Tebay

# Infiltration Reduction Plan

**Last Updated:** June 2026

United Utilities

Water for the North West

# Executive summary

Tebay in Cumbria is currently in both survey and intervention stages (see Figure 1) to address infiltration, with the aim of reducing spills at the Tebay Sewage Pumping Station Storm Overflow and the Tebay Wastewater Treatment Works Storm Tank Overflow. 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. A further survey and additional interventions are in progress, and are due to be completed in Spring/Summer 2026.

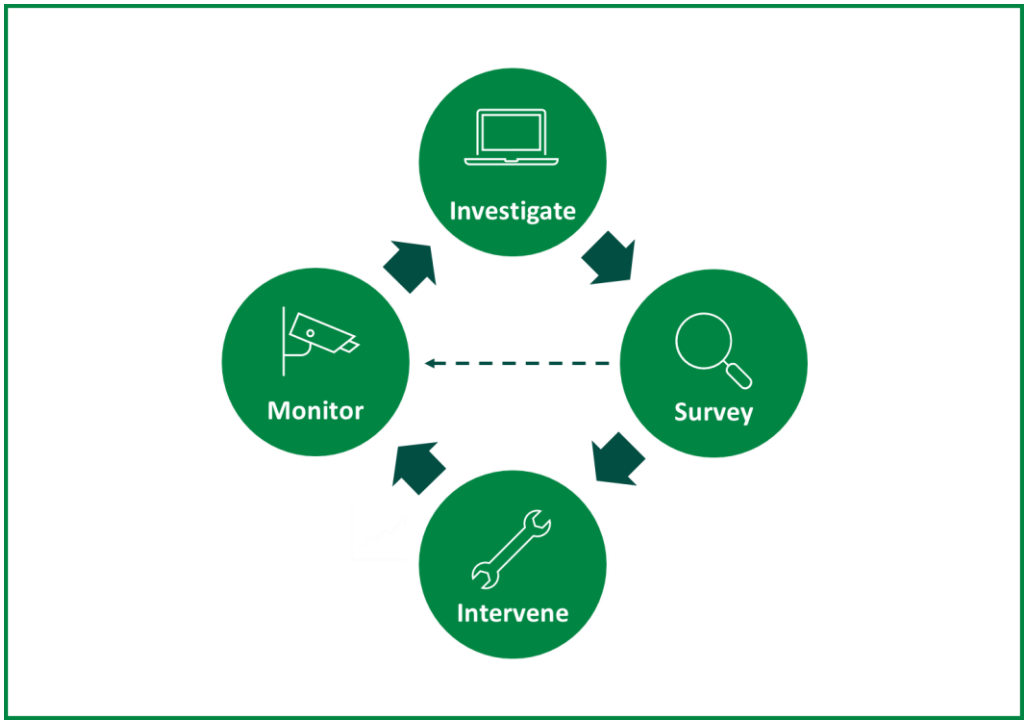


**Figure 1:** Iterative process to investigate, identify and address groundwater infiltration

# 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 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.

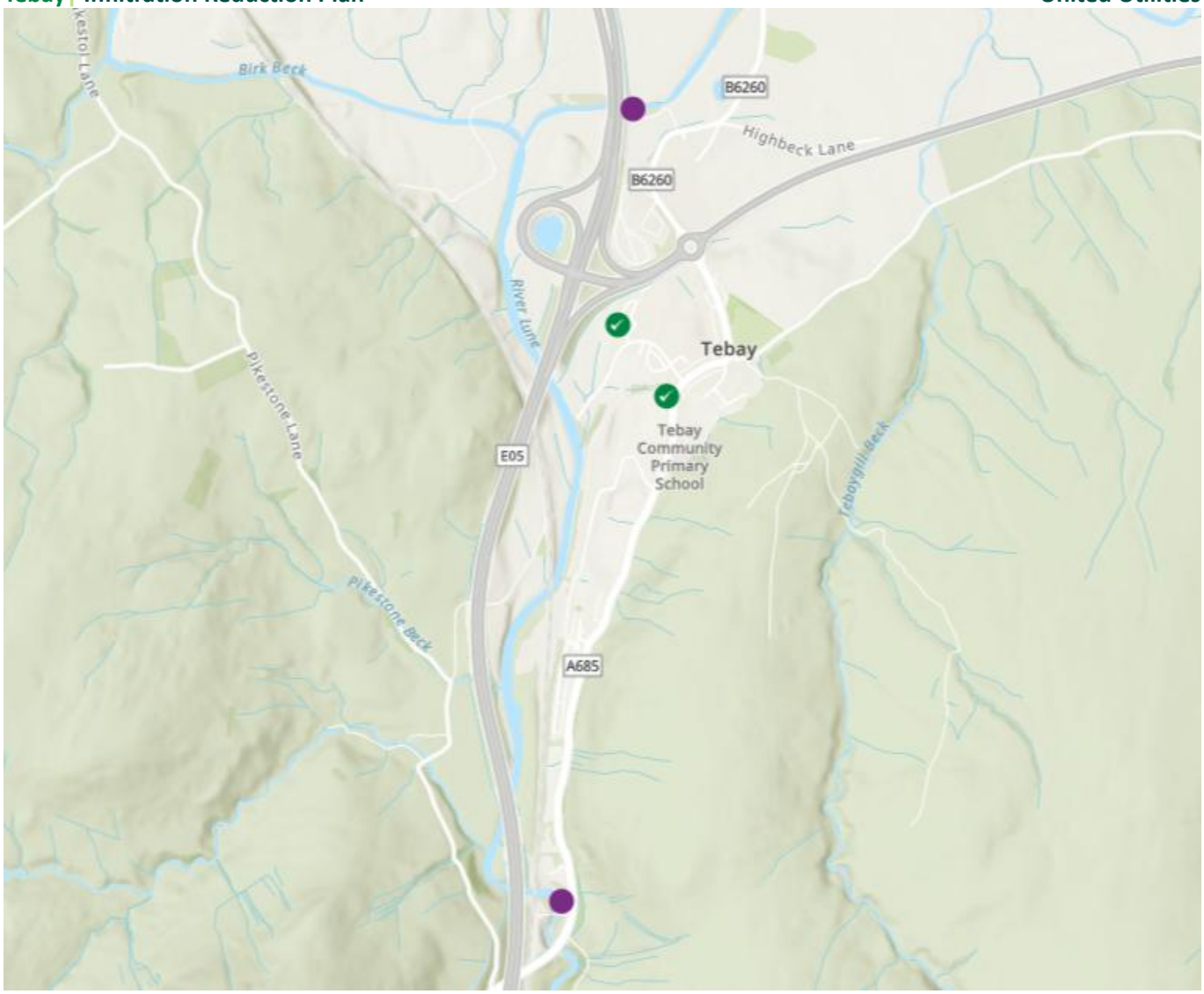


**Figure 2:** United Utilities – Better Rivers – Storm Overflow Map (December 2025). The purple dot at the top marks the Tebay Sewage Pumping Station Storm Overflow. The purple dot at the bottom marks the Tebay Wastewater Treatment Works Storm Tank Overflow

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

## Investigate

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 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 drained 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 would also identify if there was 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 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. The surveys 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 to prevent infiltration.

Further remedial works are currently underway and due to be completed in Spring/Summer 2026.

## Next steps

Tebay is currently in both the survey and intervention stages 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.