

Barrow Nook

Infiltration Reduction Plan

Last Updated: September 2026



Executive summary

Barrow Nook in Lancashire is currently in the monitoring stage (see Figure 1) to address infiltration and reduce spills at the Barrow Nook Wastewater Treatment Works Storm Overflow. An initial desktop assessment concluded that there was a possibility of groundwater infiltration. 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 completed in Spring 2025 to address localised infiltration identified at the survey stage. Further surveys were completed in Autumn 2025, with additional interventions being completed in 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 Barrow Nook drainage area and its associated overflow, Barrow Nook Wastewater Treatment Works Storm Overflow. 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.

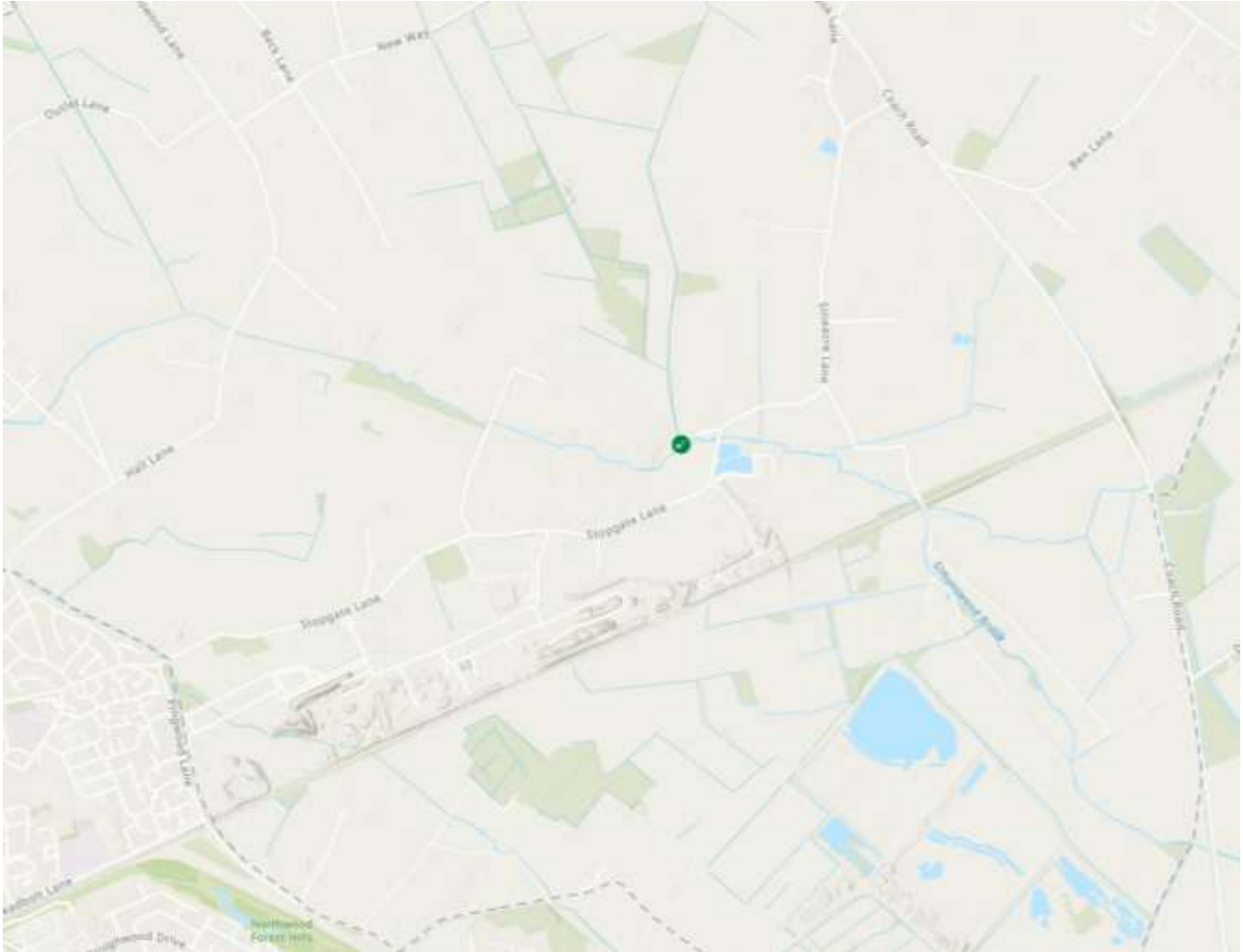


Figure 2: United Utilities – Better Rivers – Storm Overflow Map (September 2024). The green dot marks the Barrow Nook WwTW Storm Overflow.

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

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 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 noted sewers running close to and across a watercourse.

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

Survey

Previous investigations in the Barrow Nook area revealed infiltration, which was remediated with patch lining in 2023. Further CCTV surveys of the area were completed in Winter 2024 to identify any additional groundwater infiltration. The CCTV surveys were assessed using Artificial Intelligence to rapidly identify and locate points of infiltration. The surveys were then reviewed by an engineer to assess for any required remedial works. Several points of infiltration were identified and remedial works were recommended.

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

Additional surveys were completed in Autumn 2025. CCTV surveys confirmed the presence of infiltration.

Intervention

As recommended, remedial works were completed in Spring 2025. This involved 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.

Additional interventions were completed in Summer 2026. This included sealing a manhole chamber and carrying out repairs within a manhole to prevent infiltration.



Figure 3: Grout injection to seal a manhole

Next steps

Barrow Nook is currently in the monitoring stage of addressing infiltration found during the second phase of surveys (see Figure 1). The site will follow the iterative process displayed in Figure 1 to monitor the efficacy of the completed interventions and identify new points of infiltration, should they arise.

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.