2.3bn for Norfolk and £2.2bn for Lincolnshire. The projects, which are in the early stages, would take water from the North Sea.

**Kielder transfer:** A large water transfer pipeline to a water treatment works near York to improve the resilience of the supply of water. Yorkshire Water is working in collaboration with Northumbrian Water and United Utilities.

**Nottinghamshire mine water treatment:** This project, in collaboration with Severn Trent Water, explores the potential to treat mine water for public water supply.

**Grand Union Canal Transfer:** A vital new scheme to bring water from the Midlands to the South-East. It's a joint water transfer project between two water companies, Affinity Water and Severn Trent, and the Canal & River Trust, the charity that owns and cares for the canal network in England and Wales.



# THINKING BIG TODAY TO SECURE TOMORROW'S WATER SUPPLY



**GERARD SHORE, COSTAIN'S DIRECTOR OF STRATEGIC PROGRAMMES FOR WATER, EXPLAINS WHY £50BN OF LARGE-SCALE WATER INFRASTRUCTURE SCHEMES ARE CRITICAL FOR THE COUNTRY'S WATER SECURITY**

On a rainy day, when you turn on the tap to fill the kettle, it is hard to imagine water is in short supply. But, in reality, it is.

If we do nothing, a huge shortfall of five billion litres of water a day has been forecast for England's public

water supply by 2055. This is being driven by climate change, population growth and increasing demand from new housing and emerging industries.

Investing in large-scale water infrastructure schemes, such as new reservoirs, water transfers and water

recycling, are essential to ensure reliable supply that can withstand climate change and population growth.

The £50bn programme of Strategic Resource Options (SROs) is set to bring about transformational change in the decades to come.

"We're looking at a once-in-a-generation investment in the water industry," said Gerard Shore, Costain's director of strategic programmes for water. "The size of the SRO programme demonstrates the scale of the challenge. The country needs to meet the needs of the future population and tackle the impact of climate change – winters are wetter but summers are drier. Plus, water isn't always in the places where we need it."

The critical importance of the growing SRO market saw Shore move into his newly created role at Costain in summer 2025, after previously leading the company's water sector for six years.

"There's a pipeline of around 30 projects in the SRO market, which is expected to grow," he said. "New reservoirs, water pipeline transfer projects, water treatment plants and desalination schemes are at the heart of the SRO investment over the next 20 years."

To ensure schemes become a reality, increased private investment will need to be made in the water space along with a willingness by regulatory bodies and water companies to take a coordinated approach. And as well as investing in infrastructure, a shift in thinking is needed by end users.

"The UK has to reduce the clean water usage per person," added Shore. "It's a precious resource that needs to be used more sparingly. The whole issue of water supply and how we use it has multiple facets; it's not just about building lots of infrastructure. Solving the problem is a massive challenge – but it's also a massive opportunity."

The government has already announced ambitions to develop nine new reservoirs over the next three decades.

"A number of these projects are huge," said Shore, "and they must be seen on the same scale as other infrastructure projects such as HS2. The industry

"We're looking at a once-in-a-generation investment in the water sector."

must look at delivery in an integrated manner – what is the demand in the supply chain and how will it be met?

"As a consultancy Costain's key responsibilities are at the front end, working with clients on how we deliver these programmes from a constructability side, as well as identifying options to reduce costs and optimise delivery timelines."

"The first wave of SRO projects will be mobilising to site later in Asset Management Period 8 (AMP8), and from this point onwards there will be a significant ramp-up in building and commissioning activity."

"The projects must be refined and optimised collaboratively from the outset to ensure customer outcomes are achieved in the most efficient manner. People need to work together, share insights and work hard from the outset to front into the complexities and challenges. Working in an integrated manner will drive the industry forward."

## COSTAIN IS DELIVERING WATER AND WASTEWATER PROJECTS ACROSS THE SECTOR



Image: Tideway  
Inside the Thames Tideway Tunnel.

### Thames Tideway Tunnel:

As part of a joint venture with VINCI Construction Grands Projets and Bache Soletanche, Costain was awarded the contract for the East works package of the Thames Tideway Tunnel, the UK water industry's biggest Combined Sewer Overflow (CSO) project.



Image: Costain  
An image of the clay compaction trial site from May 2025 in Abingdon, Oxfordshire, to inform the design of SESRO.

### Yorkshire Water:

Costain is working on technical services and assurance frameworks to optimise water and wastewater assets, supporting the fulfilment of Yorkshire Water's environmental ambitions and health and safety requirements.



### AMP8:

Costain is working on multi-year capital delivery programmes and frameworks for Northumbrian Water, United Utilities, Southern Water, Severn Trent and Thames Water to upgrade and improve water infrastructure. It has also been appointed as United Utilities' Managed Service Provider, delivering management and asset maintenance services.

Experience from major infrastructure builds in the nuclear sector is already showing where wins can be made. Hinkley Point C is intended to help save money on the Sizewell C project by serving as a blueprint, allowing the transfer of lessons learned, an established supply chain and an experienced workforce. It's something the water industry will also be championing.

"Removing those competitive barriers and sharing insights is driving productivity," said Shore. "Companies like Costain and other contractors who work across the sector, are doing this day-to-day. But the whole industry needs to work in a much more integrated way to tackle these challenges and opportunities in order to drive costs down and achieve a better outcome for customers."

The Independent Water Commission's review of the water sector in 2025, chaired by Sir Jon Cunliffe, has now led to the publication of the government's Water White Paper with the sector facing a radical overhaul.

A recommendation made for longer-term strategy is something to be welcomed, added Shore.

"The Asset Management Periods for the UK water industry have been great, but they have caused what some refer to as the 'stegosaurus effect'. Having five-year cycles means we're constantly ramping up and recruiting in year one and two, heading for a peak and then bringing resources down in the latter years. The contracts we've secured for AMP8, which have the potential to be extended into AMP9, really enable us to lean into the programme with a longer term perspective and make investment decisions that go even further with the impact created.

"Having a long-term objective gives stability both in business and to drive efficiencies and deliver innovation."

But for Shore, there's a deeper, more personal motivator for working to improve the water sector.

**"The whole industry needs to work in a much more integrated way to tackle these challenges and opportunities."**

"There's an absolute clear line of sight between the work that Costain does and the improvements being made in people's lives that are making a difference. That's hugely motivating.

"We're recruiting new people into industry who have a strong social conscience and an ambition to improve people's lives. Water is becoming a very attractive sector for people to get into."

And more change is coming. He added: "The industry is only at the start of this journey and in the coming year things will look different – industry-wide collaboration will be more evident and there will be a step forward in using digital data to inform decision making.

"I'd also love to see planning approved for at least two mega SRO schemes – maybe more – with plans in place to scale up for delivery. It's an incredibly exciting time." II



Image: iStock



# COLLECTIVE ACTION WILL PLUG WATER'S SKILLS GAP



**FOLLOWING THE FIRST WATER UK SKILLS SUMMIT, WATER UK'S DIRECTOR OF PUBLIC AFFAIRS, MARK HOLMES, EXPLAINS WHY THE SECTOR MUST RECRUIT AN EXTRA 50,000 PEOPLE BY 2030**

The water sector is actively addressing the skills agenda – with thousands of new jobs vital to driving forward the industry's growth ambitions.

Unprecedented levels of investment, sweeping regulatory change and the biggest pipeline of major projects in a generation mean the demand for individuals who can make all of that happen is also at an all-time high.

Trade body Water UK hosted its inaugural Skills Summit in July 2025, uniting government, water companies and the broader supply chain to take decisive action on building the workforce of the future.

The event aimed to reinforce the critical role the water sector plays in

powering the UK's economic growth, and launched an ambitious plan to train 50,000 new workers by 2030 and recruit 5,000 new apprentices.

Mark Holmes, Water UK's director of public affairs, said: "We often talk about a skills challenge, but really this is a skills opportunity. We're looking at 50,000 new roles right around the country – and these are good jobs.

"A massive increase in investment – £104bn over the next five years – means if we are to deliver on that we need more people right across a whole gamut of roles: engineers, technical AI modellers, front line call centre staff.

"We need people at every stage of their career. Yes, we want to hire 5,000

new apprentices across the period but there will also be a lot of retraining and redeploying people with senior knowledge."

Holmes says Water UK's Skills Summit was an "important first step" in bringing government, regulators and the water industry together to address the challenges, consider the opportunities and, importantly, highlight the great work already under way.

He said the event aimed to highlight the sector's "unrivalled passion" and demonstrate to the government the need to do more on skills in the water sector at a time when there is much competition from the call for clean energy jobs, airport expansions and transport employment such as HS2.

"The government has now really committed to the water skills agenda, having established the Water Skills Strategic Group in November 2025," added Holmes.

The group's focus will be the delivery of the £104bn investment – the largest since privatisation. Convened by Defra and co-chaired with sector skills body Energy & Utility Skills, the group will drive coordinated action to grow a future-ready, highly skilled workforce across England and Wales, which will form the future of the water sector.

Group members include Water UK, British Water, the Institute of Water, major water companies across England and Wales, supply chain contractors and key government departments. It will run until March 2030, aligning with the Asset Management Period 8.

"We opened the door with the Skills Summit," said Holmes, "and it achieved a great deal. The next step is the detailed policy work, and I hope this new group will deliver that."

Government and water companies agreed to unprecedented skills commitments with the summit's Water Skills Pledge. As well as job and apprentice creation, this included:

- Recruiting 2,000 young people via a new Water Academy Work Programme
- Support for more than 100,000 long-term unemployed, care leavers and veterans through Untapped Talent initiatives



On the creation of the Water Skills Strategic Group, water minister Emma Hardy (pictured far right, at Water UK Skills Summit), said: "We are driving the biggest overhaul of the water sector since privatisation – making sure record investment goes where it's needed most to clean up our rivers, lakes and seas.

"That means opening up jobs and opportunities across England and Wales so we have skilled people on the ground, in every community, delivering the change we all want to see. This partnership between government, industry and training bodies will help build the workforce we need for the future of our water sector."

- The creation of a new £25,000 Watershot Prize to encourage graduate scientists to develop the technologies of the future and bring their expertise to the water sector
- Continuing to progress Water Skills Bootcamps – 16-week courses that offer a guaranteed interview to anyone successfully completing the course

But Holmes says tackling the skills agenda for water is not just about bringing in new talent.

"We've got to think about the people who have been in the sector for a long time and are putting their shoulders to the wheel on some of the new challenges the sector faces: climate change, technological adaptation, increasing pressure from businesses and population growth."

Significant reforms are on their way for the sector with the abolition of Ofwat and the creation of a new regulator.

"That will be so important for setting the sector on the right course in the coming decades," added Holmes. "We need to get those reforms right, get the new regulator set up as soon as possible and have good leadership that sets the tone from the top.

"Five years from now I want the industry to have fulfilled its promises – to rebuild public trust, upgrade the network, cut sewage spills, enable economic growth and make sure we've got resilient water supplies in the face of climate change and population growth – plus a bigger, stronger workforce.

"I'm very proud of the water sector, and five years from now I'd like a lot more people to be feeling proud having joined it." **II**



# WATER: THE NEW CARBON?



**REES WESTLEY, PARTNER AND HEAD OF UTILITIES SERVICES AT CONSULTANCY RLB, TAKES A CLOSER LOOK AT RETHINKING RESOURCE MANAGEMENT IN THE BUILT ENVIRONMENT**

According to estimates by the World Economic Forum, by 2030, there will be a 40% gap between the global water supply and demand.

With the UK government's targets on housing, the need to maintain and rebuild national infrastructure, and the growth of sectors such as data centres, there is no doubt the pressure on water availability will continue to rise up the agenda.

So how can we work with the industry

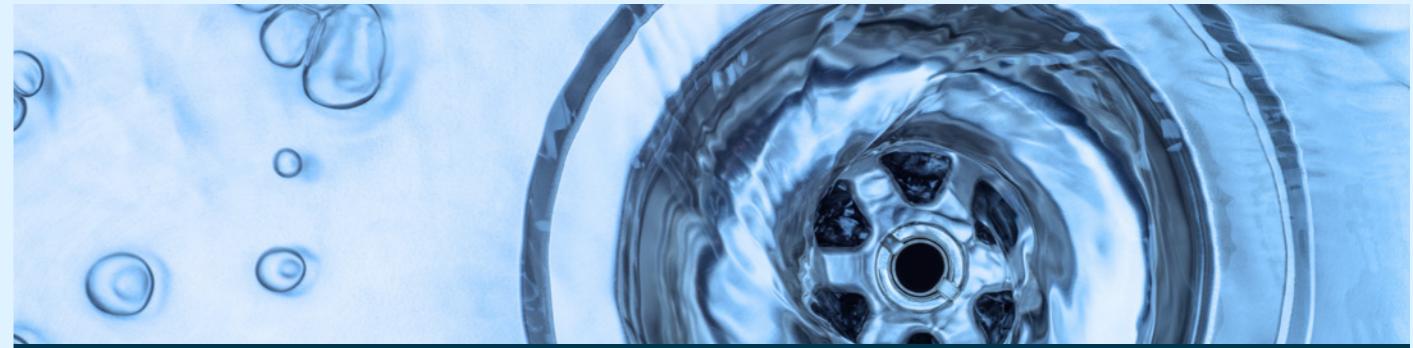
to slow down the use of water and bring viability to projects, while remaining cognisant of environmental impact?

As head of utilities services at independent construction and property management consultant Rider Levett Bucknall (RLB UK), it is a concern I am hearing again and again, with water becoming the new carbon in terms of reduction strategies and monitoring.

Although 70% of our planet's surface is

water, the challenge on many projects is how to extract that water, recycle it efficiently and manage the waste of it.

Groundwater abstraction of water is one of the most reliable and sustainable methods and offers a stable supply and resilience during droughts and natural filtration through geological layers. When managed properly, it supports sustainable water systems by diversifying supply sources and reducing dependency on surface water infrastructure.



## SUSTAINABLE WATER MANAGEMENT AND REUSE STRATEGY: CASE STUDY

On a recent project, RLB suggested to the client to adopt a sustainable water management and reuse strategy.

The project had constraints pertaining to the availability of a suitable potable water supply, and a wastewater discharge issue was also identified.

The project team looked at integrated water management strategies, such as an onsite wastewater treatment plant where wastewater would be processed and reused for washdown, WC flushing and the like. The project saw an 80% saving on waste through the recycling of water, which reduced the anticipated potable water demand for the project.

The project considered a system that limited the reliance on potable water demand and wastewater discharge to the public sewer, encompassing:

- Initial potable water intake to the site
- Onsite sewer system
- Onsite sewer system that was directed to an onsite blackwater recycling facility
- Treated/processed water from the recycling plant reintroduced to the project for non-potable water demand, which in turn will be used for WCs (flushing), irrigation and washdown areas
- The washdown/flushing/irrigation water is then collected within the site drainage system and either stored in an attenuation pond (for potential top-up use) or finally discharged into a local water source/brook
- Any surplus water from the main blackwater treatment plant can be discharged to a public sewerage system (if required)

These practices are not common in mainstream projects in the UK, but as the water crisis deepens, they could become common considerations for a more sustainable future.

However, there is a need to adhere to strict regulations around abstraction rates, making sure they do not exceed natural recharge to avoid depletion, land subsidence and ecological harm. Safeguarding catchments from pollution is also essential, as groundwater contamination is difficult and costly to remediate. Many regions require abstraction licences to ensure long-term balance and protect ecosystems.

While the viability of projects and the reality of how we manage our water crisis are key, we must also recognise the part water can play in working towards sustainability targets and climate adaptation going forward.

Greywater recycling is a good start for any project to consider as a key sustainability strategy. Greywater is lightly used wastewater from showers and baths, bathroom sinks, laundry and sometimes dishwashers and kitchen sinks – depending on local regulations. It excludes blackwater (toilets), which requires more intensive treatment.

By reducing the potable water demand, between 30% and 50% of household water use can be offset when reused for toilets, irrigation or cooling, while decreasing wastewater volume and the load on sewers and treatment works. Treating greywater also typically requires less energy than abstraction and treating freshwater.

As water availability increasingly affects project viability, it is becoming a core consideration in resource planning, alongside energy, materials and labour.

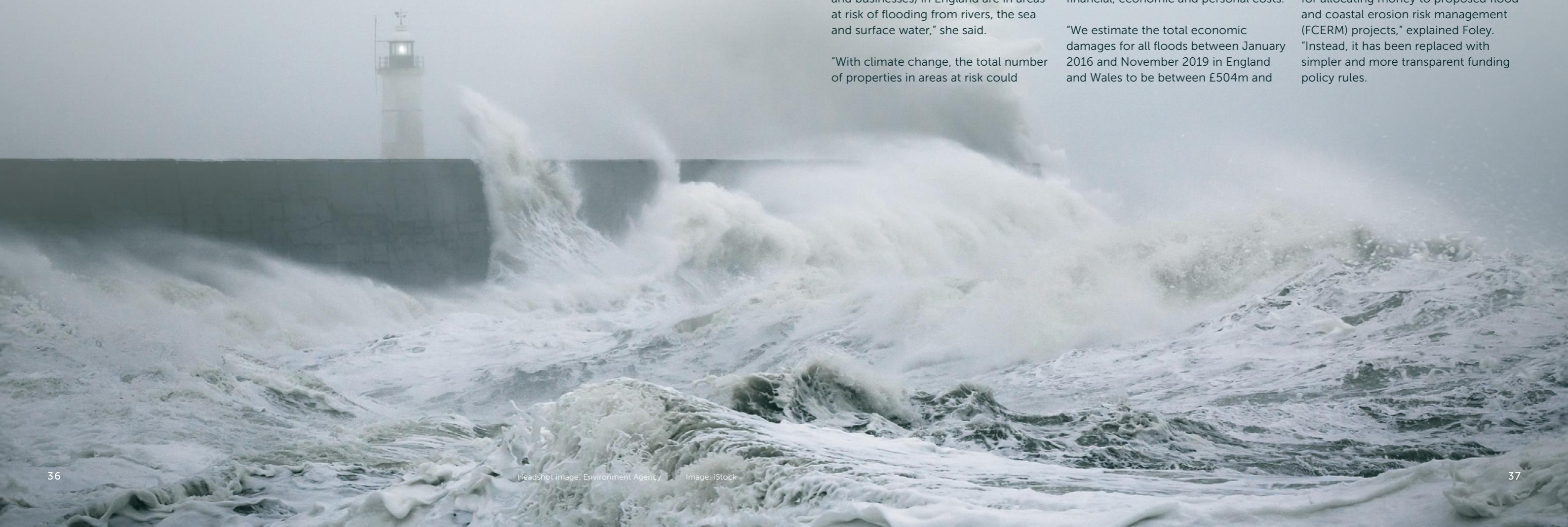
**"There is no doubt the pressure on water availability will continue to rise up the agenda."**

Unlike these variables, however, we have very few substitutes for water. If we are to continue to build responsibly and sustainably into the future, we must understand how we use this resource and ensure we manage it wisely. **II**

# TURNING THE TIDE ON FLOODING TO PROTECT OUR COMMUNITIES



JULIE FOLEY, DIRECTOR OF FLOOD RISK STRATEGY AND NATIONAL ADAPTATION AT THE ENVIRONMENT AGENCY, EXPLAINS HOW INVESTMENT AND NEW REGULATIONS ARE ACCELERATING THE PACE OF FLOOD DEFENCE DELIVERY



The UK is grappling with increasing episodes of flooding.

As climate change continues to shift weather patterns, we are seeing more intense rainfall and a rise in extreme weather events.

The government has announced the largest flood defence programme in history, investing a record £10.5bn until 2036. This is projected to benefit more than 890,000 properties by constructing new flood schemes, repairing existing defences and protecting communities from the devastating impacts of flooding.

Julie Foley, director of flood risk strategy and national adaptation at the Environment Agency (EA), explains the scale of the problem.

"The new National Flood Risk Assessment (NaFRA) data shows that around 6.3million properties (homes and businesses) in England are in areas at risk of flooding from rivers, the sea and surface water," she said.

"With climate change, the total number of properties in areas at risk could

increase to around eight million by mid-century. In other words, one in four properties in England will be in an area at risk of flooding from a river, the sea or surface water by that time.

"This report also highlighted the vulnerability of infrastructure and agricultural land to flooding, with 38% of roads and 27% of railways highlighted as being in areas at risk from one or more sources of flooding. The updated national coastal erosion risk map (NCERM) shows that 3,500 properties are at risk of coastal erosion by 2055."

Flooding risk comes from various sources: over flowing rivers, high tides and storm surges at the coast, surface water and flash flooding from overwhelmed drainage systems, and rising ground water.

And when the rain comes and the waters rise it imposes significant financial, economic and personal costs.

"We estimate the total economic damages for all floods between January 2016 and November 2019 in England and Wales to be between £504m and

£924m, with a best estimate of £708m (2024 prices)," said Foley.

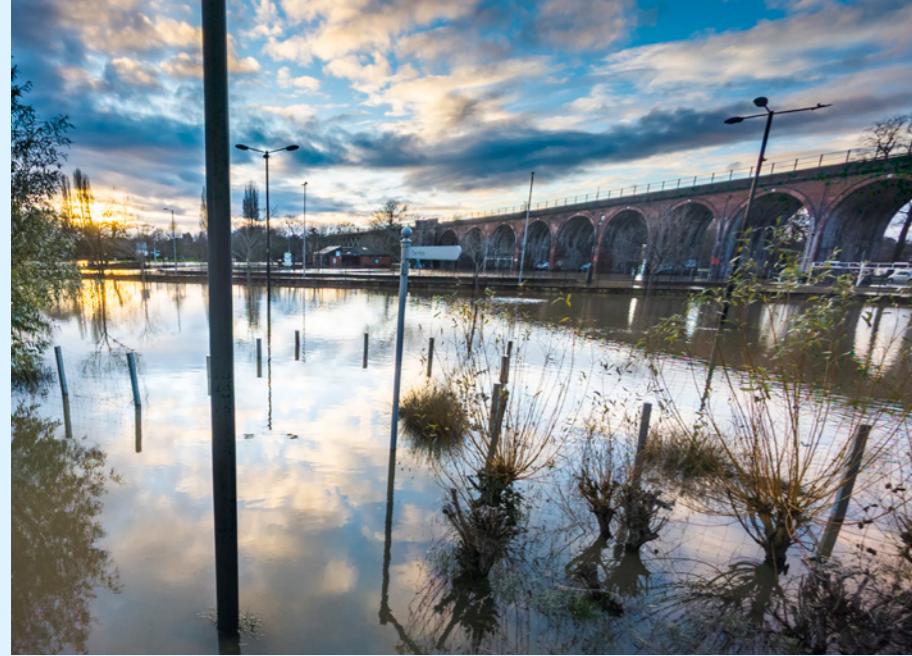
"Research also shows flooding can have severe and long-lasting mental health consequences including depression, anxiety and post-traumatic stress disorder."

The UK government's new flood defence rules, effective April 2026, aim to bring flood defences to communities at increased pace.

Announced in October 2025, the new rules ensure all prioritised flood projects valued at £3m or less are eligible for full funding by the government. Prioritised projects valued higher than this will be eligible for the first £3m of support upfront and 90% of the costs thereafter.

"The new policy radically changes the approach to investing in flood and coastal resilience, removing the outdated and complex funding formula for allocating money to proposed flood and coastal erosion risk management (FCERM) projects," explained Foley.

"Instead, it has been replaced with simpler and more transparent funding policy rules."



"The vision of the new FCERM funding policy is to ensure we are promoting the right floods solution in the right place at the right time, helping to kickstart economic growth, accelerating the construction of flood and coastal erosion projects and protecting homes, businesses and agricultural land across the country."

In October 2025, the EA's Warning System and associated Get flood warnings service on GOV.UK launched.

The Warning System issues flood messages to more than 2.6million customers. Meanwhile, the Get flood warnings service enables members of the public, organisations and emergency responders to independently register and customise how they receive flood alerts and warnings.

"Our NaFRA data plays a role in both these systems by providing more detailed information on areas at risk of flooding," explained Foley. "Being prepared helps reduce the impacts of flooding and enables faster recovery."

The government's £10.5bn capital settlement and changes to funding

rules are set to make a major impact for flood defences.

"The EA's FCERM investment programme has and will continue to better protect properties from flooding and coastal change and help to maintain existing defences. Collectively these activities also support local businesses, communities and economic growth.

**"Research shows flooding can have severe and long-lasting mental health consequences, including depression, anxiety and post-traumatic stress disorder."**

"Economies at no risk of flooding, or where risk has been lowered, enjoy higher levels of growth and recover more quickly from shocks. This increases investor confidence, viability of businesses, resilience of critical infrastructure, innovation, regeneration and tourism." <sup>II</sup>



## FLOOD DEFENCES ACHIEVEMENTS

The Environment Agency is delivering the government's national flood and coastal erosion risk management (FCERM) investment programme of flood and coastal defences, investing £2.65bn over 2024–25 and 2025–26 to scale up national resilience through building new, and improving existing, flood defences. The target is 52,000 better-protected properties.

Since April 2024, 177 projects have been completed as part of the FCERM investment programme, better protecting 40,500 properties.

In June 2025, the government announced the £4.2bn Spending Review 2025 settlement. This funding covers the next three years (2026–27 to 2028–29) of the FCERM investment programme to build and maintain flood defences, protecting communities across England from the dangers of flooding.

## FLOOD DEFENCES PROJECTS



Image: EA

**Canvey Island Flood Defence Scheme, Essex:** Completed in July 2025, this £75m project has renewed 3km of tidal defences to protect more than 6,000 properties for the next 50 years.

**Cockett Wick seawall improvement scheme, Essex:** The £12m improvement scheme was completed in summer 2024, protecting 3,000 homes and businesses in Jaywick from tidal flooding.



Image: Van Oord

**Saltfleet to Gibraltar Point Coastal Defences, Lincolnshire:** Ongoing beach management work reduces the risk of flooding to 20,000 homes and businesses, 24,500 static caravans and 35,000 hectares of land in Lincolnshire.

**Southsea Coastal Scheme, Portsmouth:** Investment of £180m is being made to protect 4.5km of coastline. Completion is expected by 2029, protecting 10,000 homes and 700 businesses.

**Preston and South Ribble Flood Risk Management Scheme, Lancashire:** This scheme plans to deliver 5km of new and improved flood defences to better protect 5,000 homes and businesses along sections of the River Ribble and River Darwen.

Image: EA

# WATER: THE RIGHT QUANTITY, THE RIGHT QUALITY, IN THE RIGHT PLACE AT THE RIGHT TIME



VICTORIA BRAYSHAW, DIRECTOR AND HEAD OF CIVIL ENGINEERING GREAT BRITAIN AT TETRA TECH, EXPLAINS THE COMPLEXITIES OF KEEPING OUR WATER FLOWING

Water is essential for life. We expect that when we turn on the tap, water will flow.

We expect that our rivers and bathing waters will be safe to enjoy. And we expect that farms, industry and emergency services will always have access to the water they need when they need it.

But we live in a changing world, and our infrastructure must be designed with that in mind.

#### Right quantity

In 2025, multiple regions across England and Wales were hit by drought. England's National Drought Group, led by the Environment Agency, described this as a "nationally significant incident".

With just 128.2mm of rainfall, spring 2025 was 40% below the long-term average and the driest in more than 50 years. At the same time, the 2024–25 storm season saw multiple significant weather events, with Storm Éowyn in January 2025 being the most impactful. Flood risk and water scarcity can and do co-exist, and we must adapt to become more resilient.

Having the right quantity of water means providing a resilient supply for households, businesses and emergency services, while preventing flooding that harms people, properties and livelihoods. That balance requires a multifaceted response, including active leakage detection and management, strategic

**"Flood risk and water scarcity can and do co-exist, and we must adapt to become more resilient."**

storage to support water supply during dry spells and catchment scale measures to slow and store runoff to reduce flood risk while promoting groundwater recharge.

Catchment scale thinking can be the key to unlocking flood risk management opportunities; upper catchment interventions can often offer viable options where the lower catchment is heavily constrained. For example, following Storm Ciara, Tetra Tech undertook an assessment and appraisal of flood risk within the village of Shap in Cumbria and found that mitigation measures in the upper catchment would have slowed and reduced the flow reaching the village, reducing flooding and overflow spills.

#### Right quality

The latest river health assessments show that 0% of England's river stretches are in good overall health, and 23% are in poor or bad overall health. Chemicals that remain in ecosystems for decades pollute every stretch of English rivers.

There are many reasons why rivers fail Water Framework Directive health tests, and many fail for more than one reason. Data shows that 62% of river stretches failed because of activities attributed to agriculture and rural land management, 54% failed because of activities attributed to the water industry and 26% failed because of activities attributed to the urban and transport sector.

A surface water separation scheme, like a rain garden on a public highway, is one example of the nature-based solutions Tetra Tech is delivering with United Utilities.





Tetra Tech's multidisciplinary design and planning work at Derby Riverside protects the sewerage network and reduces spills, making more than 1,200 homes resilient to the damaging impacts of floods

A scalable approach to quality is required. Schemes that combine de culverting, nature-based solutions and river restoration reduce both flood risk and pollutant loading. For example, our River Lea Outline Business Case in Luton modelled fluvial and pluvial interactions using an integrated approach and proposed de culverting and nature-based solutions across the town centre.

#### Right place

Many water supply shortfalls are regional and systemic. Making sure water gets to where it needs to be requires strategic planning, coordinated investment, robust assessment and governance to allocate costs and risks fairly.

Strategic Resource Options (SROs) are large, multi-company or regional interventions, including new reservoirs, major transfers, large scale reuse and storage schemes to address supply shortfalls. They are a pragmatic response to imbalances, but they are no substitute for resilience.

#### Best practice combines:

- Prioritising demand reduction, reuse and local storage
- Designing SROs as multi benefit projects to deliver environmental and social gains
- Using a gated process to de risk projects before commitment
- Embedding adaptive governance to be responsive to change

Strategic planning also means safeguarding land. Optioneering across catchments often identifies land that should be protected from development to preserve future flood storage capacity; this is a pragmatic act of intergenerational insurance.

#### Right time

Providing supply when it's needed and protection during storms relies on accurate information.

Monitoring networks, seasonal forecasts and predictive analytics convert uncertainty into manageable risk. Digital twins, models and real-time controls allow operators to shift storage and operations in advance of extremes.

However, digital water technologies are not simply add-ons; they must be fully integrated into the overall solution to maximise benefits. With the right approach, benefits include lower capital costs, rapid deployment, targeted control and total system optimisation.

**"Our challenge is to deliver interventions to keep water flowing, rivers healthy and communities safe, today and for the next generation."**

Tetra Tech's WaterNet technology is a spatial asset management reporting and analysis tool that efficiently collates data for operators and water companies, empowering them to make smart investments and efficient operational decisions.

#### Integrated solutions

Delivering resilient systems requires integrated teams of hydrologists, geomorphologists, civil and environmental engineers, ecologists,

modellers, planners and community engagement specialists.

Our work over the past four years at Derby Riverside illustrates the multidisciplinary nature of modern delivery: civil and structural design, geotechnical surveys, ecology, landscape and heritage considerations were all embedded to deliver flood protection while enabling regeneration and respecting heritage features and existing constraints.

Tetra Tech's multidisciplinary design and planning work at Derby Riverside protects the sewerage network and reduces spills, making more than 1,200 homes resilient to the damaging impacts of floods.

#### Lessons for the sector

The sector must embrace strategic, multi-scale programmes that combine demand reduction, catchment thinking and flexible, phased delivery. That means:

- Embedding climate allowances and iterative modelling into planning and design
- Combining engineered and nature-based solutions in hybrid schemes
- Translating technical outputs into emergency preparedness and resilience plans
- Prioritising multi-benefit outcomes so that investments realise environmental, social and economic benefits, and recording and measuring those benefits

The water sector is running record scale capital programmes, responding to intense public scrutiny, and managing supply chain pressures. Our challenge is to deliver interventions that overcome those challenges to keep water flowing, rivers healthy and communities safe, today and for the next generation. [II](#)



A surface water separation scheme, like a rain garden on a public highway, is one example of the nature-based solutions Tetra Tech is delivering with United Utilities



Tetra Tech's WaterNet technology is a spatial asset management reporting and analysis tool that efficiently collates data for operators and water companies, empowering them to make smart investments and efficient operational decisions

# SPONGE CITIES BY DEFAULT

## DESIGNING WATER AS URBAN INFRASTRUCTURE



MARK FLETCHER, WHO LEADS ARUP'S GLOBAL WATER BUSINESS, EXPLAINS WHY IT'S VITAL WATER AND SPONGE CITY PRINCIPLES ARE AT THE HEART OF URBAN DEVELOPMENT

Cities face a growing water challenge – and it's not just a case of too much, too little or the wrong quality.

It's that we still tend to treat water as a hazard to be piped away, rather than as an asset to be designed for. The outcome is familiar: flash floods batter neighbourhoods, heat is trapped in hard landscapes, sewer networks become more expensive to operate

and investment stays reactive rather than preventative.

Integrating blue and green infrastructure into mainstream urban design can slow water runoff, reduce flood peaks and cool neighbourhoods, often at a lower lifecycle cost than purely grey infrastructure. This shift turns "sponge city" principles from optional extras into core delivery

requirements. The way we manage water can also be too complicated, and simplifying governance across the water cycle can be a significant enabler.

### From concept to practice, what the evidence shows

The sponge city idea, popularised in China, is simple: work with nature so

the urban fabric absorbs, slows and stores rainfall rather than rushing it into pipes. There is no universal blueprint, context or governance matter. But the foundation is consistent: distributed green and blue assets that absorb and store water, keeping flows controlled rather than chaotic. The term itself was coined by the late professor Kongjian Yu in 2013, underscoring the ethos of cities working with nature.

Real-world projects demonstrate the value of this approach. In New York City, right-of-way bioswales (planted sidewalk systems) capture the first inch of rain and reduce combined sewer overflows, while also delivering cooling and amenity benefits. Arup supported the programme by designing and administering installations across thousands of acres and multiple public property sites. New York's broader rain-garden programme is now central to its green infrastructure policy, illustrating how cost-effective flood mitigation can be embedded into everyday streetscape design.

In Cardiff's Greener Grangetown, a partnership approach delivered 108 rain gardens and 130 trees that divert an average of 40,000m<sup>3</sup> of surface runoff annually from the combined sewer.

The project cleans water and conveys excess flows to the River Taff, while simultaneously transforming the public realm and transport corridor.

**"We still tend to treat water as a hazard to be piped away, rather than as an asset to be designed for."**

These schemes demonstrate that sponge infrastructure delivers more than hydrological performance: it brings biodiversity, safer streets, and lower operational costs than continually expanding pumps and pipes.

### Measure the natural infrastructure, then design with it

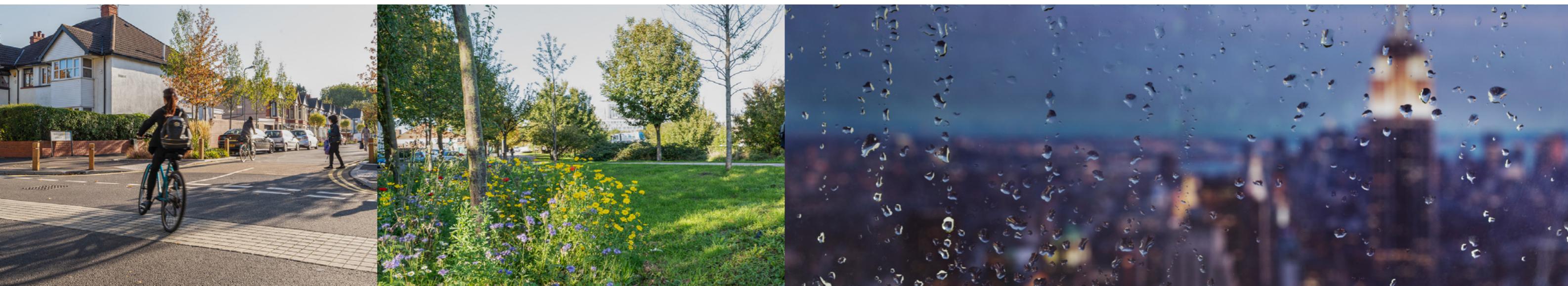
To mainstream sponge thinking, we must quantify our cities' existing "sponginess". That means measuring current blue and green infrastructure – trees, soils, parks, private gardens, ponds – and understanding how much runoff it can absorb.

Advances in data and digital analysis have fundamentally changed what is possible. Satellite imagery and land-use analysis tools like Arup's "Arup Observe" can now be used, to map green and blue cover at city scale, alongside soil and vegetation properties, to build a detailed picture of surface permeability and estimate runoff potential.

This allows planners and designers to identify where blue-green interventions will have the greatest impact, rather than relying on isolated projects or assumptions. And these interventions also impact heat, enabling integrated designs that manage stormwater and temperature together. These digital-plus-nature workflows are now part of routine planning advice, not a research experiment.

### Governance and catchment thinking, make resilience systemic

Sponge principles work best when embedded across the whole water cycle and the broader city system. The City Water Resilience Approach (CWRA) provides a structured pathway to understand shocks and stresses, map assets and interdependencies, convene stakeholders, assess practices, and develop and implement actions.



Cardiff's Greener Grangetown

Rainy New York

This helps cities move from ambition to delivery with the right sequencing, incentives and oversight. It prioritises nature-first interventions where they can carry the load, integrated with residual existing or new grey infrastructure.

Surface water responsibilities typically span multiple agencies and asset owners, so stakeholder alignment is essential. Delivering sponge city programmes at scale requires shared goals, common baselines and consistent standards for design, operation and maintenance. London's recent work on surface water strategy and cross-party collaboration reflects this shift and shows how governance can accelerate practical rollout and embed water-sensitive design in long-term strategy.

#### From pilots to "default unless": a delivery agenda

To futureproof infrastructure, blue-green design must become the 'default'. Unless there is a clear, evidence-based reason not to, briefs and contracts should prioritise rain gardens, permeable streets and green roofs, with grey capacity used only where necessary.

Water should be treated like energy – measured, budgeted and

deliberately designed for. Performance requirements (runoff attenuation, water quality improvement, thermal comfort metrics) should sit alongside cost and programme. Digital baselining of blue-green assets should occur at concept stage.

Lifecycle analysis should quantify avoided pumping and treatment, reduced heat related damage and wider socio-environmental co-benefits. In Cardiff, these wider benefits were independently valued in the millions.

Procurement should reward multifunctionality: a street that delivers drainage, cooling, biodiversity and active travel is more valuable than a single-purpose scheme. Codes and standards must catch up, embedding water-sensitive urban design into highways, housing and public realm guidance.

Maintenance needs to be planned from day one: green infrastructure is robust, but it thrives with stewardship, community involvement and clear responsibility.

#### What good looks like: an integrated, data led approach

- Baseline and model: Use digital tools to map current sponginess and heat hotspots.

- Plan at catchment scale: Apply CWRA to align agencies, prioritise interventions, and unlock funding.
- Design for co-benefits: Deploy rain gardens, bioswales, permeable paving and green roofs where they deliver the greatest impact.
- Embed in contracts: Make blue-green solutions the default, with measurable outcomes and maintenance obligations defined upfront.
- Simplify governance: Look at how this can be better aligned to deal with extremes more effectively with clarity of roles and responsibilities for each organisation across the water cycle.

Flood damages rise with every degree of warming and heat extremes are already straining health systems and infrastructure. The tools, methods and proven projects exist. The challenge now is to scale and embed sponge city design as the standard pathway for streets, neighbourhoods and districts. If city authorities, utilities, developers and designers adopt a "default unless" mindset, we can protect communities, unlock long-term value and meet climate resilience targets without waiting for the next storm to force change. [II](#)



Cardiff's Greener Grangetown

Image: Arup

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# 2050

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- Collaboration and investment

# HARNESSING WAVES AND WATER'S POWER FOR A SUSTAINABLE FUTURE

GENERATING ENERGY FROM WATER AND INCREASING DRINKING SUPPLIES VIA THE SEA ARE TWO FURTHER WAYS WATER IS MAKING A DIFFERENCE. STANTEC GIVES AN INSIGHT INTO VITAL WORK IN HYDROPOWER AND DESALINATION

**Perthshire's iconic Tummel Bridge Power Station has been harnessing the force of water for almost a century.**

Thanks to a £50m refurbishment, its lifespan was extended by four decades back in 2024, with the installation and energisation of two new hydro-electric power turbines. Stantec supported SSE Renewables with the complex, two-year modernisation scheme.

Strengthening the historic structure, preserving its architectural character while at the same time ensuring clean energy supplies from hydropower for a future generation, the project has now gained national recognition.

It recently secured the Heritage and Restoration Award at the British Hydropower Association's Annual Conference 2025 Awards.

The iconic site, which is in the centre of the overall Tummel Valley Hydro Scheme cascade, has also increased its potential generation output from 34 to 40 megawatts (MW) during optimum conditions.

The project involved the replacement of the station's two original hydro turbines, which were installed in 1933, with new modern technology.

Image: Pixabay



Tummel Bridge Power Station

This increases water flow, enabling the rise in generation output at the plant and extending the hydropower plant's working life by at least 40 years.

This means Tummel Bridge Power Station will be running in the power system of 2050 and will play a continuing role in harnessing homegrown hydro power for a net zero future in Scotland and the UK.

SSE Renewables contracted Stantec's teams to look at options to replant the end-of-life mechanical and electrical equipment as well as conduct the detailed civil design works.

The plant's 5km aqueduct, classed as a Category A reservoir due to the volume of water it contains, underwent significant maintenance, drainage, leakage and improvement works supported by specialist reservoir engineers from Stantec.

The construction works focused on maintaining the original building

footprint and where possible, looked to continue the original internal look of the Category A listed station.

The project resulted in a wealth of information being documented and recorded on the carefully preserved historic building.

Craig Scott, Stantec's director of hydropower and dams, said: "Tummel Power Station has such a rich history, having held exceptionally rare turbines which were the largest of their kind, and being modified with a crane from the 1930s and even WWII air raid shelters.

"It was incredibly important for our team that we were able to retain and honour its original character, designed around muscular inter-war classicism, despite completely modernising its inner workings.

"By breathing new life into this asset, rather than rebuilding it, we've demonstrated what's possible when it comes to considered heritage

restoration in the hydropower sector. I'd like to thank the BHA for this award and congratulate our client SSE Renewables on another meaningful project that will benefit communities in Scotland."

Commissioned in 1933, Tummel Bridge Power Station is one of the oldest hydro power plants in Scotland.

"Retrofitting existing energy assets with modern, highly efficient equipment, rather than rebuilding them, brings added value for our clients as well as the communities they serve," said Scott.

SSE operates a fleet of eight hydro power sites across Scotland. These include some of the most iconic power station sites built after the introduction of the 1943 Hydro Electric Development (Scotland) Act, which brought hydro-electric power to the Scottish Glens 80 years ago.



## DESALINATION PLANS MOVE AHEAD

Anglian Water desalination plans have recently taken another step forward.

The water company has awarded the technical contract to develop its two upcoming desalination plants, in Lincolnshire and Norfolk, to TYPSA-Stantec.

The proposed plants are designed to support the company's long-term strategy to secure resilient water supplies in the region, which is the driest part of the UK.

A joint venture (JV) between TYPSA, a global independent engineering services and consultancy group, and Stantec, a global leader in sustainable design and engineering, TYPSA-Stantec been appointed as the primary consultant for Anglian Water Services' (AWS) Desalination Technical Partner Framework.

The JV, which is supported by Acciona Agua, will support AWS with a range of technical design expertise associated with the development of two new desalination plants.

They will be joined by a secondary DTP, RSK-GHD JV, supported by Veolia.

The £29m partnership brings together world-class expertise in engineering and infrastructure, ensuring that Anglian Water has the best technical support as it progresses this critical and new initiative.

In its 2024 Water Resources Management Plan (WRMP24), Anglian Water identified significant challenges for the East of England, primarily due to a forecast reduction in available supply of potable water and an increase in the demand forecast.

**“Seawater desalination is a fairly new technology for the UK water industry, so our partners’ technical expertise will be vital in progressing these plans.”**

This project will secure future water supply for millions of people and will also play a vital role in national efforts to tackle climate-driven water stress, population growth and rising demand. As a result, two desalination plants have been identified as part of the Adaptive Plan to address the shortfall in Norfolk and Lincolnshire.

Seawater desalination is a relatively new technology within the UK water industry, and the two proposed new plants will be the first of their kind in the Anglian Water region. The plants will work by abstracting seawater from the North Sea, using pre-treatment, reverse osmosis and remineralisation, before blending treated water into supply. Brine waste will be dispersed via a long sea outfall.

The Desalination Technology Partnership (DTP) will give Anglian Water access to global expertise and cutting-edge innovation in desalination, helping us upskill its teams in an area that's new to the

UK water sector. It also enables the company to build strategic relationships for future projects and strengthen resilience through a two-partner framework.

As part of this collaboration, the DTPs will provide the technical expertise needed to deliver the programme. This includes design and engineering, optioneering, site selection, planning and consenting, as well as support for estimating, programming, and constructability assessments. They will also assist with land acquisition and regulatory engagement, ensuring the programme is robust and future-ready.

Kate Cassalli, head of programme development for Anglian Water, said: “Seawater desalination is a fairly new technology for the UK water industry, so our partners’ technical expertise will be vital in progressing these plans.”

Scott Jackson, Stantec's regional business lead for water in the UK and Ireland, said: “Having led the way in Europe’s desalination market for some time, TYPSA is the perfect partner for us as we design and deliver these world-leading plants that will benefit communities across the East of England for generations. I’m incredibly excited to show Anglian Water the strength and breadth of our offering throughout this AMP and beyond.”

As the primary partner, TYPSA-Stantec – working together as a joint venture, supported by Acciona – will be awarded the scope of work for both proposed sites. The secondary partner, RSK-GHD JV, supported by Veolia, will play a vital role in strengthening the overall framework by providing resilience and continuity.

The contract, which is worth up to £29m, started in January 2026 and will last for five years, with the option to extend for a further five years at the end of the initial term. [II](#)





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