

Great Orton

Infiltration Reduction Plan

Last Updated: March 2025



Executive summary

Great Orton in Cumbria is currently in the intervention stage (see Figure 1) to address infiltration and reduce spills at the Great Orton Waste Water Treatment Works Storm Tank Overflow (017670128ST). A desktop assessment concluded that there is the possibility of groundwater infiltration. CCTV surveys have confirmed infiltration and remedial works are due to be completed in Spring/Summer 2025.

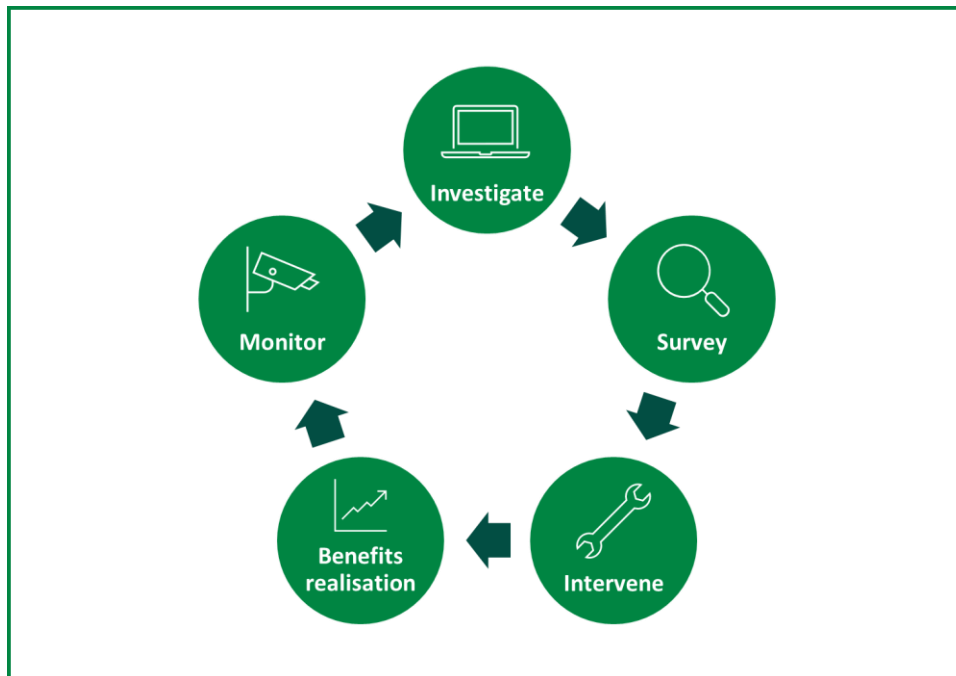


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 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 the associated overflow Great Orton Waste Water Treatment Works Storm Tank Overflow (017670128ST). 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.

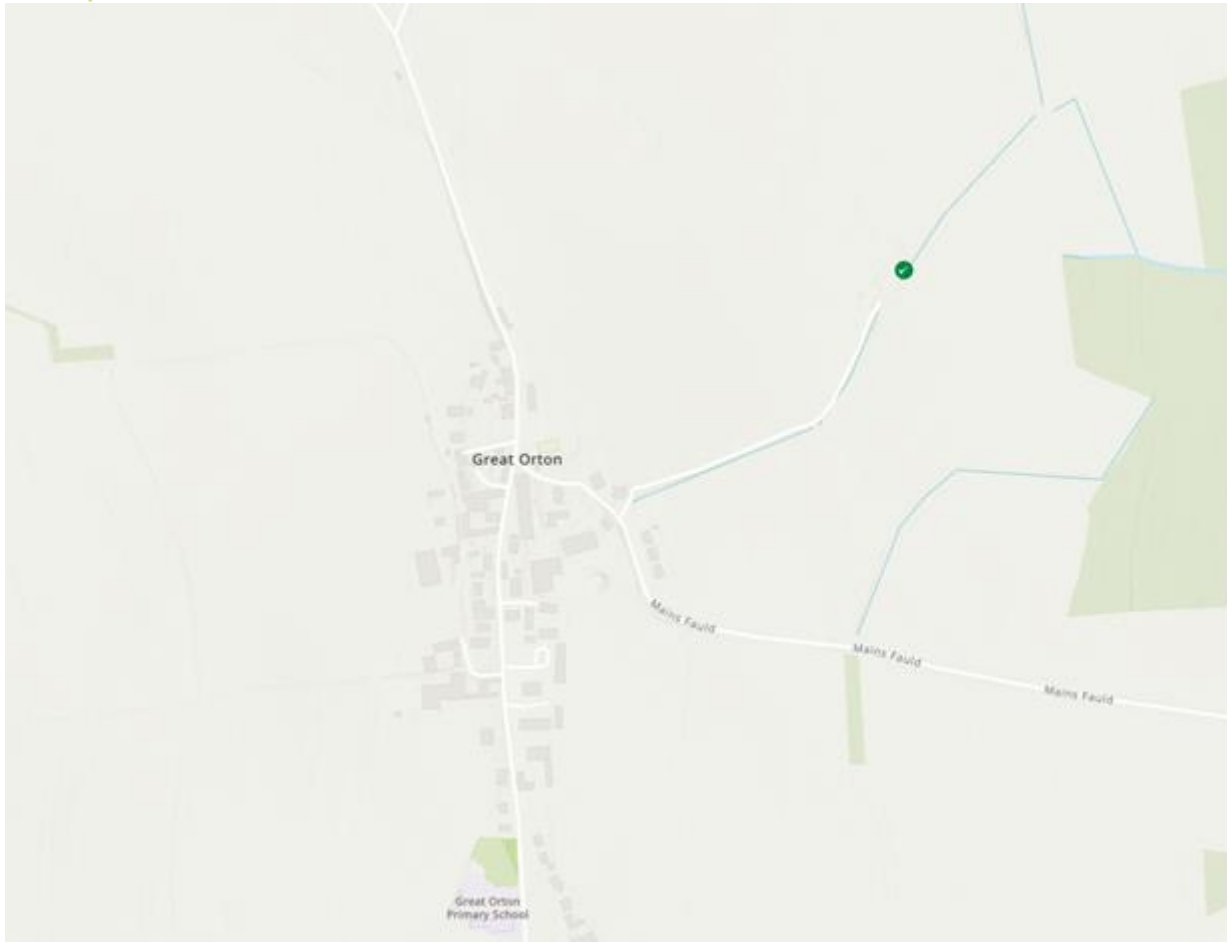


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (September 2024). The green dot marks the Great Orton Waste Water Treatment Works Storm Tank Overflow.

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

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 is some evidence of seasonal infiltration due to groundwater ingress and that, based on an analysis of the baseflow, reducing infiltration in this area could be significant enough to reduce spill frequency at Great Orton WwTW.

However, further observations identified rural streams/ditches running adjacent to public sewers that could enter the sewer system via highway drainage systems or defects in the pipe fabric. There is also the possibility of very slow rural run off contributing to spills.

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

Survey

As recommended, we completed nearly 300m of CCTV surveys in Winter 2024 and infiltration was identified throughout the areas surveyed. The CCTV surveys were reviewed by an engineer and assessed using Artificial Intelligence to rapidly identify and locate points of infiltration requiring remedial works.

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

Intervention

Remedial works to address infiltration are due to be completed in Spring / Summer 2025. Plans include relining around 100m of the sewer network where infiltration was found.

Next steps

Great Orton is currently in the intervention stage of identifying and addressing infiltration (see Figure 1). The site will follow the iterative process displayed in Figure 1 to complete remedial works and monitor the area for their efficacy and identify any more significant areas of infiltration, should they arise.