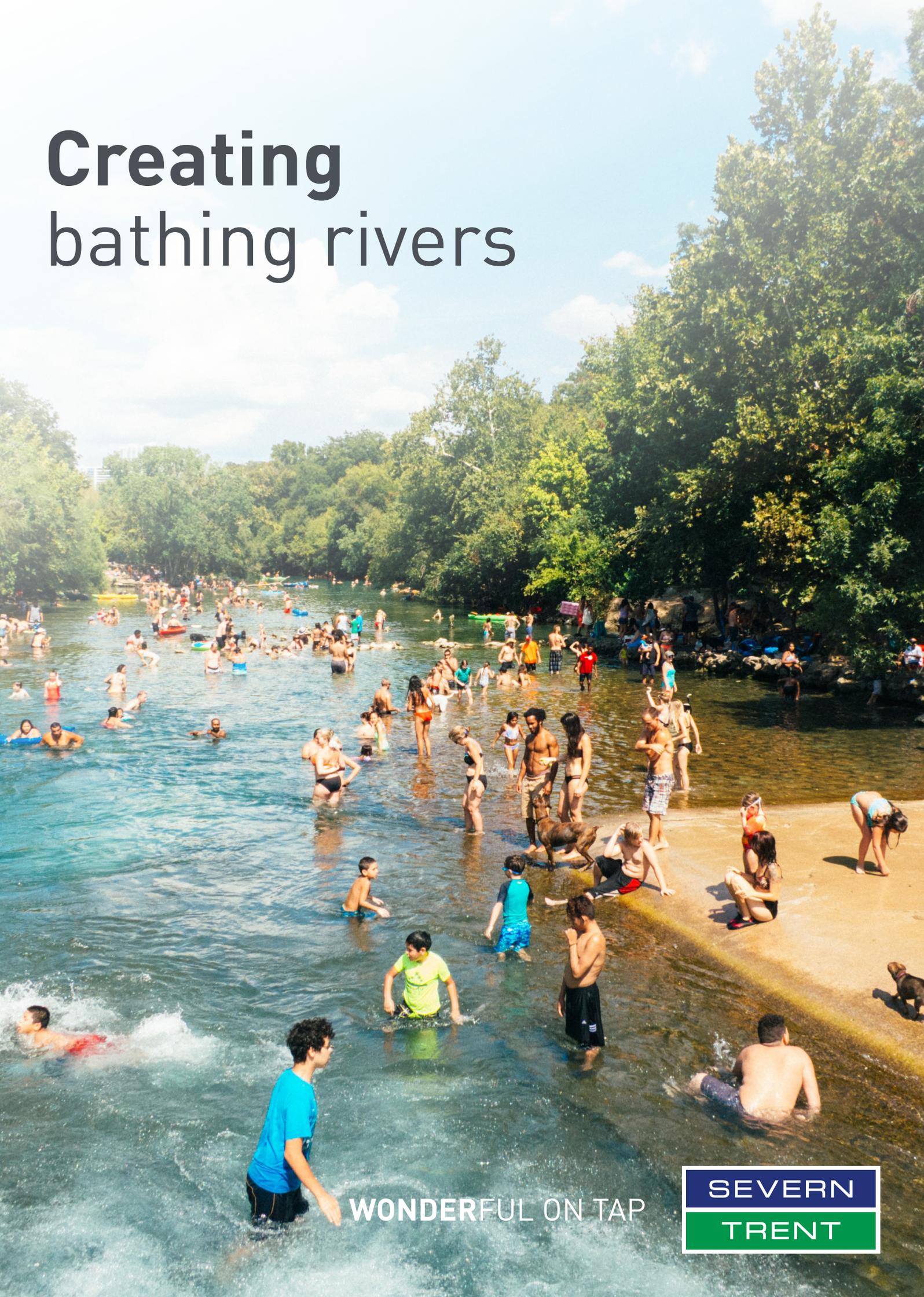


Creating bathing rivers



WONDERFUL ON TAP

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Overview

The current approach to improving river quality isn't working. Water companies have invested £25bn since privatisation and yet only 14% of rivers meet good ecological status. Furthermore, not a single river in the UK meets bathing quality standards, unlike many in Europe.

Part of the problem is that there is no single owner of river outcomes. Improvements to date have been focused on individual contributors delivering their 'fair share' of improvements without considering whether the most efficient and effective catchment solutions have been delivered. This problem is compounded by the fact that, nationally, significant sources of river pollution are farming and land management practices (36%), which are very dispersed and will require significant additional resources to resolve.

With the Government having committed that three-quarters of rivers will be close to their natural state in its 25 Year Environment Plan, the approach to improving river quality needs to change – and we stand ready to lead the way.

We intend to create two large-scale pilots on the rivers Avon and Teme that redefine how future river improvements should be delivered. The difference compared to the traditional approach can be summarised in three ways:

- a focus on river-quality outcomes, particularly as they relate to customers and citizens, rather than individual contributions;
- adoption of holistic solutions that also address emerging risks such as pharmaceutical residues and antimicrobial resistance, instead of piecemeal improvements; and
- coordination of improvements at a catchment level, with water companies taking ownership of river outcomes.

The result of our pilots will be the creation of the UK's first bathing quality rivers. These pilots will deliver enormous insight into how we can accelerate river quality improvements in an affordable manner and, critically, reveal how we can address emerging water quality risks such as pharmaceutical residues.

Most importantly, more than a million customers stand to benefit directly from our pilots, as demonstrated through similar progressive environmental reforms across Europe. There are a million people living within the catchment area, including some areas within walking distance that are in the 20% most deprived in the country. With the nearest coastline 80-120 miles away, these pilots will generate new opportunities for our customers to enjoy the outdoors, which brings with it mental health and wellbeing benefits. The pilots will also enhance the



We want to create the UK's first ever bathing quality rivers, providing new opportunities for our customers to enjoy the outdoors, creating hundreds of jobs and providing a massive boost to the economy – as we have seen in similar projects in Munich and Copenhagen.



Liv Garfield,
Chief Executive



UK's biodiversity and aquatic life – supporting fish populations, including salmon, and river animals such as otters.

Our customers are overwhelmingly supportive of the proposed pilots, with 74% expressly supporting them, and a further 21% saying they don't mind in principle. Given the huge potential benefits to local communities, we are working to maximise access to bathing quality rivers through (i) the development of real-time monitoring apps that show when the river is safe to swim; and (ii) aligning our proposals with local councils to improve access and amenity value, including Stratford-upon-Avon's £1.5m redevelopment project.

Delivering these outcomes will require significant innovation. With 50% of the dry river flow in the upper Avon coming from our sewage works, we will need to install advanced ozone disinfection at six works, including a large upgrade at Warwick sewage treatment works. This will ensure the discharges and river can meet the necessary quality standards. We will also reduce the frequency of operation at 25 storm overflows, through a combination of storage upgrades and sustainable drainage solutions. Finally, we will work with farmers, whose practices are responsible on average for 46% of river quality issues in the upper Avon and 71% in the river Teme, to minimise agriculture and farming runoff across an area roughly the size of Greater London (152,000 hectares). The total cost of these two pilots is £153m.

Most importantly, we are limiting the impact on bills in the current period to 15% for the entire £730m package of six Green Recovery proposals. This equates to around £6 extra per year (on the average household bill) – which our independently conducted research found over 70% of our customers would be willing to pay.

About this document

The Green Recovery has provided us with a welcome opportunity to be bold, move faster, and think outside our traditional remit.

This is one of six proposals that Severn Trent has prepared for consideration by Defra and Industry Regulators. Like the others, it has been chosen because it represents a 'knotty problem' we need to untie to benefit the UK in the long term; it will require multi-agency collaboration in order to deliver at scale and pace; and, importantly, customers are energised by this topic.

The need to act - why bathing rivers?

Clean, healthy rivers have the potential to support ecosystems, biodiversity, communities, health and wellbeing, and the local and national economy. Currently, this potential is untapped: the UK has zero bathing quality rivers. In comparison, the EU has many more designated rivers: 420 in France, 32 in Germany and 169 in Spain. As of December 2020, there is one designated bathing river in England (the Wharfe at Ilkley) but it will be several years before it is improved to bathing quality standards.

In its 25 Year Environment Plan, the Government has set a bold ambition for at least three-quarters of rivers in England to achieve 'good ecological status' as defined by the EU Water Framework Directive (WFD). At present, just 14% of rivers meet this status. Prior to the implementation of the WFD in 2009, 23% of rivers were classed as meeting good status criteria. Even taking into consideration the increasingly stringent definition of 'good ecological status', it is clear that no meaningful progress has been made in the last decade using WFD criteria. If we continue with the current approach to improving river quality, England will never meet its goals. It is clearly time to try something different.

This is not to say that substantial progress has not been made by water companies (and other sectors) to improve river quality. It is important to note that WFD classification works on a "one out – all out" principle; unless every failing element is addressed, good ecological status cannot be achieved. Since overall river quality is dependent on many factors – including water companies' effluent quality and storm overflows, pollutants from agriculture, runoff from roads and urban areas, and industrial pollution – it is often the case that individual reasons for failure are resolved, but the headline classification of river quality remains unchanged.

One of the challenges with the current approach is that there is no single owner of rivers that is responsible for delivering specific outcomes. We operate within the framework of the Water Industry National Environmental Programme (WINEP), which only covers improvements to be made by water companies, while measures to address issues from other sectors are set and managed separately. In addition, WINEP targets are set for specific AMPs rather than focused on long-term outcomes, and do not take account of new risks such as pharmaceuticals and antimicrobial resistance. This leads to a piecemeal approach rather than a holistic, long-term environmental improvement plan that addresses current and future needs.

Defra, the Environment Agency and Ofwat recognise that the WINEP needs to evolve to deal with the growing pressures from pollution, population growth, climate change, and customer expectations. Without fully integrated, multi-sector action plans (rather than a system in which each party is focused on tackling their 'fair share' of the challenges), resolving issues at the catchment scale will remain problematic.

The Green Recovery has provided us with the means to think differently – be bold, move faster, and think outside our traditional remit.

Our vision - bathing rivers

To deliver a material improvement in river quality, we think there is a need to change the current approach in three ways:

- a focus on river-quality outcomes, particularly as they relate to customers and citizens, rather than individual contributions;
- adoption of holistic solutions that address future risks such as pharmaceutical residues and antimicrobial resistance, instead of piecemeal improvements; and
- coordination of improvements at a catchment level, with water companies taking ownership of river outcomes.

Our proposal is to take two rivers (the Teme and Avon) and drive a material improvement in river quality. In doing so, we will deliver wider customer benefits beyond those achieved under improved ecological conditions. The end result will be two bathing quality rivers.

Over recent years, we have been tracking an improvement in customer expectations that we believe provides an opportunity to unlock the wider economic, social and environmental benefits of clean, healthy rivers, and to transform how we plan for long-term environmental improvements.

- Demand for open-water ('wild') swimming has increased significantly in the last decade¹ - as illustrated by the Google trends graphs overleaf. During 2020, the combination of the Covid-19 pandemic and hot summer normalised outdoor swimming in rivers and supervised venues².
- Customers increasingly value access to nature, telling us in our PR19 research that local green spaces provide opportunities for escapism, relaxation, and time with friends and family. The pandemic has also led people to recognise the value of feeling connected to where they live³.
- There is growing awareness of, and momentum against, poor-quality rivers – and storm overflows in particular. New and established campaign groups are demanding change⁴, and high-profile critiques of water companies' performance in this area are gaining traction⁵.



¹ <https://trends.google.com/trends/explore?date=today%205-y&geo=GB&q=river%20swimming>. Membership of the Outdoor Swimming Society (OSS) has grown from 300 in 2006 to 100,000 at the end of 2019, with 700,000 unique website users per year.

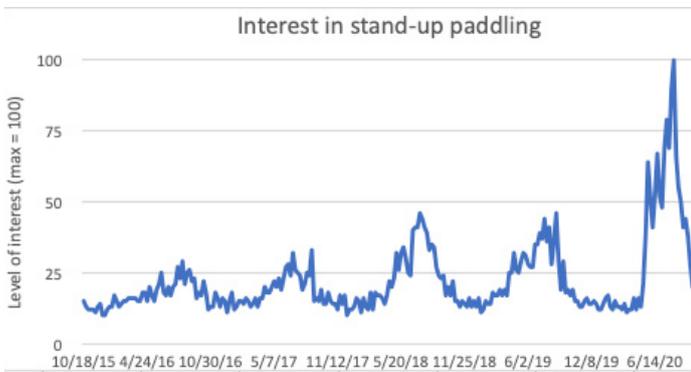
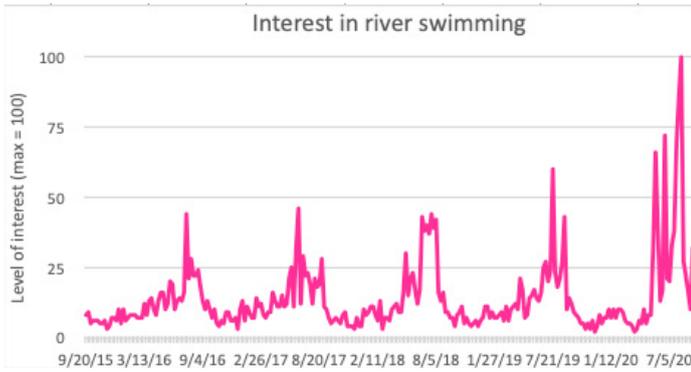
² Their popularity was such that the OSS removed their online maps to ease overcrowding at bathing spots.

³ Independent research from Britain Thinks found that one of the three key takeaways from the pandemic was the value of feeling connected to where you live. Our own research also shows that customers have become more aware of the natural world during lockdown.

⁴ #endsewagepollution campaign led by Surfers against Sewage and the Ilkley Clean River Group

⁵ Such as articles in the Guardian in July and September 2020.

¹ <https://trends.google.com/trends/explore?date=today%205-y&geo=GB&q=river%20swimming>. Membership of the Outdoor Swimming Society (OSS) has grown from 300 in 2006 to 100,000 at the end of 2019, with 700,000 unique website users per year.



Capitalising on this shift in expectations, we believe that the creation of safe, healthy bathing waters in targeted rivers could turn an environmental problem into a community-led opportunity. Bathing waters can provide a focal point for collaboration with stakeholders and communities, allowing us to move at pace towards our long-term WFD target while delivering the recreation, health and wellbeing benefits that customers – who are, after all, paying for river quality improvements – are demanding now.

Working collaboratively with stakeholders will allow Severn Trent to develop long-term, outcome-led environmental improvement plans that also address emerging water quality challenges such as antimicrobial resistance, pharmaceutical residues and microplastic pollution. This will keep us ahead of likely future legislation, allowing environmental improvements to be delivered more efficiently and protecting future customers from higher bills. By taking ownership of the long-term catchment plan, and the associated quality standards, we will also be better able to deliver the outcomes and benefits that customers both want and pay for. It cannot be right for water companies to continue invest billions of pounds to deliver a better environment on behalf of our customers, only to find that outcomes are not being achieved due to a lack of integration with other parties.

Unlocking the potential of bathing rivers

Our pilots will unlock significant economic, social and environmental benefits in both the short and long term⁶.

Short-term benefits:

- Generate around 330 direct jobs and a further 310 indirect jobs in the construction industry through delivery and maintenance of bathing quality water in the Avon and Teme catchments.
- Improved biodiversity, particularly through wildflower buffers along rivers to mitigate runoff from agriculture.
- Stronger local communities working with local councils to enhance the riverfront to maximise the tourism and economic benefits from bathing quality rivers. This is particularly important given the impact of Covid-19 and the increased importance that people are placing on their local communities.

Medium-term benefits:

- Improved river quality at the pilot sites, demonstrating progress towards the Government’s target of three-quarters of English rivers achieving good ecological status under the WFD.
- Increased health and wellbeing through increased connection with nature, access to low-cost, local recreation and exercise opportunities, and reduced risk of health impacts for swimmers and other water users. Swimming has well-documented health and wellbeing benefits, including the positive mental health benefit of cold water swimming.
- Insight generation for developing future-proof environmental improvement strategies in both urban and rural contexts, which will be shared openly with other water companies and other interested stakeholders.
- Addressing the risks associated with pharmaceutical residues and antimicrobial resistance – applying learning from Switzerland, we will test how best to face into these challenges in a UK setting. This will also involve extensive monitoring of the ozone disinfection processes so the information can be shared with the sector and Environment Agency.

Long-term benefits:

- Sustained economic impact through local business and tourism, including riverside cafes, sports clubs, leisure activities and sporting events.
- Reduction in water resources pressures through reuse of up to 30MI/d of our waste product (the highly treated final effluent) from the Avon pilot.

⁶Evidence for these benefits is provided in the full business case.

Why now?

We welcome the Green Recovery as a catalyst for rethinking our approach to river quality improvement, allowing us to develop new, future-proof strategies while creating jobs and supporting economic growth in the short and medium term.

Our vision for 2045 is to be operating a set of assets that make a positive difference to the environment, and to have contributed to the delivery of the Government's 25 Year Environment Plan. We believe that now is the right time to move forward with this investment, an important step towards our vision for the following reasons:

1.

Near-term, visible customer benefits that meet changing expectations

Our proposed pilots will deliver increased community, economic and wellbeing benefits in line with a cultural shift that places greater value on access to nature and, in particular, safe places for open-water swimming. These visible benefits are an important consideration, given Severn Trent customers' support for bathing quality rivers and growing awareness across the UK of the importance of river water quality and enhancing biodiversity.

2.

Skills and jobs for the UK's Green Recovery

Our proposal offers the opportunity to deliver wider benefits that are common to the Green Recovery objectives, right at the heart of communities. Delivering our proposal will create around 330 much-needed jobs directly and a further 310 indirectly, and develop much-needed engineering skills for the green economy⁸.

3.

Delivering a first for the UK

The UK has 644 designated bathing waters, only 16 of which are inland waters - and, until December 2020, none were rivers. From the 2021 bathing season there will be one designated bathing river in England (the Wharfe at Ilkley) but it will be several years before it is improved to bathing quality standards. We therefore have the opportunity to create the UK's first bathing quality river, demonstrating the power of the Green Recovery not only in economic terms but also in widely recognised health and wellbeing benefits, including access to low-cost, local recreation and exercise opportunities.

4.

Accelerating the achievement of Government priorities

The delivery of these two pilots will help accelerate the pace of environmental improvements, contributing to the delivery of the 25 Year Environment Plan. Our proposal also supports the objectives of the taskforce set up by Defra, the Environment Agency and Ofwat to reform the Water Industry National Environmental Programme (WINEP) in time for PR24. Specifically, it proposes greater flexibility to deliver better environmental outcomes, and brings water companies to the centre of the design and development of the programme.

5.

Sharing learning across the industry

Since there are no rivers in the UK that meet bathing water standards, we do not know the true cost and complexity of delivering bathing water quality in rivers. Our two pilots will generate insights into the costs, benefits and technologies needed for a wider-scale rollout, helping inform not only our future strategy, but those of water companies across the UK. They will also provide valuable data on emerging challenges such as antimicrobial resistance and pharmaceuticals in the environment.

6.

Economic circumstances create the optimal conditions for investment

With the cost of debt at a record low and inflation well below the assumptions at PR19, we have the opportunity to invest at a very low cost and keep bills affordable.

Our proposal

We propose two large-scale pilots to deliver bathing quality water in the rivers Avon and Teme, at a total cost of £153m. This will consist of:

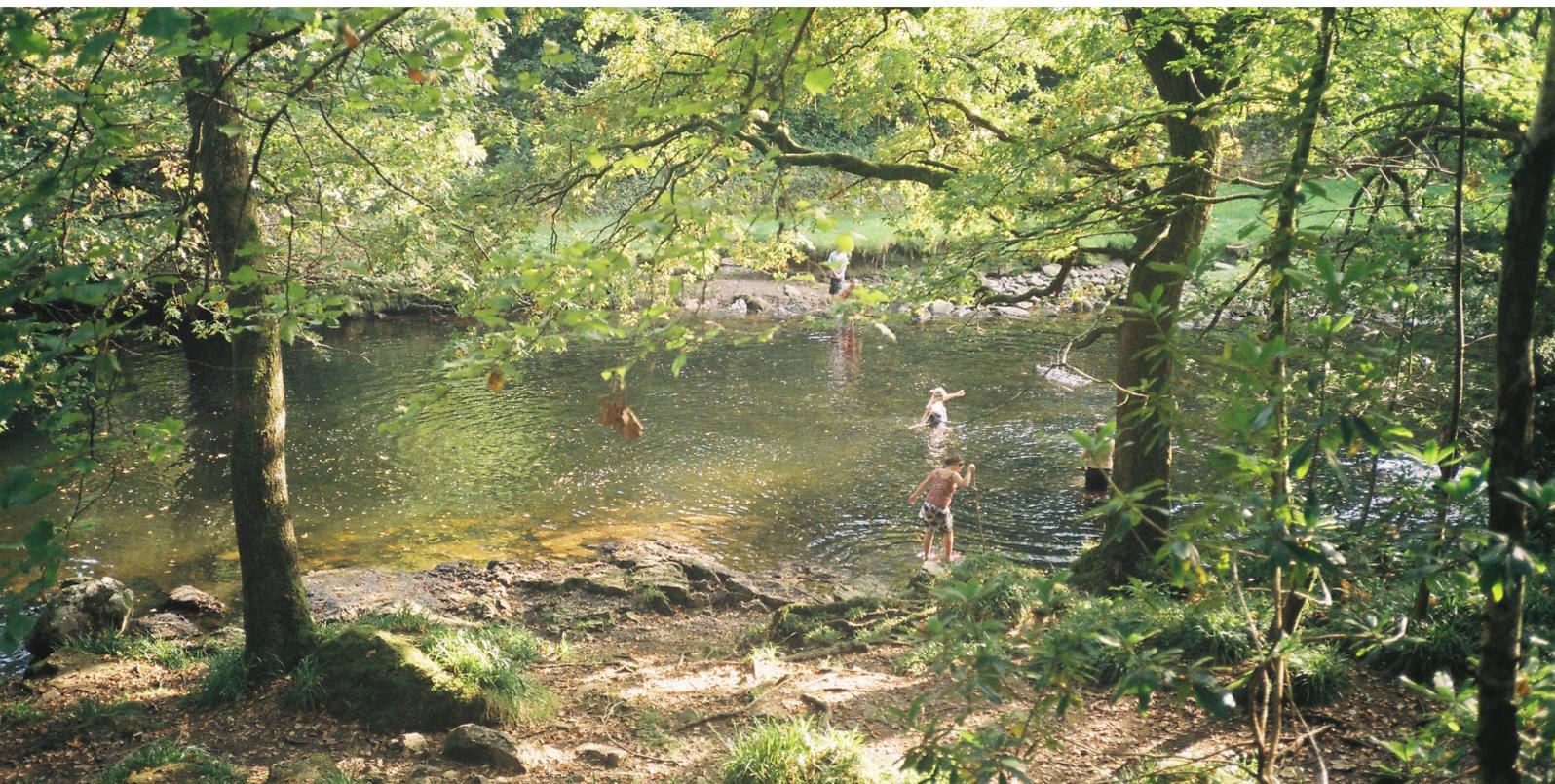
- Installing ozone disinfection for the final effluent of six sewage treatment works (which will also tackle emerging issues such as pharmaceutical residues in water).
- Significantly reducing the frequency / volume of spills at 25 storm overflows, contributing to delivering the WFD and responding to customer expectations.
- Catchment management on around 152,000 hectares of farmland to reduce faecal pollution.
- Partnering with the local community to create riverside guardians, including opportunities for citizen science, increasing social cohesion, training and skills development and fostering behaviour change.
- Working alongside the £1.5m Stratford Riverside regeneration project to create a world-class riverside destination.
- Moving from infrequent overflow monitoring to providing real-time, open and extensive data on storm overflows and river water quality.

Our investment programme will deliver specific improvements to the health of the rivers. This includes meeting bacteriological standards, improvements against chemical and ecological standards, and tackling emerging issues such as pharmaceuticals (aiming at >80% removal, in line with the targets that have already been adopted in Switzerland).

Most importantly, from the perspective of our customers, these investments will change how the Avon and Teme can be used. Although there is a strong heritage of swimming in these rivers, today they are not suitable for bathing and similar activities. Through our investment, customers will be able to swim safely in their local river for at least 80% of the year, with data and warnings to indicate when it is not safe to do so. The warning system will be also be predictive and cover factors other than poor water quality, e.g. high flow rates, that affect safety.

Delivery will be phased between 2020/21 and 2025.

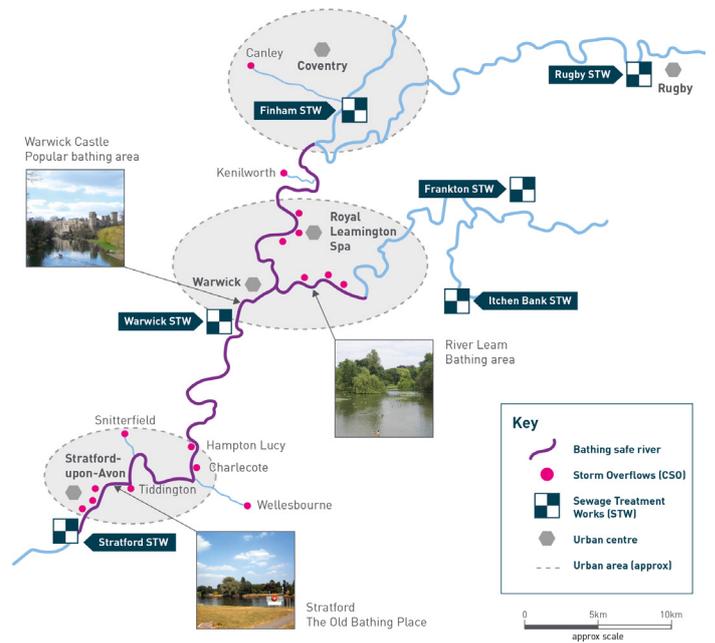
In developing this proposal, we have endeavored to maximise third-party funding and synergies, aligning benefits to deliver more for customers. The proposed Stratford-up-Avon regeneration project (the Riverside Green Corridor) has secured initial funding of £1.5m from the Coventry and Warwickshire Local Enterprise to use access to open space as a key driver of early economic recovery. Their ambition to create a world-class riverside destination aligns perfectly with our own aim to create the UK's first bathing quality rivers, and we therefore see strong potential for synergy: for example, the secured funding is likely to include amenities such as toilets and litter bins, all of which enhance the benefits for customers without increasing the cost to them.



Why the Avon and Teme?

We are proposing two pilots, one in an urban catchment (the Avon) and one in a rural catchment (the Teme through Ludlow). In making our choices of these catchments, we considered several factors:

- **Insight generation for different types of catchments across the country.** We expect the water quality challenges to be different for our rural catchment, the Teme, where agricultural pollution is likely to be a strong contributing factor, versus urban areas like the Avon with more road runoff. Delivering both rivers to bathing standard will reveal insights that we can share with the Environment Agency and other companies.
- **Strong likelihood of success, reflecting the water quality improvements delivered over the last 10 years, largely through catchment management,** achieving many of the WFD aspects of water quality and building strong stakeholder relationships.
- **Existing demand for wild swimming, with significant community-led improvements planned** that will allow us to pool resources and deliver more for customers. For example, Stratford-upon-Avon District Council is currently consulting on a riverside regeneration project to drive an early economic recovery, leveraging its heritage as a bathing spot.
- **Significant capital maintenance planned for assets in the next AMP,** in order to align maintenance work with the pilot activities.
- **Potential for synergies with other projects,** including the potential to use our waste product (the highly treated final effluent) from the Avon catchment to help address water resources challenges in the region⁹.
- **Local support from key partners.** We have begun to engage with stakeholders at both pilot sites, and have secured strong interest in our proposals from the Deputy CEO of Stratford-upon-Avon District Council and the Member of Parliament for Ludlow.



⁹ Creating a circular economy by providing 30MI/d of our final effluent from the Avon catchment to meet 8% of our long-term water deficit.