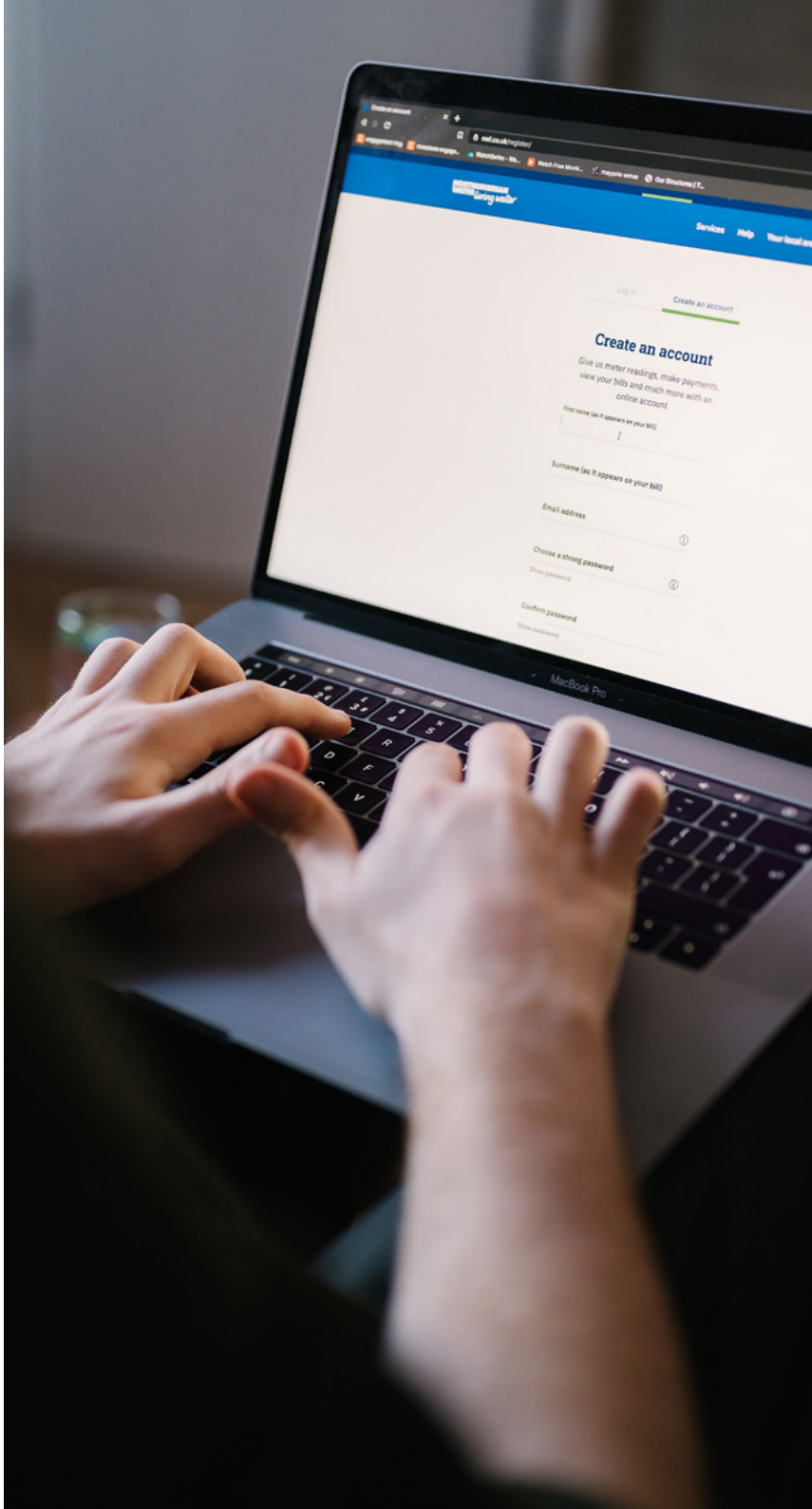

OUR OPEN
DATA STRATEGY
NWG
living water

CONTENTS



Foreword by

Heidi Mottram

Chief Executive Officer, Northumbrian Water Group


Heidi Mottram, CEO

Our purpose is caring for the essential needs of our communities and environment, now and for generations to come.

We do this by providing reliable and affordable water and wastewater services for our customers. We make a positive difference by operating efficiently and investing prudently, to maintain a sustainable and resilient business.

At Northumbrian Water Group (NWG) we have a long history of living Our Purpose and Our Values. These values, ethical, results driven, innovative, customer focused and one team, have always been at the heart of how we do business.

As a result, developing our capabilities regarding open data is the natural ethical thing for us to do. We have been opening up our data sets, collaborating widely and realising value for more than eight years now.

This has mainly been in the form of data hacks. A data hack is an orchestrated event where we prepare data sets, typically with several years worth of data. We then put out an open invite for people and teams outside of our organisation to analyse the data.

We have had great success in this area, most recently with leaks, pollutions and interruptions to supply.

Data hacks have exposed us to new thinking that we have brought back into our business.

Aside from improving our own business, this collaboration and co-creation has brought economic, societal and environmental benefits to our operating regions and beyond.

Our most famous example is undoubtedly the National Underground Asset Register – a common underground map of the country.

The need for this became clear during our 2017 Innovation Festival, where three separate sprints identified it as a critical requirement, and, during our 2018 festival, we brought it to life through collaboration with Northern Gas Networks, BT and Northern Powergrid.

During the course of a week, we were able to create a common underground map of four areas of Newcastle, which has since been used as a springboard to create a similar asset with Sunderland City Council.

We have played a pivotal role in the development and expansion of NUAR.

As the first company to sign a national data-sharing agreement, we demonstrated our commitment to innovation and collaboration and have been instrumental in transforming the concept of a digital map of utility assets into a reality, working alongside a consortium of utilities, local authorities, Ordnance Survey, 1Spatial, and MGISS. **It is on track to be fully operational at the end of 2025.**

To support our ambitious goal to eradicate water poverty in our operating areas by 2030, we are now running similar initiatives to save our customers money across a range of services by sharing data to make it easier for customers in vulnerable circumstances to get the support that they need

We are also collaborating with the nuclear industry to extend the life of concrete assets to maintain a reliable and resilient service for our customers.

The water industry holds vast data sets, that can play a key role in unlocking value for the UK from open data.

These opportunities will only increase as we invest in smart networks, yielding ever more data about how our climate is changing and the impact it has.

We deliver vital services that can be subject to external influences, for example extreme weather events such as storms or drought.

Three years ago, we decided to influence a move towards open data for the industry. We named this initiative Stream.

This initiative secured innovation funding and is now a live collaboration supported by 16 of the UK major water companies covering the majority of the UK's population.

While we have done a lot to unlock value from our data, we know there is more to be done.

The industry and our customers are facing challenging times, dealing with complex issues related to climate change and the current cost-of-living crisis. The industry needs to form new collaborations to find new solutions to best support our customers.

We believe that open data has a big role to play in helping us to tackle these issues. We will continue to be brave, working with Ofwat to push forward with open data as a strategic priority and unlocking value for our business, for our customers and for our environment.

Heidi Mottram CBE
Chief Executive
Northumbrian Water Group

Introduction by

Nigel Watson

Chief Information Officer, Northumbrian Water Group

We have been innovating with data for the last seven years. It has been nothing less than transformational for our organisation.

We have seen a tremendous improvement in performance in key areas like pollution. We have also seen a significant shift in our culture here at NWG.

Getting value from our data has become second nature to our employees. Doing this in collaboration with others has become our preferred method. Indeed, our innovation track record has been recognised independently in the annual Water Company Performance Survey carried out by British Water.

As Heidi has said, one of our big success stories is Stream, which we are proud to have led from the very start. When the first edition of this Open Data Strategy was published there were 11 water company members of Stream and this has subsequently grown to 16 which now represents the vast majority of the UK sector.

We will actively encourage as many water companies to participate in Stream as we can to maximise the effect we can have together as an industry.

We are working hard on defining common data standards so that we can share data to drive performance improvements and adapt more rapidly to support reliable and resilient services.

Combining the data sets of our respective businesses will unlock value for ourselves which in turn will add value for our partners, our stakeholders, our industry, our customers and our environment.

We will be able to identify efficiencies through detailed analysis of our asset performance and we will be able to learn from one another as we adapt to climate change.

While we are excited by Stream, we know that on its own, it is not enough. Many of the challenges that we face today and into the future cannot be solved by the water industry alone.

We need to collaborate with the energy sector to help customers during the current cost-of-living crisis.

We need to work in partnership with agriculture to improve soil health and river water quality.

We have to reduce greenhouse gases and we can do this more effectively if we share more data with our supply chain.

There are numerous opportunities for us to improve outcomes for our customers and the environment that can be realised by being more open and collaborating with others.

Our Open Data strategy sets out our ambition and commitment to open data. In this strategy we will explain what open data means to us, the problems we can help to solve with it and our approach to using Open Data to add real value.

While developing this strategy, we have researched published best practices as well as inspiration from those who have demonstrated the ability to generate real, quantifiable value as a result of opening up data, such as governments from around the world.

We have consulted widely and challenged ourselves, our assumptions and our practices.

While we will be brave, we know that we must also be safe and secure. We will always make sure that we protect our customers' data.

We run Critical National Infrastructure and we will always fulfil the responsibility that comes with that.

Some of our data is complex and technical. We need to make sure that the context is well understood by anyone who uses it.

This document represents a clear commitment from NWG.

We have a growth mindset and we know that we learn by doing. We will review this strategy periodically and we will continue to scour the outside world for best practice that improves our performance.

If you ever have any ideas or insight that you think would enhance this initiative, please contact us.

Nigel Watson
Chief Information Officer
Northumbrian Water Group

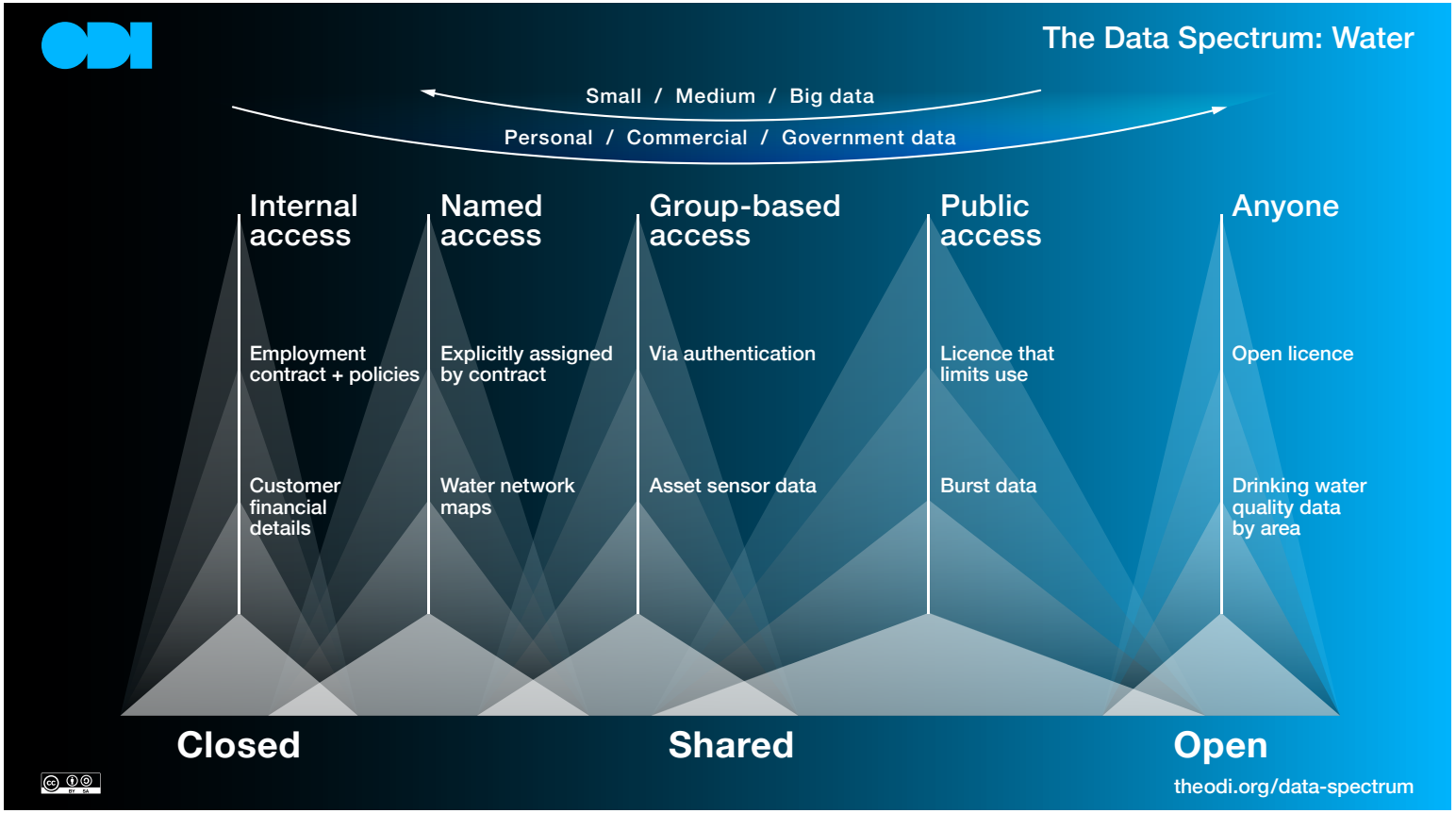
What is Open data?

Open Data can mean different things to different people.

The data spectrum shows the spectrum of openness of data, including fully 'open' which is data that anyone can access use and share. We align to the Open Data Institute's (ODI) definition of open data.

Our Open Data Strategy covers the entire spectrum, from data that will remain closed due to commercial, security or personal reasons through to data which is freely available for anyone to access, use and share without constraint.

This framework will be used internally to help identify and prioritise releases and by external users to help understand how we will be releasing our data and the ways in which they can get involved.



Our Open Data vision and mission

Our Vision

Our vision is to be the national leader in the water sector and beyond in the generation of tangible value through the use and publication of Open Data.

Opening up our data will provide new opportunities for research, innovation, engagement and greater efficiency for our industry and the adjacent sectors of the economy with the potential to generate business opportunities and stimulate economic growth in our operating regions and beyond.

The original version of this strategy was drafted in consultation with the Open Data Institute. Subsequent updates are reviewed and signed off by our Executive Leadership Team. It is consistent with our wider vision, which is to be the national leader in the provision of sustainable water and wastewater services.

Our Mission

Our Open Data mission is to make available a wide range of useful data sets, along with contextual information to help others use and interpret our data as easily as possible. We will do this in a way that ensures sensitive data is protected at all times.

In doing so, we aim to stimulate and fuel the discovery of innovative solutions to improve our performance and enable the creation of new products and services.

This will in turn build trust in the water industry and improve the lives of our customers and positive outcomes for the environment.

This will be achieved by our six-pillar strategy:

- We will continue to lead the water industry as it moves together towards Open Data.
- We will publish our data openly in an easy-to-consume way.
- We will focus our efforts on improving the lives of our customers and the precious environment in which we live.
- We will collaborate with other primary, secondary and third sector organisations such as utilities, higher education, social enterprises, and other businesses in our region in order to enable better cross-sector outcomes
- We will convene a vibrant local ecosystem, promoting citizen data science and building valuable skills in our region.
- We will build out the enabling people, process and technology capabilities for open data within our organisation.

The benefits of Open Data

Open Data has long been identified as a fundamental resource for governments, business and society.

The positive impacts of Open Data are wide ranging, yielding social, environmental and economic benefits. Studies have indicated that there is huge economic potential for Open Data. In 2013, McKinsey estimated a global market powered by Open Data would create an additional $3tn to $5tn a year across just seven sectors: Open data:

Unlocking innovation and performance with liquid information. In terms of reputation, the release of increased amounts of Open Data also allows for greater transparency and trust.

We generate a lot of data from our day-to-day operations. Technology innovation has changed all our lives and created an exponential growth in data.

Our data infrastructure has therefore become more and more critical to the running of our business. As the economics of data are non-rival or even anti-rival, we feel that the more it is shared and used by others as well as us, the more value it gains or produces.

More recently, in 2020, the European Data Portal estimated that the value of open data for the EU28+ was €184bn in 2019, and forecast it to reach between €199.51 and €334.21bn by 2025.

The report also looked at employment figures, with 1.09 million open data employees in 2019 and 1.12 to 1.97 million open data employees forecast by 2025.

This data often has a value that extends far beyond its original purpose and we believe there are many opportunities we can collectively use data for to grow our economy, transform our services and improve societal and environmental outcomes.

For example, open data can help us achieve decarbonisation or harness the potential of the regions we serve.

Closer to home, research by Deloitte has documented how Transport for London (TfL), one of the earliest adopters of the open data movement, have added around £130m a year to London's economy. TfL achieved this by releasing information such as timetables, service status and disruption information.

The opening of this data has not only made people's journeys easier, it has also created jobs and provided opportunities for innovation.

Ofwat's paper H2Open - Open Data in the water industry: a case for change contains further examples where the value of open and shared data has been demonstrated.

We have learnt through experience that delivering such value is always most effective when we create the right conditions to enable others to innovate through our data and this needs to include managing data risks to ensure no harm is caused to people and communities.

We have a long track record of doing this through our annual Innovation Festival, which since the first event in 2017, has hosted 172 sprints, hackathons and daily dashes.

One major success which was born from such beginnings was the creation of the National Underground Asset Register, which has been predicted to deliver at least £350m per year of economic growth through increased efficiency, reduced asset strikes and reduced disruptions for citizens and businesses.

We have been, and plan to continue being, very active in driving innovation in our business and industry, some of which is enabled by the Ofwat Water Breakthrough Challenge initiative.

It is this belief and positive experience of sharing data that drives us on to open up and share data more broadly.

We want to be able to catalyse, support and amplify the creative power that exists beyond our company borders in order to deliver further benefits to our customers, society and the environment.

Opening our data will provide new opportunities for research, innovation, engagement and drive greater efficiency.

It also acts as an important contributor to the UK government's ambition to position the UK as a global champion of data use.

Here are just some of the benefits that we believe we can achieve through Open Data:

- Greater transparency and accountability leading to greater trust and performance.
- Inviting challenge on our performance and finding new opportunities for partnerships.
- Facilitate meaningful citizen participation creating opportunities for input into decision making and service design.
- Supporting business and service innovation and creation in the private, public and third sectors leading to wider economic growth.
- Helping to support and fuel research, development and action to solve and adapt to some of society's toughest challenges such as climate change and the cost-of-living crisis.
- Increase our reputation as a progressive and modern company.
- Improvements in data quality and underlying data management practices arising from a wider review of our data by our communities of re-users.

On the next few pages, we have documented a couple of our recent case studies which demonstrate the potential we see for opening up and facilitating collaboration through our data.

Our activities in review

Much of our focus throughout 2023 and 2024 has been providing leadership at a sector level, in line with our strategy commitment to 'Lead the Industry'. This has mainly been through our role as lead entrant on Stream and also as convener of the first ever Open Data Forum.

The Open Data Forum brought the sector together to develop and adopt the Water Sector open data roadmap, which was approved by all companies at the beginning of December 2023. We brought everyone together again in April 2024 to review the progress that had been made and again in October 2024.

As part of the activities outlined in the sector roadmap, we recently published the first sector level open data strategy ('Improving our data flows: an open data strategy for the water industry') in March 2025. We were pleased to take a lead role in the development of this strategy with the support of the Open Data Institute and are among the first companies to officially commit to it. The published document can be found here. This strategy sets out a series of commitments that will be made, and principles adopted, in relation to open data.

In addition to this, an updated water sector open data maturity framework has been developed by the Open Data Institute, which builds upon the previous PwC maturity framework developed in 2022. This has been piloted by Northumbrian Water and the intention is that this will become the framework adopted by the sector and the results from each company assessment be published openly.

As part of Stream, we have been developing common processes and standards, such as data risk assessment and the adoption of a single open licence type (Creative Commons CC-BY-4.0) and single metadata standard (INSPIRE aligned to Gemini 2.3) and we continue to work to embed these processes into Northumbrian Water.

Stream itself has delivered three key milestones since the first version of this strategy was published. We launched the minimum viable platform (MVP) on 18 December 2023 with the release of three foundational datasets and then, after incorporating the learning from the MVP, the full product release on 30 April 2024, releasing three further, more complex, datasets (see www.streamwaterdata.co.uk). We have continued to work collaboratively to release a total of 92 datasets on open licence (as at February 2025). Our third milestone was also achieved in 2024, as the nine English water and sewerage companies worked together with Water UK and a range of other stakeholders to develop and release the National Storm Overflow Hub in late November.

This data product represented a global first, with near-real time storm overflow event data and improvement plan data being published on open licence for the first time. The Stream members continue to build upon this success with further use cases focused on value generation for customers, society and the environment.

The ecosystem that has developed around Stream grows daily and we are ensuring that two-way conversation with our data users is facilitated and factored into everything we do. In addition, the Stream membership has also grown, with 16 out of the 18 major UK water companies now enjoying the benefits of membership. Crosssector challenges are being identified, and we look forward to working with others to deliver a shared, cross-sector use case within the next 12 months.

We also initiated the development of a standard way to convert the Annual Performance Report (APR) tables from human readable format (xls) to machine readable format (csv) along with a standard for how the data is described in the associated metadata. Standardising the conversion now enables the table data to be more easily joined up and queried across companies and the adoption of this should demonstrate a clear step change across the sector in the adoption of open data characteristics in the publication of the APR tables.

The conversion methodology has also been shared with relevant Ofwat colleagues and further work is planned by Ofwat teams to assess how the entire process (data capture to open publication) could be more streamlined.

We carried out a review of Environmental Information Requests to identify the most requested data types (many of which align to key performance indicators in the APR) and are currently preparing to proactively and openly publish more data in line with these trends. We will use the Stream portal to amplify the reach of these datasets. We have established a value framework which we now use to identify, score and rank possible use cases internally and this has been shared with other companies and adopted and adapted by Stream.

We are in the final stages of closing the loop on an open data use case, which concerned the use of our published data by a third-party innovator to identify and prioritise optimal locations for the installation of bee hotels. Our leadership team spent an afternoon earlier in 2024 making bee hotels to install at these locations and we look forward to seeing these hotels occupied by key pollinator species in the future. The model and use case will be published openly once the installation stage has been completed.

Our updated Open Data Strategy and forward plan has been compiled from a combination of learning from the last 18 months along with the findings and recommendations of the Independent Maturity Assessment conducted by the Open Data Institute at the end of May 2024 to ensure progression can be achieved within the next 12 months.

Case Study: **What lies beneath**

Beneath our roads and pedestrian pavements lie a network of pipes and cables required to deliver essential services such as gas, electricity, and water.

It is estimated that the total length of these buried assets is around five times the total length of the road network but with more than 650+ owners and various data systems involved there was no single overall view of what lies beneath.

In partnership with Ordnance Survey, we've been working hard to improve the efficiency and safety of underground works by creating a secure, auditable, trusted and sustainable platform – the National Underground Asset Register.

When desining any new pipeline scheme, information about the location and characteristics of existing buried assets is essential to make sure the design is optimised, even more so for trenchless projects where damage to existing buried assets may not even be identified at the time of the work. In fact, three of the sprints at our 2017 Innovation festival concluded that their underlying problems could be greatly eased by the introduction of a single digital map of what is under the ground, showing water, electricity, gas, telecom and other buried assets and planning-relevant zones.

Although an integrated web-based records system has existed in Scotland since 2012, in England, Wales and Northern Ireland the development of such a system has been rather more problematic. Several initiatives had been tried and failed.

In 2018 around 60 people from a range of different organisations took part in a 'Mapathon' that proposed a three phase plan:

1. a sandbox environment that would cover the whole of the city of Sunderland comprising about 140,000 households;
2. a regional pilot that would encompass the overlapping operating areas of gas, electricity and water companies, covering about four million households and several counties; and
3. an aspiration for the platform to be adopted as a national platform and deployed across the country.

The Geospatial Commission funded the pilot along with another pilot that was running in the London area.

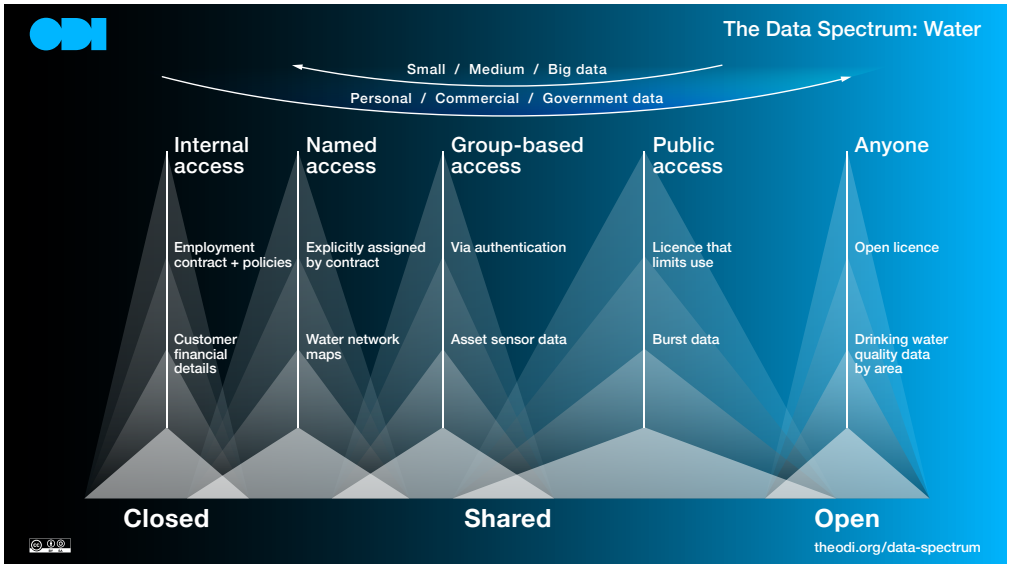
After the successful conclusion of the two pilot projects, there was a strong desire from all participants to progress to a full implementation. The Geospatial Commission also saw the clear potential for a national initiative in England, Wales and Northern Ireland. A further phase was carried out in preparation for the procurement by central government of the delivery of such a national service – the National Underground Asset Register (NUAR) was born.

"NUAR is a vital UK asset that is demonstrating value in sharing data across organisations and importantly across sectors [and] is one of the best examples of national scale data sharing we have in the UK right now."

Kevin Reeves, Industry Executive, Energy & Utilities, Microsoft

"We are excited to see the NUAR vision come a step closer to reality. Unlocking underground asset data will give rise to a plethora of use cases and enormous benefits to the utility sector and beyond."

James Harris, Chief Executive Officer, one.network



Case Study: **Giving rivers a voice**

Our rivers are under increasing pressure from multiple sources, and this is not just a problem that is being experienced in the UK, it is a global challenge. River Deep Mountain AI (RDMAI) is an initiative seeking to answer the question 'if we could give rivers a voice, what would they say?'

The RDMAI programme is a collaboration between UK water companies and delivery partners, funded by the Ofwat Water Breakthrough Challenge. We are the lead water company for the initiative.

The programme is developing open source, scalable artificial intelligence (AI) and machine learning (ML) models to inform effective action to tackle waterbody pollution. The programme is connecting and analysing diverse open and shared data to develop actionable insights. Our ambition is the models developed will unlock new insights into the complex factors impacting waterbodies, bringing a deeper understanding of multiple aspects of waterbody health across river catchments and help accelerate positive change.

The programme will release the models as open source to ensure that everyone can use and develop the models further after the programme ends.

The team have been engaging with stakeholders and subject matter experts to pinpoint and select challenges based on potential environmental benefit, end-user needs, scalability, and the potential for AI, ML, and remote sensing to provide benefits over current approaches. They have been wading in rivers, visiting wastewater treatment plants, engaging with coastal communities, and completing catchment walkovers with charities and talking to farmers. The programme has narrowed its focus down to three overarching themes that address the most burning challenges and questions in catchment management.

Theme one focuses on using AI/ML to model pollutants such as bacteria and nutrients and asking the question, 'how might we improve understanding and estimation of pollutants and how might gaps in monitoring be filled by using existing data?'

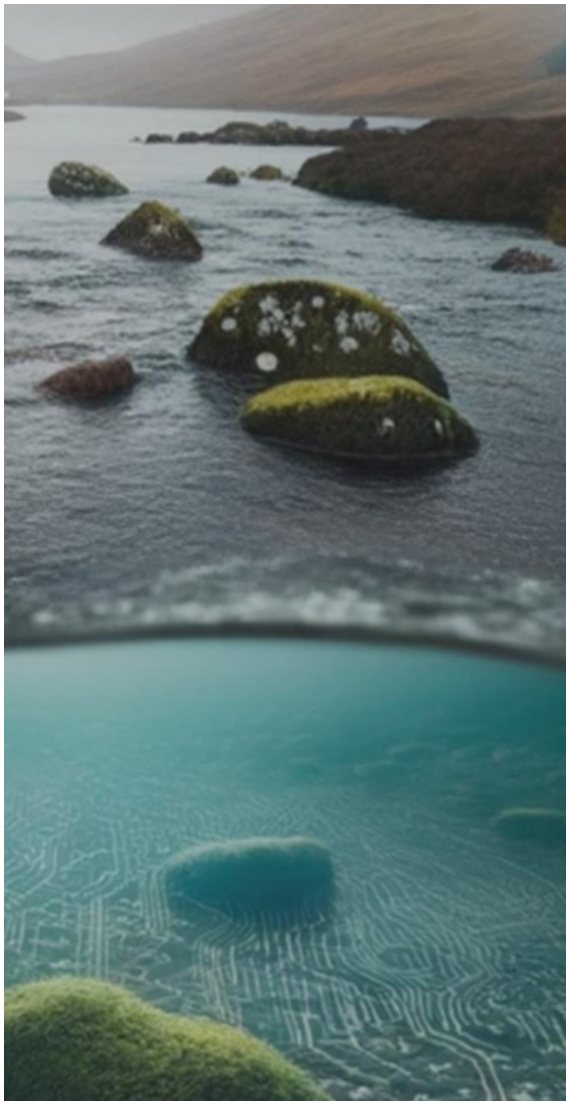
Theme two focuses on optimising how catchments are monitored. How can data be collected in smarter ways, such as using remote sensing technologies like satellite imagery to understand catchments much better?

Theme three is focused on using AI/ML to categorise anomalies in continuous monitoring data. The output from this theme should support stakeholders' ability to sense-check and understand continuous data in a time-efficient and thorough manner.

Over the course of 2025, the programme aims to:

1. Continue optimising ML models, remote sensing data (such as satellite data) and expand collaboration with stakeholders through validating in pilot catchments.
2. Evaluate the scalability of the models in additional catchments and build an open-source framework for the release of models by December 2025.

We are the **lead water company** for the **RDMAI initiative**



The pillars of our Open Data Strategy

Our Purpose is caring for the essential needs of our communities and the environment, now and for generation to come.

We do this by providing reliable and affordable water and wastewater services for our customers. We make a positive difference by operating efficiently and investing prudently, to maintain a sustainable and resilient business.

Our Open Data Strategy aligns directly with our Purpose and is built on top of our core values, which are: customer focused, results driven, ethical, innovative and one team.

We have formulated six pillars to the Open Data Strategy. These represent the 'how' of our Open Data plan.

They are:

LEAD THE INDUSTRY -
we will continue to lead the water industry as it moves together towards data sharing and opening. This will allow us to collectively learn faster and increase interoperability to support a broader approach to solving some of our shared, national challenges.

MAKE IT EASY -
we will publish our data openly in an easy-to-consume way, supporting and encouraging our local stakeholders and citizen scientists. Our data will be made available in a timely manner.

Some of our data is technical and complex and so we will provide appropriate mechanisms to support data re-users to understand it. Our data will be made available to people and organisations under license. As with all of our data published under open licence, it will be free to use.

OUTCOME FOCUSED -
we will focus our efforts on improving the lives of our customers and the precious environment in which we live. We will tackle local issues that our customers tell us they care about as well as national ones that require us to come together with others to solve.

COLLABORATE WITH OTHER SECTORS
- we will collaborate with other sectors and in particular energy, accelerating the move to net zero, enabling better cross-sector outcomes.

We need to work symbiotically to decrease stress on scarce resources as energy transitions to renewable sources.

As part of a group of companies that includes energy distributors such as Northern Gas Networks, Wales and West and UK Power Networks, we believe that we are uniquely positioned to do this. As a recent example, together with UK Power Networks we are founding and active members of the Industry Data for Society Partnership.

BUILD AN ECOSYSTEM -
we will convene a vibrant local ecosystem, promoting citizen science and building valuable skills in our region.

We will strengthen our existing partnerships within our region such as with the National Innovation Centre for Data and forge new ones both locally and nationally.

We will help the growth of our ecosystem of data re-users and innovators through supporting and promoting citizen science and partner with educational organisations to both bring diverse talent into the sector and build valuable skills in our regions.

STRENGTHEN OUR CAPABILITY -
we will build out the enabling people, process, and technology capabilities for open data within our organisation. We need to make sure Open Data becomes business as usual for us, that it is easy for us to execute. That means we will recruit, develop, and retain the right skills. We have invested significantly in our data strategy since 2015, but we want to go further to make sure we continually increase the trust in and value of our data to our data-reuser communities.

The pillars of our Open Data Strategy: Lead the industry

In April 2020 we started a conversation among water companies to see if we could enable the sector to move towards Open Data. We authored an initial thought leadership publication and then worked together to recruit other interested parties.

To move forward at greater pace, we applied for and received two rounds of innovation funding from the Ofwat Water Breakthrough Challenge (WBC) competition.

This initiative is now known as Stream and includes 16 of the major UK water companies, representing the majority of the UK's population.

The vision of Stream is to 'unlock the potential of water data to benefit customers, society, and the environment'.

With the first tranche of funding received in July 2022, Stream completed a blueprinting exercise which concluded in December 2022. This blueprint set out the high-level design for the elements needed to establish a data sharing infrastructure for the water sector.

The second tranche of funding, received in August 2023, enabled Stream to bring the blueprint to life.

A minimum viable platform was launched four months later, providing an opportunity to test out the end-to-end publication processes and how best to present data to users. Learning from this phase was incorporated into the development of the enduring platform which was launched at the end of April 2024 [www.streamwaterdata.co.uk]. Since then, Stream have been working on publishing data to support a series of valuable use cases, the most notable of which was the release of the National Storm Overflow Hub, sponsored by Water UK, at the end of November 2024.

We believe that the work and scope of Stream is a vital parallel activity to our own Open Data activities, for us to be able to address challenges which rely on a national or cross-sector approach. We also believe in the power of working collaboratively to make sure the water industry moves forward at pace, for the benefit of all.

Through our activities at NWG, we will also seek to lead the industry in using open data to drive benefits to customers, society and the environment. We will commit to building on our independently assessed status as a leader in innovation by encouraging further open innovation and the use of and contribution to open standards and open source. We will work to create a culture of openness in all that we do.

OPEN DATA – data that anyone can access, use and share – is provided and consumed by organisations and individuals across the city. Data sharing for the same purposes is also encouraged when data cannot be fully open.

OPEN SOURCE – code that is published under an open licence, allowing anyone to use, share and improve the software.

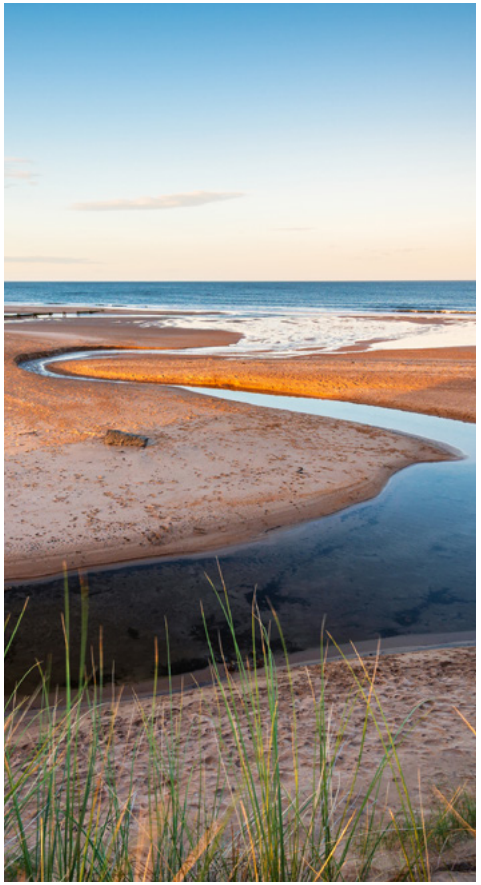
OPEN STANDARDS – reusable agreements that make it easier for people and organisations to publish, access, share and use better quality data, and can be both technical and non-technical.

OPEN INNOVATION – sharing data and ideas, and supporting innovative projects from citizens, environmental organisations, startups, and business or academia.

OPEN CULTURE – building data infrastructure that is as open as possible, encouraging data literacy and capability for all, and advocating for open innovation, with a specific focus of leveraging collaborative technology towards ethical, equitable and just goals.

We will measure our success by:

- There is a clear and agreed strategy for Stream covering the period 2024-2028.
- Stream has a transparent list of planned publications that is available internally and externally for comment.
- We can clearly demonstrate how value has been generated through Stream via a number of published use cases.
- Sustainable funding is in place for Stream for the period 2025-2028.



Stream.®

The pillars of our Open Data Strategy: Make it easy

We commit to publishing useful data that is easy to use, understand, access and is available for everyone.

Part of achieving this will be by ensuring we adopt the FAIR principles of Findability, Accessibility, Interoperability and Re-usability and make use of relevant open standards. Open standards for data are reusable agreements that make it easier for people and organisations to publish, access, share and use better quality data

We want our data re-user community to derive as much value as possible from the data we publish and so we will adopt a user-centred design approach to how we publish our data.

We will engage with our community to seek feedback on the usefulness of features and support for data re-use.

We will also follow best practice guidance and make sure we seek out, learn and incorporate valuable lessons from other Open Data publishers to make it the best user experience it can be. We will keep our offering under constant review using analytical tools to spot where users may be having difficulties and move to address these swiftly and iteratively.

Some of our data is more technical in nature. For example, understanding sewer overflow data requires an understanding of the difference between validated and unvalidated events or what constitutes a spill event and how it is calculated.

We will publish comprehensive metadata (data about the data) alongside the data itself to help users understand it better.

Where we feel it would add value, or based on direct feedback, we will also publish additional content to explain the context and background. We will also provide a communication channel to help users request additional support from our data and business subject matter experts This channel will also be used to encourage feedback from users on the usability of our data, identifying any problems they may detect when using our published data such as data quality issues.

Alongside our data, we will also publish information on our sector challenges and set our communities challenges to make sure our data re-users can be guided on what might be valuable problems to solve in water.

We have a long history of running successful data hacks and will continue to pursue this activity, primarily at our annual Innovation Festival. These events, which started in 2017 attract an audience from around the world. In 2024, we had 3,131 participants from over 650 organisations across 37 countries.

Each year we will run three to four data-based challenges. To date, we have covered topics as wide-ranging as leaks, flooding and rats. Our methodology for running these is well-established and includes the presence of experts to help guide teams of data analysts from beyond our sector as they develop fresh thinking and new hypotheses.

We will measure our success by:

- User feedback online and from our community events.
- Usage statistics, trends and analytics on our published data.

In 2024, we had **3,131 participants** from over **650 organisations** across **37 countries**

The pillars of our Open Data Strategy: Outcome Focused

Customers are at the heart of our business.

This guiding principle has directed all that we do as a company over many years, including the way in which we consult with customers and take their views into account in our business plans. We believe that customer participation taps into a wider movement to connect people to the things that matter in their lives, giving them not only a voice but also more control.

We believe that customer engagement is essential to enabling us to deliver outcomes that are important to customers, society and the environment, at the right time, at a price they are willing to pay. This aligns to the Ofwat principle 'the right outcomes at the right place, at the right time'.

We engage with customers through a wide range of channels, including our community portal, customer research and discussions, our People Panels, tracking research and groups such as the Water Forum which challenges us and hold us to account on behalf of customers.

We will continue to use these channels as a means to understand what challenges and opportunities are important to our customers and stakeholders and where open data can support. We will seek to achieve equitable outcomes across demographic or socioeconomic lines and focus particularly on customers and communities in vulnerable situations.

We ask our customers about their priorities regularly – for example, we know that their top priority is good quality water.

Our business plan and performance commitments already reflect these priorities and to help show how we are performing, we will also seek to make our key performance data (such as on leakage, pollutions and bursts) more available in a form that can be utilised beyond a simple annual summary.

We also know that our customers support environmental improvements, but don't always want to pay for this through their bills.

So we will publish the information we hold about the local environment to support long-term, outcome-focused decision making in the future – supporting others in their efforts to make environmental improvements too.

Alongside customer priorities our data publication roadmap will also be guided by other stakeholder priorities such as historical requests received under the Environmental Information Regulations 2004.

We will look to publish the most commonly requested information types in a form that data users will find most useful.

Finally, we will review the data we have previously shared as part of our Innovation Festival data hacks and sprints to assess whether any of these datasets can be published.

Not all data shared for the purposes of a data hackathon may be suitable for sharing on an open licence, but we will assess each case and decide on an appropriate mechanism by which we can share the data as openly as possible.

We will act ambitiously and grow the quantity and range of published data sets over time by working closely with data stewards in our business and data re-users and will publish a list of datasets released or due to be published with an indication of timeframe.

Where datasets are requested but not published, the business data owner will provide clear reasons why not. This information will also be published openly to improve transparency and discoverability.

We will measure our success by:

- Being able to demonstrate how our open data publication roadmap is in line with the priorities of our customers and stakeholders.
- Feedback from our customers, community and interest groups as to the relevance and usefulness of our data.
- Responding, as far and as fast as possible, to requests for datasets from our communities of data re-users where there is a valuable outcome at stake.
- Collecting and publishing case studies demonstrating the impact our published data has enabled for our customers, communities and the environment.

The pillars of our Open Data Strategy: Build an ecosystem

To generate as much value as we can from the data we publish we need to build and support a community of data re-users.

There are three main strands to our approach to building an open data ecosystem:

1. Developing partnerships.
2. Supporting citizen science and open data communities.
3. Building data skills in our communities.

DEVELOPING PARTNERSHIPS

We believe that we can catalyse an open data movement in our regions, one that is ultimately cross-sectoral in nature.

We do business with everyone in the regions we serve, and we have good coverage of data with regards to the local environment in which we operate.

This positions us strongly to play a convening role when it comes to open data. By leveraging our existing partnerships and working with key universities, we believe we can support insight into key social and environmental problems and create economic opportunities.

There are a variety of sectors and organisations with who we can share data to create fresh insight.

One prime example of this is storm overflows.

We are partnering with the National Innovation Centre for Data at Newcastle University, together with our existing partners in the Northumbria Integrated Drainage Partnership.

We believe that combining our large datasets, we will be able to find novel ways of diverting rainwater away from the combined sewer system without creating flood risk – or provide data to others who can. This should ultimately lead to a reduction in flooding and storm overflows into our local rivers.

We are also working strongly with agriculture, using novel measures and data to help catalyse a drive towards regenerative agriculture techniques. This will improve river water quality and soil health, while helping the farmer earn a good living in a post-Common Agricultural Policy regime and also manage the risks associated with the transition.

We believe that there is considerable scope for improving the lives of our customers too. For example, we have launched a project looking at securely sharing customer details (with their permission) to support other utilities in providing proactive support with other household bills. We need to verify our customer details including household income to provide them with our social tariff, and sharing this information could help those households to access other services to help reduce household bills in the face of the cost of living crisis.

In 2022 we were successful in securing Water Breakthrough Challenge innovation funding for Support for All, a project that will design and build a solution to securely host and share customers registered for priority services.

All providers of critical services currently hold their own version of a priority services register, which details customers in need of additional support in certain circumstances. This will continue to be true, but Support for All will provision a 'tell us once' style service that will enable customers of all services to go to one place and update their details.

Our successful regional pilot Support for All [Support for All 2 - Ofwat Innovation Fund] in 2023 to design and build a solution to securely host and share customers registered for priority services identified over 350,000 customers in need of support. The project proved able to provide a single place for critical services to share services customers need, as well as identifying where companies can work collaboratively to increase awareness and take up of the support services that can be provided. Following this success, further Water Breakthrough Challenge innovation funding is enabling a national platform to be built which will incorporate data from utilities and other organisations, as well as allowing customers the ability to amend and access the support they require.

Houses and meters are getting smarter. These can provide valuable insights such as highlighting if an older person living alone is not adhering to their normal daily routines.

With the right security measures in place along with the permission of the customer, we believe we can provide valuable insights to help extend independent living.

SUPPORTING CITIZEN DATA SCIENCE AND OPEN DATA COMMUNITIES

We believe that Citizen Data Science can play a key and complimentary role to our own work, enabling us to tap into data sources and expertise that would otherwise be beyond our reach.

In 2022 we hired two 'activists' to help us to understand how we can be good partners to this community and how we can both get good value from the collaboration.

To empower citizen data science we will create a comprehensive ecosystem that includes and connects people, tools, data and processes.

Complementary roles such as business translators, developers, data engineers and data scientists will work together to support citizen data scientists to fill in any skill or knowledge gaps.

We will work deliberately with Citizen Data Science as an extension of our own efforts. Given the nature of the work we do, there are certain areas where this is likely to add a lot of value. Perhaps the most obvious example of this is river water quality.

People are seeking more recreation in our rivers, in some cases all year round. We will be deploying sensors to track water quality. These will be highly calibrated and likely to be deployed near our assets. Where this means we wouldn't be monitoring the whole river, Citizen Scientists could help us to fill in the gaps.

Cheaper sensors may lack functionality (that is, less parameters) and accuracy, however, they can still provide valuable insight and we will work collaboratively with Citizen Scientists to maximise the value of aggregating these datasets.

BUILDING DATA SKILLS IN OUR COMMUNITIES

We recognise that one of the keys to success with our Open Data Strategy is to make sure that the right levels of data skills and data literacy exist to get value from our data and data in the wider ecosystem. We see data skills as essential for the use and analysis of data and data literacy is the ability to think critically about data in different contexts and examine the impact of different approaches when collecting, using and sharing data and information.

Data literacy focusses on elements such as:

- Comparing and contrasting how different people use numbers, graphs and infographics to convey important messages.
- Evaluating the impact of bias and limited sampling on important decisions.
- Examining the ways that data is collected. and the purposes of this collection.
- Being able to understand the ethics surrounding a dataset or piece of analysis.

It is widely recognised that there is a national skills shortage in this area. The government's own National Data Strategy (May 2021) states that 178,000 to 234,000 UK companies were recruiting for roles requiring hard data skills and that half of these companies were finding it hard to find people with the right skills.

We will seek to engage the educational facilities in the regions we serve to use our Open Data to support the delivery of the national curriculum and further education. We will provide data, challenges and expertise to help engage our local community, especially in solving the environmental challenges we face.

We will use our Open Data as a means to support the growth of in-demand skills in our region to not only raise regional prosperity but to build a talent pipeline for the sector. We will do this by working with our educational organisations to design and run challenges supported by our data and teams of experts. For example, we are engaging with Northumbria University to support them to host a hackathon during Open Data Day in 2025 around an environmental water theme. The discipline that is data science leads to the codification and operation of algorithms that become part of day-to-day operations in an organisation like ours.

We will measure our success by:

- Create and measure the scale and impact of our data re-user community
- Number of users contributing to discussions or data updates.
- Number of applications developed on published data.
- Use NWG Innovation Festivals and other events to design and lead open data challenges.
- Explore the possibility of leading and promoting a water themed challenge through the Industry Data for Society Partnerships.

The pillars of our Open Data Strategy: Collaborate with other sectors

There is a clear and obvious nexus between the water and energy sectors, so we will focus significant effort in working with energy partners to share data and solve common problems.

This nexus starts with the household customers that we both serve. Around 18% of energy consumption in UK homes is spent heating water. The water sector is following the energy sector closely with its deployment of smart meters, which will lead to fresh insights. This obviously needs to be done carefully to avoid open access to personally identifiable data.

However, through techniques such as representative synthetic data this should be possible. If it is, the prize is significant for both customers and producers.

We can jointly leverage this knowledge to drive innovation, making it easier for customers to lower consumption and bills – and linking water and energy efficiency,in new homes and retrofits. This will have the added benefit of reducing carbon and increasing resilience.

One of the impacts of climate change that we have already experienced is the increased incidence of large storm events which can cause significant impact to our customers and the services that we, and other utilities, provide.

All the long-range predictions relating to climate change suggest that we will see these kind of storm events more often – and although we are investing in more resilience to help maintain services in these extreme circumstances, we will still rely on effective recovery.

So, we need to make sure that we plan and coordinate our resources more effectively to recover our services quickly once the storm has passed. Sharing data and accessing Open Data sources is key to achieving this. Local resilience forums will work much more effectively if they are collectively leveraging the widest set of real time data available. For example, it could be that the first action everyone should take in the wake of the storm is to coordinate on clearing the key transport links.

Water and energy also need to work symbiotically to decrease stress on scarce resources as energy transitions to renewable sources. We are a significant energy user as well as a renewable energy producer. Working together and sharing some of this data could help make us all more efficient.

Water scarcity is already having an impact on energy production and reliability in some countries, with desalination's share of total energy consumption in the Middle East projected to increase from 5% now to almost 15% by 2040. Our WRMP (Water Resources Management Plan) includes potential alternative pathways that include desalination in the future, too. We may also see large water demand from green industry, such as battery production and green hydrogen.

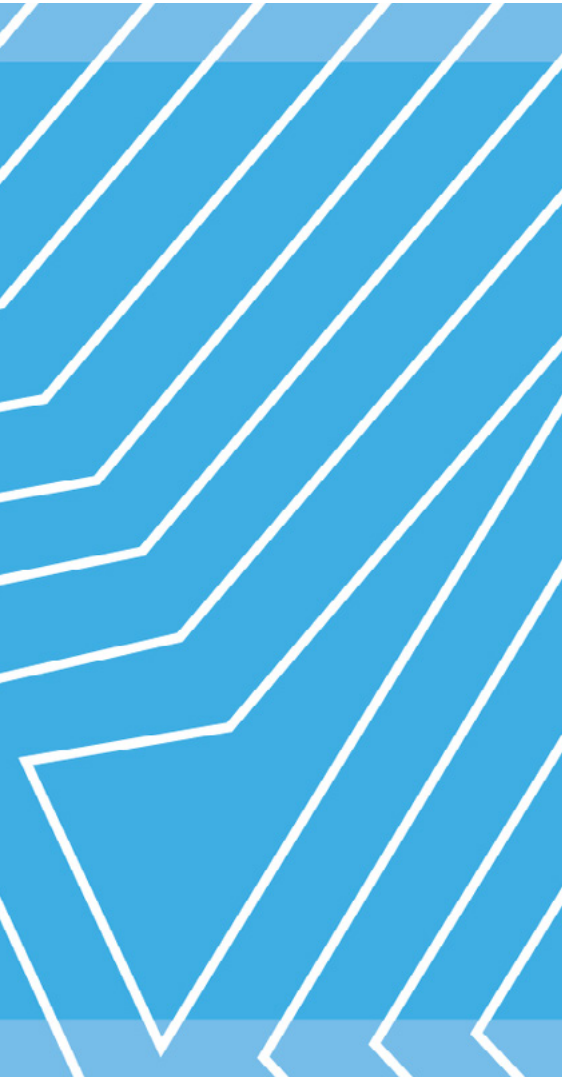
We could see new wastewater energy generation and reuse of chemicals. Sharing data and making optimal, joined-up decisions will be critical for the UK to make a successful transition.

Finally, we will watch with interest the progress of the Smart Data initiative led by the Department for Business and Trade within the energy and telecoms sectors to understand and prepare for any future implications for the water sector.

We will measure our success here by:

- Work with the energy sector to define, launch and successfully deliver a series of open and shared data challenges to address our key, shared issues.

The pillars of our Open Data Strategy: Strengthen our capability



We will seek to grow our internal capability in line with best practice.

We will work to align to the principles that have been agreed by the whole water sector of FAIROE (findable, accessible, interoperable, reusable, open and ethical). We will also work hard to align to FAIR principles (findable, accessible, interoperable and re-usable).

To achieve this, we will work internally to increase our open data capability, accountability, governance, leadership and culture making sure we have solid data foundations on which to build.

We will use the ODI Open Data Maturity model to assess our effectiveness at an organisational level and to guide our improvement activities.

We will create learning pathways to ensure we continually improve how we collect, curate, manage and delete data through effective governance, management and stewardship.

We will focus on building data skills and data literacy, fostering a culture of openness and ethical use of data so that our colleagues understand the value of data, the social impact it can create and the risks of improper collection, use and sharing of data.

We will provide appropriate guidance to our colleagues on how to identify whether third party data is appropriately licenced for reuse and make suggestions on how to find and source reliable, high quality data through services such as government or industry portals or open data certificates.

We will continue to work closely with data experts such as the National Innovation Centre for Data, the Open Data Institute, Icebreaker One and the Hartree Centre to help support us achieve our open data aspirations.

We will refresh our Open Data Strategy periodically to incorporate new learning, feedback or best practice. Feedback will be sought from our community of users to feed into this review. We will work to increase the quality of the datasets we publish building on work we have already started as an integral part of our digitally enabled transformation programmes. This has already led to a significant improvement and we recognise that we have more to do.

We are currently investing in improvements in our asset data. We are also seeking to demonstrate that we have appropriate control on asset health, with maintenance regimes grounded in operational facts.

We clearly need to make sure that we have sufficient data and analytics skills ourselves. We have been investing in analytical skills across our workforce for the last four years in the form of the (level 4) Intelligence Ops programme. We are currently refreshing our internal digital strategy and have created our first data strategy.

The data strategy serves as a guide for our journey towards becoming a data-driven organisation addressing critical areas of data management such as data governance, architecture, exploitation and culture. Our open data strategy sits within this broader data strategy. We will continue to build out this culture, but also invest in the awareness of the possibilities of Open Data, so that our people are minded to seek answers beyond the boundaries of our organisation.

We are appointing, for the first time, an Open Data Portfolio Manager which will report directly to our Head of Intelligence and Analytics, with Executive Leadership Team oversight. This role will work across the business to promote Open Data, ensuring that we publish our data sets responsibly and reliably and engage with a rich ecosystem whenever possible.

We will measure our success here by:

- Demonstrate progression in maturity through regular assessments using the ODI maturity assessment framework. We will invite the ODI to undertake an independent assessment of our Open Data maturity and will publish these results and our plans openly.

Our Values

Our Vision sits alongside our Purpose and clearly sets out what we want to achieve:

Our vision is to be the national leader in the provision of sustainable water and wastewater services.

As important as what we do is how we do it. Our values define how we work to deliver our outcomes and achieve our vision.

Our five core values for open data align directly with our company values and are based on the six International Open Data Charter Principles developed in 2015.

They are:

ETHICAL AND CUSTOMER FOCUSED – we will adopt an open first stance but we will not compromise on the fundamental right to the protection of confidential personal, commercially or security sensitive data as set out in UK legislation.

Where confidentiality and/or sensitivity prevents us from publishing the dataset as fully open, we will not let this be a barrier to innovation by adopting a 'named or group-based access' approach or method of desensitisation instead, where possible.

In summary, we will maintain high data protection standards without creating unnecessary barriers to use.

We are committed to making sure our colleagues understand the importance of the ethical collection, use and sharing of data and seek to demonstrate leadership in what it is to be a responsible data user and steward.

RESULTS DRIVEN – we will continually expand the datasets we publish to deliver more value, including considering adding or signposting non-company data that may be considered valuable.

CUSTOMER FOCUSED AND RESULTS DRIVEN - we will work to meet established best practice standards for Open Data, and make specific commitments to the long-term support and maintenance of released, high value data that users can rely on.

ONE TEAM - we believe that together we are more effective and so we will work with our water industry peers to make sure there is a consistent and coherent approach across the sector.

We aspire to achieve interoperability through standardisation, taking into account that not all standards are technical and even actions such as aligning language can deliver value.

We will continue to lead the Stream initiative to do so and we won't reinvent the wheel where artefacts and frameworks from other sectors are available and relevant.

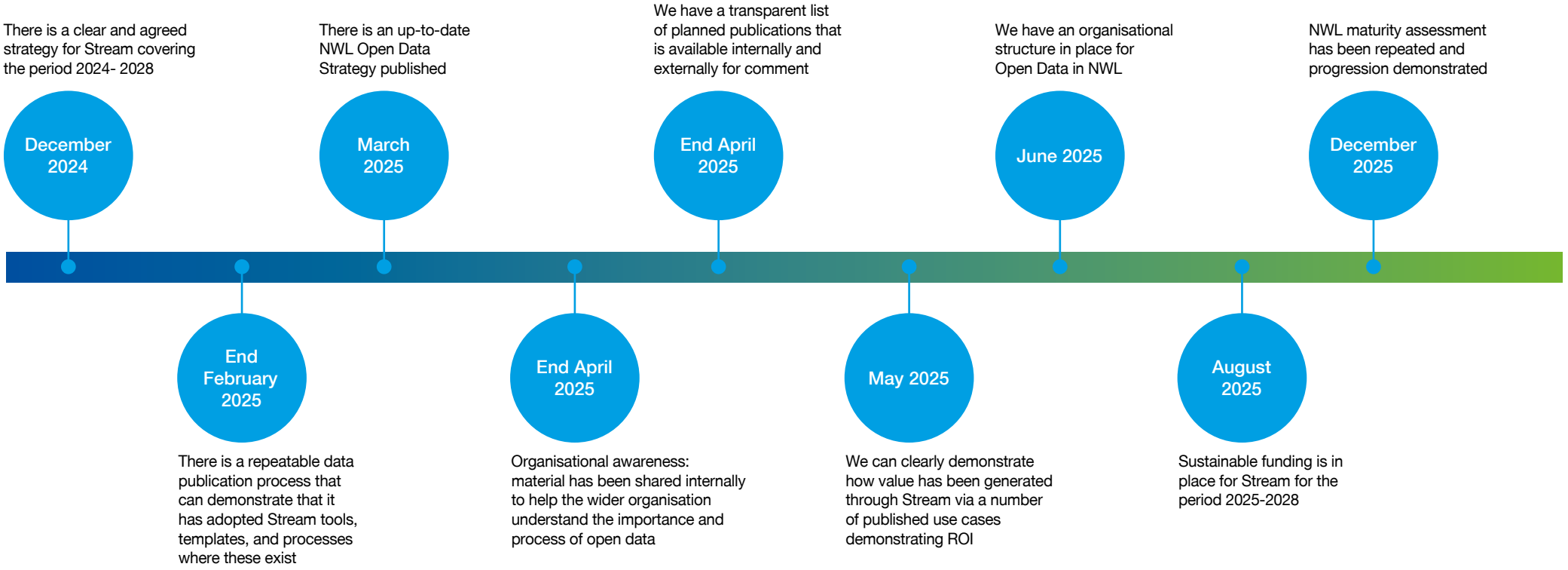
CREATIVE, INNOVATIVE AND ONE TEAM - we will engage with a broad community of users, both locally and nationally, to promote and encourage the use of our data to deliver transparency as well as societal, environmental, and economic benefit.

We will seek feedback from the same to inform improvements, measure benefits and promote good exemplars, use cases and champions of open data.

We will support our users to understand and explore our data to enable inclusive development and innovation.

Our values define how we work to deliver **our outcomes and achieve our vision.**

Our plan for Open Data: Open Data roadmap for 2024/25



Here, you'll find detailed information about our strategy, our targeted use cases, the datasets we plan to incorporate and how we're doing towards our Objectives and Key Results (OKRs).

NWG
living water

March 2025