

**Caldbeck**

# **Infiltration Reduction Plan**

**Last Updated: March 2025**



## Executive summary

Caldbeck in Cumbria is in the monitor stage (see Figure 1) to address infiltration and reduce spills at the Caldbeck Wastewater Treatment Works Storm Tank Overflow (017670113ST). A desktop assessment concluded that there is a low likelihood of groundwater infiltration contributing to spills and CCTV surveys also did not reveal infiltration.

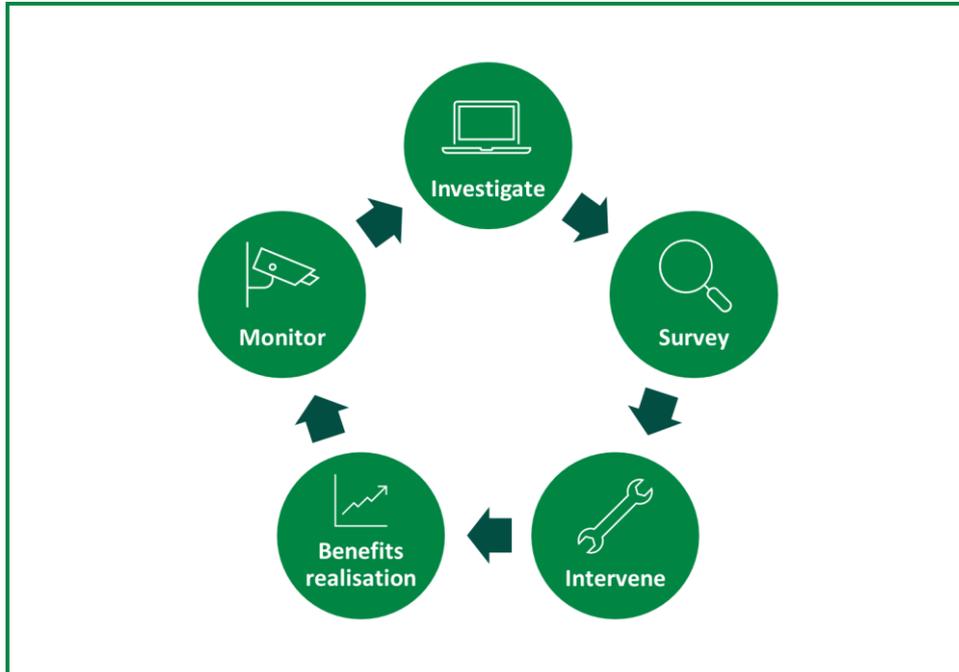
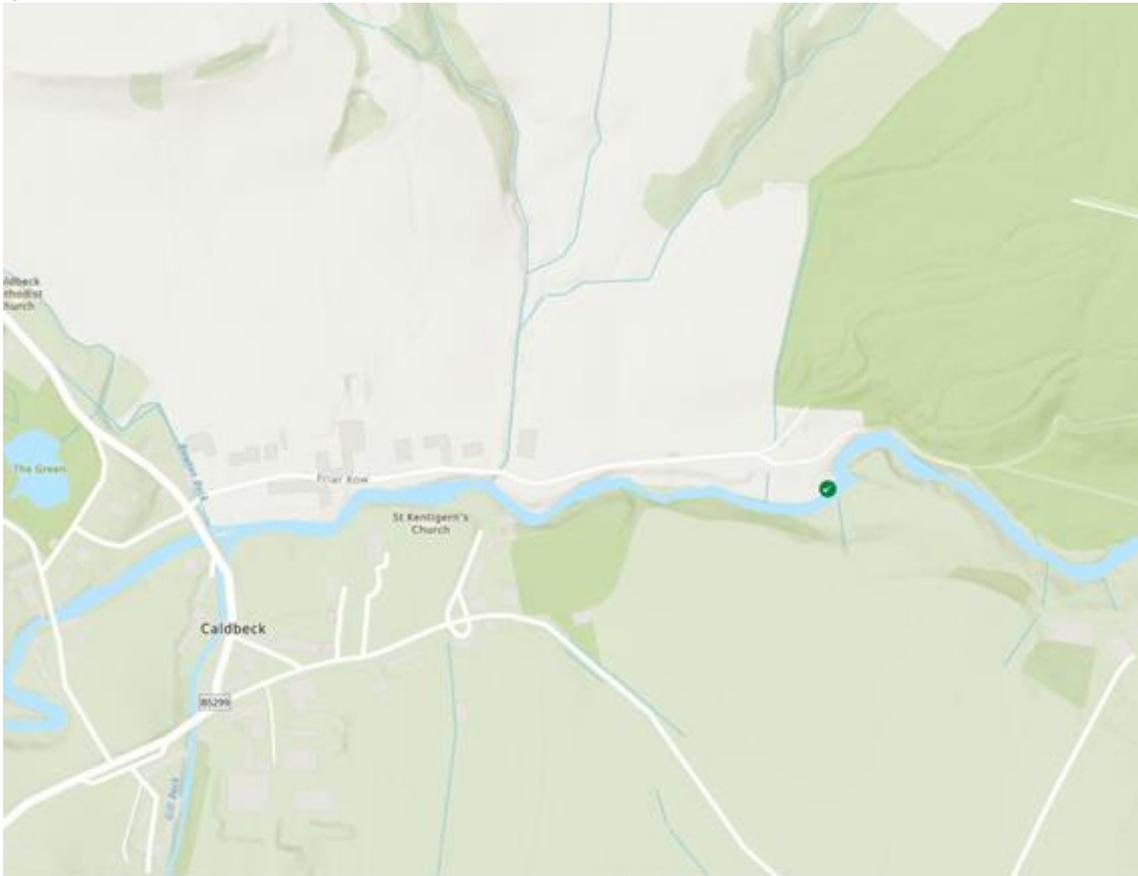


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

## Context

Sometimes, water can enter our wastewater pipes that they were not designed to receive. One source of these additional flows can be groundwater infiltration which can occur through pipe defects, leaky joints or issues with manholes. Extra water in the network can cause the sewer capacity to be exceeded, leading to sewer flooding or contributing to storm overflow activations.

As part of our ongoing work to maintain an effective network and achieve Better Rivers for the North West, our Infiltration Reduction Plans demonstrate our efforts to date and next steps to address infiltration and inflows in the catchment. This plan covers the Caldbeck drainage area and the associated overflow, Caldbeck Wastewater Treatment Works Storm Tank Overflow (017670113ST). In 2022, infiltration was identified as a potential leading cause of the storm overflow discharging. The purpose of this plan is to capture the process to investigate, identify and address significant groundwater infiltration.



**Figure 2:** United Utilities – Better Rivers – Storm Overflow Map (October 2024). The green dot marks the Caldbeck Wastewater Treatment Works Storm Tank Overflow.

Caldbeck village in Cumbria is situated at the northern border of the Lake District National Park in the Northern Fells. It sits on Cald Beck with Gill Beck also flowing through the village.

## Investigate

A desktop study was undertaken using available data to understand the extent of infiltration in the sewer network of the drainage catchment. The following data (where available) was analysed to determine the scale and location of potential infiltration:

- Relevant flow and depth data
- Operational information
- MCERTS Data
- Hydraulic models of the catchment
- River Levels
- Groundwater (borehole) data
- Spill analysis
- Topographical and Sewer maps

The assessment concluded that significant groundwater infiltration was unlikely in the catchment. However, there are areas in the catchment where sewers cross the river or run adjacent to a local pond.

From these findings, it was recommended that CCTV surveys are completed to see if there is infiltration into the sewer. CCTV surveys can also identify infiltration of the watercourse into the sewer or land drainage connected into the sewer, which can be removed.

## Survey

As recommended, 752m of the sewer network was surveyed in Winter 2024. The footage was reviewed by an engineer and assessed using AI technology to rapidly identify points of infiltration and identify areas requiring remedial works. The surveys confirmed that there was no significant groundwater infiltration contributing to increased flows into the network and as a result no remedial works are required in the area surveyed.

The network was also checked for inflows and no lateral connections are suspected of receiving flows not bound to receive.

## Next steps

Caldbeck is in the monitoring stage of identifying and addressing infiltration (see Figure 1) to identify emerging points of infiltration, should they arise.