Gilsland

Infiltration Reduction Plan

Last Updated: October 2026



United Utilities

Water for the North West

Executive summary

Gilsland is currently in the monitoring stage (see Figure 1) to address infiltration and reduce spills at the Gilsland Wastewater Treatment Works Storm Overflow. An initial desktop assessment concluded that groundwater infiltration in the catchment was possible. Surveys have confirmed the presence of infiltration, and interventions were completed in Autumn/Winter 2025.

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.

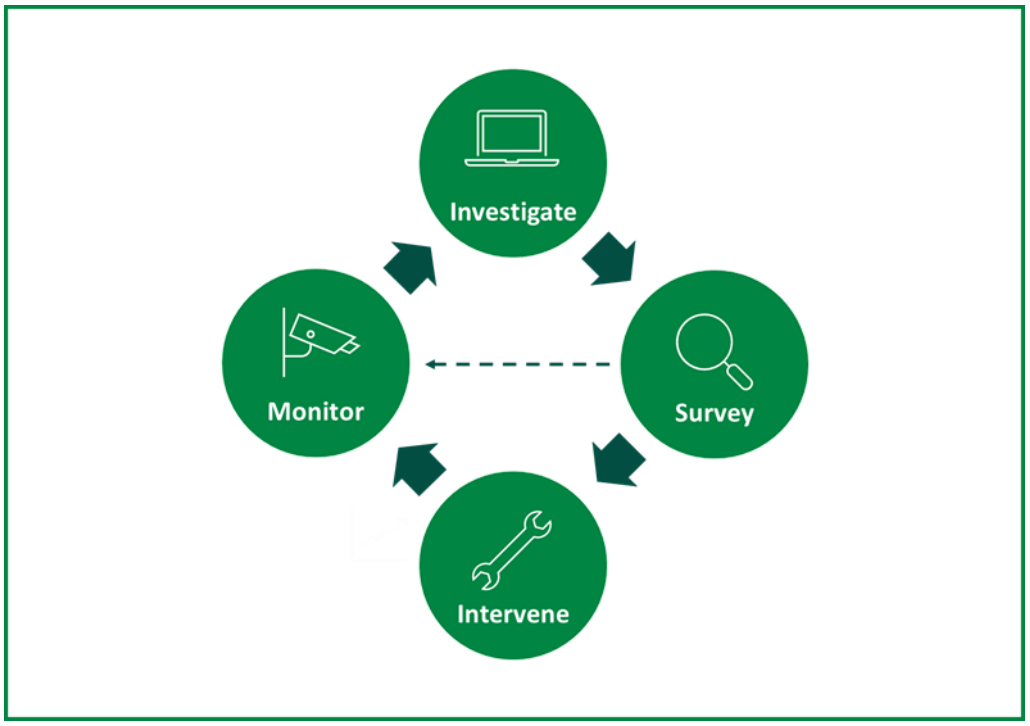


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 Gilsland drainage area and its associated overflow, Gilsland 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 capture the process to investigate, identify and address significant groundwater infiltration.

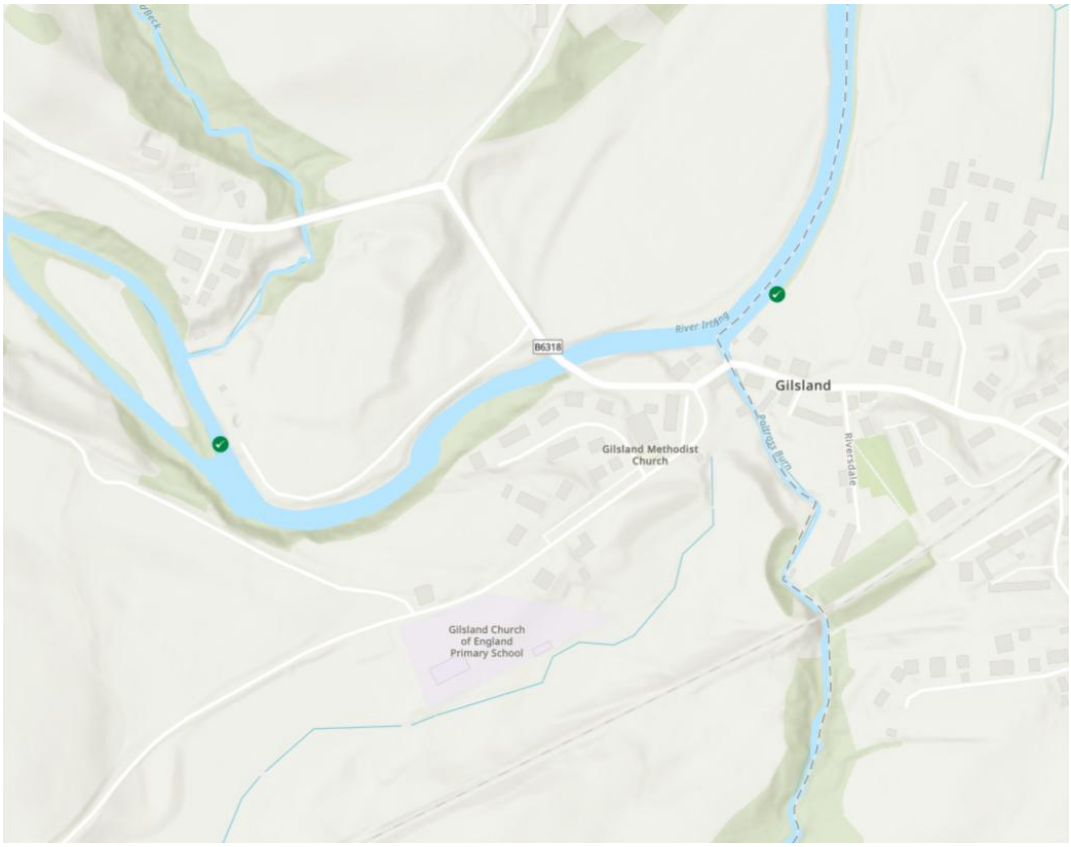


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (November 2024). The green dot on the left of the image marks the Gilsland Wastewater Treatment Works Storm Overflow

Gilsland straddles the border of Cumbria and Northumberland on the route of Hadrian's Wall. The River Irthing borders the village to the north; its tributary, Poltross Burn, flows through the village.

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 possible in the catchment, with indicators of rainfall-driven runoff and increased prevalence in the winter pointing to increases in groundwater levels.

The assessment identified areas of the catchment where rural streams run down steep banks towards a highway with public sewers; it also found sewers that cross a river. Potential interactions of these watercourses with the sewers via highway gullies or defects could contribute to flows in the network.

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

Survey

We completed 705m of CCTV surveys in Autumn 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. Multiple points of infiltration were found, and interventions were recommended as a result.

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

Intervention

As recommended, remedial works to seal the network were completed in Autumn/Winter 2025. This involved lining 126m of the sewer, sealing a manhole, and building up a manhole.

Next steps

Gilsland is currently in the monitoring stage of addressing infiltration. The site will 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.