

Sutton Benger 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 Sutton Benger did not reach critical levels and the sewer network was able to cope, therefore no mitigation works were carried out by Wessex Water in this part of the catchment. There were three incidents of backing up, however none were due to inadequate hydraulic capacity (IHC). Sealing was completed in late 2021.

Action Plan

Annual activity

- Continue monitoring system performance using telemetry, rainfall records and local groundwater levels.
- Proactive maintenance of vulnerable sewers including 6 monthly routine jetting.
- Stakeholders' meetings with local authorities to establish roles and responsibilities.
- Review existing asset and operational data and produce an annual infiltration reduction update.
- Promote a multiple agency approach to communicate particularly during times of high groundwater.
- Risk modelling of Wessex Water Assets to plan which catchments require proactive surveys as set out in Sewerage Risk Management Manual.
- Follow procedure for responding to, investigating, resolving and recording operational contact incidents.
- Promotion of multiple agency approach. Regular meetings with Lead Local Flood Authorities and other risk authorities where appropriate.
- Continue customer engagement, via the Wessex Water website and public meetings when applicable.

Completed to date

- Appraise incidents of sewer and surface water flooding.
- Raise awareness about mechanisms of sewer overloading and need for risk-based approach for improvements.
- Analysis of inspection data to identify infiltration.
- Routine review of telemetry and compare with borehole, watercourse, rainfall data and customer incidents to assess infiltration levels.
- Procedure for recording, investigating and resolving incidents established.

- Undertaken pro-active inspection of vulnerable public sewers and identified infiltration using CCTV and ElectroScan.
- Commissioned pump station surveys and asset update.
- Wessex Water infiltration [video](#) added to website.
- Review of telemetry compared with other factors to assess residual levels of infiltration.
- Analysed flows in the sewers using flow survey and modelling where appropriate.
- Considered construction of local boreholes and installation of web-based auto logging telemetry to monitor groundwater levels.
- Liaised with the Environment Agency regarding their groundwater warning service.
- Investigated watercourse monitoring in the local area as a possible indicator of groundwater levels and trigger levels for Operational Mitigation Action Plan (OMAP).
- Sewer and manhole sealing of the public system where proven to be cost effective based on proactive inspections.

	2015-20	2020-21	2021-22
Length of sewer inspected (m)	4,047	2,774	7,433
Length of sewer sealed (m)	26	-	1,364

Short term

- Continued sewer and manhole sealing of the public system where proven to be cost effective based on proactive inspections.
- Investigate watercourse monitoring in the local area.
- Analyse flows in the sewers using flow surveys and modelling where appropriate.
- Investigate the use of Artificial Intelligence to code CCTV footage, increase survey efficiency and help identify defects and hotspots.
- 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.
- Appraisal of flooding incidents.

Medium term

- CCTV and targeted infiltration studies according to analysis from previous surveys and telemetry data.
- Identify road gullies and other impermeable areas connected into the foul sewers and remove them where cost effective.
- Commission pump station surveys where necessary.

Long term

- Inspection of private gullies, drains, and manholes.
- Remedial works of private assets.
- Monitor and regulate surface water deposal to prevent foul sewer infiltration.
- Consider sustainable solutions such as above ground attenuation.
- CCTV and targeted infiltration studies according to analysis from previous surveys of s105a sewers.

- Where areas of infiltration in private drainage systems are found, pass information on to the Council for further action. Wessex Water to consider funding private improvements.

Current Performance

The graph below shows incidents against regional river level (as measured at Great Somerford river gauge) and the flow at Sutton Benger Water Recycling Centre (WRC). Prior to the sealing in 2017 and 2018 to prevent infiltration, there was a strong correlation between groundwater level and inflow into the WRC. Post lining, this relationship has remained unchanged. Whilst inflow to the works have remained high, incidents attributed to IHC have significantly reduced. Further sealing to prevent infiltration was completed in late 2021, however the effectiveness cannot be determined yet due to dry weather experienced in winter 2021/22.

