

Caldbeck

Infiltration Reduction Plan

Last Updated: January 2026



Executive summary

Caldbeck in Cumbria is in the monitoring stage (see Figure 1) to address infiltration and reduce spills at the Caldbeck Wastewater Treatment Works Storm Tank Overflow (017670113ST). An initial desktop assessment concluded that there was a low likelihood of groundwater infiltration contributing to spills. CCTV surveys found evidence of infiltration, and interventions were completed in Autumn 2025.

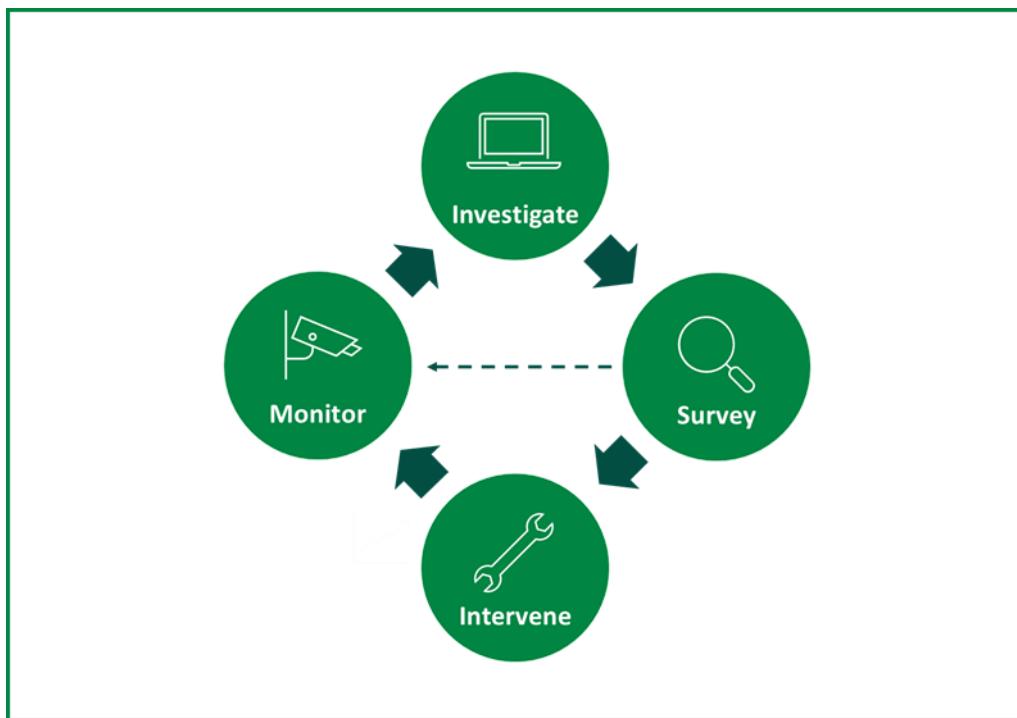


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

Context

Sometimes, water can enter our wastewater pipes for which 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 its associated overflow, the 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.

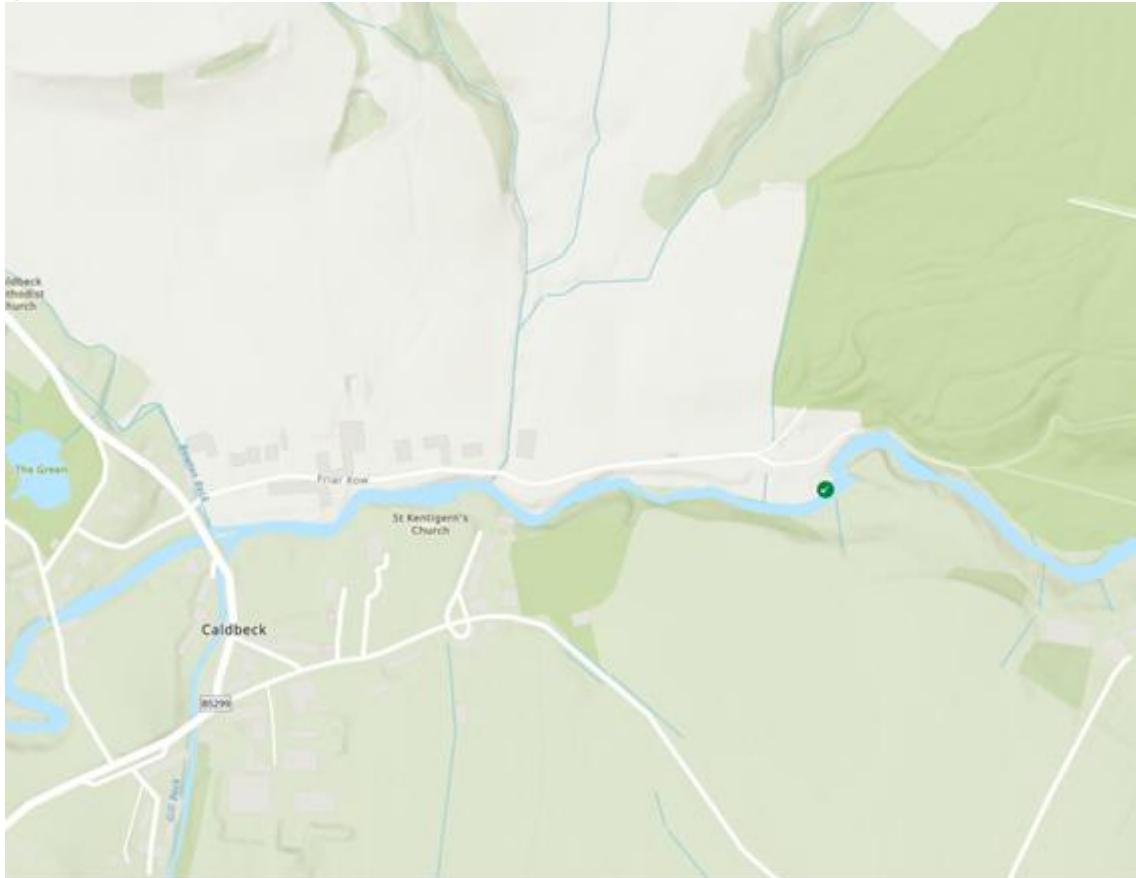


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (October 2024). The green dot marks the Caldbeck Wastewater Treatment Works Storm Tank Overflow.

Caldbeck 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, it was found that there were areas in the catchment where sewers cross a river or run adjacent to a local pond.

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

Survey

As recommended, 752m of the sewer network was surveyed in Autumn 2024. The footage was reviewed by an engineer and assessed using Artificial Intelligence to rapidly identify points of infiltration and identify areas requiring remedial works. Some minor infiltration was identified, and interventions were recommended to resolve this.

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

Interventions

Remedial works were completed in Autumn/Winter 2025. This included lining 74m of the sewer network in order to prevent infiltration.

Next Steps

Caldbeck is currently in the monitoring stage of identifying and addressing infiltration (see Figure 1) to monitor the efficacy of the remedial works and identify new points of infiltration, should they arise.