Grasmere

Infiltration Reduction Plan

Last Updated: October 2026



United Utilities

Water for the North West

Executive summary

Grasmere in Cumbria is currently in both the survey and intervention stages (see Figure 1) to address infiltration and reduce spills at the Grasmere Wastewater Treatment Works Storm Overflow. An initial desktop assessment found an indication of infiltration in the area. CCTV surveys confirmed the presence of infiltration, and remedial works are underway as a result.

A first phase of survey and remedial works were delivered during Spring 2026. A second phase of survey and remedial works is underway and expected to complete in Winter 2026/27.

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.

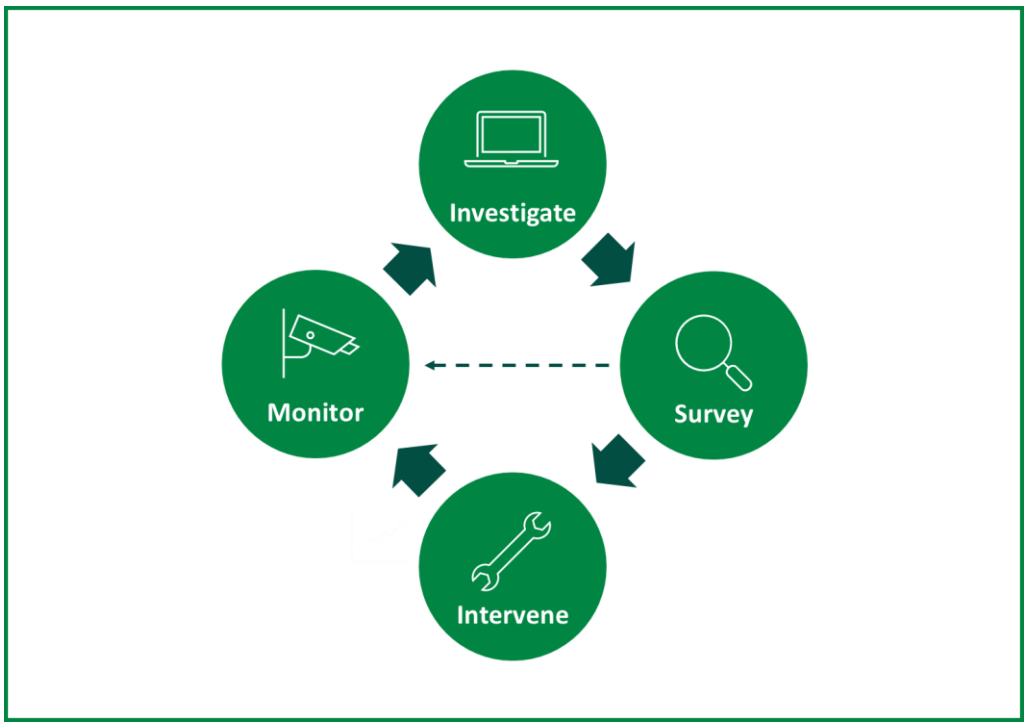


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 Grasmere drainage area and its associated overflow, Grasmere Wastewater Treatment Works Storm Overflow. In 2024, 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.

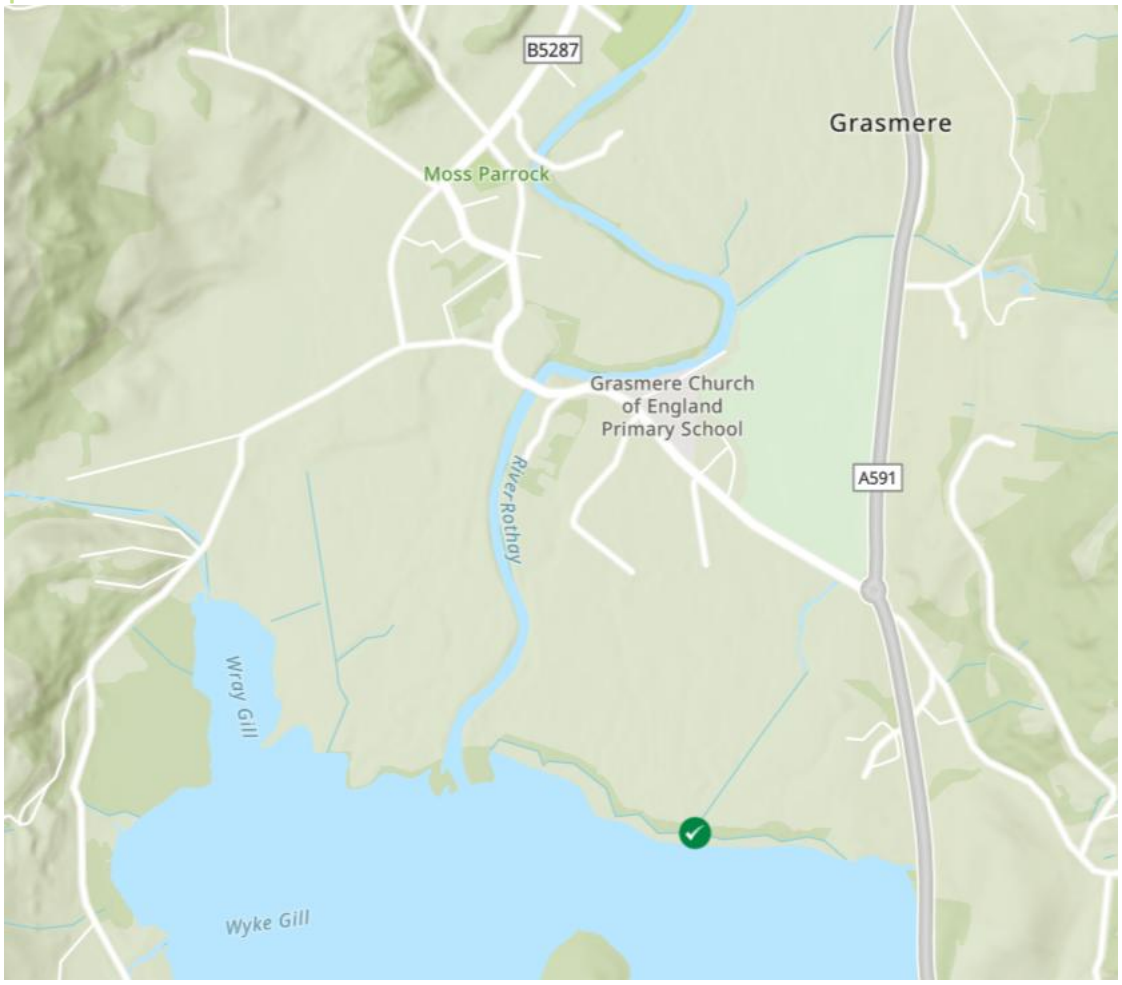


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (January 2026). The green dot marks the Grasmere Wastewater Treatment Works Storm Overflow

Grasmere lies in the heart of the Lake District, nestled within a glacially carved valley. The village sits approximately 62m above sea level, surrounded by rugged fells including Helm Crag to the north-west and the Fairfield Horseshoe ridge to the east. The terrain is a mix of steep uplands and low-lying meadows, shaped by post-glacial processes and fluvial erosion.

The River Rothay flows through the valley, feeding and draining Grasmere Lake. The lake's outflow continues into Rydal Water and eventually into Windermere, forming part of a larger interconnected watershed.

The landscape supports a mosaic of habitats: upland heath, deciduous woodland, and grassland. Historically, the valley floor has been used for grazing and small-scale agriculture, while the surrounding slopes remain largely uncultivated due to their steepness and thin soils.

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 desktop assessment found multiple indicators of infiltration that did not appear to be caused by rainfall. It also indicated a level of baseflow in the area.

The assessment found that some sewers run adjacent to or through rivers and watercourses; sometimes flow from these watercourses can enter the sewer network.

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

Survey

As recommended, 1,431m of CCTV surveys were completed in Spring 2026. 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 work. Multiple points of infiltration were found, and remedial works were recommended to seal the network.

A second phase of survey work is expected to complete in Winter 2026/27.

Intervention

A first phase of interventions was delivered in Spring/Summer 2026. This included lining 224m of sewer and sealing four manhole chambers to seal the network and prevent infiltration.

A second phase of remedial work is underway and expected to complete in Winter 2026/27.

Next steps

Grasmere is currently in both the survey and intervention stages of identifying and addressing infiltration. The site will then follow the iterative process displayed in Figure 1 to monitor the efficacy of these interventions and identify new points of infiltration, should they arise.