

Greystoke

Infiltration Reduction Plan

Last Updated: November 2024



Executive summary

Greystoke in Cumbria is currently in the survey 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 however, surveys are underway to clarify this as well as the exploration of Natural Flood Management to manage rural run off if this is found to be a significant contributing factor in spill numbers.

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.

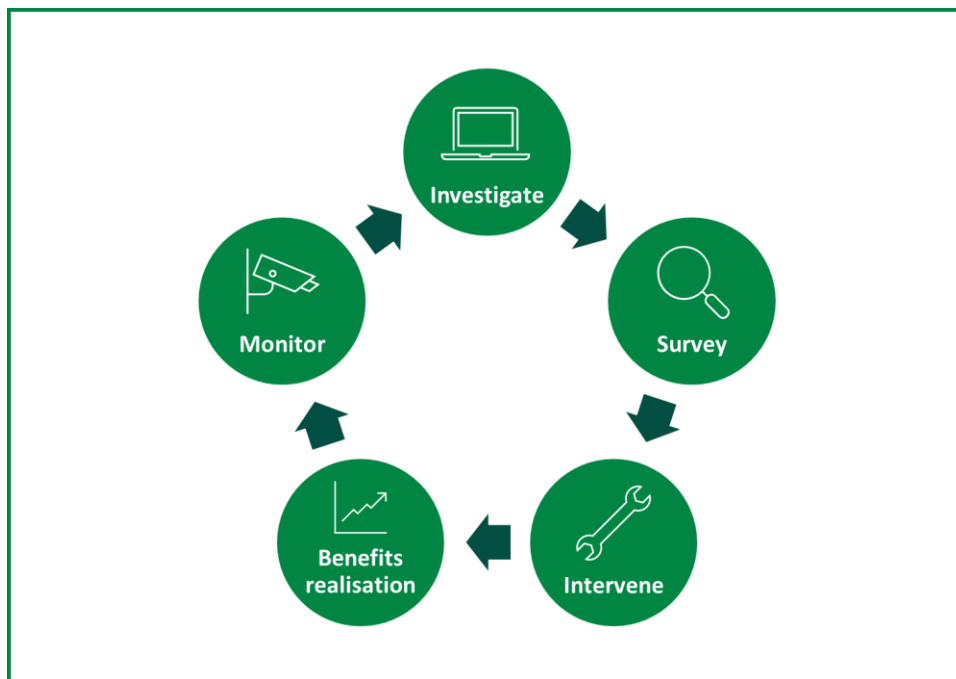


Figure 1: Iterative process to investigate, identify and address ground water infiltration

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.

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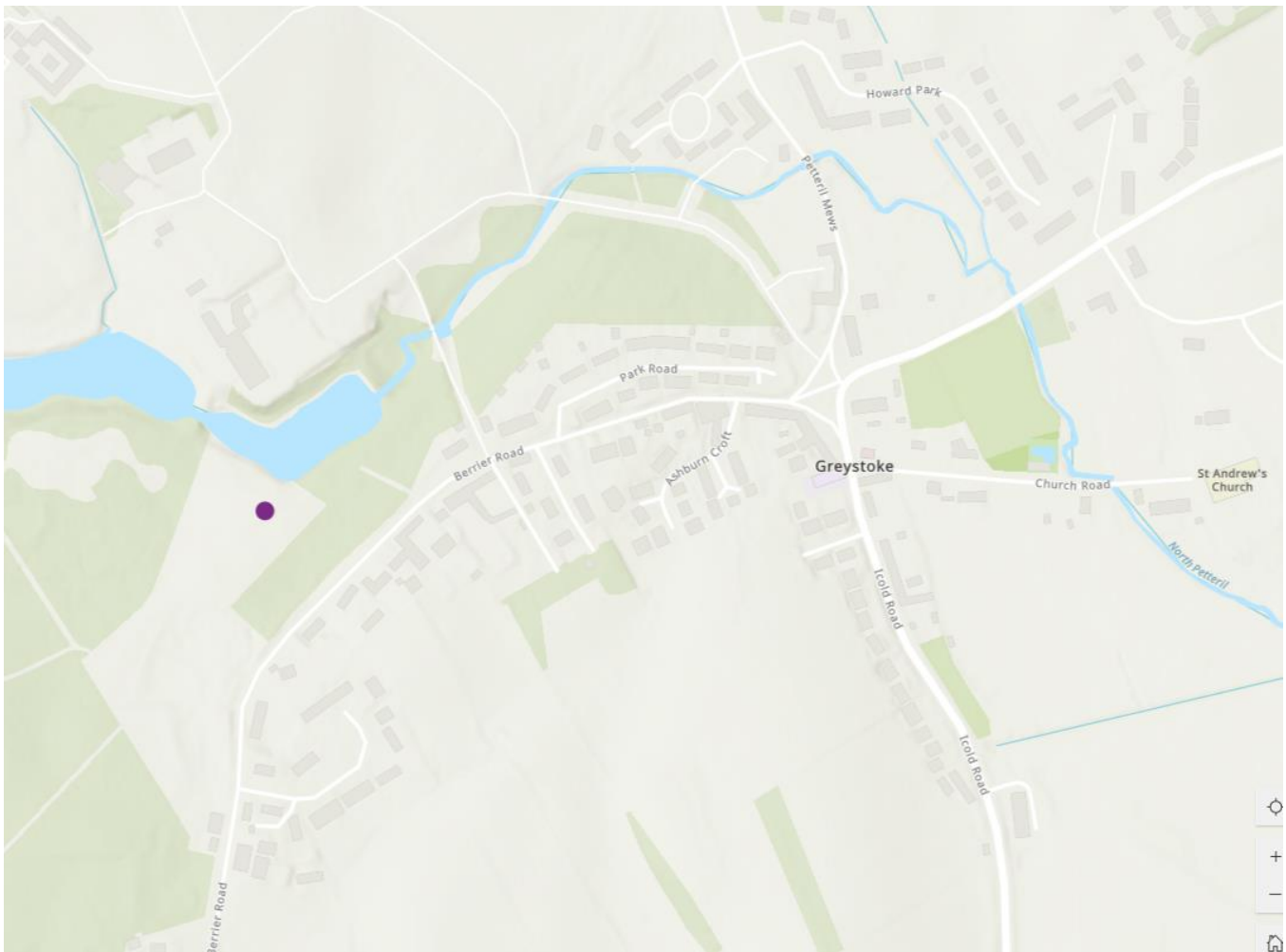


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (November 2024). The purple dot marks the Greystoke Pumping Station Storm Overflow.

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

Comprehensive CCTV surveying of the area is planned for Winter 2024 to identify possible infiltration and inflows to the sewer. This may be extended to Winter 2025 if surveying is not conclusive. The CCTV survey information will then be assessed using Artificial Intelligence to identify outstanding infiltration and inflow issues that need addressing.

As well as CCTV, surface water planning software may be used to complete a hydrological and topographical assessment to identify opportunities for natural flood management in the catchment to reduce the impact of rural runoff on sewer capacity.

Next steps

Greystoke is currently in the surveying stage of identifying and addressing infiltration (see Figure 1). If the CCTV survey reveals groundwater infiltration, interventions will be considered, and the site will follow an iterative intervention regime to monitor the efficacy of the solution. Remedial works at Greystoke could include, but not be limited to, relaying sewers, lining sewers, sealing manholes or disconnecting inflows. This would be expected to be completed in 2025.