

Kirkbampton

Infiltration Reduction Plan

Last Updated: April 2026



Executive summary

Kirkbampton in Cumbria is currently in both the survey and intervention stages (see Figure 1) to address infiltration and reduce spills at the Kirkbampton Wastewater Treatment Works Overflow and Storm Tank Overflow. An initial desktop assessment concluded that groundwater infiltration was likely in the area. CCTV surveys confirmed infiltration, and interventions are due to be completed in Spring/Summer 2026. Further surveys are also underway, due to be completed in Summer 2026.

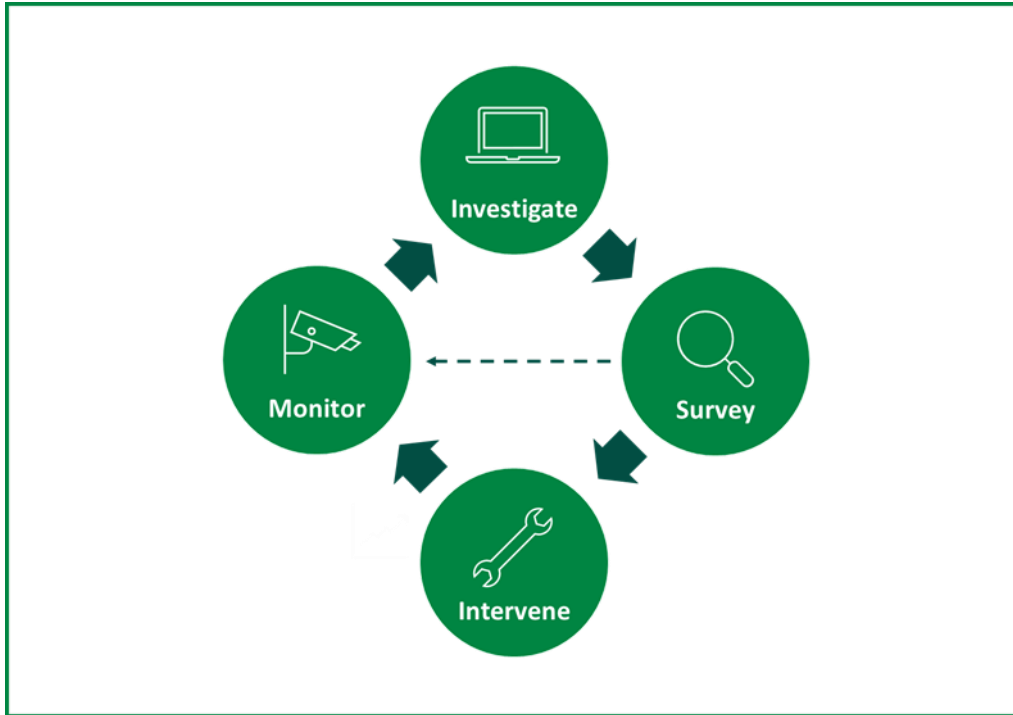


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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. 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.

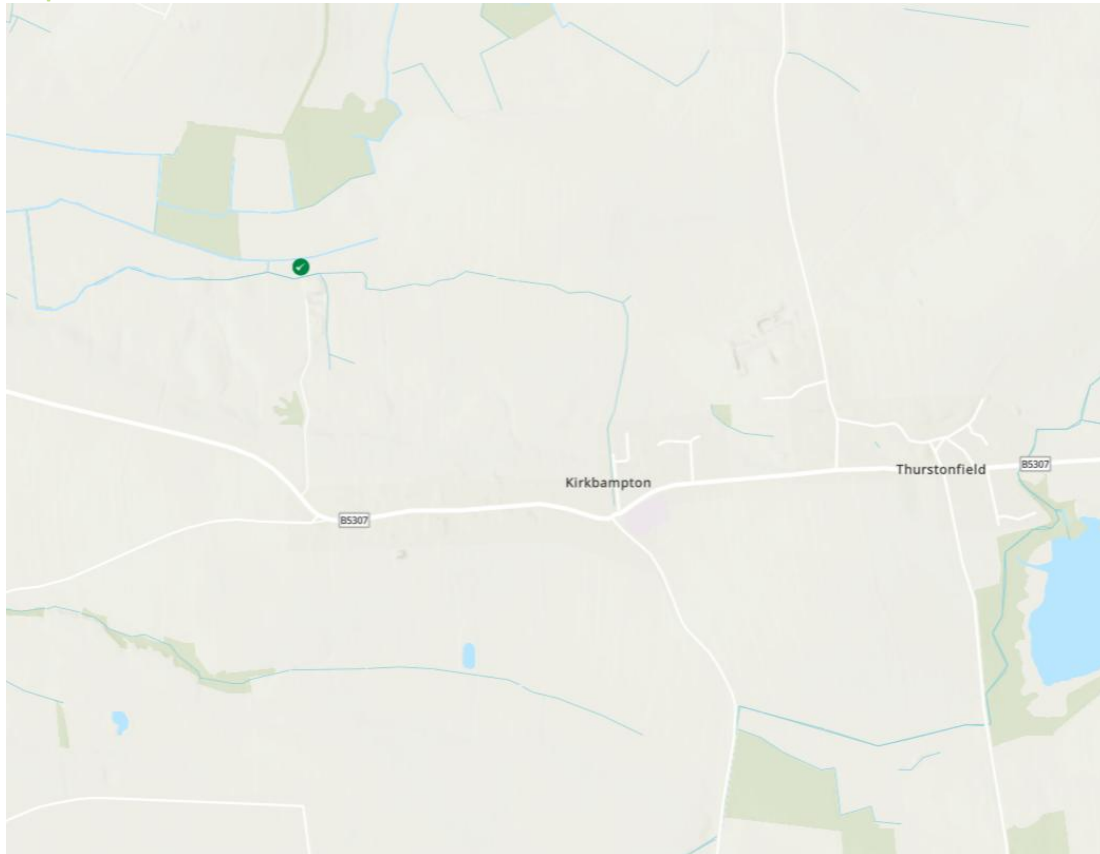


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (September 2024). The green dot marks the Kirkbampton Wastewater Treatment Works Storm Tank Overflow

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

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 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 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 was infiltration of the watercourses into the sewer network. CCTV surveys could also identify if there was land drainage connected into the sewer, which would be assessed for removal.

Survey

2,841m of CCTV surveys were completed between Winter 2024 and Autumn 2025. 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 works. The surveys found multiple points of infiltration in the sewer system, and remedial works were recommended as a result.

The network was also checked for inflows; some inflows were discovered and are being investigated further.

Further surveys are currently underway, due to be completed in Summer 2026.

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. It is also in a second stage of surveys to identify any further infiltration. If surveys find further infiltration in the network, additional remedial works will be planned.