

Kirkbampton

Infiltration Reduction Plan

Last Updated: January 2026



Executive summary

Kirkbampton in Cumbria is currently in the intervention stage (see Figure 1) to address infiltration and reduce spills at the Kirkbampton Wastewater Treatment Works Overflow and Storm Tank Overflow (017670126SO & 017670126ST). A desktop assessment concluded groundwater infiltration is likely in the area. CCTV surveys confirmed infiltration, and interventions are due to be completed in Spring/Summer 2026.

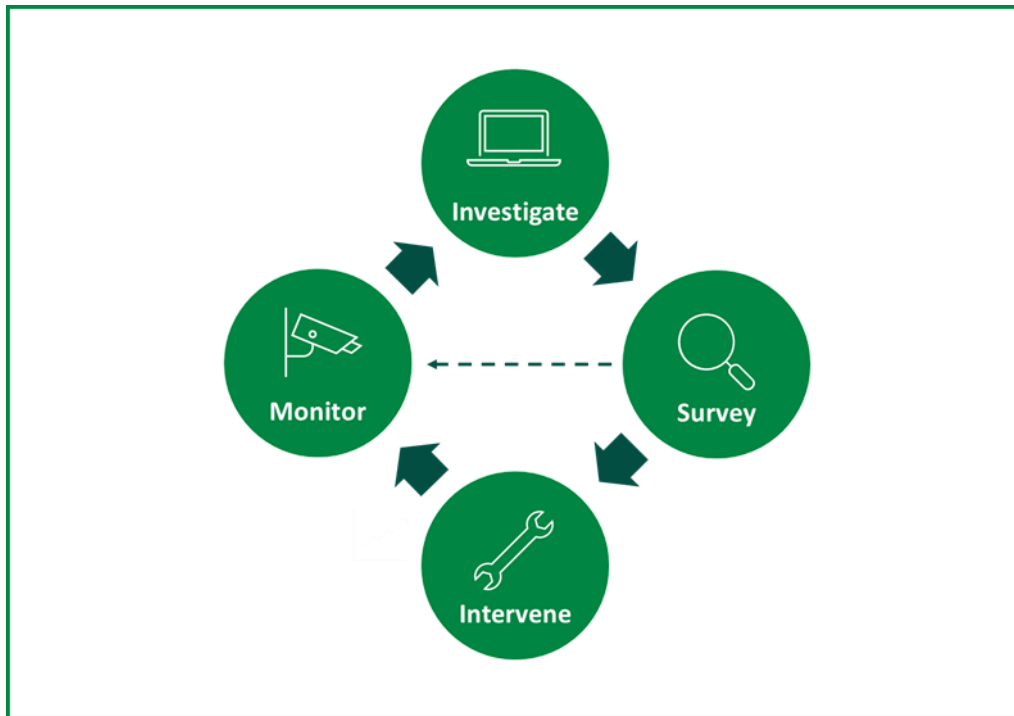


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 Kirkbampton drainage area and its associated overflows, Kirkbampton Wastewater Treatment Works Overflow & Storm Tank Overflow (017670126SO & 017670126ST). In 2022, infiltration was identified as a potential leading cause of the storm overflows discharging. The purpose of this plan is to capture the process to investigate, identify and address significant groundwater infiltration.

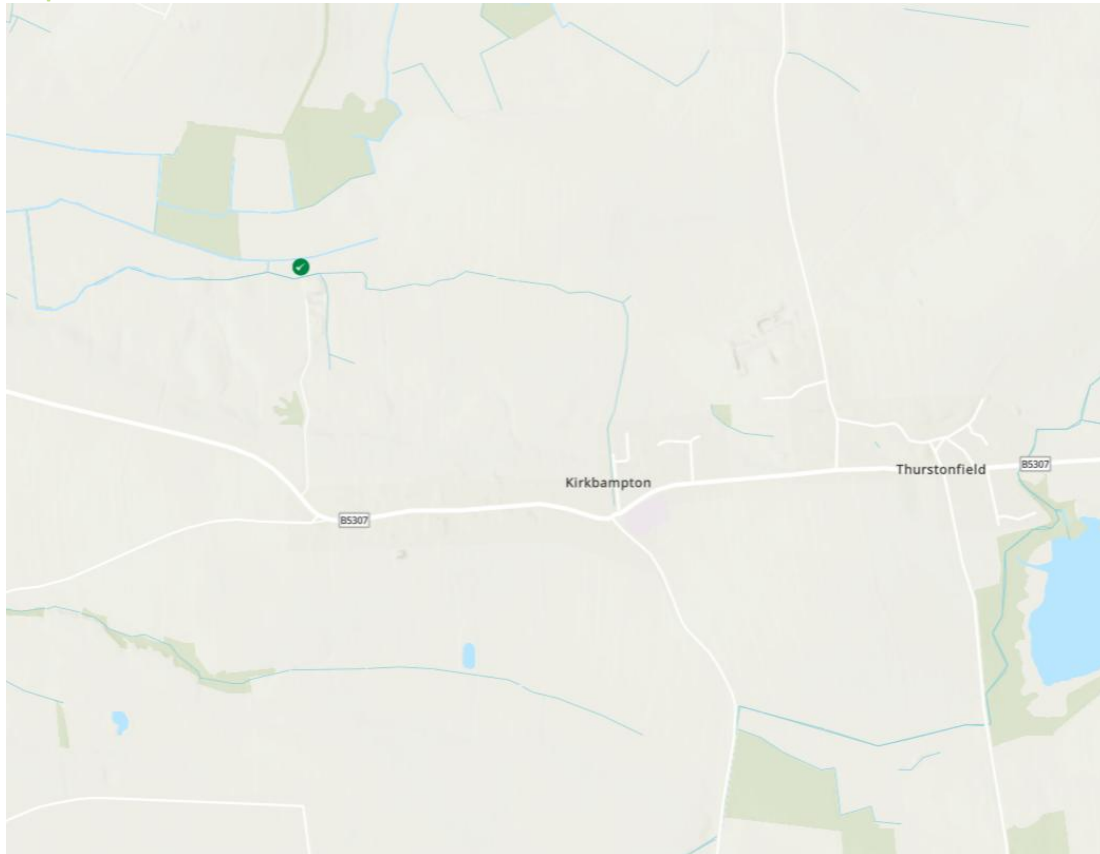


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (September 2024). The green dot marks the Kirkbampton Wastewater Treatment Works Storm Tank Overflow.

Kirkbampton in Cumbria sits 6 miles west of Carlisle and is surrounded by farmland and scenic countryside. The village has a relatively flat landscape considering its proximity to more undulating hills towards the Lake District National Park to the south and the coastal marshes and plains to the north.

Investigation

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 significant groundwater infiltration was likely in the catchment. Monitoring at the storm tank evidenced seasonal changes indicative of groundwater infiltration. The assessment also noted areas of the catchment where the sewers crossed watercourses. It can be that flow from the watercourses enters the sewer system via defects in the sewer network or when there is a rise in groundwater levels.

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

Survey

2,841m of CCTV surveys were completed between Winter 2024 and Autumn 2025. The surveys were reviewed by an engineer and assessed using Artificial Intelligence to rapidly identify and locate points of infiltration requiring intervention. Infiltration was discovered entering the sewer network at various joints along the length; we investigated the suspected source of the infiltration and suspect it is entering from the adjacent Powburgh Beck. Interventions were recommended to mitigate this.

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

Intervention

As recommended, interventions to address infiltration are expected to be completed in Spring/Summer 2026.

Next steps

Kirkbampton is currently in the intervention stage of identifying and addressing infiltration. The site will then continue to 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.