

October 2025 – Project Monitoring Updates

This document contains the updates provided by each project from the October 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.

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Innovation in Water Challenge (2021)

No project updates this quarter.

Breakthrough 1 (2021)

Catchment Systems Thinking Cooperative (CaSTCo)

Over four years, partners worked across England and Wales to bridge long-standing divides between citizen science and regulatory monitoring and to make data more accessible and trusted. Our 8 demonstrator catchments proved that when people, data, and institutions collaborate, community-generated evidence can meaningfully influence investigations, investment, and restoration priorities. CaSTCo has proven that collaboration can transform how we monitor and manage rivers. The next challenge and opportunity is to secure investment in scaling what works into nationally accredited monitoring schemes and data approaches, with strong governance to support the relationships that turn shared data into shared action. In its final year, a Taskforce of experts co-developed a 10-Year Roadmap which outlines the steps to build a national catchment data system, embed shared standards, and maintain cross-sector partnerships over the long term. This Roadmap will drive future work to implement the approaches developed by CaSTCo.

Fair Water

The FairWater project is nearing the end of the phase that is obtaining four types of data: point of use water quantities on appliances, sinks and toilets; household water meter readings at hourly intervals; shower use time; and kWh from smart plugs on appliances. Data collection started in May '24 and will finish in Jan '26. The 55 houses with installed sensors have undertaken several interventions, aimed at four water use tasks of laundry, dish washing, showering and toilets. The interventions were i) information leaflets, as a behaviour "nudge", ii) providing cleaning products designed for lower temperature and lower water use cycles; iii) a final intervention providing new technologies, such as low flow shower heads. Data on water use before and after interventions is being analysed, to provide the insights that allow pathways to be developed for households to reduce their water use. A second range of activities have been performed with a further 107 Households taking part in surveys and focus groups, providing detailed qualitative data, and a well-rounded understanding of consumer behaviour and preferences. An exciting innovation development has been to procure re-circulating showers with installation at a project partner's test site scheduled for Autumn '25.

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.

Triple Carbon Reduction

The Triple Carbon Reduction demonstration plant construction completion is currently in progress. The MABR is operational and different trial conditions are being explored to identify potential issues and understand the process. The aim of this optimisation period is stabilise the process and prepare it for integration with the electrolyser. The IES is currently on site and undergoing final H&S due diligence, aiming to commission and start up in November. Once the IES is integrated with the MABR and Oxygen can pass between the two systems safely, the trial will officially start for a duration of 6 months.

Water Neutrality at NAV sites (Project Zero)

Project Zero continues to make positive progress in our works on phase 3; exploring a hybrid solution for water neutrality. We have progressed our discussions and alignment of delivery programs with the developer. Project zero has recently completed a desktop-study report which aims to support understanding of the potential water resource benefits that rainwater harvesting

fed non-potable systems could provide to new domestic development sites. We have begun to take valuable insights from this report and are working towards a publicly shareable document.

Breakthrough 2 (Catalyst) (2021/2022)

Catalysing a NET-ZERO future

We have successfully executed the Site Trial Agreement contract covering the trial equipment and methodology. We are now scheduling importing of the biocatalyst, delivery of the pilot plant, modifying the trial facility and installing required ancillary equipment. Meanwhile research at Cranfield has been continuing successfully.

Breakthrough 2 (Transform) (2021/2022)

Managing Background Leakage

Phases A and B are complete, with the DMA Phase B reports to be published in due course. The fieldwork conducted in Phase C will be completed by the end of October 2025, with the analysis due to be completed by the end of March 2026. Phase D, the uncertainly analysis, is underway and is due to be completed by November 2025.

Breakthrough 3 (Catalyst) (2022/2023)

Artificial Intelligence for Algal Monitoring

The AI for ALG project is moving toward its testing phase, having spent almost two years constructing our training dataset, eDNA ground-truthing techniques, and AI-based models required for automatic microalgal detection and classification. Through this work we have now produced > 45,000 images and annotated > 60,000 individual microalgal cells with their genus/species level taxonomic classifications. In parallel, we have developed novel eDNA methods that can work on low-volume, fixed water samples, as well as established a sampling protocol with our water company partners for eDNA screening of their algal communities, which will we use to validate our training dataset. We have trained, tested and optimised numerous Convolutional Neural Networks for the detection and classification of microalgae using existing public datasets for marine phytoplankton, and are now working to re-train these networks on our own training dataset of UK freshwater algal species. Looking to the future, the project will begin to bench mark and improve our models, running them in parallel to current water industry algal screening practices to quantify the improvement they offer and begin to produce high-resolution datasets on UK freshwater algal communities for subsequent algal risk modelling.

Using science and nature to end sewer misery

The project is currently at the testing phase with the installation of 6 growth boxes and 3 flow loops. The growth boxes will test if the IG formula will deter the root growth from the pipes in a real world setting and prove (proof of concept). The 3 flow loops will determine the leaching rate of the coating within the internal circumference of the pipes with 3 varying flow rates

Breakthrough 3 (Transform) (2022/2023)

Net Zero Hub

Actilayer: Construction is complete, structures are installed on all lanes. The Actilayer membrane has been installed on all lanes except ASP5 as it is a control lane. We have observed that efficacy of Actilayer is influenced by factors other than UV, including temperature, humidity and air flow (flux). Our monitoring indicates that higher efficacy may be achieved through better control of these variables. Trials are being progressed to establish the optimum conditions and will be included in our findings. As part of the Net Zero Challenge fund in AMP8, we intend to refine the design based on the optimised conditions. The draft design manual for the retrofitting of Actilayer is under review. Digital Twin: The project extended its site-based activities through to the 31st July, including more data from recent sensor installations, improving model accuracy and conducted model validation. 2 months of testing has been completed to help test its usability and obtain user feedback. Severn Trent have made the decision to complete a 2-month trial which is funded by Severn Trent this check to complete further user and scenario testing to validate the simulation and optimisation outputs and to train the model. Noting, this will be done with the solution not in the development environment but a pre (production) environment.

Breakthrough 4 Catalyst (2023/2024)

ALL-Streams HTO

The ALL-Streams HTO project is exploring and developing the potential for Hydrothermal Oxidation (HTO) to recover and recycle resources from biosolids produced during sewage treatment. The water industry in England & Wales produces approximately 1.1 million wet tons of biosolids each year. The project is exploring the potential for recovering ammonia, phosphorus and organic compounds from HTO processed biosolids using a pilot plant designed by project partners Anglian Water, Cetogenix, Cranfield University, and Atkins Realis. If successful, this unique process could eliminate the need for land-spreading of biosolids whilst recovering valuable renewable resources for UK-industry. Between March 2025 and October 2025, the project team have completed the build & commissioning of the pilot plant that is composed of an HTO process & downstream ammonia, phosphorus and organic compounds recovery processes. Phase 1 of the project has now been

closed and Phase 2 experimental & integration trials has commenced. Phase 2 HTO integration trials will be conducted between September 2025 and May 2026.

METREAU - Microbial Electrochemical Technologies for REsource recovery And Utilisation

The project has made good progress over the recent period. The final location for the installation of the solution has now been confirmed, and the work package scope has been finalised. Work on the Basis of Design (BoD) is currently underway, which will inform both the conceptual and detailed design stages. The BoD work is being undertaken by BNC, with completion of the BoD for Work Packages 1, 2, and 3 expected by mid-October. Following this, the design development phase will commence. NWG has identified a suitable Principal Designer and HAZID Chair for the project from their framework. A pre-meeting was held with the HAZID Chair to discuss the level of information required ahead of the HAZID workshop. Newcastle University has also engaged with Safemachine to understand the requirements for UKCA/CE marking and process approvals related to Work Package 3, and is liaising with alternative suppliers for equipment procurement. Overall, the project remains on track, with key design and safety preparation activities progressing as planned

PFAS - A whole system approach to an impossible problem

Since the previous monitoring report, the project has continued to focus on the identification and potential selection of potential technologies and suppliers which we want to use for phase 1 trial of the project for Workstream 1: Liquid and solid waste streams. We have undertaken follow-up sessions with 10 different PFAS destruction technology suppliers after the completion of a ranking exercise using the success criteria we developed with Cranfield University. We now have quotes from 5 suppliers for testing bench scale systems, and the remainder are working on quotes. We are working through legal requirements of working these suppliers. The bench scale tests will occur at either Cranfield University testing facilities or the supplier's own with one of our projects' post-doctoral researchers in attendance. One post-doctoral researcher is now in post and the remaining person will be in post during October 2025. We have continued to work on the identification of key PFAS compounds to target and possible by-products and this will be formalised over the next reporting period. In addition, we have commenced work on the development of synthetic water recipes for the bench scale systems trial and have finalised our waste streams of interest.

Pipebot Patrol

The current focus of the project is ensuring thorough testing of the Pipebot is complete, initially in a controlled test environment before deployment within a sewer network. The project team are currently making adjustments to the Pipebot to ensure optimum performance whilst working on data capture and creation of a dashboard panel to control and store information. In addition to this

the team are working to ensure that power and connection to the site are secured with an appropriate kiosk. Progress is being made swiftly to achieve trials imminently and update customers in the trial area of progress.

Pipebots for Rising Mains Technology Development Phase 2

The Pipebots for Rising Mains Technology Development Project Phase 2 is progressing well. The work builds on a WBC2 feasibility project to develop a pipeline condition inspection tool for use in live sewer rising mains using novel acoustic sensors. Starting in September 2024, a workshop meeting defined the scope, needs and challenges of a live rising main inspection system. This led to the Optimisation & Operational Process Report which baselined the technical requirements of the survey tool and outlined inspection and access options for development to TRL5. Work then followed on the Integrated System Design which resulted in detailed drawings and specifications to produce the prototype system. In parallel with this work, lab tests and computer modelling of the sensing system was undertaken. The prototype system has now been built and is nearing readiness for large scale rig tests to TRL6. On completion of the rig trials, Phase 3 of the project will lead to live rising mains trials on water company assets to TRL7. The capability to inspect the internal condition of live rising mains and measure deterioration will enable asset planners to target pipe replacement, to ultimately reduce incidents of failure and pollution.

SuDS iQ - A National SuDS Collaboration & Evaluation Platform

The project's initial co-definition phase (Phase 1) has completed, following an on-line survey (> 120 responses, April 25), 3 regional collaborative co-creation workshops (>65 attendees, May 25), and a circulated draft design definition document. In preparation for the workshops, a set of wireframes and mock-ups were developed to support stakeholder engagement. Work on Phase 2 has commenced, with substantive progress made on the SuDS standards compliance evaluation tool; DEM and land use layer import and interrogation functionality; and the option evaluation tool. The app creation functionality has focused on: Development of a User-friendly project creation workflow to guide users through the SuDS planning and conceptual design process. Architecture to allow test users to provide feedback throughout. A new "Geoplan" to provide user-friendly access to the model (with georeferencing, auto surface definition, user-click subcatchment drawings, import/export of GIS data files) Integration and upgrade of existing model Initial collation of data libraries (e.g. national soil types). Specification and initial design of results page. Initial deployment of development server. Dissemination activities have included participating on a panel with Ofwat at the European Wastewater Management Conference, contributing to the Nature first learning report, and speaking at the CIWEM webinar: 'SuDS tools what's around the corner'.

Support for All 2

Funded by Ofwat's Innovation Fund, Support for All is a national platform designed to securely share Priority Services Register (PSR) data between utilities and trusted third parties. Building on the completed collective data sharing agreements, along with data sharing protocols which cover different section data sharing and an agreed security architecture, build was completed in Spring 2025 in readiness for the first stage of the platform to go live. User testing was completed by Water companies, Gas companies and Electricity companies alongside independent security testing and were proud to say the platform went live in Summer 2025! We're delighted at the speed of the system, which can upload two million records in less than an hour, checking and validating each address provided. We've currently over 7 million addresses in Support for All and over 250,000 customer registrations. Work is now underway to build enhanced features such as reporting dashboards to help partners reach more customers. Over the next few months, we're supporting other utilities to share data via Support for All which aims to provide a better service for customers in vulnerable circumstances by only requiring customers to share their needs once.

Tapping into sewer heat

The project has faced technical and budgetary challenges at the intended installation location. We have been working with partners to establish an alternative location for the deployment of the heat recovery solution to meet the objectives of the project. We have established a proposed alternative location offering reduced costs and an energy offtake opportunity. We are now working with partners to verify the opportunity.

Transforming Bioresources - the Benefits of Biochar

We are producing Bio Char at a low temperature pyrolysis reactor at Edinburgh University with sludge pellets provided by Scottish Water. Bio Char samples have been delivered to CCM technologies who have started to produce fertiliser from bio char produced at three temperatures 700, 900, 1000 degrees. CCM technologies will carry out pot trials for each temperature to assess the impact of the pyrolysis temperature on the destruction of PFAS within the bio char fertiliser

Breakthrough 4 Transform (2023/2024)

Proving the concept of sewage sludge pyrolysis

The project has reached a major milestone with the identification of a preferred plant manufacturer (OEM) and a preferred Delivery Partner. We are now finalising contract negotiations, with signature expected by the end of October 2025. At which time we will be able to name the partners. This two-contract approach has strengthened collaboration and improved confidence in regulatory and

safety compliance, even though it extended the procurement phase by around ten months compared to the original plan. The additional engagement has built stronger supplier relationships, clearer communication, and greater willingness to share critical safety information, all of which support delivery of a more robust demonstration. In parallel, we have submitted our Environment Agency permit application under Standard Rule SR 2024, which will be accompanied by a risk assessment using the EA's H1 tool. This marks an important step towards securing regulatory approval for the demonstration trials. Looking ahead, the next reporting period will focus on contract award, mobilisation planning, enabling works at Crossness STW, and safety studies such as HAZID and HAZOP. These activities will ensure the demonstration plant can be installed and operated safely, while generating valuable learning for the sector.

River Deep Mountain AI

In July 2025, River Deep Mountain AI entered the final phase of the project, and as of October 2025 all AI/ML models developed during phase 2 will have gone through several validation steps to evaluate their performance and transferability across the UK. In parallel, extensive work has gone into developing relevant use case descriptions and action plans for the models, to make it easy for the broader water sector to understand and make use of the models after completion of the project. This work will continue through to project completion. By the end of October, the project will reach its second major milestone, as the final version of the AI/ML models will start being released open source on GitHub. This release will include detailed model reports to provide full transparency of the model development, training, performance and validation. In November, these reports will be transformed into shorter whitepaper formats, enabling a wider audience to access information about the models. For the remaining time, the focus of River Deep Mountain AI, will be to ensure all insights, models and documentation is shared across the water sector so that learning and outputs of this project are made available to all.

Sewage sludge gasification (sustainably addressing sludge-to-land, net-zero and emerging contaminant risks)

We are bringing back into operation a belt dryer that last operated in 2017. This work is nearing completion with commissioning underway and sludge cake receipt scheduled to commence in mid-October. Whilst we awaited sludge drying commencement, Scottish Water offered dried sludge pellets for gasification test purposes. We have successfully gasified 60 tonnes of dried sludge and pinpointed 3 upgrades based on this test work: 1. Sludge contains more ash than the SRF waste normally gasified at the gasification plant, so an additional particulate filter has been installed and successfully tested. 2. The gasifier normally operates at 1,200°C - 1,400°C. To complete PFAS destruction we thought there may be a need to operate at 1,500°C, so additional cooling has been installed and successfully tested. 3. Sludge contains higher levels of Nitrogen than SRF, so ammonia removal equipment is being installed and will be completed by the end of October. Test results from Queens University Belfast, based on the 60 tonnes of sludge gasified, show PFAS

destruction. The Carbon Trust are progressing with development of the full carbon assessment model for the end-to-end process and comparative scenarios.