

Wookey 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 in 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. Groundwater in Wookey did not reach critical levels; the sewers were able to cope, and the Water Recycling Centre (WRC) was not overwhelmed, with no incidents attributed to Inadequate Hydraulic Capacity (IHC) over the winter period. No mitigation works were carried out by Wessex Water.

Action Plan

Annual activity

- Pro-active maintenance of vulnerable sewers including 6 monthly routine jetting.
- Monitoring of system performance using telemetry.
- Review data, update reports and meet with stakeholders for an annual update and to share findings.
- Promote a multiple agency approach to managing solutions during high groundwater levels.

Completed to date

- Procedure for recording, investigating and resolving incidents in place.
- Proactive inspection using CCTV of vulnerable public sewers.
- Analysis of inspection data to identify infiltration.
- Analysed flows in sewers using flow survey and modelling.
- Commissioned pump station survey and asset update.
- Appraised incidents of sewer and surface water flooding.
- Reviewed historic telemetry and rainfall records.
- Carried out infiltration sealing of sewer and manholes where deemed cost-effective, targeting work according to study findings.
- Raised awareness about mechanisms of sewer overloading and need for risk-based approach for improvements.
- Routine review of telemetry compared with borehole, watercourse, rainfall data and customer incidents to assess infiltration levels.
- Reviewed long term options for monitoring and improving data collection such as Event Duration Monitoring.

- Installed a flow monitor and pressure transducer at Bleadney Mill sewage pumping station (SPS).
- 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)	13,475	6,573	-
Length of sewer sealed (m)	2,554	56	5

Short term

- Use of machine learning and rainfall forecasting to predict flows in sewers
- Continued sewer and manhole sealing of the public system where proven to be cost effective based on proactive inspections.
- Add OMAP layer to Drainage and Wastewater Management Plan Hub for Risk Management Authorities
- Investigate the use of Artificial Intelligence to code CCTV, increase survey efficiency and help identify defects and hotspots.

Medium term

- Commission further pump station surveys where necessary.

Long term

- Inspect and remediate where appropriate private drainage networks.
- Monitor and regulate surface water disposal to prevent misconnection of surface water and foul sewers
- Inspection of private gullies, drains and manholes.
- CCTV and targeted infiltration studies according to analysis from previous surveys of s105a sewers.

Current Performance

The graph below displays the incidents against river levels (as measured Wookey) and the inflow at Wookey WRC. Infiltration sealing in 2014, 2016, and 2017/18 appeared to help reduce incidents due to IHC. Mitigation action prevented flooding during the winter of 2019/20, when groundwater levels were the highest since 2013/14. However, infiltration remains still an issue in the catchment, with three incidents attributed to IHC recorded in 2020/21. Telemetry data also shows a significant correlation between river levels (an indicator of groundwater levels) and inflow to Wookey WRC.

