Great Orton

Infiltration Reduction Plan

Last Updated: October 2026



United Utilities

Water for the North West

Executive summary

Great Orton in Cumbria is currently in the monitoring stage (see Figure 1) to address infiltration and reduce spills at the Great Orton Wastewater Treatment Works Storm Tank Overflow. An initial desktop assessment concluded that there was the possibility of groundwater infiltration. CCTV surveys confirmed infiltration, and interventions were completed in Winter 2026.

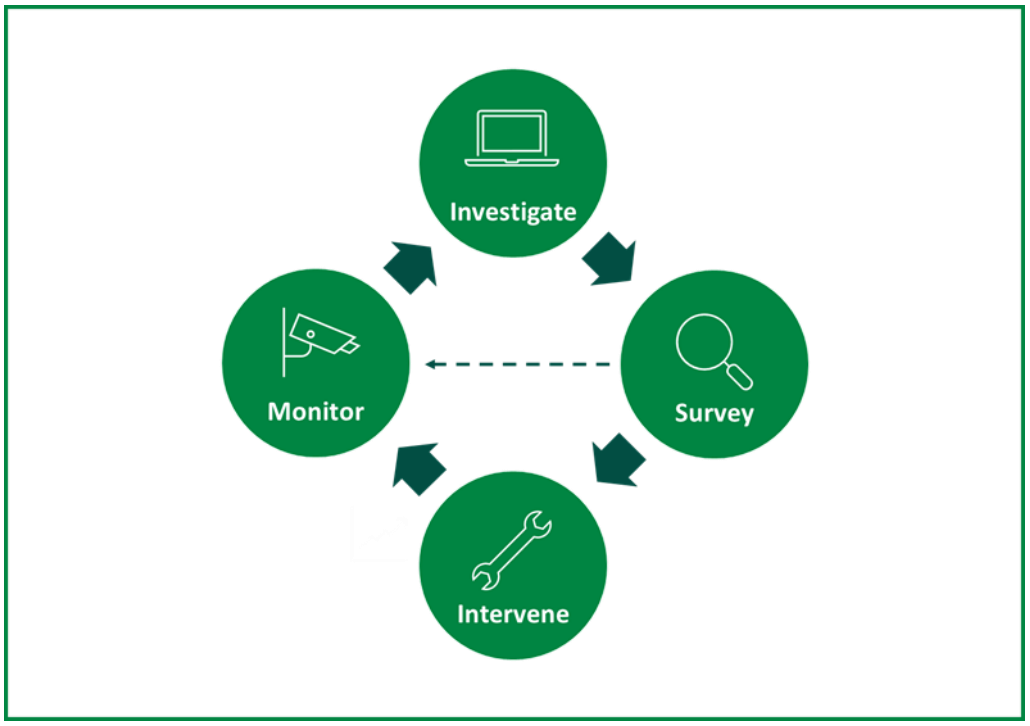


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 show our efforts to date and next steps to address infiltration and inflows in the catchment. This plan covers the Great Orton drainage area and its associated overflow, Great Orton Wastewater Treatment Works Storm Tank Overflow. In 2022, infiltration was identified as a potential leading cause of the storm overflow discharging. The purpose of this plan is to capture the process to investigate, identify and address significant groundwater infiltration.

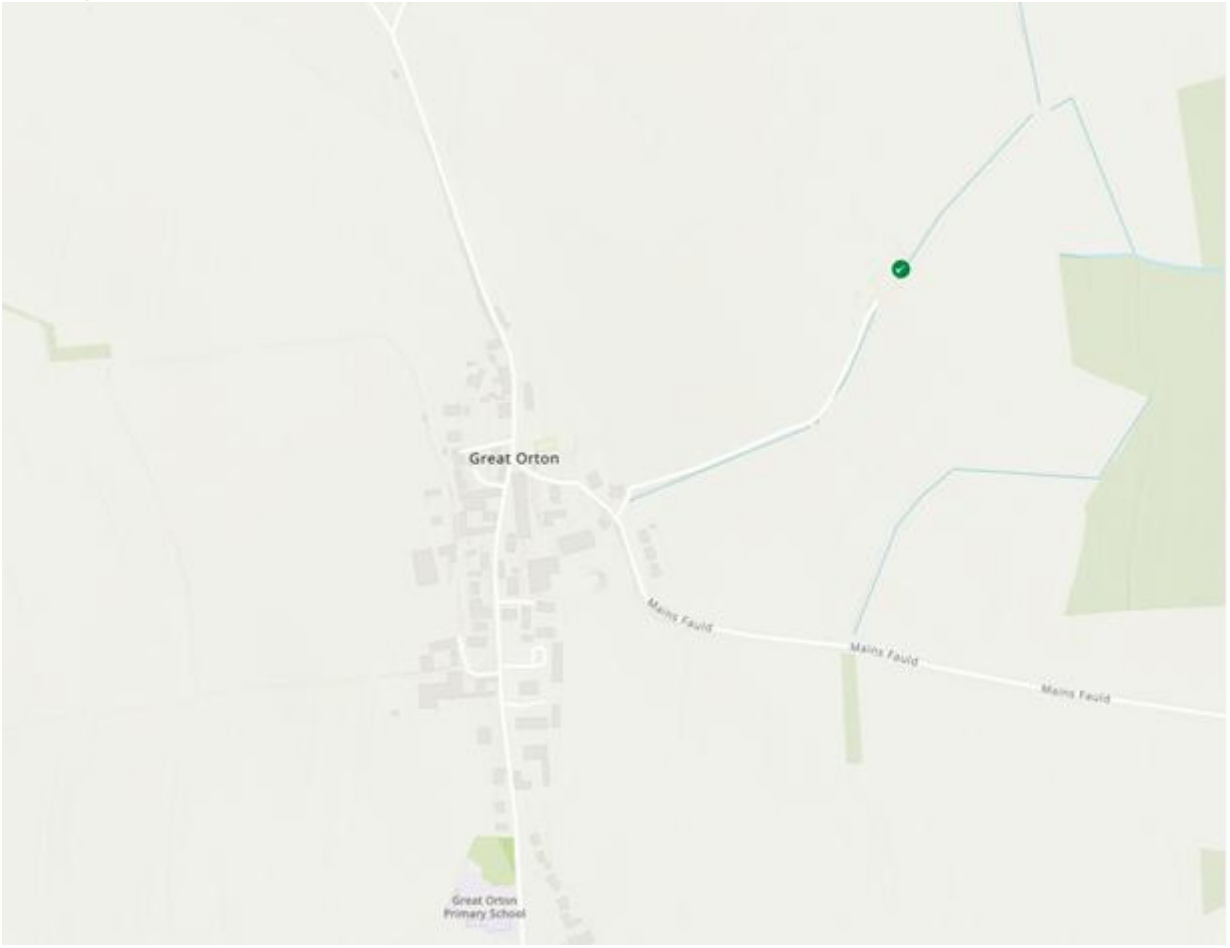


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (September 2024). The green dot marks the Great Orton Waste Water Treatment Works Storm Tank Overflow

Great Orton is a small village in Cumbria, south of Wigton. It is surrounded by rural land and discharges to Roughton Beck.

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 there was some evidence of seasonal infiltration due to groundwater ingress and, based on an analysis of the baseflow, reducing infiltration in this area could potentially reduce spill frequency at Great Orton Wastewater Treatment Works.

Further observations identified rural streams and ditches running adjacent to public sewers where infiltration of the sewer system could happen via highway drainage systems or defects in the pipe fabric. There was also the possibility of slow rural runoff contributing to spills.

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

Survey

We completed 295m of CCTV surveys in Autumn/Winter 2024. 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. Infiltration was identified throughout the areas surveyed, and remedial works were recommended to seal the network.

The network was also checked for inflows; a lateral connection was suspected to be receiving a flow not bound to receive which is being investigated.

Intervention

As recommended, remedial works were completed in Winter 2026. This involved lining 100m of the sewer to seal the network and prevent infiltration.

Next steps

Grasmere is currently in the monitoring stage of addressing infiltration. The site will continue to follow the iterative process displayed in Figure 1 to monitor the efficacy of these interventions and identify new points of infiltration, should they arise.

As groundwater infiltration has been found but is yet to be confirmed as the leading cause of spills to the environment, interventions have been completed to address the localised infiltration identified during surveys. As more is known on the outcome of the interventions, this Infiltration Reduction Plan will be updated accordingly.