Greystoke

Infiltration Reduction Plan

Last Updated: March 2025

United Utilities

Water for the North West

Executive summary

Greystoke in Cumbria is currently in the monitor stage (see Figure 1) to address infiltration and reduce spills at the Greystoke Wastewater Process Pumping Station Storm Overflow (EDE0059SO). A desktop assessment concluded that infiltration in the area is unlikely and CCTV surveys also did not reveal infiltration. The area will now be monitored to identify new points of infiltration, should they arise.

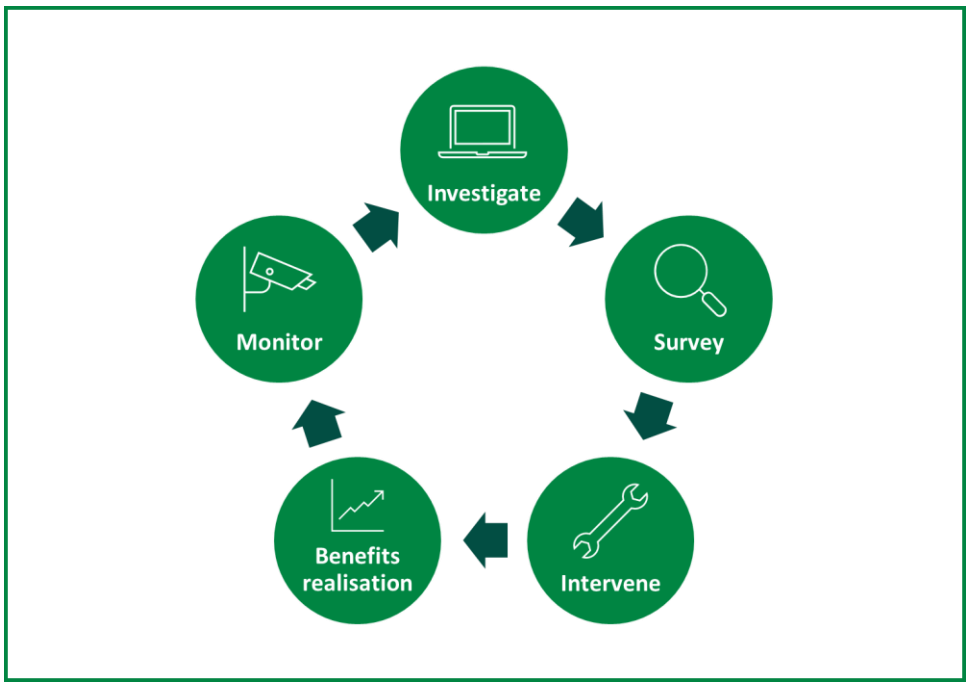

Figure 1: Iterative process to investigate, identify and address ground water infiltration

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 Greystoke drainage area and the associated overflow the Greystoke Wastewater Process Pumping Station Storm Overflow (EDE0059SO). In 2023, infiltration was identified as a potential leading cause of the storm overflow discharging. The purpose of this plan is to further investigate and address this.

If groundwater infiltration is found to be a leading cause of spills, interventions will be assessed and this Infiltration Reduction Plan will be updated accordingly. If not, this plan will end at the survey stage and next steps will be processed through other relevant workstreams.

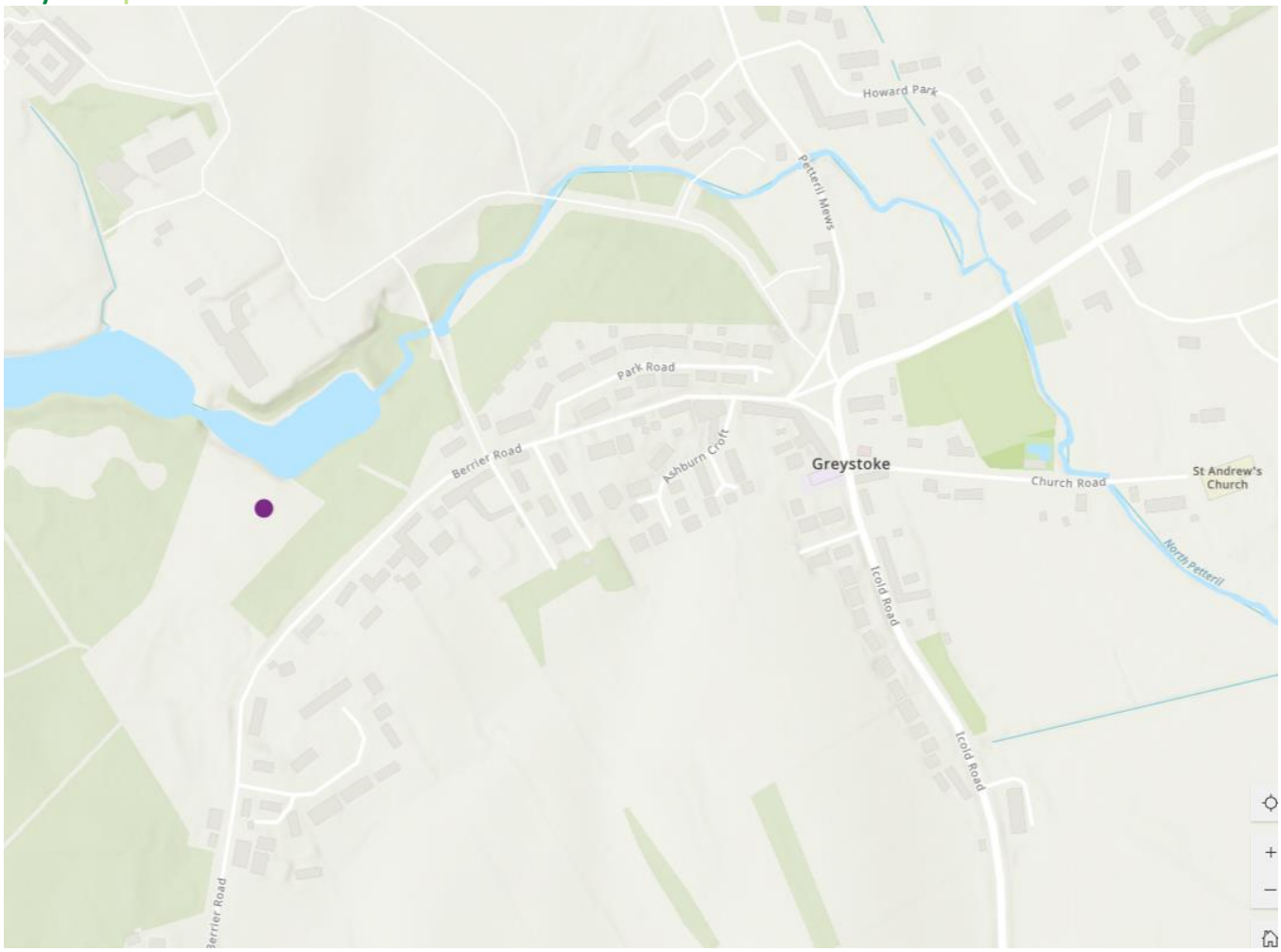

Figure 2: United Utilities – Better Rivers – Storm Overflow Map (November 2024). The purple dot marks the Greystoke Pumping Station Storm Overflow.

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 there was no evidence of infiltration at this site. Further observations identified areas of the catchment where sewers cross waterbodies. Flow from these streams could enter the sewer system if there were defects. Therefore, it was recommended that CCTV surveys are completed to identify potential infiltration points to confirm that there is no significant groundwater infiltration

Survey

215m of the sewer network was surveyed in Winter 2024. The footage was reviewed by an engineer and assessed using AI technology to rapidly identify points of infiltration and identify areas requiring 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 remedial works are required in the area surveyed.

The network was also checked for inflows and no lateral connections are suspected of receiving flows not bound to receive. The potential impact of surface water run off on the sewer network in the catchment will be explored via other channels at UU.

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 identify new points of infiltration, should they arise.