

**Kaber**

# **Infiltration Reduction Plan**

**Last Updated: November 2024**



## Executive summary

Kaber Waste Water Treatment Works Storm Overflow in Cumbria is currently in the survey stage (see Figure 1) to address infiltration at the Kaber Wastewater Treatment Works Storm Overflow (017670011SO). There was limited data available for Kaber to complete a desktop assessment and therefore, conclusions on the presence of infiltration could not be drawn at this level. Surveys are underway to clarify this as well as the exploration of Natural Flood Management to manage rural run off if this is found to be a significant contributing factor in spill numbers.

If groundwater infiltration is found to be a leading cause of spills, interventions will be assessed and this Infiltration Reduction Plan will be updated accordingly. If not, this plan will end at the survey stage and next steps will be processed through other relevant workstreams.

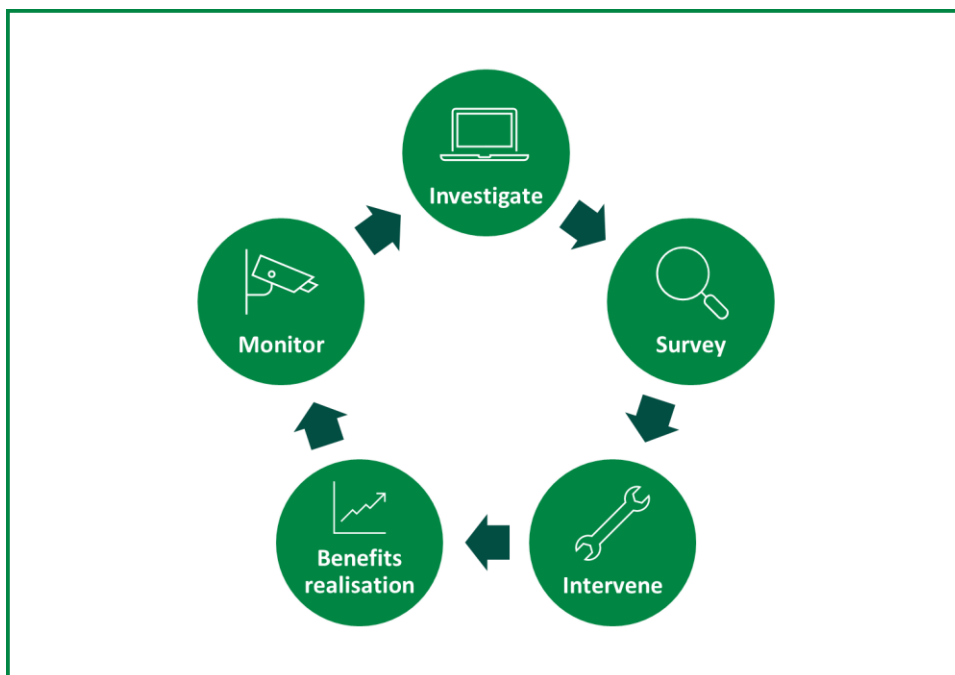


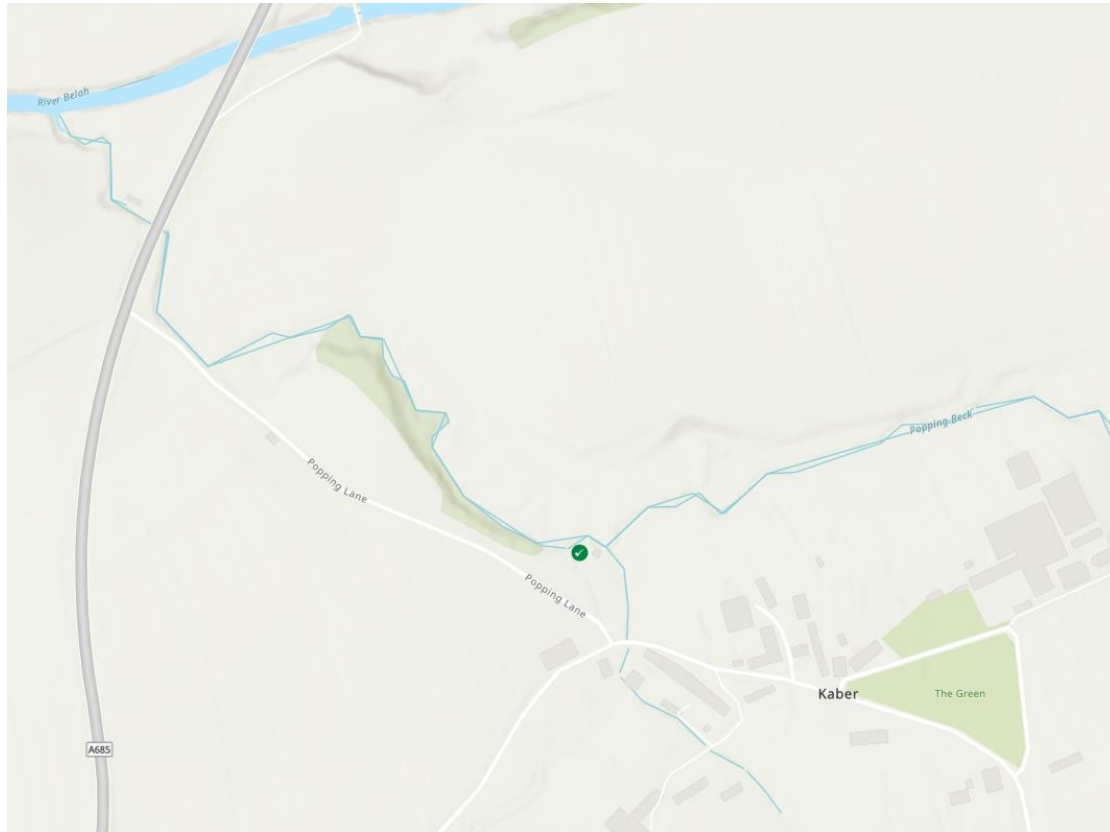
Figure 1: Iterative process to investigate, identify and address ground water infiltration

## Context

Sometimes, water can enter our wastewater pipes that 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 Kaber drainage area and the associated overflow the Kaber Wastewater Treatment Works Storm Overflow (017670011SO). In 2022, infiltration was identified as a potential leading cause of the storm overflow discharging. The purpose of this plan is to further investigate and address this.

If groundwater infiltration is found to be a leading cause of spills, interventions will be assessed and this Infiltration Reduction Plan will be updated accordingly. If not, this plan will end at the survey stage and next steps will be processed through other relevant workstreams.



**Figure 2:** United Utilities – Better Rivers – Storm Overflow Map (October 2024). The green dot marks the Kaber WwTW Storm Overflow.

Kaber lies in the Eden District of Cumbria, around 32km southeast of Penrith. South of the River Belah and its tributary, Popping Beck.

## Investigate

A desktop study was attempted using available data to understand the extent of infiltration in the sewer network of the drainage catchment. There was limited data available for Kaber and therefore, conclusions on the presence of infiltration could not be drawn at this level.

## Survey

Comprehensive CCTV surveying of the area is planned for Winter 2024 to identify possible infiltration and inflows to the sewer. This may be extended to Winter 2025 if surveying is not conclusive. The CCTV will then be assessed using Artificial Intelligence to identify outstanding infiltration and inflow issues that need addressing.

As well as CCTV, surface water modelling software will be used to complete a hydrological and topographical assessment to identify opportunities for natural flood management in the catchment to reduce the impact of rural runoff on sewer capacity.

## Next steps

Kaber is currently in the surveying stage of identifying and addressing infiltration (see Figure 1). If the CCTV survey reveals groundwater infiltration, interventions will be considered, and the site will follow an iterative intervention regime to monitor the efficacy of the solution. Remedial works at Kaber could include, but not be limited to, relaying sewers, lining sewers, sealing manholes or disconnecting inflows. This would be expected to be completed in 2025.