GREEN RECOVERY REPORT

2021/22

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Liv Garfield
CEO

OUR GREEN RECOVERY PROGRAMME

In July 2021, Ofwat confirmed we could invest an additional £566 million (2017/18 prices) in our ambitious Green Recovery programme, providing a great opportunity to support our ESG ambitions. We were delighted with this outcome and are thrilled to share that all our Green Recovery projects are progressing at pace with key suppliers engaged.

I am delighted that the water sector is playing its part in the country's green recovery from the COVID-19 pandemic. We do not underestimate this responsibility and the role we can play in helping to meet the economic and social challenges that our country faces. I am particularly proud that our Company is using this opportunity to deliver schemes that address long-term issues that we know are important to our customers. These include developing low carbon water resources, delivering a step-change improvement in river water quality, making our towns more resilient to flooding and trialling innovative schemes to remove lead from customers' supply pipes. We are excited that the work we are doing is actively shaping the future for both Severn Trent and our wider industry.

We are passionate and well-placed to support the green recovery and we have an excellent track record in delivering the best possible service for the communities we serve, with our dedicated workforce. This is reflected in our strong operational, environmental and customer outcomes and is a testament to the hard work of the operational teams involved.

This is our first Green Recovery Report and provides an update on the strong progress made to date. We welcome feedback on our approach and look forward to updating you as the projects progress. In future, we expect this report to evolve and become more focused on specific deliverables, our key project milestones and vital learnings. Our Green Recovery programme consists of six schemes, that will deliver a host of benefits for our customers and communities. An overview and progress update on the six schemes is provided on pages 6 to 22.

Rivers safe for swimming

More water for more customers

Homes protected from flooding

Protecting customer supply pipes

Lower water consumption

Faster environmental improvements

We have mobilised all projects at pace and have gone from a standing start, a year ago, to recruiting teams of people and getting into delivery, on what are large and complex projects. We feel equally as excited about the year ahead and the learnings that we will share.

The team is motivated by the learnings that will come out of the innovative solutions we are creating, from sustainable urban drainage in Mansfield to trialling various solutions to remove lead in customers' supply pipes and creating bathing quality rivers for all to enjoy. The plans to bring new capacity into supply in a low carbon way across Derbyshire is truly innovative and exciting.

We have had a really broad range of stakeholder engagement since the projects have begun, including community roadshows at Mansfield and Leamington Spa and separate visits from MPs, the Environment Agency ('EA'), Ofwat and the Drinking Water Inspectorate ('DWI') covering all of the projects. Feedback has been incredibly positive with excitement building about what we will deliver.

The benefits these schemes will create for our customers are wide-ranging. Improving more than 50 km of rivers to create bathing quality stretches of water of the rivers Leam and Teme will provide more leisure opportunities, improve wellbeing and also deliver environmental benefits, including enhanced biodiversity and healthier aquatic life. Our £76 million Green Recovery project in Mansfield, which will see us install thousands of sustainable urban drainage schemes including rain gardens, retention ponds and swales, will create a greener, cleaner environment across Mansfield. Not only will these interventions assist with flood alleviation in Mansfield, they will also deliver wonderful nature-based amenities for local communities to enjoy. Our supply pipes project has been really challenging so far in terms of achieving planned job numbers, but we continue to learn a huge amount and adapt our approach accordingly.

On top of the long-term benefits for customers and the environment, these investments will directly create jobs in the Midlands at a time when employment, and getting people back into work, is vital for our region. And we will be recruiting and training local people, using the brilliant facilities at our Severn Trent Academy, to improve skills across our region.

£13.9 million
investment as we launch our projects

Over **33,000**[1]
meters installed

163
new roles created directly within Severn Trent with 124 recruited

79
customers have had their supply pipes improved through the removal lead

Our Green Recovery data tables, as at 31 March 2022, are included in full in our Annual Performance Report.

[1] As at 30 June 2022

CUSTOMER BENEFITS OF GREEN RECOVERY

Rivers safe for swimming

- People will be able to swim safely in stretches of the rivers Leam and Teme – bringing new leisure and fitness opportunities to more than 1 million local people, within an hour's drive.
- The environmental benefits will include enhanced biodiversity and aquatic life.
- Cleaner rivers don't just mean greater physical and environmental wellbeing – they also support growth in the river-based economy.
- Exploring options to to go further than our commitment to improve water quality, by looking into the provision of access and amenities.
- Pioneering ozone technology in UK for waste water treatment for betterment of public health and to enhance the water quality in our rivers.

Protecting customer supply pipes

- Protecting up to 26,000 customers from the harmful effects of lead in drinking water.
- Understanding how to move away from chemical treatment to protect from lead.
- Reducing leakage by around a million litres a day – this is especially important because around 25% of leakage happens in our customers' own pipes.
- Trialling three delivery models to speed up the lead replacement scheme (direct labour, contract labour and grant model).

More water for more customers

- 93 Ml/d at peak capacity of additional water supply, providing increased resilience to hotter, drier summers and wetter winters, thereby securing water resources for future generations.
- Enhancing 46 hectares of habitat to deliver a net gain in biodiversity.
- We'll share the lessons learned with other organisations – helping the UK understand how to bring new capacity into supply in a net zero way.
- We will be testing the limits of nature based and lower chemical treatment solutions such as wetlands pre-treatment and ceramic membranes in the main treatment process, which are low chemical.

Lower water consumption

- Raising awareness and helping customers to save c.3 Ml/d of water through more efficient use and leakage reduction.
- Helping us target high users during periods of high demand – resulting in fewer interruptions for all customers.
- Helping customers to save money on their water bills.
- Raising customers' consciousness of the environmental impact and carbon footprint of their usage and unchecked leakage – therefore saving carbon.
- Improving data capture and therefore having a better understanding of our water balance.
- Installing 157,329 more meters for customers, over 48% more than our AMP7 base target.

Homes protected from flooding

- Significantly lowering flood risk across Mansfield.
- Creating around 6.5 hectares of biodiversity-rich habitat.
- Reducing 58,000m^3 of storage requirement in our sewers.
- Improving water quality, including reducing the risk of storm overflows being triggered at around 20 discharges.
- Greatly improving local recreational amenities.
- Installing thousands of sustainable urban drainage schemes including rain gardens, retention ponds and swales, which will create a greener, cleaner environment across Mansfield.

Faster environmental improvements

- Improving over 500 km of river.
- Supporting aquatic wildlife to thrive.
- Delivering environmental improvements five years sooner than they otherwise would have been.
- Pushing the boundaries of technology to treat waste water to the highest quality possible.
- Returning rivers to good status and reversing the impact on them.
- Reducing spills from combined sewer overflows ('CSOs') to protect rivers from the impact of storms.

JOB CREATION FROM GREEN RECOVERY

Direct Recruitment

The Green Recovery programme provides an incredible opportunity for job creation, at a time when our region needs it. We have worked through a wide range of channels to attract the right talent, using established recruitment methods, complemented by social media and recruitment events.

To ensure that our Green Recovery workforce reflects the communities we serve, we have focused on diversity and also blended internal and external recruits to ensure a range of experience across different industries. We have also structured our Green Recovery Team to ensure we have flexibility – with a blend of permanent and some fixed term contracts and contractors to fill short term gaps.

We have put a real focus on engagement for our new recruits, to retain new talent and inspire our teams. The mini-QUEST (engagement survey tool) result for our Green Recovery team was 9.0, placing us in the top 5% of utilities globally.

Promoting Talent and Upskilling

We have previously grown our internal talent through our established graduate, apprentice and intern programme, including the **#10000BlackIntern** programme. We have taken this learning into our Green Recovery recruitment.

124
people directly recruited

45%
of those recruited are female

17%
of those recruited are from a minority ethnic background

9.0
engagement score in the mini-QUEST survey (out of 10)

Working with our supply chain to create innovative solutions and new jobs

WaterSafe Plumbers Event at our Academy

We held an event at our Severn Trent Academy with around 30 WaterSafe plumbers from 17 companies to get feedback on the grant scheme. Working with plumbers in our local area will enable us to increase job volumes and create local jobs through the grant model.

Green Recovery Recruitment Event

In October 2021, we were pleased to run a recruitment event to support our Green Recovery programme at the NEC in Birmingham. We promoted the event externally as well as approaching potential candidates directly to invite them along.

Each of our Green Recovery project leads gave presentations and our resourcing teams engaged with potential candidates so we could follow up with them on relevant vacancies. This was our most successful recruitment event to date, with c.100 people attending. Resultant hires were 31% female and 28% minority ethnic – ensuring our teams reflect the regions that will benefit from these projects. Appointments were made for a wide variety of roles, including engineers, customer liaison officers, frontline operatives and project manager roles.

RIVERS SAFE FOR SWIMMING

Our Goal

Make stretches of the River Leam and River Teme healthy enough to swim in.

Pass on what we learn to other organisations, as part of our efforts to understand what it takes to achieve bathing quality rivers and to ensure the UK's rivers can achieve 'good ecological status'.

Create more leisure opportunities, improve community wellbeing and deliver environmental benefits, including enhanced biodiversity and healthier aquatic life.

Our Approach

Engage with and help other parties make positive change in the catchment, e.g. working with farmers to prevent pollution getting into rivers.

Develop new ways of communicating with river users so they understand water quality in real time.

Install ozone effluent disinfection at three sewage treatment works and build new storage and sewer capacity to help us reduce the environmental impact of around 25 storm overflows.

While we do not own our region's rivers, we have an important role to play in improving river health. That means significant innovation and investment over the next 10 years. We will use state-of-the-art systems, materials and processes, creating blueprints for a new water future, one that is leading the way for the whole UK water industry. Our communities will benefit directly from our bathing rivers project, with our nearest coastline being at least 80 miles away for our communities. Our project will generate new opportunities for people to enjoy the outdoors and connect with the environment. This exciting project is the first big step in creating bathing rivers in our region and advancing our plans to 'Get River Positive' so that our communities and customers can look forward to enjoying our rivers safely in the future.

GET RIVER POSITIVE

Check out the **getriverpositive.co.uk** website for more information about our River Pledges

Our Progress

Our mobilisation efforts have focused on three areas alongside our work with the supply chain to progress the project into contract:

1. **Analysed our network.** Asset surveys and flow monitoring (sensors) allow us to understand the size of storage required to reduce spills during heavy rainfall. Carrying out ecological surveys to make sure all activities comply with environmental regulations, habitats and vulnerable species are protected, in addition to understanding what time of year we can undertake the necessary work.

We have already deployed over 25 monitors that track a range of river parameters. We are looking to be innovative in this space so we are trialling two new types of monitor, in addition to a more established type. This will give us great insight into which are the most accurate and cost effective monitoring solutions.

Water quality monitoring devices installed in the rivers.

Creating a blueprint for bathing quality rivers.

Making stretches of the River Leam and River Teme healthy enough to swim in.

2. Our treatment works. Detailed surveys have been completed to understand loading at each works to ensure we can design the most effective, environmentally friendly and green solutions for each of the parameters and improving river quality. We have started to work on a river model that will provide real-time information on whether a river is safe to swim in and overall river health. This will use inputs from a range of sources such as event duration monitors ('EDM') data and our new river monitors, and provide an overall status on river health. This work will be finalised in early 2023 once we have sufficient data to develop and test it.

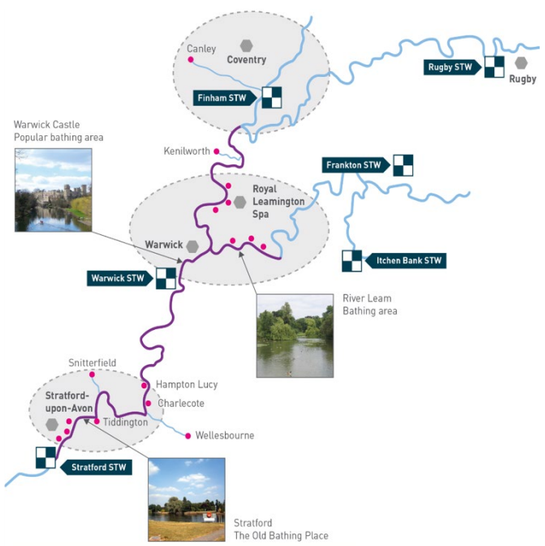
We are making good progress with our ozone treatment plans. We have completed equipment benchmark testing and are starting to work on the outline design. The Design Team visited our Campion Hills water treatment works ('WTWs') to observe and understand ozonation plants and gather valuable insights from the operations team about operation and maintenance processes in place. The ozone disinfection will be an industry first for waste water final effluent in the UK. We are therefore blazing the trail with planned installation at three sites (Ludlow sewage treatment works ('STW'), Itchenbank STW and Frankton STW).

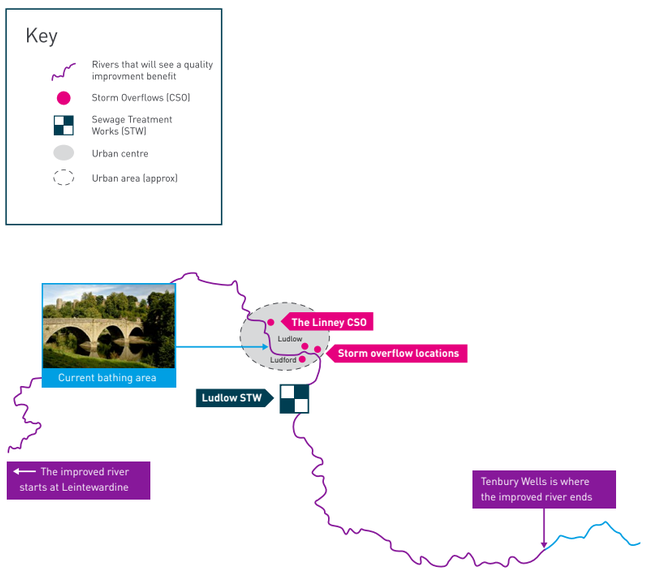
We have chosen ozonation technology to:

- Focus on river quality outcomes;
- Address emerging risks such as pharmaceutical residues and antimicrobial resistance; and
- Reduce bacteria (E.coli and Enterococci).

The delivery of these outcomes will require significant innovation such as advanced ozone plant technologies which have never been used for waste water treatment in the UK. We will share our insights and learnings with the sector.

The maps below provides an overview of our Bathing Rivers project in Leamington Spa and Ludlow.





3. Engagement with farmers and river users. In order to provide accurate river quality monitoring and modelling information, we have held focus groups and engaged with land agents and owners to inform them of our project and encourage them to work with us. We have implemented structured focus groups with river users to get their views on what they would like to see in a customer application.

We have engaged with landowners to develop the delivery programme, and undertaken numerous site visits, feasibility work and surveys to inform our approach.

We have also engaged with a broad range of other stakeholders to inform them of our plans, seek their views and understand where we can work with them – with some fantastic feedback on our plans.

We have been engaging key stakeholders such as, Surfers Against Sewage on the development of a customer application to provide real-time information about the water quality. A call with Phillip Dunne, MP for Ludlow, was positive, with him demonstrating he was a strong supporter of the project and thrilled that we are improving the River Teme. He wants to be a part of the project and will be of great help with wider engagement. We are also building a virtual room online where community groups can visit to find out all about what we are doing in their area, with the first ever community newsletter for river users being created too.

4. Supply chain engagement. We have engaged with our supply chain, and have early contractor involvement ('ECI') contracts in place for all key projects to ensure that we get ahead with design and constructability reviews of our capital solutions.

A concept we are discussing with third parties, to go further than our commitment to improve water quality, is by looking into the provision of access and amenities to attract people to certain locations on the river (and not limited to the one cited in the drawings).

See our artist's illustrations below.

The return of our waterways to a standard fit for bathing is a much-needed and welcomed vision from Severn Trent. I have worked closely with Severn Trent to put the River Teme in Ludlow at the forefront of its plans to improve water quality. I look forward to working with local people, interested groups and farmers to find suitable places for safe and healthy enjoyment of the river in and around Ludlow.

Philip Dunne
Member of Parliament for Ludlow

Rivers Safe for Swimming Timeline

2021/22

- Identify and engage partners for laboratory and sampling work
- Begin feasibility work

2022/23

- Feasibility and optioneering
- Commerical discussions and contract negotiations

2023/24

- Finalise detailed design
- Construction on site at all locations

2024/25

- Construction and commissioning
- Handover at all sites

MORE WATER FOR MORE CUSTOMERS

Our Goal

Increase water supplies by up to 93 million litres per day – enough to serve a city the size of Derby. We will do this with a reduced carbon impact, and share our approach with companies in the sector, supporting our and the water sector's aim to be net zero by 2030.

The additional water supply will increase our resilience to hotter, drier summers and wetter winters, securing water resources for future generations.

Our work will also increase the biodiversity of 46 hectares of habitat, at our Witches Oak site, and trial reduced chemical treatment in the water process.

Our Approach

Utilise an abstraction licence we purchased from a decommissioned power station at Rugeley and build a new water treatment works for this source of water.

Construct a ceramic membrane plant; a first for us.

Help 3,000 businesses save money, and reduce waste by looking for opportunities to reduce leaks, upgrade water fittings and signpost to installing grey water and smart storage systems, saving up to 4 Ml/d.

Our Progress

We have worked hard to design the most optimal solution for customers. This changes our proposal to focus on a single site solution. This has been a lengthy exercise, but worthwhile to ensure the project delivers for customers now and in the future. Learnings from this project have enabled us to produce a new designing standard for ultraviolet ('UV') disinfection which we will be using at the new Church Wilne WTW.

We have held meetings with our ceramic membrane supplier to discuss the pilot trials, the design of Church Wilne WTW and long lead items that need to be procured to avoid any delays.

Throughout May 2022 we began construction at Church Wilne and Witches Oak for the pilot plants. Environmental surveys on the transfer pipe route are underway and Bathymetric survey of the gravel beds at Witches Oak is scheduled.

[1]The Church Wilne solution is subject to Ofwat approval.

There are four aspects to this project:

1. Increasing raw water to Church Wilne[1].
We will be using our existing abstraction location on the River Trent at Witches Oak and have appointed a designer to develop the outline design. We will construct new floating wetlands in three existing gravel beds at the site to provide the first stage of water treatment and also increase the biodiversity.

We have already undertaken some great work on the feasibility of wetlands pre-treatment, in combination with design partners and research institutions. Our plans will use floating reed beds, with a focus on nutrient removal and pre-treatment, whilst also providing amazing biodiversity benefits. We are designing the wetlands so that they provide a haven for fish and eels. Used in combination with ceramic membranes, this will be a real game-changer in reducing chemical treatment and energy consumption and developing more sustainable treatment solutions.

The floating wetlands are innovative as they enable the wetlands to rise and fall with the level of the River Trent. We can remove the floating wetlands relatively easily from the gravel beds and replace the plants, making ongoing maintenance much easier.

For more information on this innovative solution see page 11.

2. Increasing the Deployable Output ('DO') of Church Wilne Water Treatment Works ('WTW')[1]. We will be using technologies to treat the water which are new to Severn Trent. We will test the performance of these technologies using a pilot plant located at Church Wilne, which will be a scaled down version of the new water treatment works.

The pilot plant will be installed at the existing Church Wilne WTW and operated for a period of twelve months. It will demonstrate the capability of the selected processes in treating raw water derived from the River Trent at Witches Oak. Pilot plant will be operational towards the end of this calendar year.

The plant will test the technologies that are proposed to be used for the full-scale new Church Wilne WTW (Sidestream). These technologies include; Suspended Ion Exchange ('SIX'), Ceramic Membranes ('Ceramac') and Granular Activated Carbon ('GAC').

We are already nearing the end of construction for the pilot plant which will provide a test facility for the new water treatment works to enable us to optimise the performance of the new process and accelerate commissioning once the full scale works are constructed.

The design of the treatment works and ceramic membranes is progressing well and due for completion over the next few months.

3. A new transfer main from Church Wilne[1] to increase resilience across our network. To deploy the additional water from the new water treatment works, we will construct two new transfer pipelines connected into our grid so that we can transport the water to where it is most needed in our region and increase the resilience. We have already undertaken significant work designing the pipeline that will go from Church Wilne to Melbourne – narrowing down options to a near finalised optimal route and starting surveys and landowner engagement.

For more information on the route the pipeline will take see the image on the right.

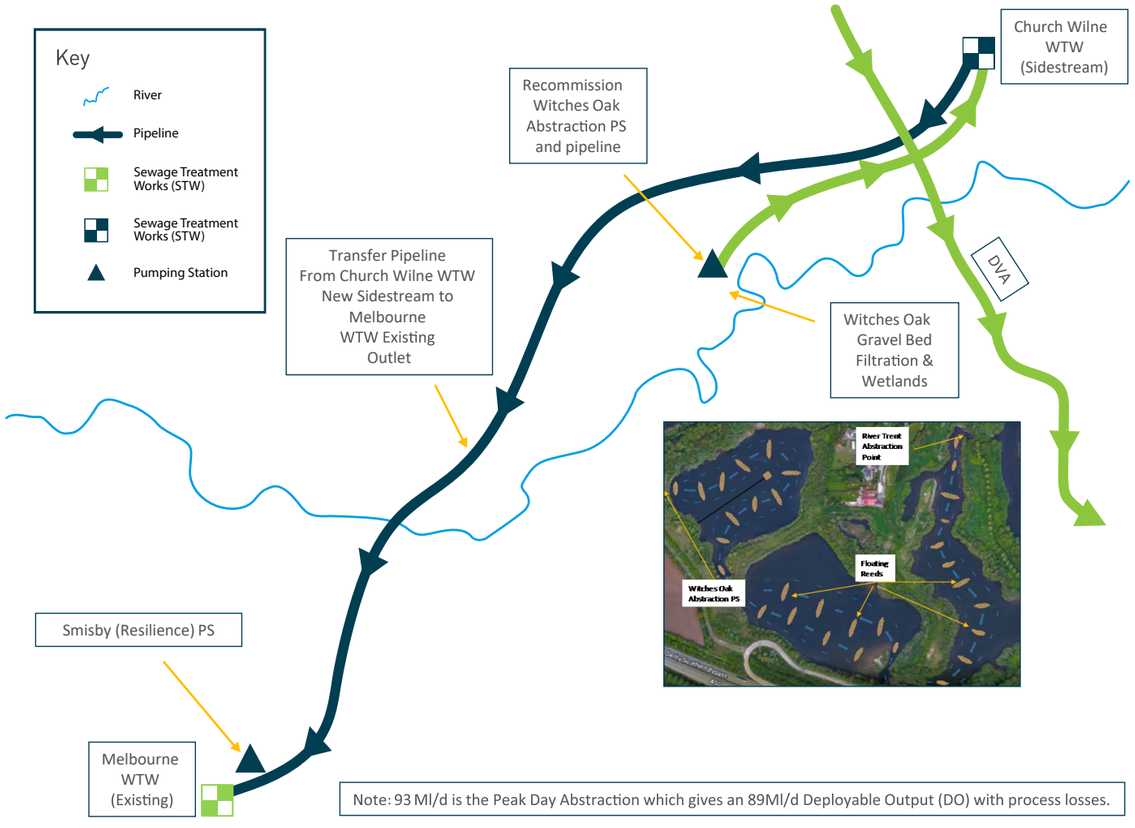
4. Complete 3,000 water efficiency audits across a wide range of different business types in order to help them reduce water consumption and save money. We have made good progress on this, engaging supply chain partners to run several trials. An initial plan conducting audits within schools began in May 2022, with a second trial in twelve different business types that was started in late June. An agreement has also been made with Water Plus for our first retailer led trial of 250 audits. We will use the learnings from these trials to inform a wider roll-out. Using our partnership with the Commonwealth Games we have been "Getting Games Ready" to ensure all venues are ready to support water efficiency.

By June 2022, we had already completed 82 initial audits, with 101 schools already signed up to our pilot audits. We are launching a wider business trial and we have had great engagement from Nottingham Business Improvement District ('BID') and Mansfield BID in supporting us sign up businesses. We have signed up a retailer to undertake retailer-led trials and test this model, with audits planned to start in July 2022.

The increasing impact of climate change on the UK's water supply is irrefutable: we have experienced the hottest summers on record recently, and at the same time we are experiencing record flooding. When combined with changes in consumer behaviour that COVID-19 has brought to the fore, there is a compelling need for significant investment in water resource capacity. Although the sector has commenced this journey and is developing a number of schemes for PR24, there is an urgent need to find lower-carbon solutions. Traditional solutions are very carbon intensive, with 1Ml/d typically creating 400 tonnes of carbon – meaning that the additional supply-demand capacity the Government has identified in its Infrastructure Plans will add 350,000 tonnes of carbon into the atmosphere unless we take action.

A summary of the scheme at Church Wilne

- Centralised treatment at Church Wilne with a new ceramic membrane treatment works (Sidestream) with an Average Day Deployable Output ('DO') of 65 Ml/d and Peak Day DO of 89 Ml/d;
- Recommission Witches Oak existing abstraction pumping station and pipeline to Church Wilne WTW (Sidestream);
- Witches Oak wetlands for solids, ammonia and nitrate reduction / removal;
- Biodiversity improvements at Witches Oak;
- Treated water transfer pipeline from Church Wilne WTW (Sidestream) to Melbourne WTW existing outlet pumping station, for resilience; and
- Treated water transfer pipeline from Church Wilne WTW (Sidestream) to the Derwent Valley Aqueduct.



More Water for More Customers Timeline

2021/22
- Feasibility and initial design
- Engage supply chain partners to carry out audits

2022/23
- Begin construction on raw water abstraction and transfer
- Finalise design of wetlands

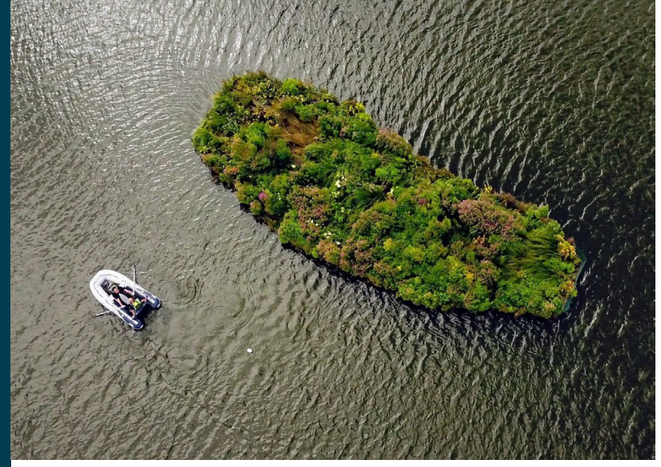
2023/24
- Construction of treated waste distribution element
- Detailed design of ceramic membrane

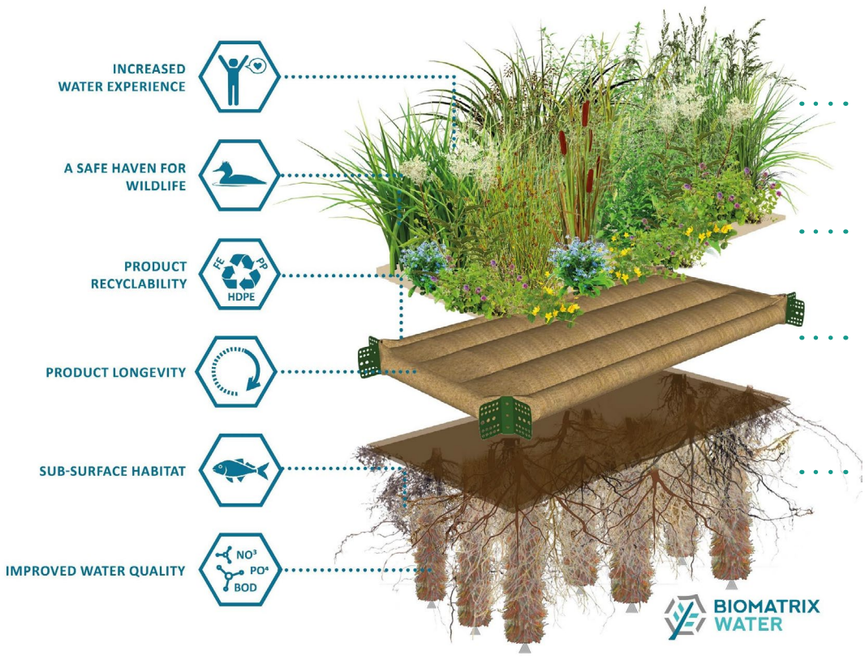
2024/25
- Construction and commissioning on all programmes
- Handover at all sites

Wonderful Wetlands

A Multi-Functional Natural Solution

Nature-based solutions, such as floating wetlands, provide a sustainable and natural mechanism for removing many of the damaging pollutants from the environment. This reduces the energy and chemical use in treatment plants, improves the condition of the local aquatic environment and increases biodiversity.





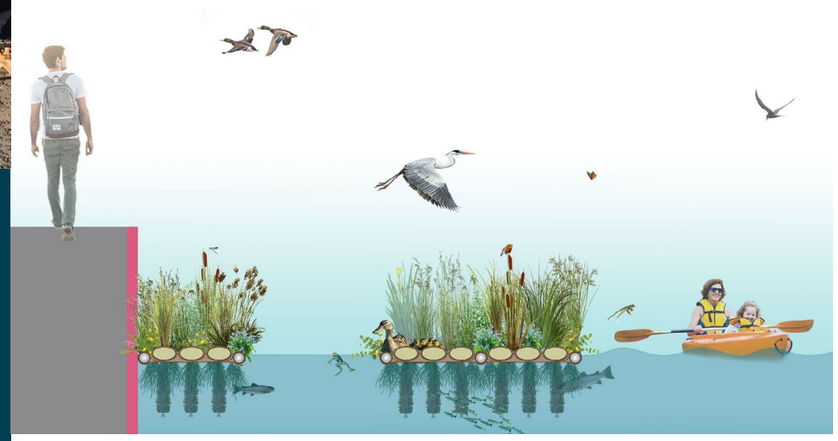
Diverse native planting increases biodiversity with specific species selected for treatment performance.

Coir matting, peat free compost and mulch creating a planting medium.

High buoyancy provided by recycled HDPE tubes to support the habitat.

Root mass and synthetic structures provide high surface area for microbial growth and wildlife habitat such as fish and invertebrate sanctuary.

Strong, powder-coated, stainless steel fixings provide a long life-span and resilience to environmental corrosion and physical stress from wave and wind action as well as flood events. Robust anchoring systems keep the islands in place but allow for them to be re-located where required for operational and maintenance activities.



A multi-functional environment:

- Water quality improvement;
- Wildlife habitat;
- Amenity resource; and
- Landscape enhancement.

The Root to Success

The root structure that develops under the wetlands is critical as it provides a large surface area for the development of microbial communities, diffuses oxygen into the water column and provides a pathway for plant uptake. This is a key element of phytoremediation and supports the complex biochemical and microbial processes that are needed to remove pollutants from the environment. A combination of root structure and synthetic media (mimicking root structure) promote better suspended solids settlement through physical filtration and coagulation of particles which precipitate to the reservoir bed. The standing plant crop takes up and metabolises some pollutants and provides a carbon source through seasonal die back and decomposition of vegetation.

Floating wetlands can be augmented with the addition of woodchip and biochar, this provides a carbon source to promote more efficient nitrogen removal. Biochar also supports biochemical degradation and adsorption removal pathways for pollutants of emerging concern including perfluoroalkyl and polyfluoroalkyl substances ('PFAS'), pesticides and other organics.

HOMES PROTECTED FROM FLOODING

Our Goal

Create the first catchment-scale flood-resilient community, using an innovative nature-based approach to reduce surface flooding. The trial is centred around the Mansfield district of Nottinghamshire, where we aim to store the equivalent of 58,000m^3 of surface water in 'blue-green' infrastructure – a range of natural surface-flood defences, such as rain gardens, drainage ponds, grassed areas and permeable hard paving.

Reduce the broader harm flooding brings to communities and create a more pleasant natural environment for local people to enjoy.

On an average rainy day in Mansfield, we get around 2 million litres of water falling on every square kilometre. And all that water has to go somewhere. In the past, towns like ours had plenty of green areas – gardens and verges, for instance – to soak up excess water. However, in recent years we have lost many of these spaces due to development and urban creep and the town is now less 'spongelike'. There is a real risk of our drains being unable to cope with heavy rainfall, leading to flooding.

Our Approach

Install a range of blue-green solutions which will capture rainwater and slow down the pace at which it enters the sewerage network or infiltrate where possible. This scale trial, using a nature-based approach, will also help improve river quality.

Work collaboratively with a range of partners, such as local councils, communities, universities and environmental groups. We are focusing on areas with high proportions of financially vulnerable customers and we aim to protect around 90,000 people's homes.

Create the first catchment-scale flood-resilient community, using a nature-based approach to **reduce surface flooding.**

600m^2 car park to be transformed into green space in Partnership with MDC and NCC, incorporating four rain gardens. Contributing area of 1,500m^2 will feed the rain gardens.

Our Progress

We have established a foundation of stakeholders and partners for the project. We are working closely with Mansfield District Council ('MDC') and Nottinghamshire County Council ('NCC'). Without their help we would not be able to deliver this project, and we thank them for their continued support. We are now co-located with our key supply chain and other partners at the Mansfield Civic Centre.

We have put the first spade in the ground, and have dug trial holes in specific areas for the installation of nature-based solutions which are being built in the coming months.

Working in partnership with MDC, we added sustainable urban drainage systems ('SuDS') into a memorial garden which will kickstart the regeneration of the town centre in line with the Council's ambitious masterplan. This pilot helped us to identify the risks and opportunities of constructing assets in a pedestrian heavy areas, whilst we develop wider schemes to make Mansfield greener, healthier and more flood resilient.

Our stakeholders have been keen to engage with us and we have visited many local businesses explaining the scheme and answering queries. We held a small private exhibition in the town hall to give local businesses early access to the visualisation concepts. We have also hosted a community exhibition in one of our pilot areas (Ravensdale) and will soon be launching a virtual exhibition to customers and stakeholders, to provide a space for all kinds of information about our project.

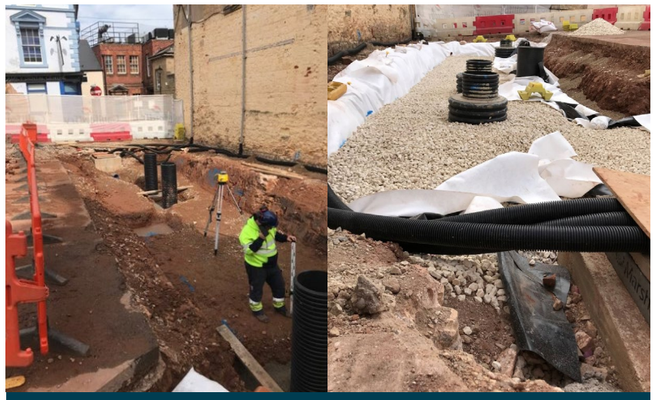
We are talking to schools in the area who are interested in incorporating SuDS into their curriculum, using our work on the Mansfield project to demonstrate examples for their pupils, and inspire potential engineers of the future.

We have engaged with consultants on the design, which is now developed for each of the interventions. We have engaged our supply chain on our pilot site, which includes 177 interventions over six zones at locations near the town centre. Our solution of creating permeable paving is providing a great opportunity to reverse urban creep. By replacing tarmacked parking areas with a permeable surface, and creating green verges, we are able to capture surface water run-off and slow it down.

We are finding other opportunities to deliver improvements throughout the project. One example of this is with developers looking into how we can incentivise them to use SuDS on brownfield sites rather than traditional hard standing.

We are developing an exciting new technology tool called 'automated site selection'. This will help us systemise and automate the selection of sites most suitable for interventions and of what type.

We have made huge progress on the outline designs for the solutions and have now completed designs for 167 interventions totalling 2,430m^3 of storage. We have also issued orders to our supply chain for the outline design of further interventions totalling more than 17,000m^3 of storage.



What are SuDS?

SuDS cover a range of things, like rain gardens, planters, even water-absorbent permeable paving. They mimic natural drainage processes, dealing with rainfall close to where it falls.

Rain gardens are a great example of SuDS in practice. Using plants and soil to retain and slow the flow of rainwater from surrounding hard surfaces, they naturally filter pollutants like oil and silt carried by urban runoff. The water is stored beneath the soil before being sent back to the sewer - cleaner and at a slower rate - or being soaked into the surrounding ground to replenish groundwater.

Permeable paving is also another great way to reduce flood risks with added benefits. The water-absorbent paving will not only help slow down and store rainwater, but also means we're able to do this while still keeping much needed parking for residents!

Research and Knowledge Sharing

We are starting to engage and influence the wider industry – the team presented a technical paper at the Blue/Green Session of the Urban Drainage Group Meeting within Flood & Coast in June 2022.

Our Mansfield project also featured on the CIWEM Planet Possible podcast on healthy rivers: **planetpossible.eco/episodes/healthy-rivers**

10 times larger than anything ever trialled before in the UK

177 interventions planned at locations near the town centre

Severn Trent's rain gardens in areas around the Market Place will help to alleviate the growing risk of flooding, as well as make Mansfield cleaner, greener and therefore healthier.

Andy Abrahams
Mayor of Mansfield

This project truly is going to be ground-breaking not only for the people of Mansfield, but for the UK and internationally too. The threat of flooding is increasing, and this project will help create a blueprint for the future on how homes, towns and cities can be made more resilient against flooding.

We're going to be installing planters, swales, rain gardens and permeable paving, that all work together in slowing rainwater down and stopping the sewerage network from becoming overwhelmed.

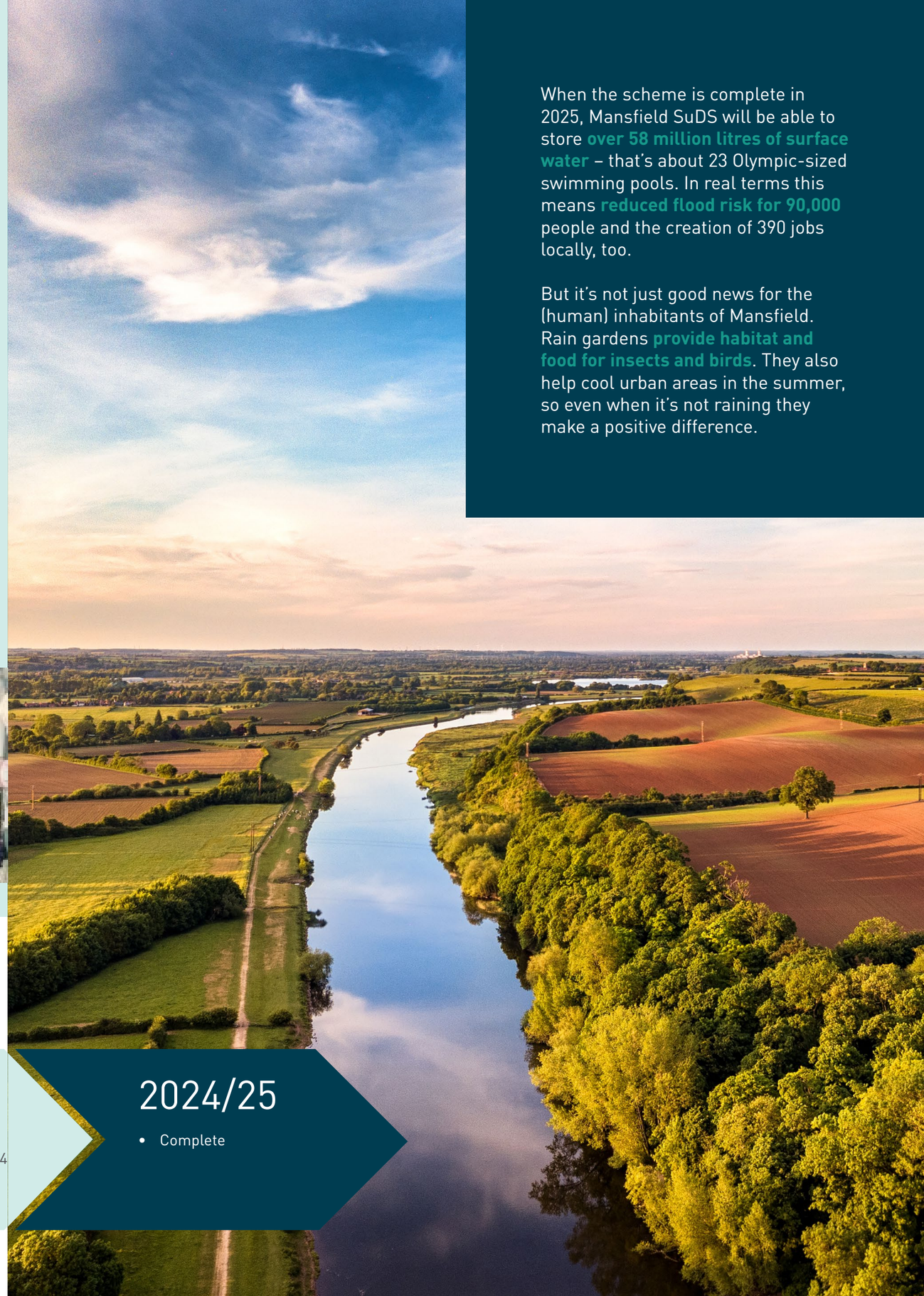
Although sustainable drainage isn't new, it's never been done on this scale and will reduce the need to dig up roads and make sewer pipes bigger, which is time consuming and more disruptive.

Adam Boucher
Green Recovery Project Lead for Severn Trent

Why nature-based flood resilience?

Our existing approach, based on our legislative remit, treats the symptoms of flooding – managing the surface water entering our sewerage networks – rather than the cause. If we maintain this approach, we face a future of trying to 'outbuild' the effects of climate change, population growth and urban creep, leading to a bloated and increasingly unaffordable infrastructure that is underutilised most of the time, but placed under huge strain during storm periods. Costs will increase further as we use more energy and chemicals to treat the greater volumes of water entering our sewage treatment works. Instead, we need to tackle the main cause of flooding: managing surface water flows across catchments before they enter our sewerage networks.

The Court House rain gardens will intercept rain water from the surrounding buildings' roof space and local paved areas.



When the scheme is complete in 2025, Mansfield SuDS will be able to store **over 58 million litres of surface water** – that's about 23 Olympic-sized swimming pools. In real terms this means **reduced flood risk for 90,000** people and the creation of 390 jobs locally, too.

But it's not just good news for the (human) inhabitants of Mansfield. Rain gardens **provide habitat and food for insects and birds**. They also help cool urban areas in the summer, so even when it's not raining they make a positive difference.

Homes Protected from Flooding Timeline

2021/22

- Identify and work with partners
- Develop industry standards

2022/23

- Initial roll out
- Review early benefits delivery

2023/24

- Majority roll out
- Feed learning into PR24

2024/25

- Complete

4

PROTECTING CUSTOMER SUPPLY PIPES

Our Goal

Removing old customer-owned lead pipes in up to 25,000 homes in Coventry, with an additional 1,000 in Bomere Heath, bringing health and financial benefits to customers in those areas.

Customer-owned supply pipes are a hidden financial and health liability for many people. Over 40% of households do not have the savings to fix a burst pipe, and up to half of all pipes could contain lead – which the World Health Organization warns is unsafe at any level in drinking water.

Reducing leaks by around a million litres a day, as around 25% of leaks come from these customer-owned pipes.

Our Approach

Prioritise areas we work with based on lead risk, estimated leakage and deprivation.

Launch an ambitious pilot to fix the problem at the source, instead of adding more chemicals to mitigate the health risk from lead, working with plumbers to replace the pipes in 25,000 homes across Coventry. Additionally replace around 1,000 lead and leaking pipes in a smaller, rural community in Bomere Heath, Shropshire.

Our Progress

The project has proved really challenging to date and, although we completed 79 jobs to the end of March 2022, this is well below our initial planned job rate. We have found that many jobs have a higher complexity than expected, with around 80% of customers who have signed up being on a joint supply. These jobs typically require all or most neighbours to sign up and are more complex and involved. We have revised our approach in light of this experience, and we expect the project to accelerate substantially.

We have directly recruited a team of operatives as part of our direct labour model trial and we are using our Severn Trent Academy to create an apprentice course that we plan to roll out nationally at the end of the programme. We have put significant effort into developing a grant scheme that will shortly be trialled before a planned wider roll out. We held an event at our Academy with around 30 WaterSafe plumbers from 17 companies to get feedback on the scheme. Through working with plumbers from our local area we will create local jobs, whilst also furthering our progress.

Replace **26,000** customer supply pipes that are made of lead in two catchments.

Reduce leaks by around a **million litres** a day.

Coventry

We are working with the community to replace around **25,000** customer-owned pipes across the city.

Shropshire

We are replacing **1,000** pipes in a smaller, rural community to enable withdrawal of chemical treatment, setting the blueprint for the long-term disengagement from chemical dosing.

We are looking at how to drive efficiency by undertaking activity on whole streets at the same time. To this end we have engaged with key housing associations who are responsible for significant numbers of properties to share our plans and identify how we can work with them.

We are working with various organisations to explore more innovative solutions, including:

- Partial lead replacement where we have a mixed material pipe where extensions have been built on older properties;
- Using an innovation to detect lead in homes. This technology is currently used in mining/ railway industries to check for voids; and
- Developing a grant scheme, that will see us join up with local plumbers to speed up the lead replacement scheme within the Coventry area. We will pay for the work via a grant and specify that work is undertaken by a WaterSafe approved plumber (both single and joint supplies). This promotes an open market to drive competition and enhanced customer choice. The benefits of using this model for our customers are set out on the right.

We are in the process of trialling the grant scheme.

We also attended the plumbing and tradespeople show at the NEC, with over 70 plumbers registering an interest. We are currently refining our processes for a wider roll out in August.

We have conducted a huge variety of engagement including visits from Ofwat, DWI, local counsellors and a community roadshow. Our work in the community spans sessions with stands at hardware shows locally, local churches, hardware stores and a foodbank, with some really great engagement from local customers.

Hey, Coventry

We're upgrading your water supply - and we need your help.

This year we're upgrading thousands of older lead water supply pipes for our customers in Coventry. You could have your pipes – and all fixtures and fittings - replaced with a new, modern and efficient supply.

And it won't cost you anything.

What do I do next?

Remember, we're working in your area for the next 12 months, so sign up today.

Just go to: **stwater.co.uk/lead-june** for more information and to register.

Or if you'd prefer to speak to us, give us a call on: **0800 917 2477**

Grant Scheme Benefits

The scheme will offer a number of unique benefits to customers:

- Using a WaterSafe plumber gives greater assurance against poor plumbing practices and the use of sub-standard products.
- We are keen to support local plumbers and businesses following the economic impact of COVID-19. The grant scheme allows the customer to choose their own plumber on the open market, giving the choice on who replaces the lead supply pipe.
- We are already completing lead replacements in CV2, this has been very popular. Using the grant scheme could mean lead service pipes are replaced sooner as it is open to all of Coventry.
- Customers may already have an established relationship with a WaterSafe plumber who is trusted to replace the service pipe.
- A plumber may already be working in the area or working in a customer property, so it may allow for simultaneous works, such as renovation works, or neighbour supply pipe replacement.
- The grant scheme will provide a bespoke service. We will offer a standard package when replacing supply pipes. With a plumber that is the choice of the customer, there could be more reinstatement options and flexibility in how service pipes are replaced.

We're really excited to be able to offer Coventry residents the chance to have their lead supply pipe replaced for free.

People may not know that they own their supply pipe, let alone potentially have a lead one which could pose not only health risks, but with a pipe that old could easily burst or leak and cause problems that would be the homeowner's responsibility to fix.

Through this ambitious pilot, we're aiming to replace 25,000 customer owned pipes with a new plastic one, taking away the financial worry should anything go wrong, while also improving the water quality and potentially see better flow and pressure into the home.

This pilot in Coventry will allow us to gain valuable learnings and understanding, that will shape how the industry looks to replace customer owned lead pipes in the future, as well as bring massive benefits to those living here.

This project will truly make a huge difference to Coventry, and see those living here be part of something that involves a major upgrade for the water network. Not only will we be replacing customer owned pipes, saving those people money and ensuring their supply pipe is of top quality and less likely to cause issues, but we will be installing smart meters so we can have a bigger understanding of where water is being used, and find and fix any leaks faster, so it's a real win win.

Carl Flello
Green Recovery Project Lead
Severn Trent

Innovation in Supply Pipes

We are using innovative technology to provide a seamless customer experience and deliver our long-term project target.

Waterfit Drilling Saddle with Valve

Our new rapid ferrule installation kit saves a lot of time and effort on site. The kit can go through ductile iron in 10 seconds and cast iron in 22-30 seconds, reducing the time and costs of service pipe renewal. The efficiencies will allow us to deliver benefits for customers more quickly and target a higher volume of work in a shorter space of time.

Global Navigation Satellite Systems ('GNSS')

We saw an opportunity to improve location data accuracy and efficiently using GNSS technology to plot service pipes on our GIS systems, which has never been done on such a scale.

Data is crucial to provide high-quality service for our customers, and we require accurate location information when laying and renewing service pipes. GNSS replaces the use of steel tape measures for triangulation and offset measurements. This speeds up our surveying operations while also improving the accuracy of recorded data.

Our concurrent implementation of z-values (elevation as mAOD) has delivered further improvements. This enables us to calculate the exact depth of the main, reducing the time it takes to find assets for repair and maintenance. Accurate elevation readings also ensure that adequate water pressure is delivered to customers.

GNSS will lead to the reduction of 'double-handling' of data, saving time and money in the process. The technology also improves quality by offering accuracy to within 100mm, a significant improvement to the 300mm standard using tape measures.

Protecting Customer Supply Pipes Timeline

2021/22

- Resourcing and recruitment
- Training of local plumbers

2022/23

- Focus on signing up households
- Exploring solutions for comple

2023/24

- Programme at full capacity
- Initial view of lead and leakage benefits

2024/25

- Complete roll out
- Review programme benefits

5 LOWER WATER CONSUMPTION

Our Goal

Raise awareness of water efficiency, making customers more conscious of the environmental impact of their usage and of unchecked leaks.

Help customers save water and save money on their water bills. We will also be able to target high users during periods of high demand, reducing interruptions for all customers.

Improve our data capture, giving us a better understanding of our water balance.

Reduce the need for future investment in water resources – a UK Government objective.

Our Approach

Roll out a large-scale trial of over 157,000 smart water meters across our network, throughout Coventry and Warwickshire.

Install over 66,000 new meters and 91,000 replacements, mainly in water-stressed areas in Warwickshire.

These will help us reduce peak-time demand as customers use water more efficiently, while also helping us reduce leakage by enough to supply a town with a population over 22,000.

Our Progress

In March 2022, we had already replaced over 5,000 meters across Coventry. By 30 June 2022, we had installed over 33,000 meters.

The data on household usage and supply pipe leakage that we receive from the smart meters will be invaluable. The benefits of this can then inform our future plans to tackle the supply-demand balance.

The data analytics and visualisation are central to identifying improvements across all our activities. Our data communications network roll out has begun and is due to complete at the end of July 2022, providing full coverage across Coventry. This platform will allow customers to interact with smart meter data for the first time. You can see an example of the customer portal on the next page.

Help customers be more conscious of the **environmental impact** of their usage and of unchecked leaks.

Improve our data capture, giving us a better understanding of our water balance.

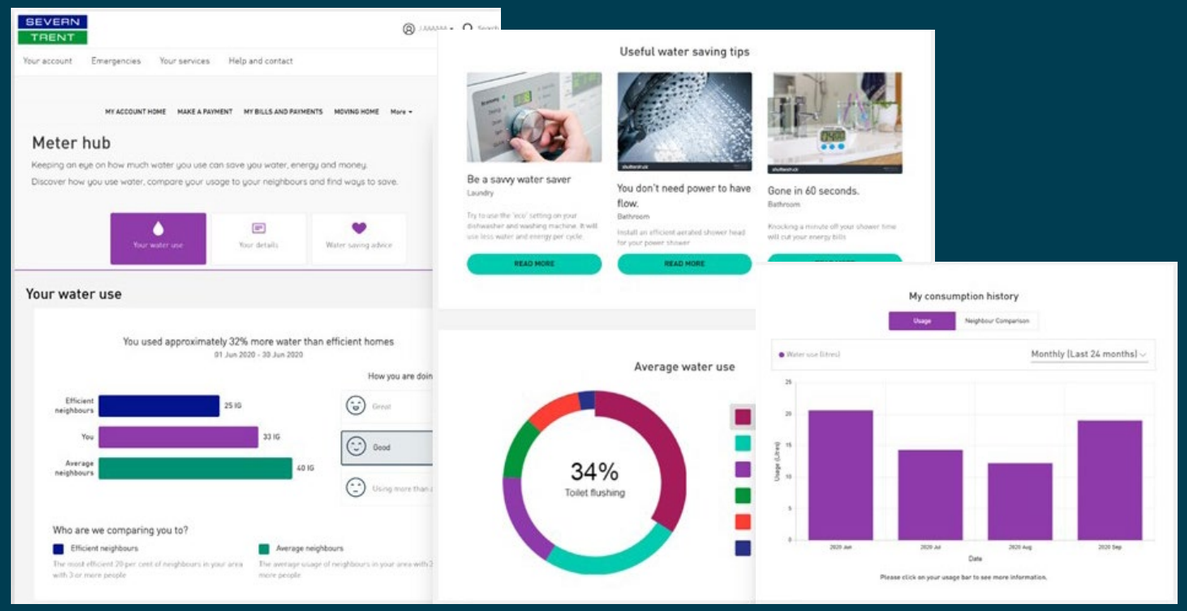
Over 33,000 meters installed as at 30 June 2022.

The portal will also give a view of consumption and alarms, as well as hints, tips and comparisons to neighbours and peer groups. We will also have a paper journey for customers who are not online and our frontline telephony advisors will also have the data at their finger tips to help customers who call in.

We have completed the first phase of creating our model office, which will help us understand and evolve the skills and expertise required to maintain a smart meter network. The model office will also look to drive new and innovative ways of tackling high consumption, as well as customer supply pipe leakage and internal plumbing losses.

CUSTOMER DASHBOARD

Customers are becoming more tech savvy, and are used to the provision of real-time data for their energy usage. This new platform will allow customers to interact with smart meter data on their water consumption. This will enable customers to understand how and when they use water, identifying potential leaks at the property and opportunities to reduce their usage.



Lower Water Consumption Timeline

2021/22

- Procurement
- Trial initiated
- Decision on technology infrastructure

2022/23

- Roll out of 60,000 meters
- Early view of benefits to consumption and supply pipe leakage

2023/24

- Continue roll out
- Feed benefits into PR24 proposals

2024/25

- Complete

By creating a smart data region, we'll really be able to understand the network, where water is being used better than ever before and help provide water saving benefits to our customers and the environment.

The main difference with a smart meter is that we'll be able to monitor the water flow in the area so we can identify any potential leaks much faster. And because they're smart, once they're fitted, we'll be able to see exactly how much water is being used and give our customers greater control on their water usage, while providing better insights and knowledge of the network.

Anthony Hickinbottom
Green Recovery Project Lead
Severn Trent

Smart meters mark a step change from today's standard meters. They provide customers and companies with near real-time information about how much water is being used, how much carbon is being generated and the financial cost. This information will enable customers to better understand how their use can impact bills. For others, it is a great way to increase their own awareness of their environmental impact and carbon footprint from water use. For water companies, smart meters provide the opportunity to improve resilience by targeting key interventions on peak demand, improve water balance insight and improve the speed and efficiency of measures to reduce leakage.

DOING RIGHT BY OUR WATER

A SMARTER WAY TO USE WATER

We're fitting over 157,000 smart meters for customers across Coventry and Warwickshire. It's part of our Green Recovery Programme, a range of projects to update our water networks using the latest technology, materials and systems. Better for you, better for the environment, in fact better for our whole region.

Doing right by you

You'll still get the same wonderful Severn Trent water and we won't change the way you're billed.

Spot leaks early

Smart meters can detect small leaks early so you can fix them before they become a big problem, potentially saving you money

Help save our planet

Use less water and reduce your carbon footprint by being more efficient with your water usage

More control

See exactly how much water you use, compare to your neighbours and learn how you can improve your water efficiency

In tune with you

Access personalised reports that are tailored to you, offering handy tips to save water and comparing you to similar households

Doing right by our region

Water is a precious commodity. One of life's essentials, as we say.

So, it's essential that we look to do right by it and do all we that we can to preserve it and protect it for homes, businesses, schools, and hospital – now and in the future.

Did you know?

Your smart meter uses just one-twelfth the emission power of a mobile phone. Smart meters transmit for a maximum of **3 seconds, 4 times** a day.

Help us to save water

The average family uses **120,000** litres of water a year. That's quite a lot!
Once we install a smart meter, we'll give you personalised water usage reports with tips to help you save water but here's how you can help:

1

Watch the clock

If everyone spent one minute less in the shower each day, you could save up to **10,000** litres of water a year.

2

Fix that tap

Not only is a dripping tap a pain, but it can also waste up to **5,000** litres of water every year.

3

Hang up the rubber gloves

Most modern dishwashers use less water than washing up by hand. Just make sure it's full up before you start it.

4

Yes, you can!

A watering can is great way to save water, instead of using a hosepipe or a sprinkler – especially if you use rain water.

We'll be coming to your street soon

We're working our way around Coventry & Warwickshire, so we'll be in touch to let you know when we're coming and what to expect.

please visit:
www.stwater.co.uk/smart-meters

or give us a call on:
0330 678 0964

Part of our 6 Green Recovery Initiatives

6

FASTER ENVIRONMENTAL IMPROVEMENTS

Our Goal

Through the Water Industry National Environment Plan ('WINEP') project, we are accelerating our environmental commitment by improving 500 km of rivers, five years earlier than planned. We will do this through by fulfilling our Water Framework Directive ('WFD') statutory obligations more quickly and accelerating improvements to storm overflows. In addition, we will see aquatic wildlife thrive.

Our Approach

Initiate 34 additional phosphate-removal projects, extra monitoring and investigative measures at 150 sewer overflows and accelerate improvements at 100 overflows.

Upgrade chemical dosing and invest in new technologies to enhance the removal of tertiary solids. Where possible, use chemical-free methods, such as enhanced biological phosphate removal and, in some cases, constructed wetlands.

Other measures will include raising weir heights and increasing pump capacity on short-duration, low-volume sewer overflows.

We are focusing on developing new talent within the team and will recruit more graduates, interns and apprentices.

Our Progress

There are 45 sites within this project spread across our entire region, as you can see on the map below. More than 50% are into ECI with our supply chain, with delivery phased from 2025 to 2027.

We are developing early feasibility at two of the more complex schemes. This allows us to understand the improvements and our growth and capital maintenance requirements over the project design horizon in the future.

Where possible, we are seeking to utilise modular 'plug and play' technologies. These allow us to design and build at pace, while maintaining the ability to adapt and add to the site in future AMPs as the site requirements evolve. This technology is a first for us, and is a really exciting approach to solving traditional problems.

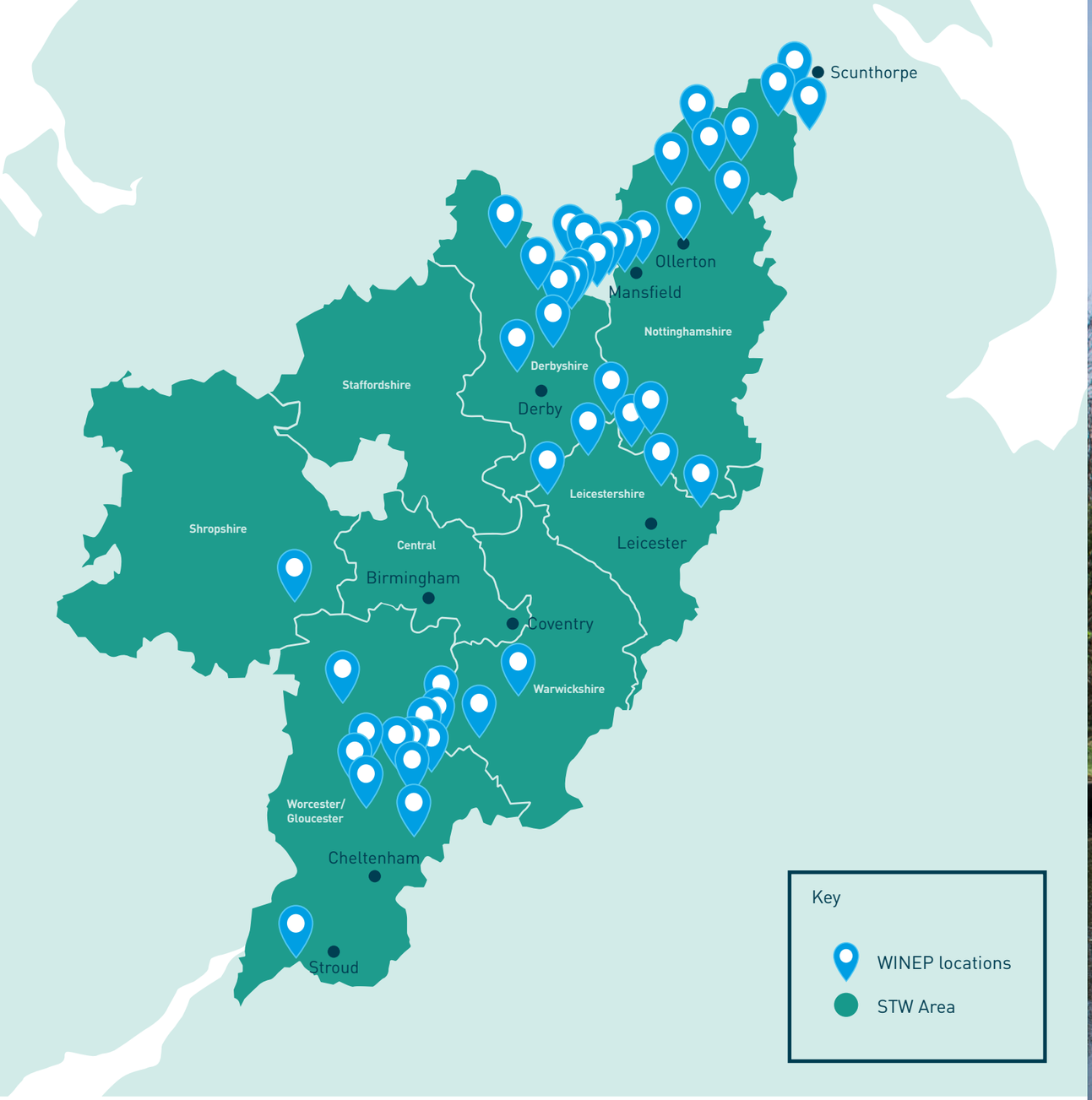
All WINEP schemes are in flight with either ECI contracts, design consultants or our in house designers.

We have already identified two sites that have the potential to use a nature-based solution – reactive media reedbeds, for which we are currently doing further feasibility work on. We will be utilising conventional tertiary treatment reedbeds on two other sites.

We have exciting plans on our CSO treatment innovation trials, including a new filtration system that can remove solids and limit the impact of CSO spills. We will trial this technology at one of our works ahead of deployment later this year. We also plan to support a storm water treatment wetland solution as part of the Hartshill to Hinckley project.

As part of our smart waste networks trial, we will use three electronic gates to help optimise flows within our network with the aim of reducing CSO spills.

This Green Recovery project offers a welcome opportunity to move faster and be more ambitious in response to the Government's 25-Year Environment Plan. We are committed to the objective of bringing at least three-quarters of our waters to their near natural state as soon as possible, and we have the ambition and credentials to deliver successfully. The recently published WFD classification shows only 14% of rivers hold 'good' ecological status. This emphasises the need to do more, faster.



Faster Environmental Improvements Timeline

2021/22

- Engage with supply chain
- Early feasibility

2022/23

- Finalise feasibility and optioneering on all programmes
- Begin construction on early start projects

2023/24

- Finalise detailed design
- Begin construction on majority of sites

2024/25

- Construction and commissioning of all AMP7 completion schemes
- Ongoing construction at sites with 2027 deadline

CLEAR AND TRANSPARENT REPORTING

Totex Cost Sharing Mechanism

In line with our core programme, a customer protection mechanism is in place to protect customers from excessive under- or out-performance on totex. We share 90% of totex out-performance with customers, but only 50% of the totex under-performance.

The Green Recovery Draft and Final Determinations were explicit that *"Cost sharing rates for green recovery allowances are listed in Table 3.1. These apply at a company level rather than a scheme specific level and show the proportions the company has to pay or gets to keep."*

The current version of the Green Recovery model applies cost sharing at a price control level; we will address this at PR24.

Decarbonising Water Resources – Single solution at Church Wilne

As part of our Final Determination for the More Water for More Customers project we were required to provide the annual milestone recovery descriptions for the remainder of the AMP within this Year 1 progress report. This requirement recognised the need to develop the design, costings and contracts before clear milestones could be set. Over the last year we have developed the design and have identified some changes that are needed to the technical solution in order to achieve the outcomes and costs agreed in the Final Determination. We have provided evidence to all of our regulators to explain the required change and we have been working through the change control process to ensure that all parties are satisfied that the technical changes result in equivalent or better outcomes for customers.

This process will be concluded in the Autumn.

Hampton Loade

We contribute to the Green Recovery scheme at Hampton Loade which is delivered by South Staffs Water. This year we have contributed £1.118 million to the delivery which is included in table 4S in the Severn Trent Water Annual Performance Report on pages 168-169.

Our Final Determination includes additional reporting requirements across our six projects. Below we have included relevant metrics that we can report for our 2021/22 activity year. All other additional reporting requirements should be considered a nil return for 2021/22. We will include additional reporting requirements in future reports as necessary.

Scheme	Description	Measurement	Unit	APR22 Reporting Year
Smart Metering	Number of new meter installations. Reported by installation type.	Screw-in	Nr (000s)	0.165
		Internal	Nr (000s)	0
		Boundary Box	Nr (000s)	0
Smart Metering	New meter installations – outturn costs. Reported by installation type.	Screw-in	£k	32.334
		Internal	£k	0
		Boundary Box	£k	0
Smart Metering	Number of existing basic meter installations replaced with:	AMI capable smart meters.	Number 000s	5.115
		AMI capable smart meters – outturn costs.	£ million	0.711
Smart Metering	Percentage of household properties within the smart metering trial area covered by the our communication network.	%	0	0
Smart Metering	Percentage of smart meter installations in the smart meter trial area providing a successful daily transmission of data.	%	0	0

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WONDERFUL ON TAP

SEVERN TRENT