ResilienTogether | INNOVATION

Case study #04

May 2024

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.

Non-invasive Gauging Stations

Non-invasive mounting of level gauges on bridge structures, eliminating the need for structural assessment and alteration to the structure of the bridge.

Figure 1. Non-invasive gauging station

ResilienTogether

ResilienTogether is creating a Smart Catchment, through 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.

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. It aims to build an intelligent telemetry network to improve understanding of flows within the catchment and establish near real-time flow monitoring.

Challenge

Radio Data Networks Ltd (RDN) have installed a river level monitoring network across the Pix Brook. A number of the gauges have been fixed to bridges. Previously, mounting a gauge on a bridge required a structural survey and extensive permissions from third-parties, resulting in delayed installations and considerable cost implications. This was due to the need to drill into and alter the bridge structure; and assess the impact of the brackets and gauging equipment on the bridge.

Innovative Solution

RDN designed an integrated lightweight, bulletproof gauging station casing with a range of non-invasive high security brackets. This enables a gauge to be retrospectively mounted without drilling and altering the structural integrity of the bridge. Although the gauging station is not drilled in, it has a series of features which offer high security against vandals, protecting the equipment.

This new and innovative design has been implemented in multiple locations across the Pix Brook. It has allowed for time and cost efficient creation of a catchment wide telemetry network.

Non-invasive gauges may also be relocated to achieve evolving objectives and to optimise the network, to better achieve a reliable water level time series that is suitable for long term data analysis.

Through the design and installation process, learning has been gained that may be of interest to organisations seeking to develop their own monitoring networks. This includes level monitoring costs, product specification, collaborating with third-parties and performance. This innovation has already been adopted by the Environment Agency and Anglian Water where temporary gauge attachments were required for Listed (protected) bridges.

Benefits

1. Saving time and money

These non-invasive gauging stations do not alter the structure of the bridge. Therefore, the time taken to gain permission to mount the gauge onto a bridge is reduced, saving the project money and reducing the production and installation time.

2. Easy to relocate

As the gauge is not drilled into the bridge, it can be easily moved and retrofitted onto existing structures compared to drilled structures. It also allows ResilienTogether to monitor locations which were previously inaccessible.

Eur Ing Brian M Back
Founder of Radio Data Networks

"An innovative solution inspired by watching the time and cost that others have faced, in attempting to gain permission to affix brackets to third party bridges. The innovation has since been employed by Network Rail and Transport for Wales."

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