Gilsland

Infiltration Reduction Plan

Last Updated: March 2025

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 (017670091SO). A desktop assessment concluded that groundwater infiltration in the catchment was possible. Surveys have confirmed that no interventions are required, and the site will be monitored.

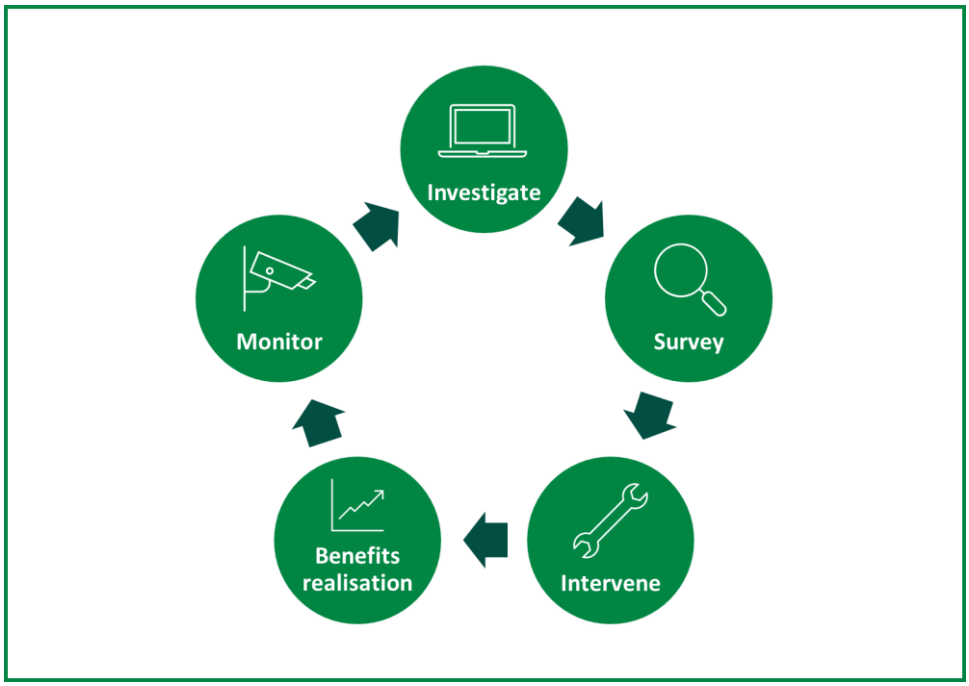

Figure 1: Iterative process to investigate, identify and address groundwater infiltration

Context

Sometimes, water can enter our wastewater pipes that 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 the associated overflow, Gilsland Wastewater Treatment Works Storm Overflow (017670091SO). 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.

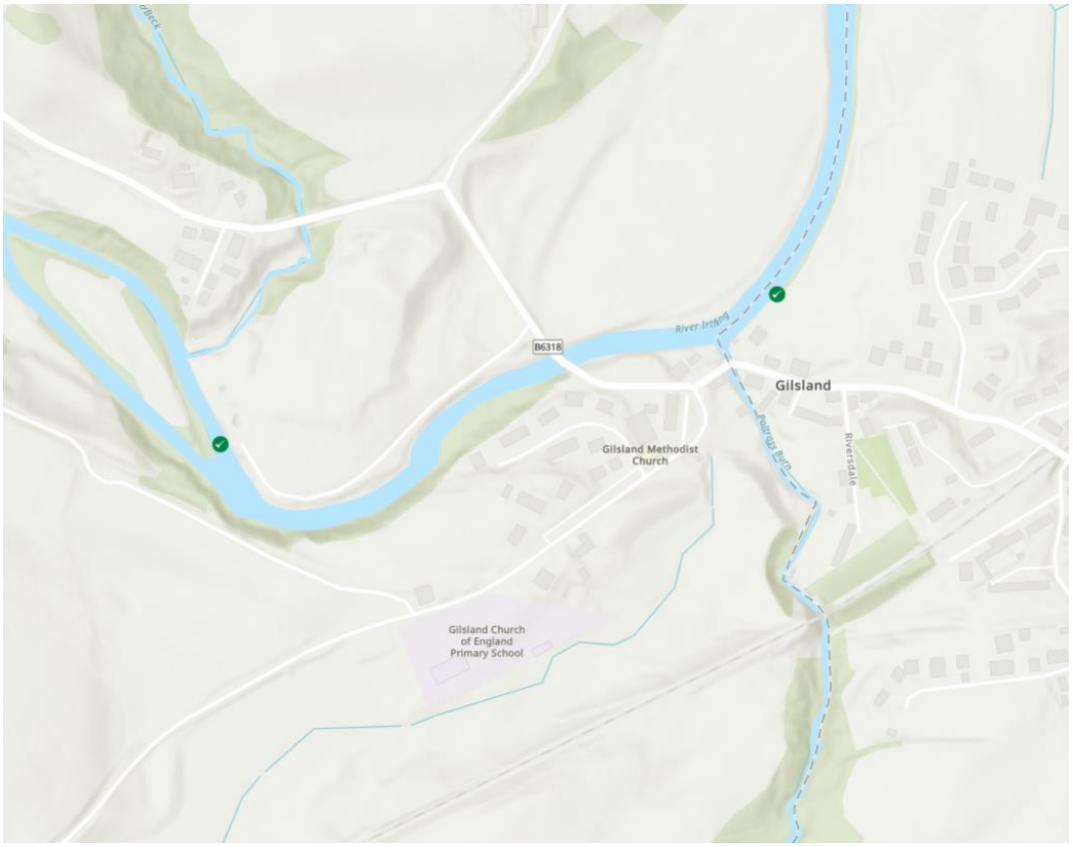

Figure 2: United Utilities – Better Rivers – Storm Overflow Map (November 2024). The green dot on the left of the image marks the Gilsland Wastewater Treatment Works Storm Overflow.

Gilsland is a village that straddles the Cumbria and Northumbrian border on the route of Hadrian's wall. The River Irthing borders the village to the North with its tributary, Poltross Burn, flowing through the village.

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 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. There are also areas of the catchment where rural streams run down steep banks towards the highway where there are public sewers and sewers cross a river. Potential interactions of these water courses with the sewer via highway gullies or defects could contribute to flows in the network.

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

Survey

Despite the desktop assessment determining groundwater infiltration as unlikely, to confirm this, 705m of CCTV sewer surveys were completed in Winter 2024. The CCTV surveys were assessed using Artificial Intelligence and reviewed by an engineer to identify points of infiltration. It was determined that there were no points of groundwater infiltration identified and therefore no interventions required in the areas surveyed.

Next steps

Gilsland will remain in the monitoring stage of identifying and addressing infiltration (see Figure 1) to identify emerging points of infiltration, should they arise.