## Bolton Low Houses

# Infiltration Reduction Plan

**Last Updated:** October 2026



United Utilities

Water for the North West

# Executive summary

Bolton Low Houses in Cumbria is currently in the monitoring stage (see Figure 1) to address infiltration and reduce spills at the Bolton Low Houses Wastewater Treatment Works Storm Tank Overflow. An initial desktop assessment concluded that there was a possibility of groundwater infiltration. CCTV surveys confirmed the presence of infiltration, and interventions were completed in Winter 2025 and Spring/Summer 2026.

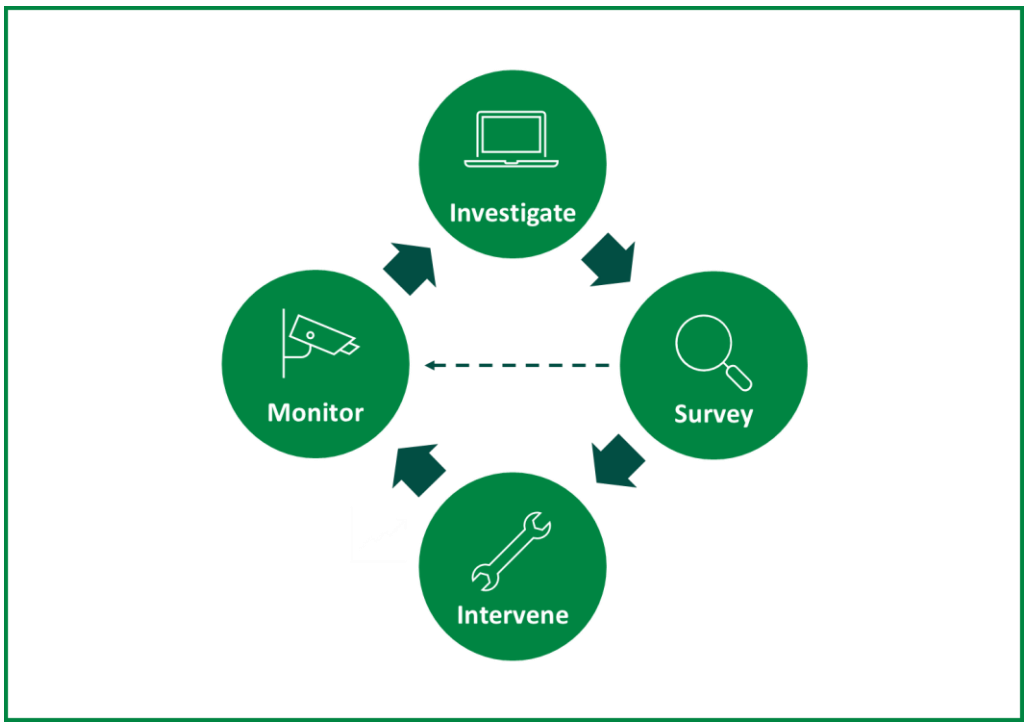



**Figure 1:** Iterative process to investigate, identify and address groundwater infiltration

# 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 Bolton Low Houses drainage area and its associated overflow, Bolton Low Houses Wastewater Treatment Works Storm Tank Overflow. 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.

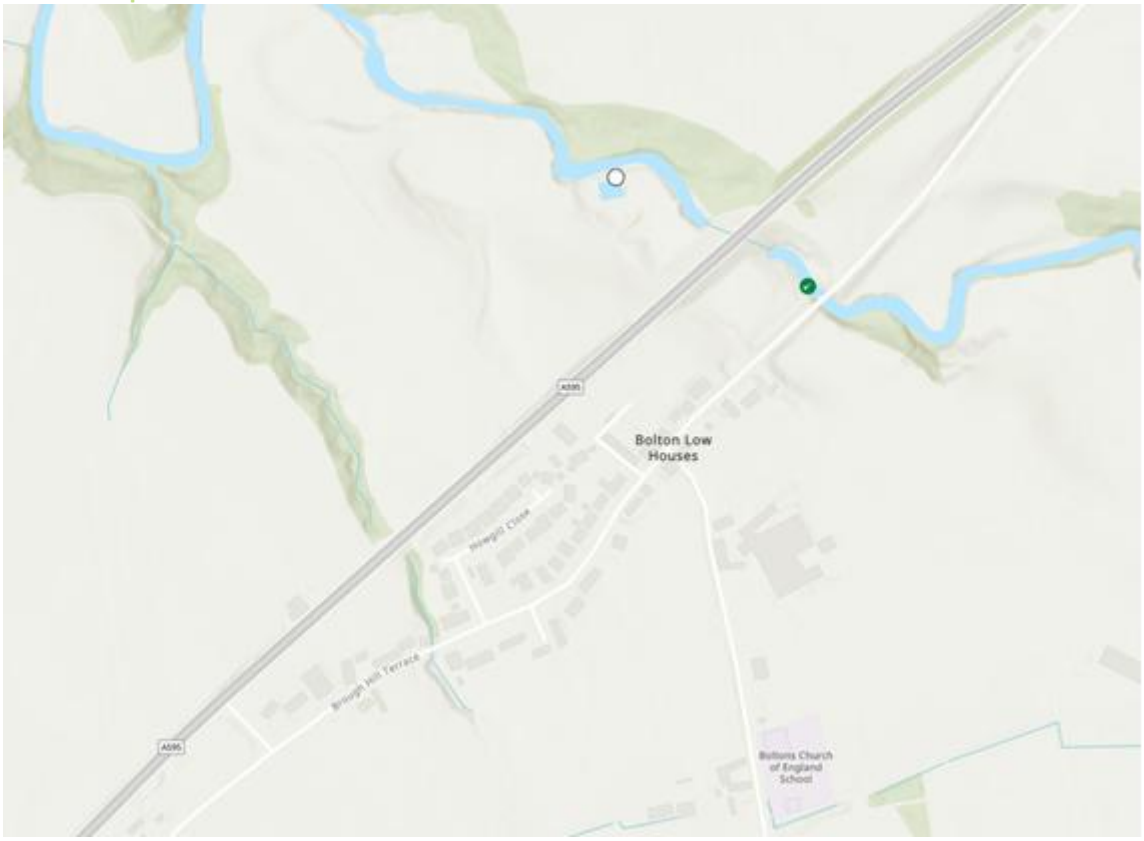



**Figure 2:** United Utilities – Better Rivers – Storm Overflow Map (September 2024). The white dot marks the Bolton Low Houses Overflow

Bolton Low Houses is a village in Cumbria, south of Wigton. It lies just north of the Lake District National Park border, close to the River Waver. The land to the south-east falls towards the village and continues down to the River Waver.

## Investigation

An initial 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 further surveys would be needed to clarify whether infiltration was present, this included the identification of a sewer crossing underneath a stream.

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

## Survey

As recommended, 282m of CCTV surveys were completed in Autumn 2024. The surveys were assessed using Artificial Intelligence to rapidly identify and locate points of infiltration. They were then reviewed by an engineer to determine any required remedial work.

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

## Intervention

In Winter 2025, interventions were completed as recommended. This involved sealing a manhole via grout injection.

In addition, approximately 194m of sewer lining was completed in Spring/Summer 2026.

## Next steps

Bolton Low Houses is currently in the monitoring stage of addressing infiltration. The site will continue to follow the iterative process displayed in Figure 1 to monitor the efficacy of these interventions and identify new points of infiltration, should they arise

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