Greater Cambridge Chalk Stream Project

Newsletter – October 2025

Building an Evidence-Led Recovery

Since our summer update, the Greater Cambridge Chalk Stream Project (GCCSP) has moved from planning into full delivery. Across our network of demonstration sites, continuous loggers are quietly recording data, erosion pins are being installed, and an enthusiastic team of trained volunteers is out in all weathers collecting weekly samples. Together, these efforts are creating one of the most comprehensive chalk-stream monitoring programmes anywhere in Cambridgeshire.

Every part of the project, from survey design to hands-on restoration, has been shaped by a single principle: that our actions should be guided by measurable evidence, not assumptions or appearances. We're interested in what *really works* for chalk-stream recovery and why.

By combining science, practical restoration, and community involvement, we're learning not only how to restore these fragile systems, but how to build long-term understanding and care for the rivers that flow through our landscapes and lives.

Measuring the Subtle Shifts in Our Streams

This autumn, Anglia Ruskin University (ARU) is installing small, silicon bronze pins along stream banks at all GCCSP case study sites. These unassuming markers will help us track one of the biggest challenges facing our rivers, erosion.

By re-measuring the pins after rainstorms and seasonal flows, we can see exactly how much soil is lost or stabilised. Comparing natural banks with those supported by coir rolls, brushwood fascines, or dense vegetation will show which approaches most effectively protect the banks and keep sediments out of the channel.

Erosion is far more than an aesthetic issue. Fine sediments wash into gravels, fill spawning beds, and clog invertebrate burrows, quietly degrading the habitats that chalk stream specialists depend on. But the impact extends well beyond the channel. When banks collapse, the entire wildlife corridor that borders the watercourse is affected, from burrowing water voles to kingfishers that rely on stable nesting faces, and otters that move and hunt along shaded banks. The influence of American signal crayfish, whose burrowing accelerates bank erosion and instability, can also be monitored before and after bankside restoration to assess how targeted interventions improve resilience..

By using a simple, low-cost method to measure change, we can make informed choices about where to act and what techniques genuinely make a difference, not only for chalk stream ecology but for the broader web of species that share these riparian corridors.

Citizen Science: Where Community Meets Research

The citizen science programme continues to grow, with more than sixty volunteers now involved, a remarkable community of people who care deeply about their local rivers. Supported by ARU's new citizen science laboratory system, volunteers will soon begin weekly water quality monitoring across the Greater Cambridge Chalk Stream Project network.

They are being trained to test for phosphate, nitrate, ammonia, and dissolved oxygen using laboratory-grade reagents. These results, reviewed by ARU scientists and project partners, will provide the high-resolution data needed to detect subtle ecological changes that simple test strips can miss.

Each participant completes training in safety, sample handling, and data recording. But the real reward comes from seeing the story of each stream unfold through data and shared discovery. Until the citizen scientists are fully trained and feel confident and supported in their roles, ARU staff will carry out the weekly water-quality sampling to ensure consistency and continued progress.

To prepare for this next phase, ARU will host three **30-minute online introductory presentations** for new water-quality volunteers. These short sessions will outline what sampling involves, explain equipment use and safety procedures, and give everyone a chance to ask questions before fieldwork begins. Volunteers need to attend only one of the sessions, all held at **5:00–5:30 pm** on the following dates:

- **Monday 13 October 2025**
- **Tuesday 14 October 2025**

- **Wednesday 15 October 2025**

The ARU Greater Cambridge Chalk Stream Research Assistant will contact all volunteers who have already registered to provide joining links and further details for these sessions.

Following the talks, each participant will be assigned to a specific monitoring site and will work in a small team to collect weekly data. Each group will nominate a Site Lead, responsible for bringing the sampling equipment, such as the Hanna multiprobe, flow meter, and clean beakers, to the site each week. Samples will be returned to ARU on the same day for analysis, with replacement equipment provided for the next visit. Site Leads are encouraged to share this role so that responsibility and learning are shared among team members.

Once the water-quality programme is fully established, we will expand training to include other citizen-science activities such as fixed-point photography, sediment trapping, and erosion-pin monitoring. Many volunteers have already expressed interest in these areas, which will help build a more complete picture of physical and ecological change across our chalk streams.

Not everyone needs to handle beakers and probes to take part. Some volunteers will focus on habitat photography and sediment collection; others will help with practical restoration, planting macrophytes, clearing invasive vegetation, and stabilising banks. Every role connects people to place, creating a citizen-science model that is inclusive, rigorous, and deeply rewarding.

Volunteer sign-up for Citizen Science: Citizen Science for GCCSP
Habitat work: nature@cambridge.gov.uk

Designing with Evidence, Not Assumption

Public consultation is now open for restoration plans at **Cherry Hinton Brook** and **Coldham's Common**, two sites that illustrate both the potential and the pressures facing urban chalk streams.

These designs are based on monitoring and survey work, including WHPT and MTR biological surveys, sediment sampling, and eDNA analysis. By understanding the root causes of water quality decline and habitat loss, we can target solutions where they will make the greatest difference.

The planned works aim to stabilise eroding banks, diversify in-channel habitats, and enhance flow and oxygen conditions. Cleaner gravels and better flow diversity will create the conditions needed for species such as bullhead and specialist chalk stream invertebrates to recover.

However, we also know that channel works alone cannot solve the nutrient problem. There simply is not enough capacity within the stream to process the phosphate, nitrate, and other pollutants entering from the wider landscape. For this reason, our water quality data will inform catchment-scale solutions, measures that intercept and filter pollutants before they ever reach the watercourse.

As **Dr Tory Milner** of Keele University puts it, *"When the chemistry and sediment balance are right, the biology follows naturally."*

Public consultation - Have your say: Cherry Hinton Brook and Coldham's Common

Cherry Hinton Brook: Understanding Urban Resilience

Cherry Hinton Brook runs through the heart of Cambridge, threading between parks and housing before disappearing into a 150-metre culvert. Monitoring has shown that its main stressors are not constant pollution, but sharp, short-lived pulses that occur during rainfall, and chemical changes that develop during drought.

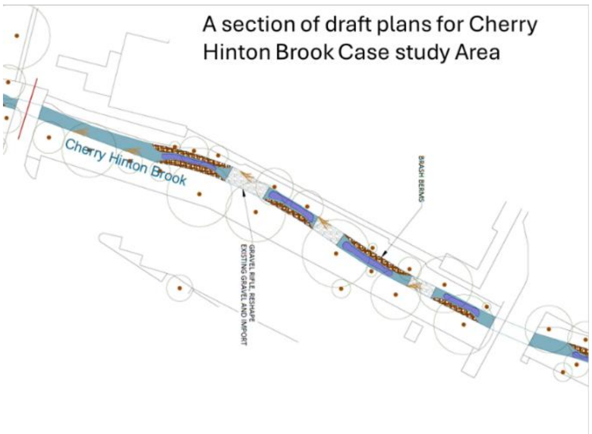
During the 2024 blitz survey, phosphate was not detected, remaining below measurable limits, while nitrate concentrations ranged from around 6 to 14 mg/L, exceeding the 5 mg/L threshold for pristine chalk streams. Elevated nitrate levels remain a concern, as the underlying aquifer already contains high nitrate and slowly increasing phosphate concentrations. This combination makes it particularly challenging to achieve the clean, low-nutrient 'ecological' conditions required for sensitive chalk stream species to thrive within an urban environment.

Turbidity readings were generally low, below 2 FTU, and ammonia concentrations between 0 and 0.04 mg/L were well within safe limits, suggesting that direct toxicity is not the primary stressor, except during heavy rainfall or prolonged drought events when conditions can shift rapidly. However, fine sediments are settling and clogging oxygen-rich spaces in the gravels of the lower reach, reducing habitat quality for invertebrates, rooted plants, and spawning fish. This highlights how water can appear clear yet still be ecologically degraded.

Our focus here is on building resilience. We are exploring options to improve fish passage through the culvert, from adding baffles and roughened channels to testing subtle guidance lighting. Above ground, restoration will stabilise banks using planted coir rolls, cleanse gravels, and restore more natural flow diversity.

Logger data collected in mid-September added valuable insight. Heavy rainfall caused a marked dip in Total Dissolved Solids (TDS) on Coldham's Brook at Coldham's Common, showing that it is connected to far more urban run off than previously assumed, a pattern similar to that seen on Vicar's Brook at Brooklands Avenue. In contrast, the outflow at Giant's Grave remained almost unchanged, confirming the stability of its chalk groundwater supply. Our loggers are now consistently evidencing pollution spikes during heavy rainfall, revealing patterns we could never detect through weekly sampling alone.

Continuous monitoring will show how quickly the brook recovers after each event, helping us and our partners design smarter, data-led urban catchment solutions. We also recognise the importance of tracing pollution to its source, which means mapping every outfall, testing what is released through the drainage network, and developing practical at-source measures to keep pollutants out of the brook altogether.



Coldham's Common: Testing Nature-Based Solutions

Few places illustrate the urban chalk stream challenge more clearly than Coldham's Common, where the relatively clean Coldham's Brook flows beside the heavily polluted East Cambridge Main Drain (ECMD).

Recent monitoring recorded ammonia levels above 13 mg/L, phosphate around 0.16 mg/L, and high bacterial counts, concentrations that would be lethal to most chalk stream specialists. Investigations point to a surface water ditch draining an industrial estate as a primary source.

Coldham's Brook itself experiences restricted flow through much of its length, particularly in the northern section where the channel is deep, heavily sedimented, and characterised by communities adapted to nutrient-rich, low-flow conditions. Vegetation here is dominated by nutrient-tolerant species such as bulrush (*Typha latifolia*), common reed (*Phragmites australis*), and other emergent macrophytes that thrive in slow, silty water. These plants provide structure and cover but also indicate a system that has shifted away from the clean-water, fast-flowing character typical of healthy chalk streams.

In contrast, we are exploring a more hydrologically diverse section within the East Cambridge Main Drain, where faster flows and a gravel stream bed support stands of *Callitriche stagnalis* (common water-starwort) and other flow-loving chalk stream plants. This reach lies within a buffered area that provides a suitable environment to trial nature-based interventions.

Floating wetlands, solar-powered aeration, and coir roll installations will be used here to demonstrate how small-scale, in-channel measures can enhance local habitat conditions and stabilise oxygen levels. These interventions are not expected to significantly reduce pollution, but they will provide valuable evidence on how pollutants behave within the system and help inform the design of more sustained, landscape-scale mitigation solutions in the future.

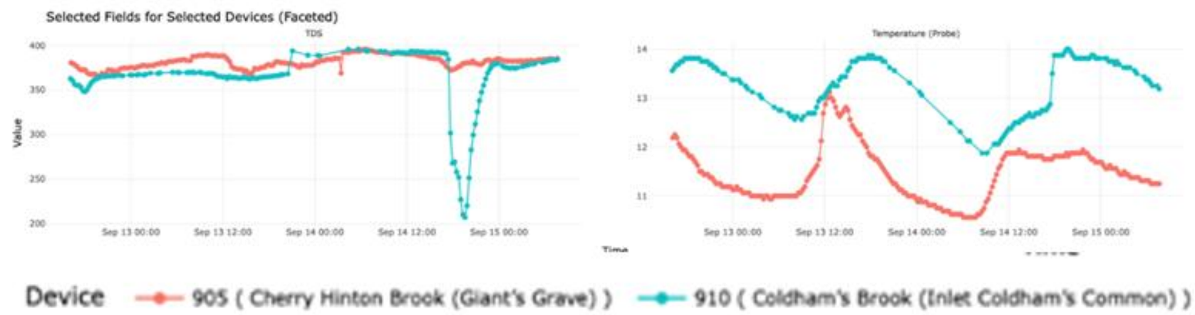
Bank realignment, in-channel enhancements including targeted gravel augmentation, and macrophyte establishment will be used within the case study area to create an aquatic demonstration of urban potential, showing how even highly modified reaches can be reimagined as functioning, ecologically rich chalk stream habitats.

Coldham's Common is where science meets creativity, a place to test, learn, and apply nature-based solutions that can be replicated across Cambridge.

The Logger Network: Revealing What We Can't See

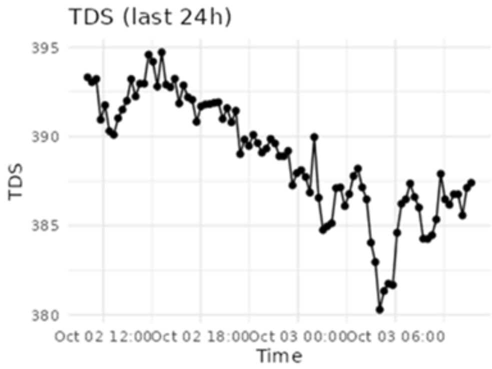
Our 24-hour data loggers are now live across Cambridge, built in partnership with **Steve Boreham**, who established the [Hobson's Conduit Trust] and [Cam Valley Forum] monitoring network. These discreet sensors continuously record temperature and Total Dissolved Solids (TDS), two parameters that quietly reveal how the chemistry of a chalk stream changes hour by hour.

During heavy rainfall on September 14th and 15th, 2025, we learnt something new about Coldham's Brook (Cherry Hinton Brook Outfall) on Coldham's Common from the logger data. The storm caused a huge dip in TDS, showing that Coldham's Brook is connected to far more urban run off than we had previously assumed. This is the same kind of response observed on Vicar's Brook at Brooklands Avenue.



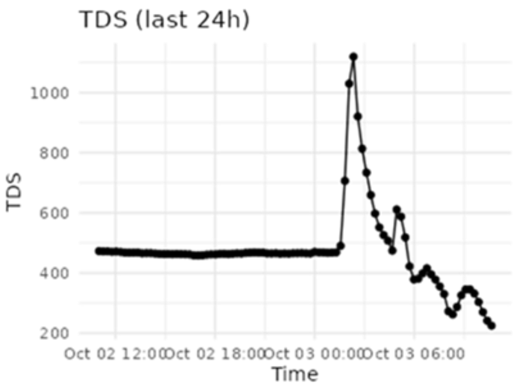
In contrast, TDS at the outflow of Giant's Grave barely responded to the rainfall, confirming the stability of its chalk groundwater source.

In early October, the ECMD logger at Coldham's Common recorded sharp TDS surges peaking above 1,100 ppm, followed by a pronounced drop to around 196 ppm as the dilution wave passed through. Coldham's Brook showed a milder, delayed pulse, while Giant's Grave remained steady. Together, these patterns confirm a fast first flush pathway through the urban drain, followed by strong dilution, whereas the chalk fed systems remain buffered by their constant groundwater supply.



Giant's Grave TDS logger during heavy rainfall

Such events reveal that the ECMD receives a rapid mix of contaminated first flush water and later, cleaner stormwater. These short-lived fluctuations are invisible to weekly sampling yet are vital for understanding how urban systems deliver pollutants in pulses.



Pollution event during rainfall from East Cambridge Main Drain from Grid Reference TL47075919

They are helping us develop urban interception systems that capture the first flush at source, use small surface-water wetlands, forebays, and vegetated filters to settle and treat runoff before it reaches the main drain, and maintain offline capacity within buffered reaches to protect high-quality chalk habitats.

Each new dataset teaches us more about how these rivers behave, offering fascinating insights into water quality dynamics that we simply would not have detected without continuous monitoring.

Springheads: Keeping the Sources Alive

The springheads at **Nine Wells** and **Giant's Grave** feed the chalk streams that flow through Cambridge, and both are delicate systems that need gentle, ongoing care.

At Nine Wells, dense tree canopy will be thinned this winter to allow dappled light to reach the water, supporting photosynthesis and stabilising banks where shade has weakened vegetation. Small in-channel features will help trap sediment and create varied flow.

At Giant's Grave, work is progressing to develop a draft plan to intercept a highways outfall before it reaches the springs. The invasive *Crassula helmsii* continues to be managed by careful hand-removal and selective shading to avoid harming native species.

These sites remind us that restoration is not a one-off act but a process of balance maintaining enough light for growth while keeping some shade for resilience against drought and heat. Regular, adaptive management keeps these headwaters open, cool, and full of life.

Linton and Abington: Next Steps

Draft restoration plans for **Linton Pocket Park** and **Abington Recreation Ground** have been shared with local Parish Councils and communities. Flood Risk Activity Permit applications are being submitted this month, with works scheduled for summer 2026, outside key breeding and winter spawning seasons.

Floating loggers will be installed in October to collect continuous pre-works data. This live monitoring will allow residents to track water-quality changes and even help report pollution events, linking community observation with science in real time.

These two sites, set in rural village settings, will act as demonstration projects showing how small-scale, evidence-led restoration can bring chalk streams back to life.

Research and Collaboration

The GCCSP continues to work closely with partners to build a shared understanding of chalk-stream recovery:

- **Cambridge Water** has begun baseline monitoring across the River Granta and nearby chalk streams to support its forthcoming WINEP programme, aligning its data collection with GCCSP sites.
- **Dr Tory Milner (Keele University)** will sample city chalk streams this autumn to study invertebrate assemblages within different sediment types, creating a benchmark for measuring post-restoration ecological change in riffles.

We are delighted to welcome Ryan Clarke, who has begun a PhD research project funded by the Hobson's Conduit Trust and Anglia Ruskin University, with support from the Greater Cambridge Chalk Stream Project (GCCSP). Ryan's work will investigate nutrient and pollution pathways within Hobson's Brook, helping to deepen understanding of how urban and groundwater systems interact across the chalk stream network.

Ryan Clarke, PhD Researcher, ARU & Hobson's Conduit Trust

With monitoring equipment, data systems, and volunteer training now firmly in place, the project is entering a new phase, analysing results, refining designs, and preparing for the case study habitat works.

Looking Ahead

The Greater Cambridge Chalk Stream Project now stands on a foundation of real-world evidence and community momentum. Each logger reading, each water sample, each photograph, and each conversation contributes to a shared picture of how our chalk streams respond to both pressure and care.

We're moving from isolated actions toward a living network of evidence-based restoration that connects people, science, and policy. The lessons learned here will ripple out across the region, informing how future projects design with nature rather than against it.

Our goal remains simple but powerful: to show that when chalk streams are restored through collaboration and understanding, their recovery is not only possible, it is inevitable.

Thank you to everyone who has helped bring this project to life, the volunteers, partners, researchers, and communities who remind us that real change begins with curiosity, care, and collective action.