Tebay

Infiltration Reduction Plan

Last Updated: December 2025

United Utilities

Water for the North West

Executive summary

Tebay in Cumbria is currently in the intervention stage (see Figure 1) to address infiltration and reduce spills at the Tebay Sewage Pumping Station Storm Overflow and the Tebay Wastewater Treatment Works Storm Tank Overflow (017270018SO). An initial desktop assessment concluded that infiltration was very likely in the catchment. CCTV surveys confirmed the presence of infiltration, and interventions were completed in Spring 2025.

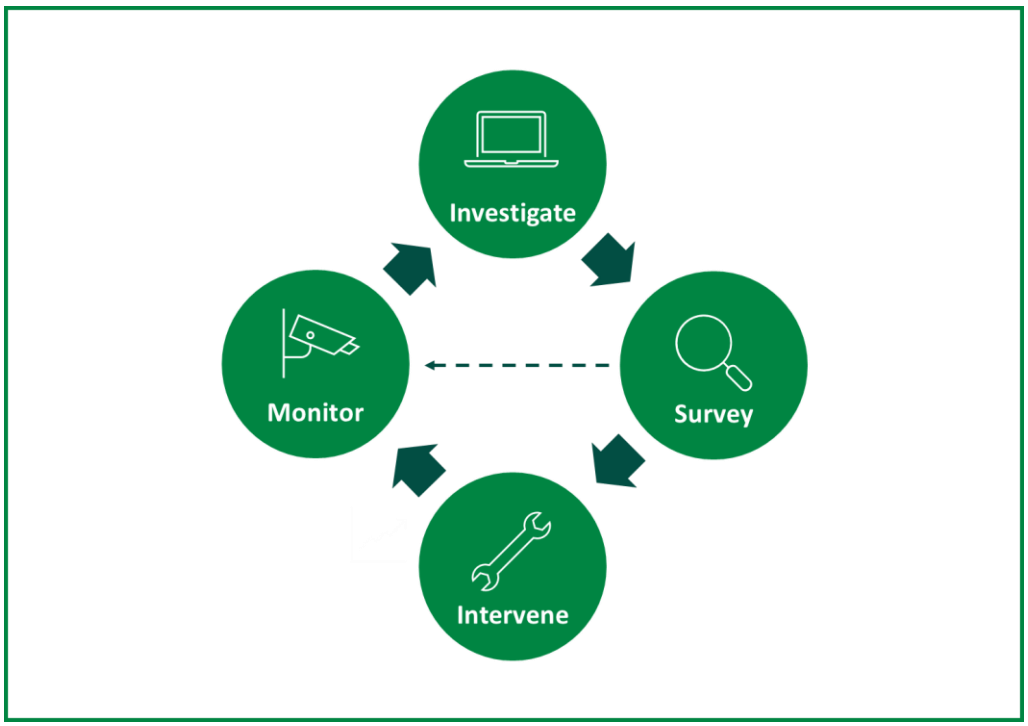

Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 Tebay drainage area and its associated overflows, the Tebay Sewage Pumping Station Storm Overflow and the Tebay Wastewater Treatment Works Storm Tank Overflow. In 2024, infiltration was identified as a potential leading cause of the storm overflows discharging. The purpose of this plan is to capture the process to investigate, identify and address significant groundwater infiltration.

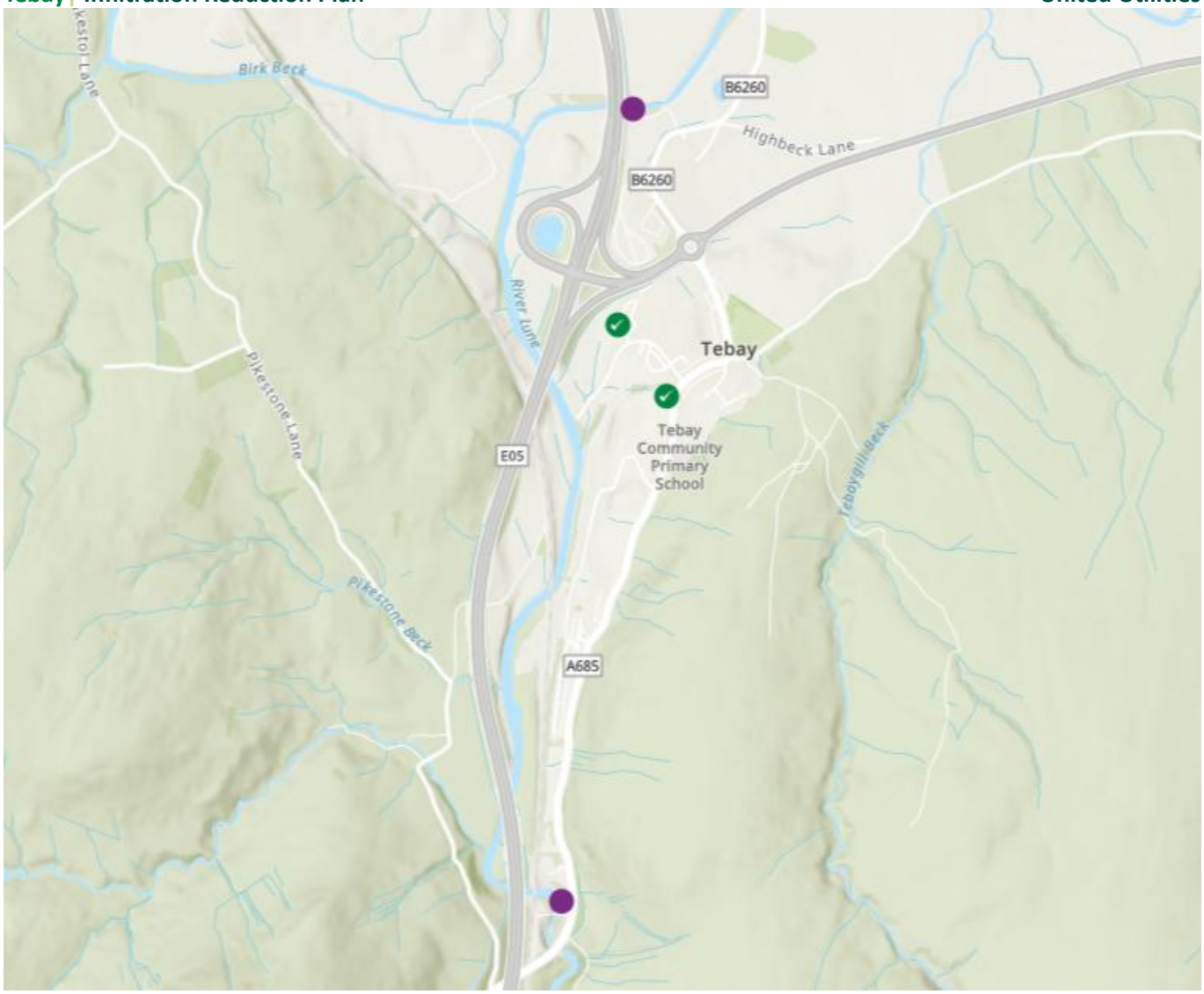

Figure 2: United Utilities – Better Rivers – Storm Overflow Map (December 2025). The purple dot at the top marks the Tebay Sewage Pumping Station Storm Overflow. The purple dot at the bottom marks the Tebay Wastewater Treatment Works Storm Tank Overflow.

Tebay sits within the historic borders of Westmorland, in the upper Lune Valley. The River Lune flows through the village and helped to shape the surrounding landscape.

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 initial desktop assessment concluded that there was evidence of baseflow, possibly due to seasonally varying groundwater levels. There was also significant evidence of rainfall-induced flows; this could be due to slow runoff or groundwater ingress. The assessment highlighted some areas where local streams and ditches drain towards the sewer system. It was recommended that CCTV surveys be completed to look for connection points or overland flow paths to the sewer, and other points of infiltration. CCTV surveys can also identify if there is land drainage connected into the sewer, which would be assessed for removal.

Survey

As recommended, 401m 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. It confirmed the presence of infiltration in the network, and remedial works were recommended as a result.

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

Intervention

Remedials works were completed in Spring 2025. This involved lining 62m of the sewer network in order to prevent infiltration.

Further remedial works are currently being planned.

Next steps

Tebay is currently in the intervention stage of identifying and addressing infiltration. The site will then follow the iterative process displayed in Figure 1 to monitor the efficacy of these remedial works and identify new points of infiltration, should they arise.