

Bolton Low Houses

Infiltration Reduction Plan

Last Updated: July 2025



Executive summary

Bolton Low Houses in Cumbria is currently in the monitor stage (see Figure 1) to address infiltration and reduce spills at the Bolton Low Houses Wastewater Treatment Works Storm Tank Overflow (017570012ST). A desktop assessment concluded that there is the possibility of groundwater infiltration but not likely a significant amount that would reduce spill count if addressed. Surveys confirmed the presence of infiltration and remedial works were completed in March 2025.

As groundwater infiltration has been found but is yet to be confirmed as a leading cause of spills to environment, interventions have been completed to address the localised infiltration identified during the Winter 2024 surveys. As more is known on the results of the interventions, this Infiltration Reduction Plan will be updated accordingly.

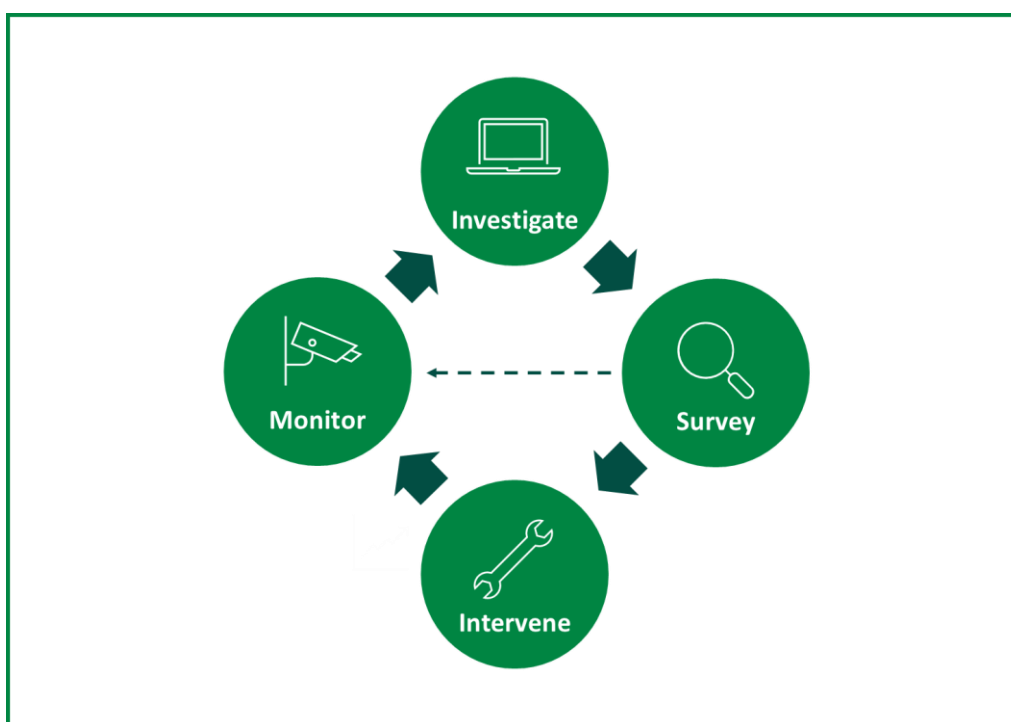


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 Bolton Low Houses drainage area and the associated overflow, Bolton Low Houses Waste Water Treatment Works Storm Tank Overflow (017570012ST). 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.

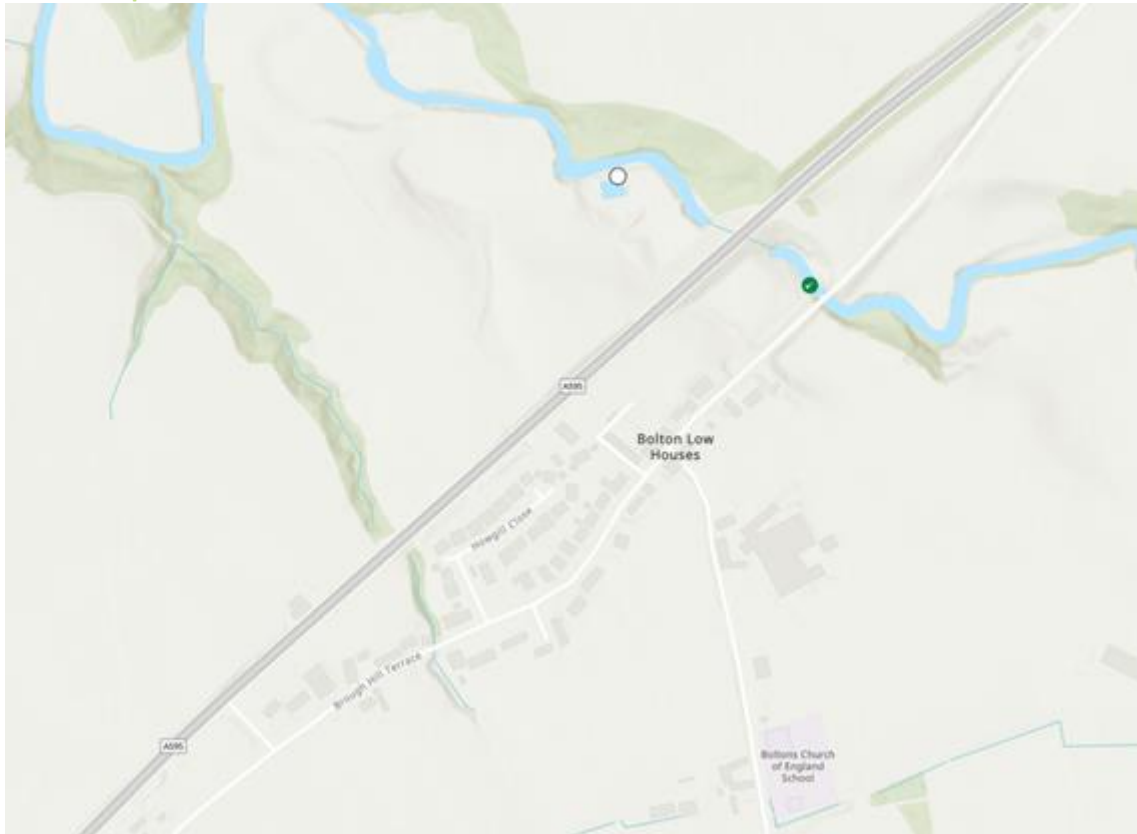


Figure 2: [United Utilities – Better Rivers – Storm Overflow Map \(September 2024\)](#). The white dot, North of Bolton Low Houses, marks the Bolton Low Houses Overflow.

Bolton Low Houses is a small village in Cumbria, South of Wigton. It lies just North of the Lake District National Park border, close to the River Waver and is surrounded by rural land. The land to the southeast falls towards the village and continues down to the River Waver.

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 were several indicators that suggested surveys were needed to clarify whether infiltration was present, including the identification of a sewer crossing underneath a stream.

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

Survey

As recommended, over 280m of CCTV surveys were completed in Winter 2024. The CCTV surveys were reviewed by an engineer and assessed using Artificial Intelligence to rapidly identify and locate points of infiltration requiring remedial works. CCTV confirmed that no active infiltration was present within the sewer pipes but one manhole did have evidence of infiltration.

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

Intervention

In March 2025, the manhole that showed evidence of infiltration was sealed via grout injection.

Next steps

Bolton Low Houses is currently in the monitor stage of identifying and addressing infiltration (see Figure 1). The site will follow the iterative process displayed in Figure 1 to monitor the efficacy of the remedial works and identify new points of infiltration, should they arise.