Greystoke

Infiltration Reduction Plan

Last Updated: October 2026



United Utilities

Water for the North West

Executive summary

Greystoke in Cumbria is currently in the monitoring stage (see Figure 1) to address infiltration and reduce spills at the Greystoke Wastewater Process Pumping Station Storm Overflow. An initial desktop assessment concluded that infiltration in the area was unlikely. CCTV surveys found evidence of infiltration, and interventions were completed in Winter 2026.

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.

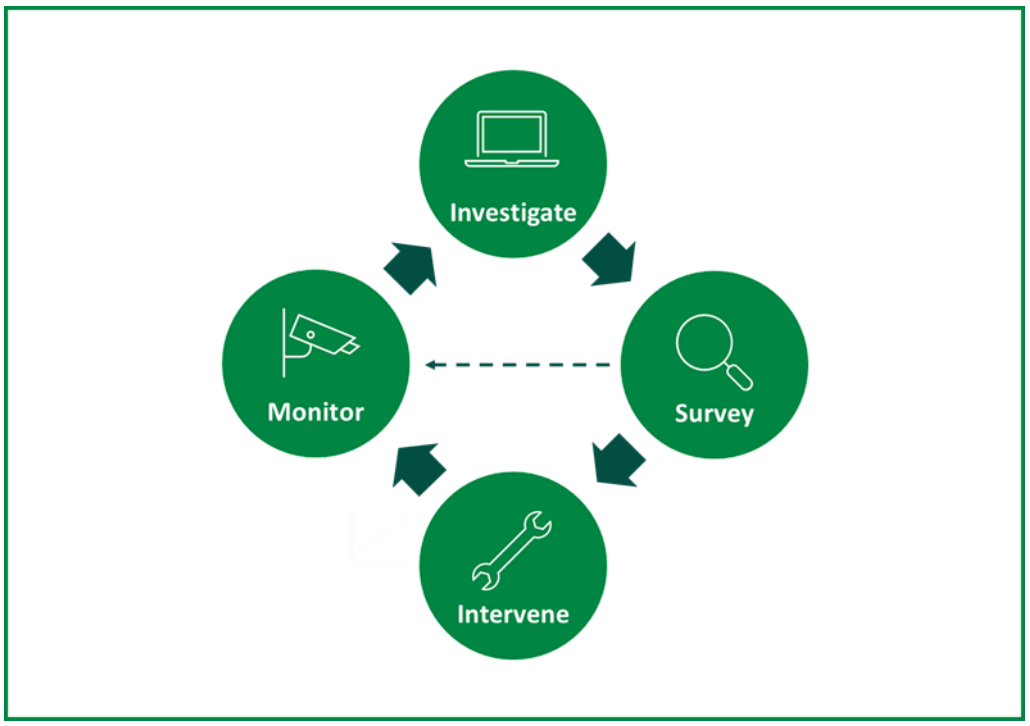


Figure 1: Iterative process to investigate, identify and address ground water infiltration

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 Greystoke drainage area and its associated overflow, Greystoke Wastewater Process Pumping Station Storm Overflow. In 2023, 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.

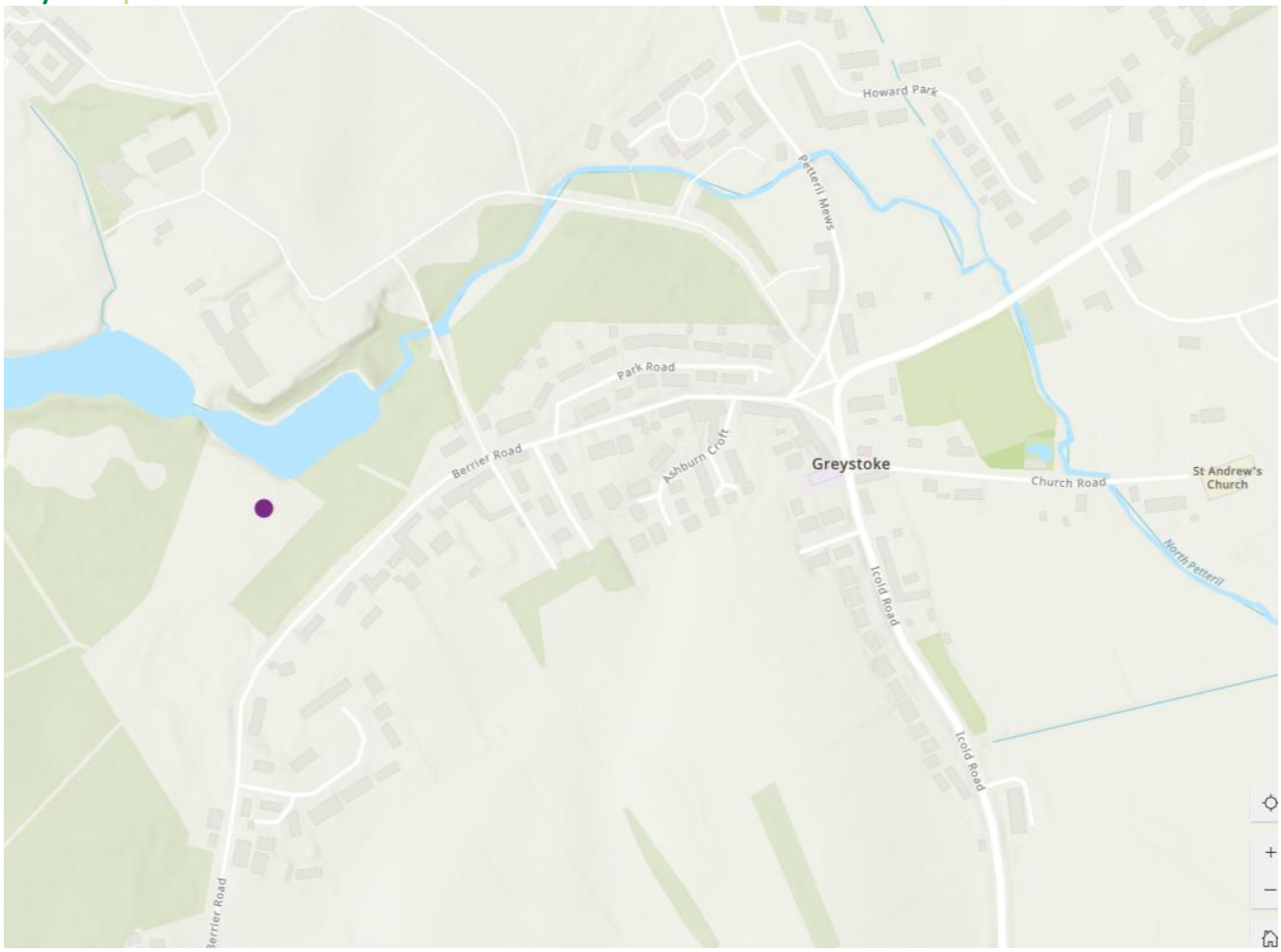


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (November 2024). The purple dot marks the Greystoke Pumping Station Storm Overflow

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 identified areas of the catchment where sewers crossed streams; flow from these watercourses could potentially enter the sewer system. Therefore, it was recommended that CCTV surveys be completed in order to identify any potential infiltration points and confirm if groundwater infiltration was present.

Survey

215m of the sewer network was surveyed in Autumn/Winter 2024. The surveys were assessed using Artificial Intelligence to rapidly identify and locate points of infiltration. They were then reviewed by an engineer to assess for any required remedial works. The surveys confirmed that that there was no significant groundwater infiltration contributing to increased flows into the network and as a result no interventions were required.

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

Further surveys were conducted in Spring/Summer 2025, with 1,554m of CCTV surveys completed. Multiple points of infiltration were found, and interventions were recommended as a result.

Intervention

As recommended, remedial works were completed in Winter 2026. This involved lining 155m of the sewer network, as well as installing 2 patch liners. A manhole was sealed via grout injection, and another manhole had its frame and cover replaced.

Next steps

Greystoke is currently in the monitoring stage of identifying and addressing infiltration. The site will follow the iterative process displayed in Figure 1 to monitor the efficacy of the completed interventions and identify new points of infiltration, should they arise.