



| CASE STUDY

Turning Environmental Data Into Sustainable Funding for Natural Flood Management



Derbyshire



**Yorkshire Water,
Lea Brook Valley CIO**





Overview

The Lea Brook Valley CIO Nature Reserve in Dronfield Woodhouse, Derbyshire, is home to a pioneering Natural Flood Management (NFM) scheme that has been protecting the local community from flooding for over 50 years. Originally constructed around 1973, the asset combines natural flood management principles with engineered infrastructure, including a cascading emergency weir and flow control structure that regulates discharge back into the Lea Brook.



On 18 November 2021, a 25-year lease agreement was established between Yorkshire Water and Lea Brook Valley CIO, with Yorkshire Water acting as landlord and the CIO becoming the custodians responsible for the long-term management of the asset.

Since 2016, Detectronic has supported the project by providing reliable hydraulic monitoring data that helps demonstrate the ongoing performance and value of the scheme. More importantly, this data provides the evidence required to support revenue-generating initiatives, helping ensure the long-term sustainability of both the flood management asset and the wider nature reserve.

Project Background

The Lea Brook Valley SuDS scheme receives surface water runoff from surrounding residential and industrial catchments before attenuating flows and releasing them in a controlled manner to the downstream watercourse. The asset plays a vital role in reducing flood risk while also providing significant environmental and community benefits.

Over the years, the site has evolved beyond its original flood management function into a multifunctional green space that supports biodiversity, environmental education, community volunteering and public wellbeing.

However, maintaining and enhancing Natural Flood Management assets requires ongoing investment. To secure long-term funding and demonstrate the value delivered by the scheme, robust evidence of hydraulic performance is essential. Accurate monitoring data allows the project team to quantify flood attenuation benefits and demonstrate measurable environmental outcomes.



Objective

The project aimed to:

- Quantify the volume of surface water managed by the Natural Flood Management scheme
- Demonstrate the effectiveness of the attenuation asset during storm events
- Provide evidence of flood risk reduction benefits
- Support long-term asset stewardship and management
- Generate data to underpin revenue streams linked to environmental performance
- Provide independent evidence for stakeholder reporting and partnership agreements

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Our Approach

Detectronic deployed a hydraulic monitoring solution comprising:

- One rain gauge
- Two MSFM AV Flow Meters installed on the inlet channels feeding the attenuation pond

Together, the monitoring equipment continuously records rainfall, water depth, velocity and flow, providing accurate insight into how much surface water is entering and being managed by the attenuation system each year.

By collecting long-term hydraulic data and capturing performance during major storm events, the monitoring solution enables the site operators to demonstrate the value delivered by the asset using measurable evidence rather than assumptions.



Why Detectronic Monitoring?

Detectronic's monitoring solution was selected because it:

- Provides accurate and reliable hydraulic performance data
- Quantifies the volume of water attenuated by the scheme
- Captures performance during significant storm events
- Delivers independent evidence that can be used in reporting and funding applications
- Supports long-term management and asset planning
- Enables environmental benefits to be translated into measurable outcomes

For Natural Flood Management assets, proving performance is becoming increasingly important. Monitoring data provides the evidence needed to demonstrate both flood resilience benefits and wider environmental value, helping asset owners and custodians justify investment and secure ongoing support.

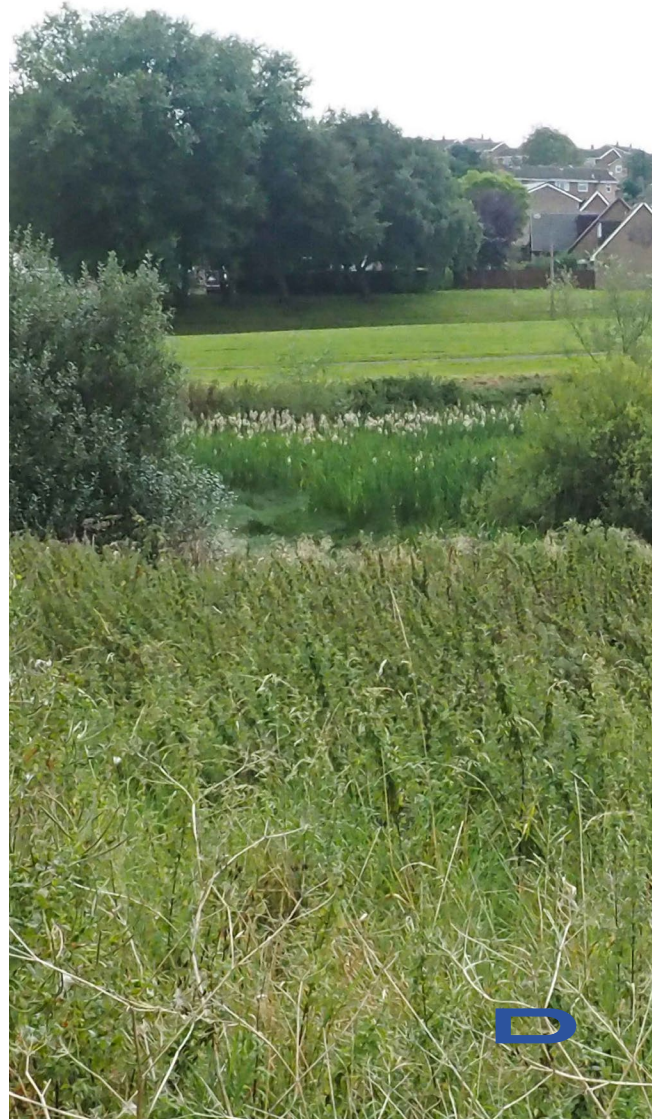
Results and Insights

The monitoring system has provided valuable evidence of the important role the scheme plays during major rainfall events.

During Storms Dudley, Eunice and Franklin in February 2022, Detectronic's monitoring recorded a cumulative flow volume of approximately 31,615m³ passing through the attenuation system, equivalent to around 12 Olympic-sized swimming pools of water.

The data demonstrated how effectively the asset attenuated significant surface water inflows during extreme weather conditions, helping to reduce downstream flood risk while maintaining the natural function of the site.

Beyond individual storm events, the monitoring programme provides an ongoing record of hydraulic performance, enabling stakeholders to understand how the asset is performing and ensuring its benefits can be clearly evidenced year after year.



Use of Data

The hydraulic data generated by Detectronic is fundamental to the long-term sustainability of the scheme.

Through an annual service arrangement with Yorkshire Water, the monitoring system provides independent evidence of the volume of surface water being intercepted, stored and managed by the Natural Flood Management asset each year. Without this data, Lea Brook Valley CIO would be unable to robustly demonstrate the flood risk reduction benefits delivered by the scheme.

The information collected is used to support environmental revenue streams, including:

- Surface Water Rebates
- Biodiversity Net Gain (BNG) credit opportunities
- Water company partnership arrangements
- Environmental enhancement initiatives
- Long-term stewardship and maintenance funding

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By converting hydraulic performance into measurable outcomes, the monitoring data provides the evidence required to support these activities and demonstrate the value being delivered by the asset.

Revenue generated through these mechanisms is reinvested directly back into the site, supporting:

- Management and maintenance of the flood attenuation asset
- Habitat creation and biodiversity enhancement
- Volunteer conservation workdays
- Environmental education programmes
- Community engagement activities
- Continued development of the 1.5km Green Corridor

The monitoring data therefore does far more than measure flow. It provides the evidence base that helps secure funding and supports the long-term future of the reserve.



Outcome

More than five decades after its construction, the Lea Brook Valley SuDS scheme continues to demonstrate the value of combining natural processes with effective engineering. Supported by a long-term partnership between Yorkshire Water and Lea Brook Valley CIO, the site delivers a wide range of benefits extending far beyond flood management.

Today, the asset provides:

- Flood resilience for the local community
- Biodiversity enhancement
- Environmental improvements
- Educational opportunities
- Volunteer engagement
- Community wellbeing benefits

Crucially, Detectronic's monitoring solution provides the independent evidence needed to demonstrate these outcomes. The ability to accurately quantify the volume of water managed by the scheme enables the site operators to support Surface Water Rebate claims, evidence Biodiversity Net Gain opportunities and maintain the funding required to manage the asset over the long term.

What began as a surface water attenuation scheme has evolved into a thriving green corridor delivering environmental, social and economic value. Detectronic is proud to support this innovative approach, helping transform reliable environmental data into sustainable funding and lasting benefits for both people and nature.



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