

Wishford Infiltration Reduction Plan Summary

This provides an update on the last year's groundwater situation, what mitigation actions, if any, were taken and a summary of our action plan to prevent flooding due to groundwater infiltration of our sewer network.

April 2021 – March 2022

Winter groundwater levels across the region were relatively low, with peak levels comparable to the winters of 2014/15 and 2016/17. Following high groundwater levels during the preceding winter, groundwater levels rose again in May 2021 with a monthly rainfall 66% above the long-term average (LTA) (fourth highest UK May rainfall on record). This particularly affected areas in the north of the region. During the autumn, heavy rainfall in October (33% above the LTA) caused groundwater levels to rise. However, below-average rainfall between November 2021 and March 2022 meant that most catchments were not severely affected by infiltration. The groundwater in the Wishford catchment did not reach critical levels. There were no incidents reported attributed to inadequate hydraulic capacity (IHC) in the catchment. The increased sump levels and pump run times at various Sewage Pumping Stations (SPS) in the catchment coincided with the rise in groundwater levels suggesting the catchment is still affected by infiltration and as it occurs during summer is suspected ingress from the River Wylfe.

Action Plan

Annual activity

- Routine jetting of vulnerable sewers to maximise capacity.
- Stakeholders meeting to establish roles and responsibilities with local authorities.
- Review existing asset and operational data and produce an Infiltration Reduction Report.
- Investigate and review Annual Infiltration Reduction Update.
- Continued monitoring of telemetry.
- Promotion of multi-agency approach particularly during times of high groundwater level.

Completed to date

- Put in place a procedure for recording, investigating and resolving incidents.
- Pro-active inspection of public sewers. Identify infiltration using CCTV.
- Analysed flows in the sewers using flow survey and modelling.
- Sewer and manhole sealing of the public system where proven to be cost effective.
- Carried out pump station surveys and asset update, where necessary.
- Reviewed historic telemetry and rainfall records.
- Routine review of telemetry; compared with borehole data, local watercourse data, rainfall data and Customer incidents to assess residual levels of infiltration.
- Initiated monitoring of local watercourses to indicate local groundwater levels and inform Operational Mitigation Action Plan (OMAP).

	2015-20	2020-21	2021-22
Length of sewer inspected (m)	16,932	6,715	793
Length of sewer sealed (m)	2,601	-	794

Short term

- Use of machine learning and rainfall forecasting to predict flows in sewers.
- Add OMAP layer to Drainage and Wastewater Management Plan Hub for Risk Management Authorities.
- Investigate the use of Artificial Intelligence (AI) to code CCTV, increase survey efficiency and help identify defects and hotspots.

Medium term

- CCTV and targeted infiltration studies according to analysis from previous surveys of s105a sewers.
- Undertake pro-active inspection of public sewers as set out in Sewerage Risk Management Manual and identify infiltration using CCTV.
- Extensive pro-active inspection of public sewers to identify infiltration using CCTV.

Long term

- Inspection of private gullies drains and manholes.
- Remedial works of private assets (where appropriate and if permitted).
- Monitor and regulate surface water disposal to prevent surface water to foul misconnections.
- Consider sustainable solutions such as above ground attenuation.

Current Performance

This graph compares operational incidents with the flow at Wishford Water Recycling Centre (WRC) and groundwater at Stoford Cross. The telemetry data implies there is infiltration in the Wishford catchment area, as there is a strong correlation between groundwater levels and the inflow. There have been fewer incidents due to inadequate hydraulic capacity (IHC) recorded in Wishford, following multiple instances of sewer sealing, and improved mitigation works in the form of tankering and over pumping. Groundwater levels were extremely high during the winter of 2019 resulting in an increased number of IHC incidents and demonstrated that the catchment remains severely affected by infiltration. However, the general trend is that inflow at Wishford WRC has decreased, demonstrating the positive impact of the sealing works thus far.

