Torpenhow

Infiltration Reduction Plan

Last Updated: October 2026



United Utilities

Water for the North West

Executive summary

Torpenhow in Cumbria is currently in the monitoring stage (see Figure 1) to address infiltration and reduce spills at the Torpenhow Wastewater Treatment Works Storm Overflow. An initial desktop assessment concluded that there was the possibility of groundwater infiltration. CCTV surveys 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.

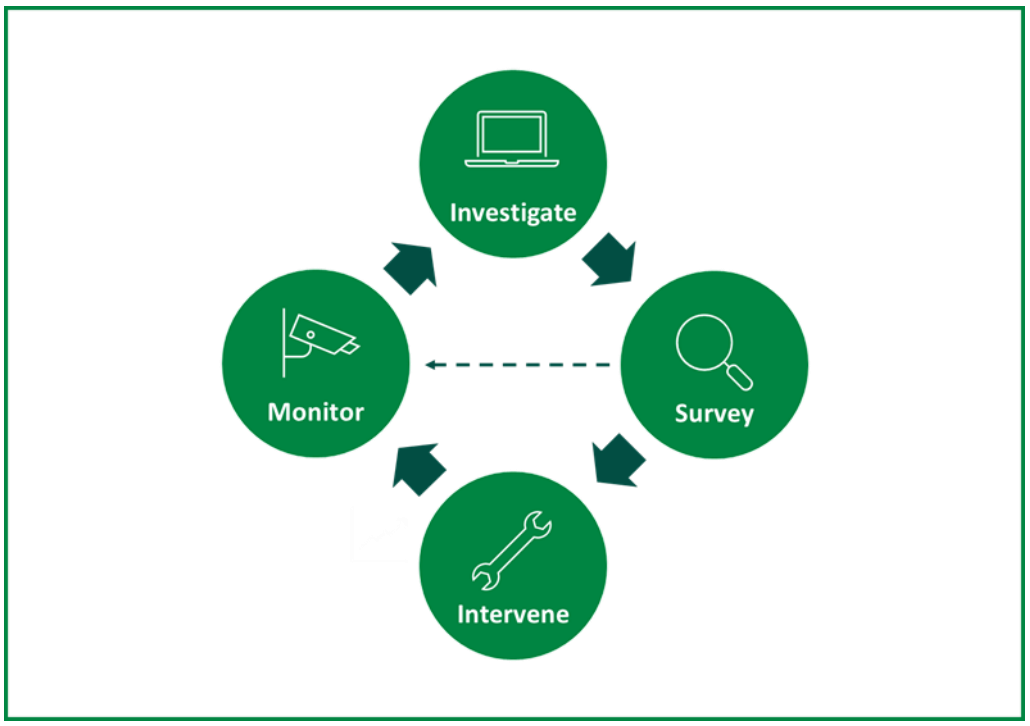


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 Torpenhow drainage area and its associated overflow, Torpenhow Wastewater Treatment Works Storm Overflow. Infiltration has been 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.

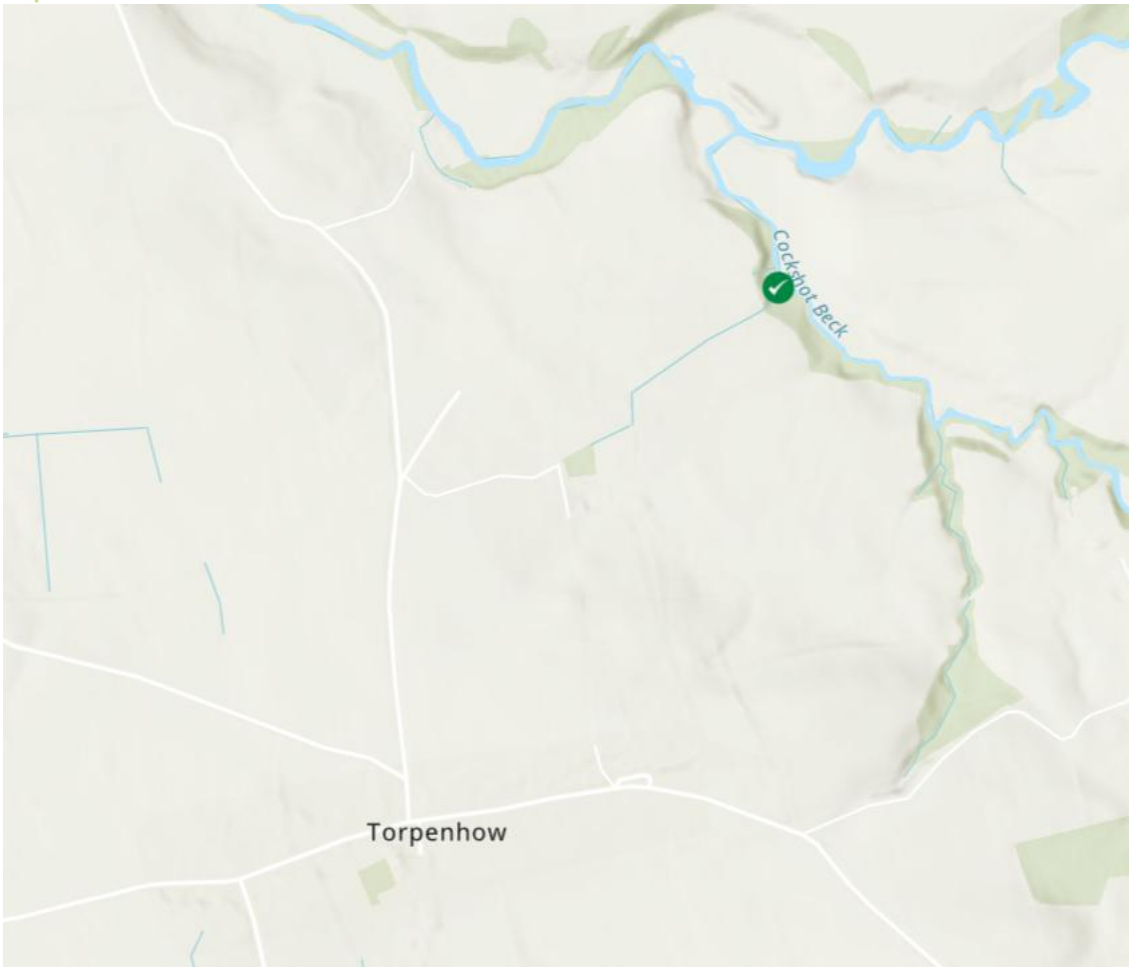


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (January 2026). The green dot marks the Torpenhow Wastewater Treatment Works Storm Overflow

Torpenhow sits 2km north of the Lake District National Park and 3km south-east of Blennerhasset. The River Ellen and its tributary Cockshot Beck are the nearest watercourses to the village. The catchment consists of gently sloping hills, surrounding valleys and farmland. The village's proximity to the Lake District fells contributes to its varied landscape.

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 found indicators of rainfall-driven runoff and possible groundwater infiltration. It also identified a point where a sewer crossed underneath a watercourse. Surveys were recommended to identify if there was infiltration from the watercourse into the sewer network.

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

Survey

535 metres of CCTV surveys were completed in autumn/winter 2024. The CCTV surveys were assessed using artificial intelligence (AI) to rapidly identify and locate points of infiltration. The surveys were then reviewed by an engineer to assess for any required remedial works. The presence of infiltration was found, and interventions were recommended as a result.

The network was also checked for any unexpected inflows, and no lateral connections were identified as receiving water they were not intended to receive.

Intervention

As recommended following the survey work, remedial interventions were completed in autumn/winter 2025. These works included lining 110 metres of sewer to help prevent groundwater entering the network through defects in the pipework.

Next steps

Torpenhow is currently in the monitoring stage of our plan to identify and address infiltration (Figure 1). We will continue to monitor the network to assess the effectiveness of the completed interventions and identify any new sources of infiltration should they arise.