

Sydling St. Nicholas 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. Groundwater did not reach critical levels in Sydling St Nicholas, and no incidents attributed to inadequate hydraulic capacity (IHC) were reported.

Action Plan

Annual activity

- Routine jetting of vulnerable sewers to maximise capacity.
- Review asset and operational data and update annual reports.
- Continue monitoring of system performance using telemetry data within the area, rainfall records and local groundwater/river levels.
- 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.
- Undertook pro-active inspection of sewers using ElectroScan.
- Stakeholders meeting to establish roles and responsibilities with local authorities.
- 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).

	2011-20	2020-21	2021-22
Length of sewer inspected (m)	4410	2913	-
Length of sewer sealed (m)	422	-	-

Short term

- Undertake rehabilitation work based on the survey findings where cost beneficial.
- Use of machine learning and rainfall forecasting to predict flows in sewers.
- Add OMAP layer to DWMP 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

- Extensive pro-active inspection of public sewers to identify infiltration using CCTV.
- 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.

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 telemetry at Sydling St Nicholas Sewage Pumping Station (SPS) and groundwater at Barcombe Farm. There is a clear correlation between pump run times and groundwater level indicating the impact that infiltration has on the local network. Sewer lining and manhole sealing has had a positive effect, as the number of incidents attributed to IHC have reduced since 2015. However, during very high groundwater periods, there remains the need for the operational mitigation action plan. This was evident during the winter of 2019/20 when tankering was carried out to prevent loss of service and to protect public health.

