July 2025 – Project Monitoring Updates

This document contains the updates provided by each project from the July 2025 monitoring cycle. Innovation Fund projects have now moved to a bi-annual monitoring cycle, so any projects not featured here might not have been required to submit a monitoring form this cycle, or might not be included for the following reasons:

- reached completion of their project
- not yet started the project
- not provided an update this quarter.

Contents

Innovation in Water Challenge (2021)

No project updates this quarter

Breakthrough 1 (2021)

AIot Enabling Autonomous Waste Catchments

Carried out collaboratively between Severn Trent and its delivery partners, the AIoT project has made great advancements for the sector regarding AI automation design for wastewater catchment management. Severn Trent's AI integrates three advanced data science models to simulate the Alfreton wastewater network and generate coordinated pumping station control schedules for pre-, during, and post-storm conditions. The project has positively demonstrated through simulation the potential for AI-based pump schedule optimisation to reduce spills by over 20%. Southwest Water's AIOT trial continues to progress. They have completed upgrading their SPS asset, OT, flow

monitoring and associated software which will allow for trial readiness in summer. Southern Water's dry weather flow and storm calibrations using SLM data have been completed, and the results have been compiled in a final report for contribution to the Blueprint. Thames Water have completed their work on defining the requirement for integrating the AI model with existing Telemetry and Regional SCADA systems, and have tested the concept of using the existing telemetry outstations for site data exchange and execution of AI model outputs. The project as a whole has enabled the development of adaptable hardware design options for AI automation, soon to be shared in our AIoT sector blueprint document – the development of which, and led by University of Exeter, has accelerated since October 2024 and is now in the final stages of compilation.

CaSTCo

CaSTCo is in the final six months of delivery and focus is on consolidating project learnings and successes; using these to inform the plan for implementing our Roadmap for the future. The Roadmap (which outlines key recommendations for implementing a unified data-driven monitoring framework to result in our end goal of healthier, better rivers) is a significant development for the project. The recommendations have been created and prioritised through sprints held with the taskforce (consisting of industry stakeholders and CaSTCo partners) and will continue to be developed to incorporate evidence from the project and to respond to the outcomes of the Cunliffe Review. Work will continue on testing our critical proofs of concept including a citizen science data hub, local evidence packs and a quality assurance approach for monitoring with input from other technical experts. CaSTCo successes and achievements to date will be published across our website and through wide dissemination through webinars and our conference on 24th September 2025 in London. An impact report will be published in the Summer 2025 which will underpin our Roadmap for the future with the stories from the project that showcase the value of the CaSTCo approach and the significant opportunities for a much more effective and targeted monitoring and decision-making approach that a national scale up would deliver.

Flexible Water Supply Schemes Pilot

The pilot is testing the commercial viability of using multi-use abstraction licences and package water treatment plans to supply business customers and help solve water resource needs. The pilot will unlock a number of commercial, technical and regulatory blockers associated with market access for small, local water supplies. We are now at the stage of network application for treated water to allow the full commercial case to be concluded and the final report to be completed.

Project Zero

Project Zero continues to progress well, Phase 3 of the project which explores a hybrid solution for water neutrality has had the planning submission sent including the requirements for a communal based water reuse system. Collaborative engagement with the lead developer to discuss and align

delivery programmes is in progress alongside understanding risks to the programme associated with the planning process. To support the phase 3 alongside providing valuable insights for upcoming Building Regulations consultations we have commissioned a desktop study on a dual network development comprising potable and non-potable water. This will explore the benefits, impacts, and performance of a rainwater harvesting system.

Safe Smart Systems

Our solution concept continues to be iteratively developed based on ongoing user testing and feedback. Within our innovation area, we expect our first operational users to be provided with enhanced insight on system performance, notified when there are anomalies on the network and be advised on recommended response options to resolve detected issues quicker and more effectively. Users will also have the capability to implement certain response options remotely.

Transforming the Energy Balance of Wastewater Treatment

Thames Water plans to begin operating the anaerobic wastewater treatment pilot plant in August 2025. Applying learnings from the Dŵr Cymru Welsh Water trial at Builth Wells, Thames Water will shorten the acclimatisation period for the pilot plant to ensure maximum treatment performance is achieved as rapidly as possible. Once operational, treatment performance and biogas yield will be monitored through liquid and gas phase sensors. In preparation for future regulatory drivers, the University of South Wales will also monitor emerging contaminants through the treatment process. The University of South Wales have completed their trials with adsorbent and ion exchange resins for the removal of phosphate and ammonium from wastewater. The learnings from this research have been integrated into Thames Water's design for an ion exchange system for the removal of nutrients from the anaerobic wastewater treatment pilot plant. Thames Water have commenced planning for the demonstration-scale plant in the final phase of the project. Key influent characteristics and health and safety requirements have been outlined to guide site selection. Internal and external experts have also been engaged to identify suitable technologies to utilize the biogas produced to maximise the likelihood a positive energy balance can be achieved.

Breakthrough 2 (Catalyst) (2021/2022)

Catalysing a NET-ZERO future

The modifications to the Microvi Pilot plant are complete, we are expecting to take delivery of it at our Innovation Centre soon, where its assembly and commissioning has been planned. Following successful commissioning we will start our 7 month trial.

Water quality as a service treatment 2 tap

The validation exercises on reservoir mixing, flushing operations and mains conditioning now completed. Additional validation has been achieved by using the sensors to track and mitigate a real network event, enabling more informed decision making and significantly reducing the potential impact on customers. Business processes are continuing to develop and progress into a business-as-usual environment.

Breakthrough 2 (Transform) (2021/2022)

Enabling Water Smart Communities

We have selected and commenced the following Tranche 2 enabling action projects:

- Water Reuse Whole Life Costs, a supplementary project to the completed reuse business case (CAPEX) project, will provide OPEX and carbon analysis for reuse systems at varying development scales and densities.
- New Standardised Environmental Incentives project aims to define and implement a fair, scalable, and impactful incentive model that benefits developers and the environment.
- Higher Quality SuDS, building a case for high-quality SuDS by assessing their added value in new developments, including impacts on property value, buyer preferences, and broader economic benefits such as flood risk reduction, water quality, placemaking, and biodiversity.

Project Outputs: Case Study Dashboard Integrated Water Management Studies (IWMS) review Community-led water stewardship 'Water Efficiency and Reuse in Housing: Design guide for a changing climate' Summary of Water Sector Environmental Incentives (2025-2026 Charging Period) EWSC Independent Water Commission response Insights Articles: Making Water Smart Communities work: Lessons for community engagement from six in-depth case studies, insights article by UEA. Sustainable water systems and practices for new housing, insights article by University of Manchester

Priorities for remainder of 2025 will be: Finalise the future Operating Model, identifying the approach for maximising long-term impact of our findings and ensuring continued value beyond the project's completion

National Leakage Research & Test Centre (NLRTC)

We've now completed the detailed design phase and finished the tender process. A preferred bidder has been selected, and the project team is working closely with them to refine the design—making sure it's both practical to build and cost-effective. The planning process is nearly complete. We're preparing the final submission, which will follow once the design refinements are finalized. We're also continuing discussions with Northumbrian Water and HR Wallingford to set up a special

purpose vehicle. This will help ensure the long-term operation of the project aligns with the original OFWAT bid, protecting the investment for the future.

Breakthrough 3 (Catalyst) (2022/2023)

Dark Fibre 2

As part of our comprehensive testing programme, we've carried out a series of controlled leakage simulations to rigorously assess the system's sensitivity and accuracy. These trials involved releasing water at predefined locations and flow rates to replicate real-world leak scenarios, enabling precise calibration and refinement of the anomaly detection algorithms. We've also evaluated the system's ability to differentiate genuine leak signals from ambient noise, such as traffic and operational vibrations, ensuring robust performance in complex environments. We're now preparing for the final round of leakage simulations. Meanwhile, Focus Sensors are working closely with the water companies to shape a commercial service offering.

Hydro Powered Smart Meter

The Hydro Smart Meter Project is due to complete on 28th August 2025. The final closeout report has been drafted for submission towards the end of July. Physical Beta Prototypes of the Smart Meter will be available from August 2025.

Water industry printfrastructure (WIP)

We are approaching the end of our Water Industry Printfrastructure (WIP) project. The last six months have seen our consortium successfully complete our final printing activities, including cold weather concrete printing. Since completion of these physical printing tasks the team have been concentrating on how we can best transfer knowledge to those wishing to adopt 3D concrete and plastics printing across the water industry. Over the next two months presentations and videos will be available on the Supply Chain Sustainability School for everyone to access with a username and password. We will also issue our technical and final reports via the Spring platform. The WIP project has received positive feedback from engaged individuals across multiple industries. Following our WIP day, at United Utilities Head Office on 10th June 2025, we received plaudits from not only water industry colleagues but also members of nuclear energy and rail focused collaborators. All presentations and the accompanying film of the event will be uploaded to the Spring platform in August 2025. In addition to this we are very proud to report that the project won "The Best Application of Technology" award at the Digital Construction Awards 2025 on 1st July 2025.

Water Literacy

The Water Literacy Programme is progressing really well. The programme is currently on track in relation to the project plan, with the programme now fully mobilized and the national rollout is underway. We are now in national rollout of the Water Literacy Programme, having delivered to 328 learners as of June 2025 and forecasted to deliver to 2000 learners by the end of November 2025. We have now started putting attention towards the forward delivery plan piece of the project to ensure that the Water Literacy Programme life cycle extends to beyond the duration of this project timeframe, enabling water literacy courses to continue beyond the current funding. Additionally, we are continuing work with Alive to expand the suite of digital assets, supporting in writing press releases, and investing in media buying with partners, to ensure we reach or exceed the 2000 sign up goal. Working with Netex to develop a 30 minute e-learning piece, which is currently in design stage ready for a release by the end of August 2025.

Water Net Gain

We are now designing the demonstration pond in partnership with Duchy College, which included some initial site survey and preparation works. The cost assessment has provided a basis for understanding how much an operational Water Net Gain would cost, including project management, pond design, planning and construction, as well as farmer compensation, maintenance and monitoring. We have procured professional tax advice, to make sure that the WNG scheme set-up does not have negative tax implications for farmers who would like to take part. This helped to further define the payment set-up, example clauses for a contract and ownership details for the final scheme. For the Willingness to Accept study, we established a partnership with the Rivers Trust, Mersey Rivers Trust, Essex and Suffolk Rivers Trust and Trent Rivers Trust. This means that we can explore farmers' willingness to participate in Water Net Gain in different parts of the country, looking at different catchments and types of farming, together with a local partner that is trusted within the farming community.

Using science and nature to end sewer misery

Currently in the test rig and demonstration Phase of which the testing boxes will be complete today 21/07/25 and the flow loop finished and ready for testing by the end of the week.

Breakthrough 3 (Transform) (2022/2023)

Biopolymers in the circular economy (BICE)

The BICE project remains within the agreed overall timescales for delivery. Our Cellvation demonstration plant has achieved a major milestone in this reporting period. We have successfully extracted cellulose (current estimated rate of 30 kg/hr) and refined it to glucose. This is a major

technical step forward for the project team and the water industry as it is the first time that this has been achieved within the UK. Over the past few months we have had some site based technical issues relating to both demonstration plants. These issues are now being successfully addressed by the project partner site teams. In the next month we will enter a period of operational optimisation and stability although, as with all trials and demonstrations of this nature, we do keep coming across unique operational requirements for our site based scientists to overcome. In this reporting period United Utilities and Cellvation presented at the European Wastewater Management Conference in Telford which received positive feedback from all those that attended.

Mainstreaming nature-based solutions to deliver greater value

The Mainstreaming Nature-based Solutions (MNbS) programme is progressing well and remains on track to deliver its intended outcomes. Over the past six months, we've focused on three key areas: (1) developing briefing notes that summarise the enablers and recommendations identified across our workstreams; (2) drafting plans for the regional tests; and (3) scoping a Tracked Programme of Nature-based Solutions to build the evidence base for NbS and support the evolution of regulation in preparation for PR29. Highlights from the past 6 months include launching our LinkedIn group and weekly MNbS Bulletin which are supporting greater engagement with the programme. Our website is launching in July 2025 to enable wider dissemination of our programme outputs. We've also made significant progress on the Common Value Framework (CVF), which will provide a consistent approach to valuing the benefits of NbS. The draft CVF is due to be published in July 2025 and will be a key tool for informing PR29 planning. We have also further socialized the programme with external stakeholders via industry events, including Flood and Coast Conference, European Wastewater Management Conference (presentation and panel session), and an article in the Ofwat Innovation Fund's most recent Learning Report, "From source to sea".

Stream 2 - Unlocking Innovation through Open Data

We're into the final stretch of the implementation phase of Stream and preparing to enter the next phase focused on increasing our Scale and reach. We've done a lot of outreach in the last few months including multiple events to get researchers hands on with our data to come up with innovative ideas to help improve river health.

Breakthrough 4 Catalyst (2023/2024)

Developing a market-based approach to deliver SuDS through street works

The project has achieved several key milestones to support the development of a scalable and effective SuDS (Sustainable Drainage Systems) market. We've completed a technical review of existing modelling tools and created a framework to assess their real-world suitability, helping shape how future SuDS investments are valued and delivered. A global review of SuDS design

standards has been completed, and draft specifications for five typical system types have been reviewed with Thames Water to support consistent, large-scale delivery via standard streetworks processes. We've developed a data platform identifying eligible areas for SuDS delivery and defined bidding approaches across geographic scales. A market simulation in Enfield showed SuDS delivery through the market could achieve cost savings of 19% - 26%. Five sites have been identified to progress three pilot schemes. Contractors and suppliers have been engaged, with plans and designs underway to ensure delivery by April 2026. The tradable unit has been confirmed as Reduction in Surface Water Volume (RSWV), and an accreditation standard has been developed to validate how SuDS projects generate RSWV credits. Statutory constraints have been mapped and mitigation strategies are in development. Planning is ongoing for broader industry engagement and the next phase of development.

Local Regeneration of Granular Activated Carbon

The four-year project started in January 2025. The main aim of the project is to look at different techniques to regenerate Granular Activated Carbon locally rather than sending the GAC away for thermal regeneration. We are currently in Phase 2 of the project where Swansea University are assessing various chemical regeneration techniques at laboratory scale to inform our further trials. Regeneration techniques include ozonation and use of Panton McLeod proprietary chemical product PM77. Focus has been on the efficacy of the methods to remove PFAS, and algal compounds (MIB and Geosmin) without destruction of the GAC surface. This assessment is crucial to us understanding which techniques are likely to work before proceeding to our pilot scale trials. We have recently embarked on the design of the pilot plants that will be situated in Severn Trent Water and Welsh Water from January 2026, with two initial design meetings held. Members of the steering group visited Severn Trent Water's existing pilot plants at Church Wilne to gain a better understanding of the requirements and potential size and layout of the pilot plants required for the Local Regeneration of Granular Activated Carbon project.

METREAU - Microbial Electrochemical Technologies for REsource recovery And Utilisation

The project has made good progress across several key areas. The second techno-economic workshop was successfully conducted, with refined outputs shared with wider stakeholders. These provide an overview of the performance and cost targets the solution may need to achieve compared to traditional methods. In parallel, an Innovate UK-funded project is underway, involving the deployment of a small-scale MEC solution at the Howdon site to assess its performance and inform the final MEC design. The overall delivery plan has been revised to adopt a more agile approach, now split into three work packages to avoid the need for a formal tendering process. A lessons learned session was held with Thames Water to draw from their previous experience with similar projects and help avoid known pitfalls. The project brief outlining health and safety (H&S) requirements has been finalised following productive discussions with the H&S team, and a follow-

up meeting is planned to clarify site zoning and further H&S aspects. A design brief for Work Packages 1 and 3 has also been finalised and shared with a supplier for pricing. Scoping for Work Package 2 is currently underway and will be followed by the design phase.

Reducing Water Demand through Behavioural Incentivisation

Severn Trent has continued its innovative water reduction incentive trial in partnership with Nectar, supported by key collaborators. The initiative rewards customers with Nectar points for reducing their water usage, encouraging long-term behavioural change. To date, four recruitment cycles have been completed, with nearly 4,000 customers enrolled - closely aligning with initial projections. Recruitment is expected to accelerate in July with the rollout of a new internal system and expanded smart meter connectivity. Early results are promising. Customer engagement is strong, with many consistently meeting their water-saving goals - some even achieving ongoing 'winning streaks,' indicating lasting behavioural shifts. Water usage reductions compared to the control group are also encouraging. Looking ahead, behavioural science is being embedded into the programme to enhance customer communication. This includes leveraging social norms, refining calls to action, contextualising water use, and testing gain-versus-loss messaging strategies. These approaches are being evaluated for effectiveness against previous, more generic messaging. The first summer challenge has recently launched, applying these techniques to encourage mindful water use during hot weather. While water-saving outcomes are still being analysed, initial engagement levels are high.

Self-Calibrating Sensor Networks for Sustainable Water Management (SCSN)

Since the baseline submission, important progress has been made by the Southern Water team in advancing the project. A key milestone has been achieved with the signing of the Collaboration Agreement with the official project partners, solidifying the foundation for joint delivery. In addition, legal agreements have been finalised and signed with both the hardware supplier and the knowledge-sharing platform provider, ensuring that all necessary contractual frameworks are in place. The first invoices associated with these agreements have been processed accordingly. The project encompasses work across four operational sites. The project team is working towards the optioneering of the initial site selection; working collaboratively with the project external and internal stakeholders to confirm and approve site access. Once this is granted, the hardware has already been procured and is ready to be deployed at site 1. To maintain strong coordination and ensure consistent progress, monthly Project Steering Group (PSG) meetings have been conducted with all project partners. These meetings serve as a platform to provide updates, address any issues, and confirm alignment among stakeholders.

Transforming Bioresources - the Benefits of Biochar

We have successfully completed our initial production of biochar for pot trials. Further production of Bio Char will commence at the end of August in preparation for the Field Trials in March 2026. This will be after 6 months of pot trails starting in September 2025, due to the growing season this is the optimum growing period.

Tapping into sewer heat

The Tapping into Sewer Heat project is exploring the potential of recovering low-carbon heat from wastewater networks to support the UK's net zero goals. Over the past year, we've made significant progress in design development and stakeholder engagement. We've now secured Early Contractor Involvement with our design and build contractor. Our contractor has completed the design for the installation and installed a penstock in the sewer to enable isolation of the pipeline during installation. We're working closely with land agents and project partners to secure permissions and finalise commercial agreements. This project continues to demonstrate the potential of sewer heat recovery as a scalable, sustainable energy solution for the future

Breakthrough 4 Transform (2023/2024)

No dig leak repair – From concept to reality

The No-Dig Leak Repair- From Concept to Reality project is pioneering a new approach to underground pipe repair that eliminates the need for excavation. Launched in October 2024, the project aims to develop and validate innovative, modular repair technologies that can be deployed with minimal surface disruption reducing environmental impact, operational downtime, and repair costs. In Phase 1, the team has successfully defined the project scope, deliverable acceptance criteria, and conceptual designs for four repair methodologies: point application, liner/clamp, flow-based, and local injection. These concepts are designed to offer flexibility while managing technical and operational risks in a structured way. Operational data from real-world sites has been used to map current leak detection and repair processes, helping to form the foundation for testing and evaluation. The project is now progressing through the design and review of benchtop test rigs, test site layouts and system schematics, including the STARs rig. A structured Go/No-Go framework has been developed to assess readiness for Phase 2, focusing on technical feasibility, risk mitigation, health and safety, and alignment with programme goals. This project represents a significant step toward smarter, more sustainable infrastructure maintenance. The outcomes of Phase 1 will inform the next stage of development and field validation, bringing the vision of no-dig leak repair closer to implementation.

Proving the concept of sewage sludge pyrolysis

The project has progressed with a revised procurement strategy, splitting responsibilities between the technology supplier (OEM) and a separate delivery partner who will manage installation and commissioning. While this approach has extended procurement by around seven months, it has improved engagement, compliance assurance, and built stronger relationships with suppliers, laying the groundwork for a more successful trial. We are working closely with suppliers to ensure the demonstration plant meets UK health and safety legislation, particularly the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR). Because these types of plants aren't commonly designed to operate in potentially explosive environments, our focus has been on reviewing and challenging supplier justifications to ensure all risks are thoroughly assessed and mitigated. We've also agreed with the Environment Agency to pursue a new type of R&D permit to support the trial. This involves a detailed environmental risk assessment using the EA's H1 matrix. In parallel, we're completing enabling works such as confirming ventilation requirements and ensuring there is enough safe working space in the existing building to accommodate the new plant.

River Deep Mountain AI

In June 2025, River Deep Mountain AI completed phase 2 of the project, focused on developing and initial testing of multiple AI/ML and remote sensing models addressing core challenges in the water sector. Throughout the phase, the project consortium has collated relevant datasets from across the sector, run experiments with AI/ML models, and completed several co-creation sessions with partners and stakeholders to ensure that models address the right challenges in the right way. The first major milestone of River Deep Mountain AI was reached in June, when the first batch of AI/ML and remote sensing models were released open source on GitHub. The first release covers key challenges such as river flow predictions, novel datasets of pollution sources, and mapping pollution hotspots. The models are released early to showcase our work to date and invite feedback from the entire water sector at a stage where changes are still possible. As River Deep Mountain AI enters phase 3 of the project, we will continue to improve the models, validate them in new catchments, and evaluate their ability to scale across the UK. In November 2025, the re-fined versions of the models will be released to the wider sector.