ResilienTogether | INNOVATION

Case study #14

February 2025

ResilienTogether is a Defra-funded project that aims to build a Smart Catchment to enhance flood resilience.
Our Innovation Case Studies showcase new and creative approaches to building a smarter, more resilient catchment.

Bentobar+ Hydrophilic Waterstop for SuDS gauge retrofit

Using innovative materials for installing a gauging station on an attenuation pond outlet.

Figure 1. Fairfield Attenuation Pond

ResilienTogether

ResilienTogether is creating a Smart Catchment, through use of innovative technologies and techniques, to reduce flood risk to people and places, enhance the water environment in the Pix Brook catchment and improve community resilience in the face of climate change.

The project is achieving this through a close-knit partnership that collaborate to deliver six inter-related work packages. This case study comes from the Flow Monitoring Work Package which aims to enhance the flow monitoring and telemetry network to improve understanding of flows within the catchment and establish near real-time flow monitoring.

Figure 2. Portable gauging station installed by RDN

Challenge

Radio Data Network's (RDN) installation of a portable gauging station on an attenuation pond outlet was one of the most challenging installations. The gauge had to be installed without permanently altering the structure with concrete or sealants and without causing the attenuation pond to drain faster. A design was also needed to create a watertight seal around the edges of the gauge.

Innovative Solution

RDN used a Bentobar+ Hydrophilic Waterstop to bed the gauge into the headwall. Used in the construction industry, hydrophilic waterstops are designed to prevent water ingress or egress from concrete structures by expanding when in contact with water to create an impervious seal. They can be used to protect structures from the wear and tear of a constant water flow and maintain structural integrity. Bentobar is designed to create a waterproof seal for up to 6 bar of pressure [1].

Use of this innovative material made the installation of this temporary gauging station on the Fairfield Attenuation Pond outlet viable. It was installed underwater without the need for permanent concrete and sealants. It meant that the installation could be conducted without the need for holding back the water or drying the attenuation pond.

To allow for the calculation of flow, all water must pass through the channel which has known dimensions. This requires a reliable seal between the frame and the structure. The use of a sealing material that expands when in contact with water, rather than a mastic or concrete-based sealant, enabled the structure to be installed and non-conformities and gaps between the frame and the headwall to be filled. Moreover, at the end of the study, the gauging station can be removed without trace and without causing damage to the headwall.

See 'ResilienTogether Innovation Case Study 11: SuDS attenuation monitoring' for more detail on this innovative installation.

[1] Hydrophilic Waterstop

If you want to hear more, please contact ResilienTogether.project@Centralbedfordshire.gov.uk or visit our website https://resilientogether.org.uk/