

Barrow Nook

Infiltration Reduction Plan

Last Updated: November 2024



Executive summary

Barrow Nook in Lancashire is currently in the survey stage (see Figure 1) to address infiltration and reduce spills at the Barrow Nook Wastewater Treatment Works Storm Overflow (16930106SO). A desktop assessment concluded that there is the possibility of groundwater infiltration but not likely a significant amount that would contribute to additional spills. Surveys are underway to clarify 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.

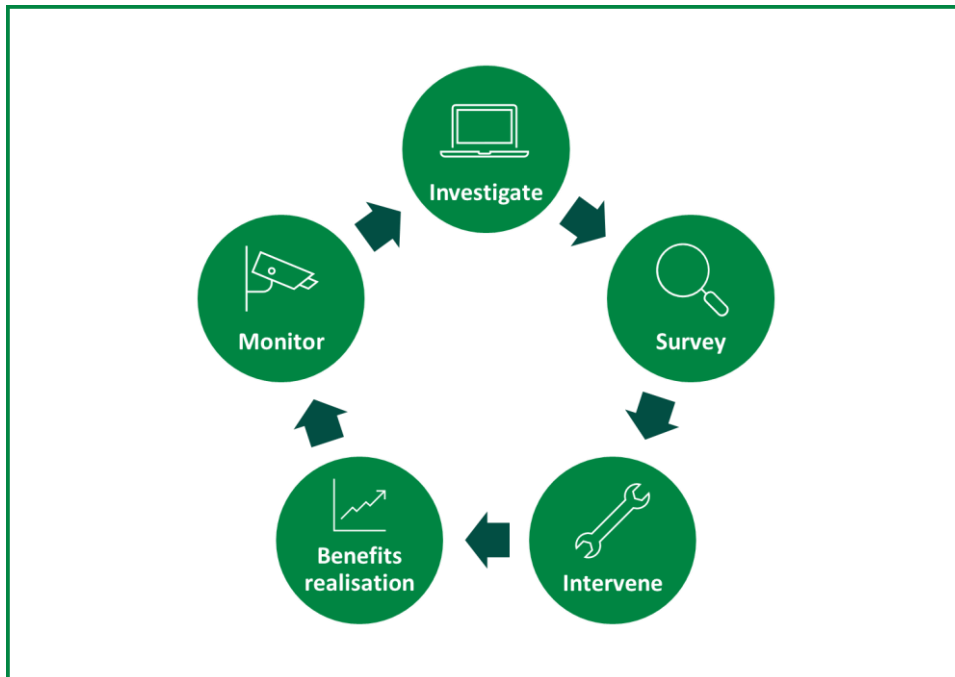


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 Barrow Nook drainage area and the associated overflow, Barrow Nook Wastewater Treatment Works Storm Overflow (16930106SO). 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.

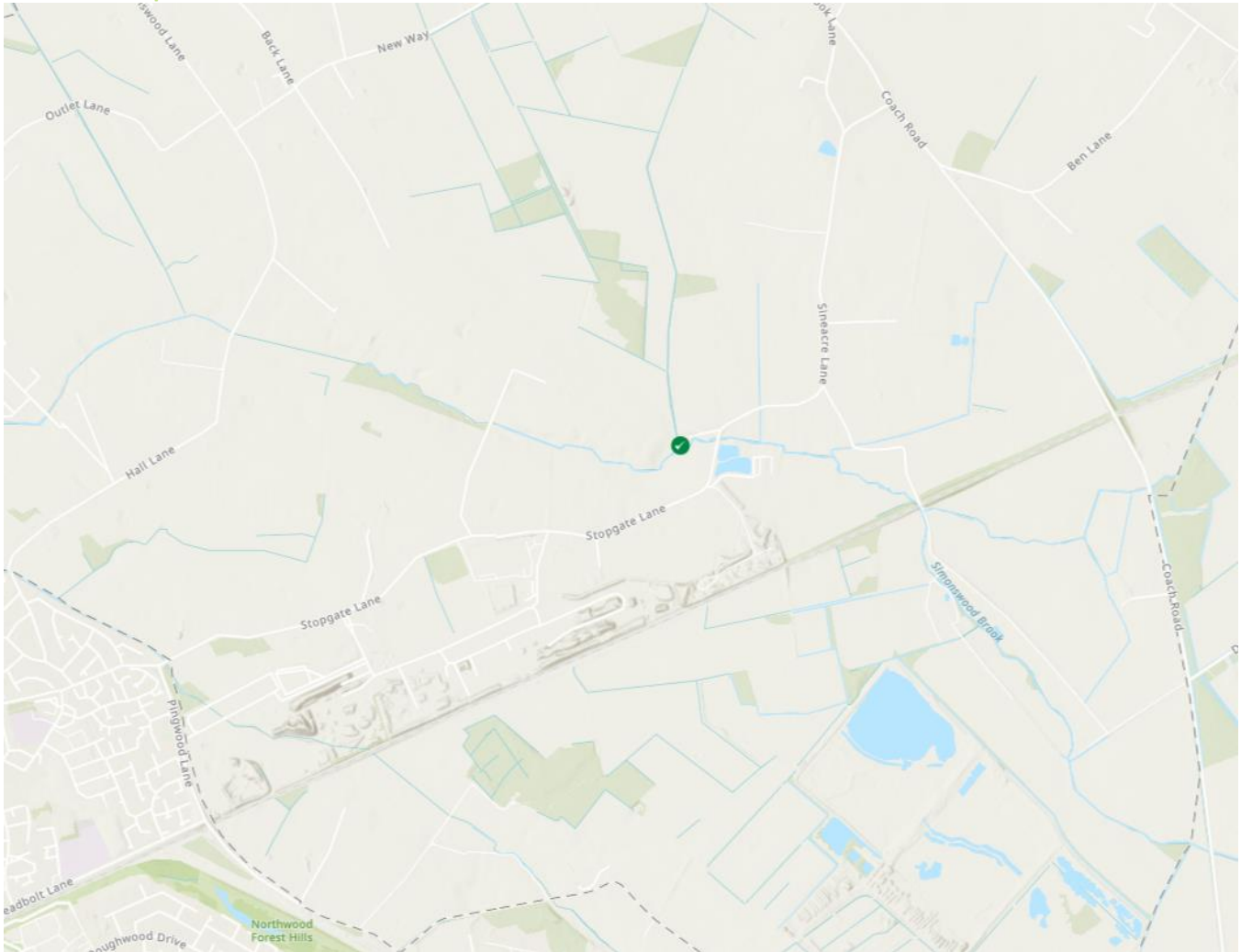


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (September 2024). The green dot marks the Barrow Nook WwTW Storm Overflow.

Barrow Nook is a small rural hamlet, bordering the Bickerstaffe region. Located in West Lancashire, Barrow Nook is close to the towns of Ormskirk and Skelmersdale as a small countryside catchment surrounded by low lying agricultural land. The hamlet is just over 1km north of Simonswood Brook where the related storm overflow is located.

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 is unlikely but possible as indicators of infiltration could be due to catchment growth, slow response run off or groundwater infiltration. Further observations also included the sewers running close to and crossing a watercourse.

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

Previous investigations in part of the Barrow Nook area revealed infiltration that was patch lined in 2023. Comprehensive CCTV surveying of the area is planned for Winter 2024 to identify any remaining groundwater infiltration. This may be extended to Winter 2025 if surveying is not conclusive. The CCTV survey information will then be assessed using Artificial Intelligence to identify outstanding infiltration and inflow issues that need addressing.

Next steps

Barrow Nook 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 Barrow Nook could include, but not be limited to, relaying sewers, lining sewer or sealing manholes.