Crosby Garrett

Infiltration Reduction Plan

Last Updated: December 2025

United Utilities

Water for the North West

Executive summary

Crosby Garrett Wastewater Treatment Works in Cumbria is currently in the monitor stage (see Figure 1) to address infiltration and reduce spills at the Crosby Garrett Wastewater Treatment Works Storm Overflow (017670005SO). A desktop assessment concluded that there was low likelihood of groundwater infiltration, however, CCTV surveys confirmed the presence of infiltration. Interventions to address this were completed in Summer 2025.

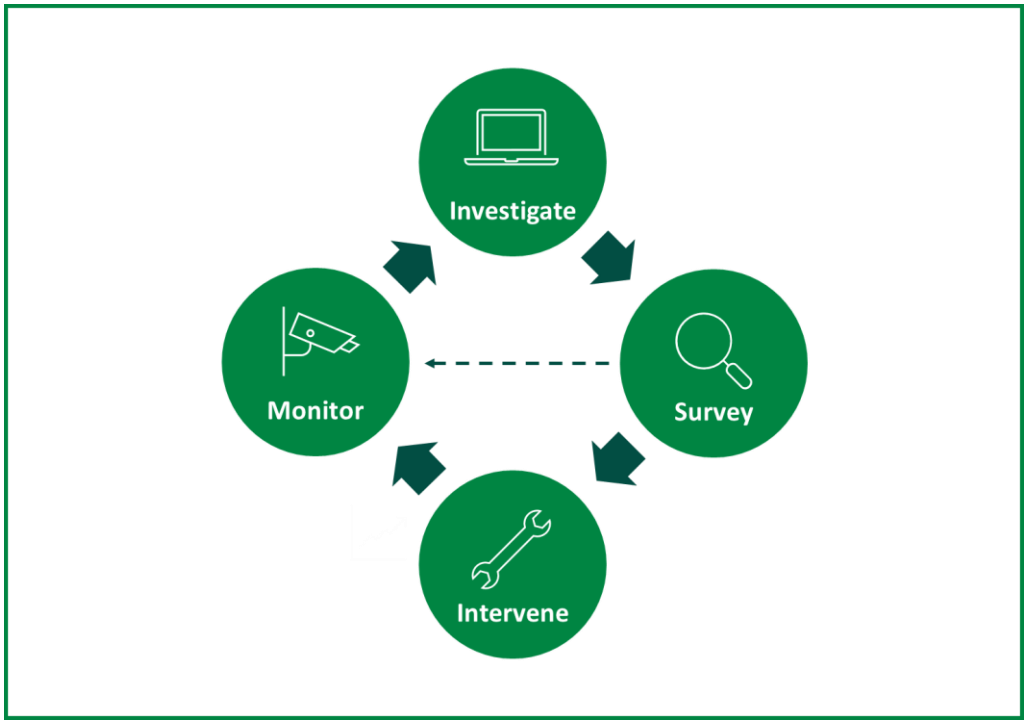

Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 Crosby Garrett drainage area and its associated overflow, the Crosby Garrett Wastewater Treatment Works Storm Overflow. In 2022, 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.

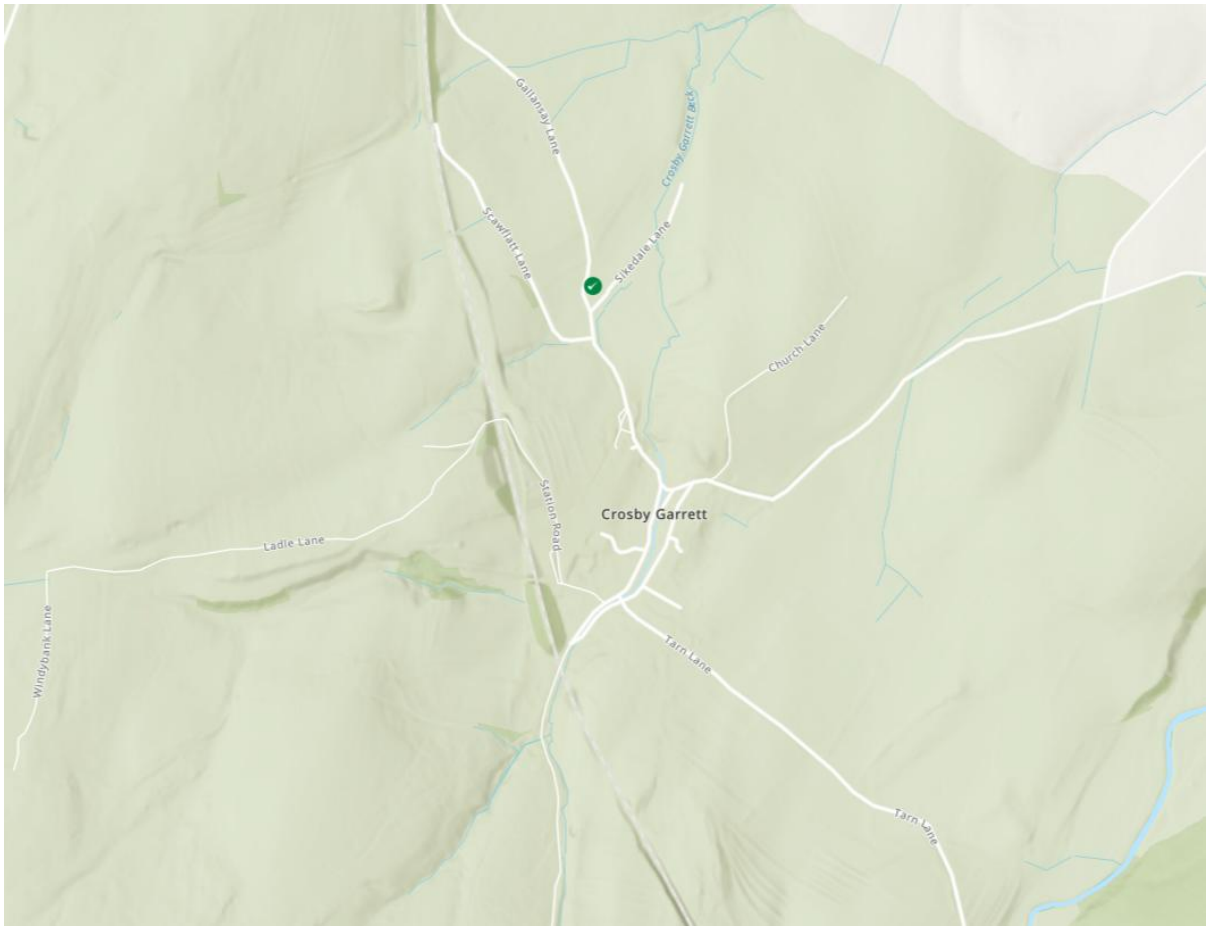

Figure 2: United Utilities – Better Rivers – Storm Overflow Map (October 2024). The green dot in the marks the Crosby Garrett Wastewater Treatment Works Storm Overflow.

Crosby Garrett is a hamlet and civil parish which sits in the Westmorland and Furness Unitary Authority area of Cumbria. Situated southwest of Penrith and three miles northwest of Kirkby Stephen, Crosby Garrett Beck flows through the area, eventually flowing north to the River Eden.

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, however, it is more probable that this is infiltration driven by rainfall. Results also indicated that spills may be partly driven by rural runoff. The assessment identified areas of the catchment where the sewer runs alongside and crosses the

stream. Flow from streams can enter the sewer system through pipe defects, leaky joints, or issues with manholes.

From these findings, it was recommended that CCTV surveys be completed to identify potential infiltration sources. The CCTV surveys should also identify if there is infiltration from watercourses into the sewer, where pipes cross them. The spill analysis suggested that reducing groundwater infiltration would not be significant enough to reduce spill frequency at Crosby Garrett Wastewater Treatment Works.

Survey

As recommended, 329m 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 infiltration were identified. This confirmed the need for an intervention to seal the network.

Checks were also carried out on all lateral connections; none are suspected of receiving flows not bound to receive.

Intervention

Remedial works to address infiltration were completed in Summer 2025. 84m of the sewer network was relined, and a section was patch-lined (including a lateral connection repair), in order to seal the sewers. A manhole chamber was sealed using grout injection.

Next steps

Crosby Garrett is currently in the monitoring stage of identifying and addressing infiltration. 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.