

Barrow Nook

Infiltration Reduction Plan

Last Updated: December 2025



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 was a possibility of groundwater infiltration, and CCTV surveys of the area confirmed this.

As groundwater infiltration was found but is yet to be confirmed as a leading cause of spills to the environment, interventions were assessed and completed to address localised infiltration identified at the survey stage. These interventions were completed in May 2025. Further surveys are currently underway to identify any additional infiltration.

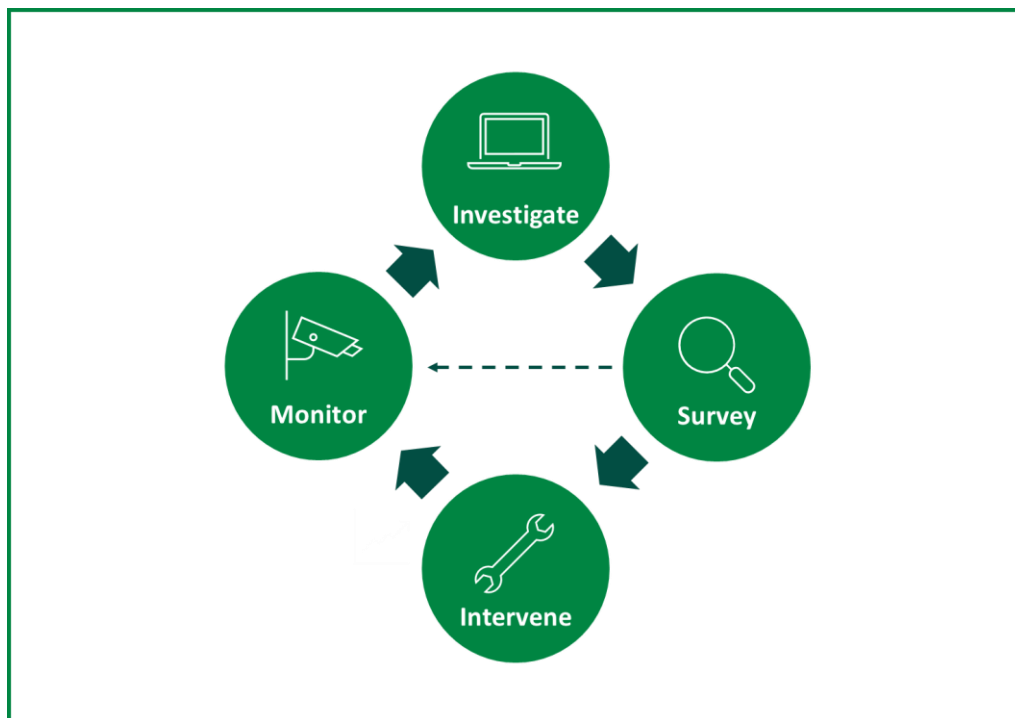


Figure 1: Iterative process to investigate, identify and address groundwater infiltration

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 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 capture the process to investigate, identify and address significant groundwater infiltration.

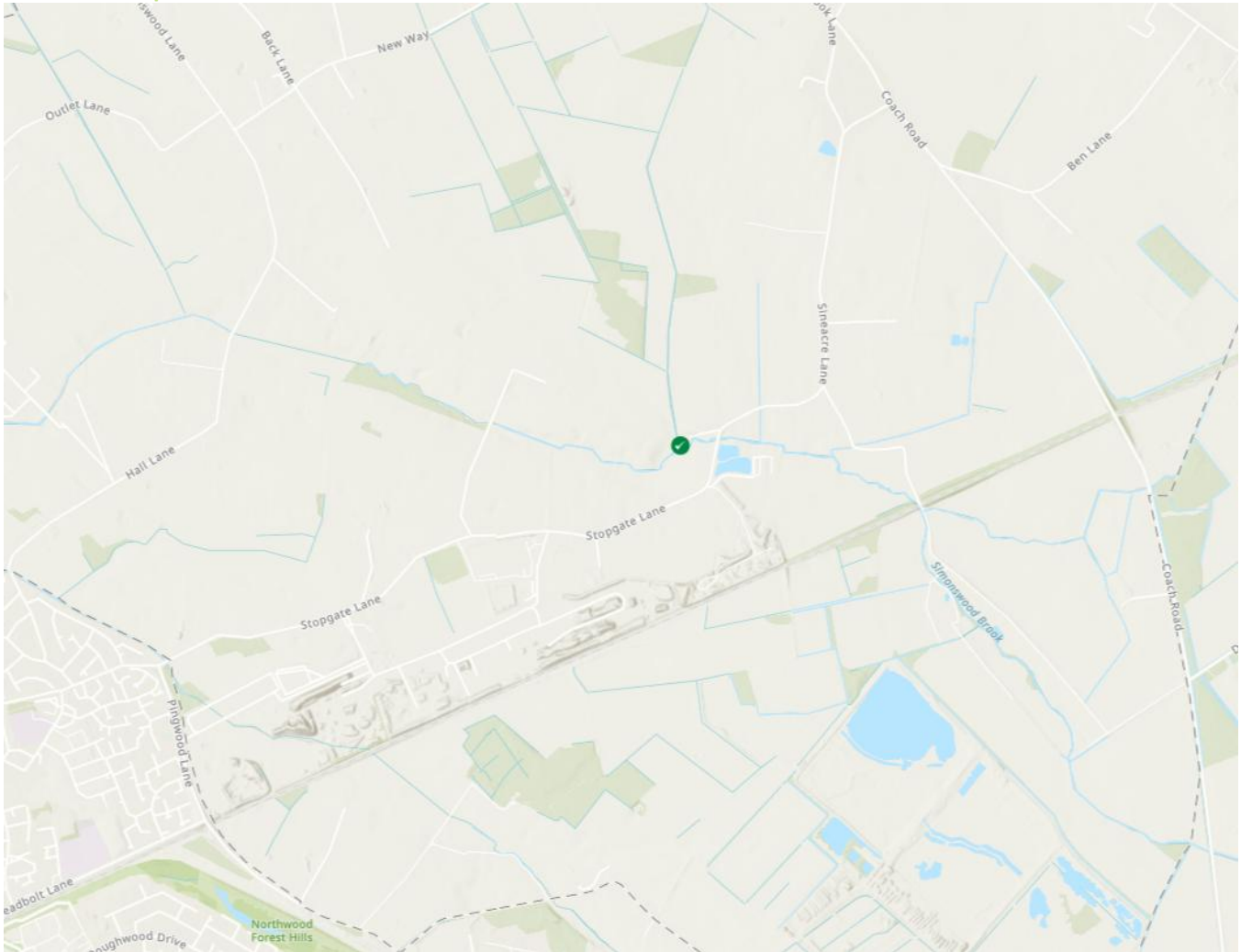


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (September 2024). The green dot marks the Barrow Nook WwTW Storm Overflow.

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 was unlikely, although possible, as indicators of infiltration could be due to catchment growth, slow response runoff, 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 were completed to see if there is infiltration of the water course into the sewer. CCTV surveys can 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. Further CCTV surveying of the area was completed in Winter 2024 to identify remaining groundwater infiltration. Several points of infiltration were identified and remedial works recommended. The CCTV surveys were reviewed by an engineer and assessed using Artificial Intelligence to rapidly identify and locate points of infiltration requiring remedial works. Linear and point infiltration was confirmed in the network.

The network was also checked for inflows, and no lateral connections are suspected of receiving flows not bound to receive.

Intervention

Completed in May 2025, linear infiltration was addressed by lining 72m of the network to seal it and prevent infiltration.

Point infiltration at one manhole was addressed by sealing it using tunnel grout at two injection points. The image below shows the grout feed hose filling the void around the manhole, creating a watertight seal.



During this stage, further potential infiltration was identified. Additional surveys are currently being carried out.

Next steps

Barrow Nook is currently in a second stage of CCTV surveys to further identify and address infiltration (see Figure 1). If further infiltration is confirmed, additional remedial work will be undertaken.