Blennerhassett

Infiltration Reduction Plan

Last Updated: March 2025

United Utilities

Water for the North West

Executive summary

Blennerhassett in Cumbria is currently in the intervention stage (see Figure 1) to address infiltration and reduce spills at the Blennerhassett Pumping Station Storm Overflow (ALL0061SO). A desktop assessment concluded that infiltration is likely and reducing infiltration in this area would be significant enough to reduce spill frequency at Blennerhassett Pumping Station Storm Overflow. CCTV surveys have confirmed infiltration and remedial works are due to be completed in Spring/Summer 2025.

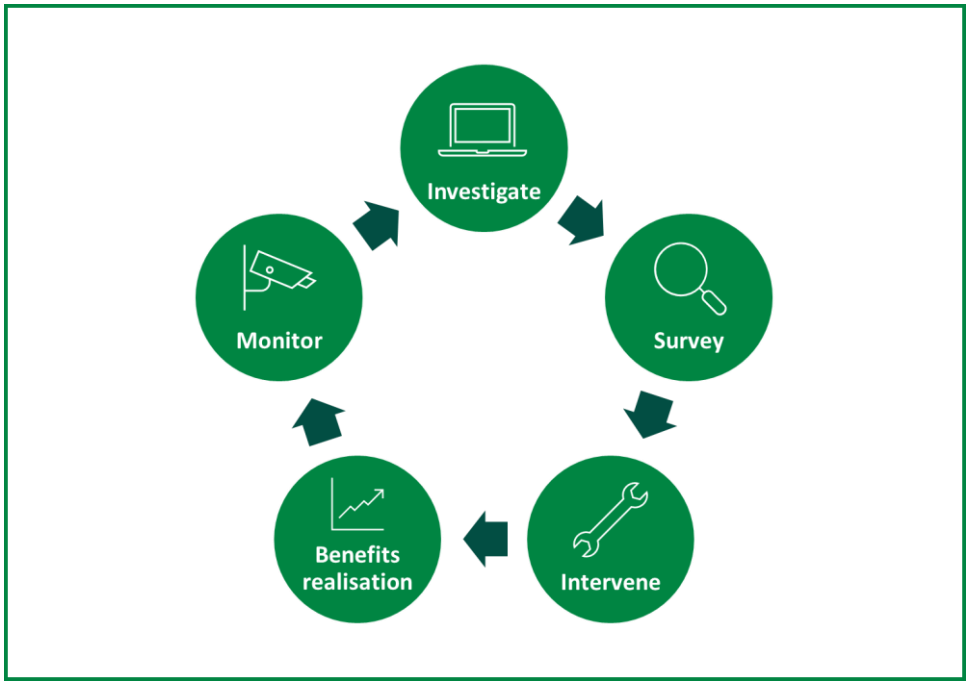

Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 Blennerhassett drainage area and the associated overflow the Blennerhassett Pumping Station Storm 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 (October 2024). The green dot marks the Blennerhassett Pumping Station Storm Overflow.

Blennerhassett Village lies on the River Ellen, to which the Pumping Station Storm Overflow spills. It sits at the edge of the Lake District National Park, about 10miles inland. The area is predominantly rural, featuring agricultural and scenic land.

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 infiltration is likely in the catchment. There were several indicators of groundwater infiltration in the system as well as infiltration driven by rainfall. The assessment also

indicated that spills may be partly driven by rural run off and identified areas of the catchment where public sewers cross the local watercourse.

From these findings, it was recommended that CCTV surveys were completed to identify potential infiltration sources. CCTV surveys also identify if there is infiltration of watercourses into the sewer, where pipes cross them.

The spill analysis suggests that reducing infiltration in this area would be significant enough to reduce spill frequency at Blennerhassett Pumping Station Storm Overflow. The contribution of groundwater infiltration to the modelled baseflow used in this assessment can only be determined following further investigations.

Survey

As recommended, over 800m 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. Several points of linear infiltration were identified, with varying degrees of severity, and remedial works recommended to seal the sewer. It should be noted that surveys capture a point in time and severity of infiltration can change based on the time of the year and seasonal ground water levels as well as recent weather events prior to surveys taking place.

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

Intervention

Remedial works to address infiltration are due to be completed in Spring / Summer 2025. Plans include relining approximately 600m of the sewer network.

Next steps

Blennerhassett is currently in the intervention 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.