Edington (Shapwick and Catcott) 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. Despite the lower groundwater and river levels during this period there was an incident reported attributed to inadequate hydraulic capacity (IHC). This was the first time since 2018. Wet well levels and pump run times were affected when groundwater levels rose sharply, suggesting that infiltration is still a problem in the catchment.

Action Plan

Annual activity

- Review asset and operational data and update annual reports.
- Pro-active maintenance of vulnerable sewers including 6 monthly routine jetting.
- Continue monitoring of system performance using telemetry data within the area, rainfall records and local groundwater/river levels.
- Promotion of multiple agency approach. Regular meetings with Lead Local Flood Authorities and other risk authorities where appropriate

Completed to date

- Procedure for recording, investigating and resolving incidents put in place.
- Proactive inspections of vulnerable sewers using CCTV.
- Analysed inspection data to identify infiltration.
- Analysis of 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 of the mechanisms of sewer overloading and need for a risk-based approach to improvements.

- Routinely reviewed telemetry, comparing borehole, watercourse, rainfall data with customer incidents to assess critical infiltration levels.
- Liaised with the Environment Agency about groundwater warning service.
- Updated the current hydraulic model for Chilton Polden, including Edington catchments, using flow surveys.

	2015-20	2020-21	2021-22
Length of sewer inspected (m)	6,730	-	7,839
Length of sewer sealed (m)	457.5	1	2

Short term

- Undertake rehabilitation work based on the survey findings where cost beneficial.
- 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.

Medium term

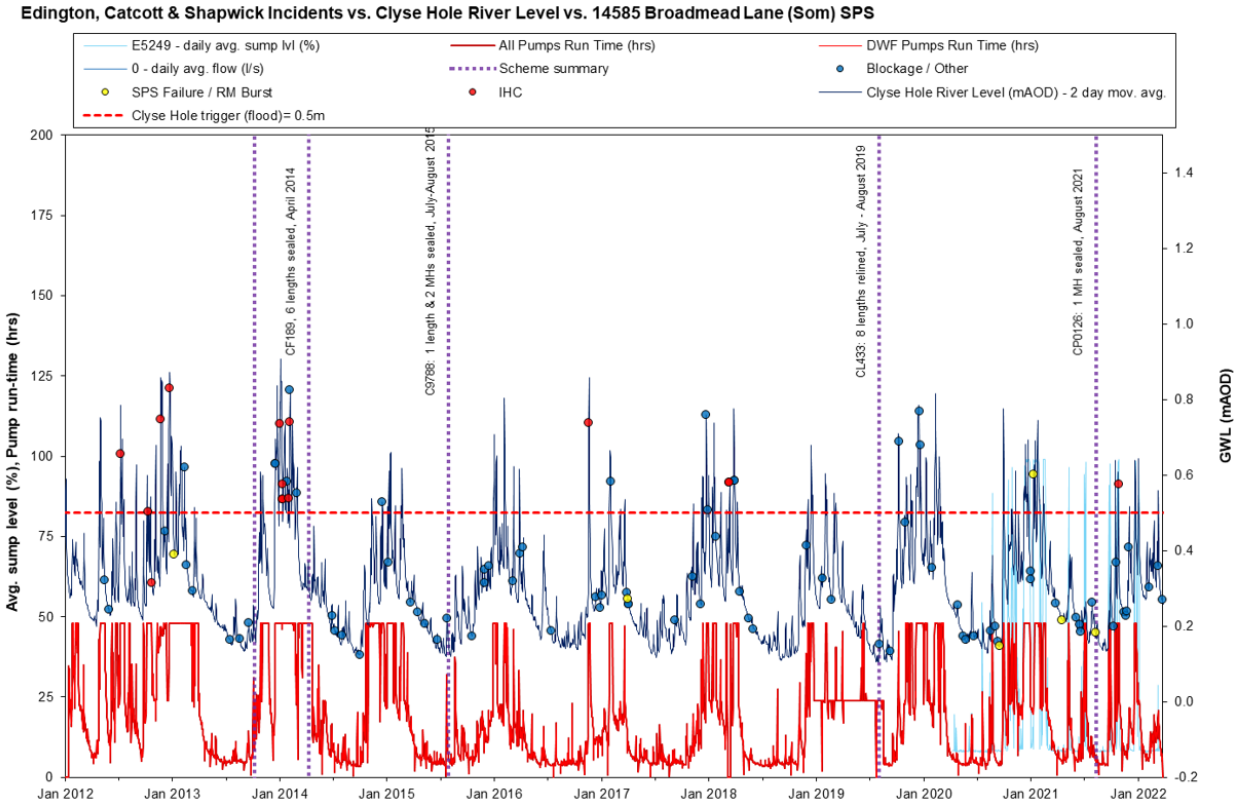
- Identify road gullies and other impermeable areas connected into the foul sewers and remove them where cost effective.
- CCTV and targeted infiltration studies according to analysis from previous surveys and telemetry data.
- Commission further pump station surveys where necessary.
- Further infiltration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

Long term

- Carry out additional CCTV to identify infiltration areas, including inspection of private gullies, drains and manholes.
- Remedial works of private assets creating an inflow into the foul only sewer.
- Monitor and regulate surface water disposal to prevent surface water to foul misconnections.
- Consider sustainable solutions.

Current Performance

This graph shows incidents against river level (as measured at Clyse Hole river gauge) and the telemetry at Edington Sewage Pumping Station (SPS). Although extensive sewer rehabilitation has been completed, infiltration is still evident in the catchment, demonstrated by the fact the wet well at Edington SPS is still high for prolonged periods of time in the winter months. However, there has been a significant decrease in reported incidents in the years since, with only one flooding reported due to inadequate hydraulic capacity (IHC) in November 2021.


Edington, Catcott & Shapwick Incidents vs. Clyse Hole River Level vs. 14585 Broadmead Lane (Som) SPS
E5249 - daily avg. sump lvl (%)
All Pumps Run Time (hrs)
DWF Pumps Run Time (hrs)
0 - daily avg. flow (l/s)
Scheme summary
Blockage / Other
SPS Failure / RM Burst
IHC
Clyse Hole River Level (mAOD) - 2 day mov. avg.
Clyse Hole trigger (flood)= 0.5m
CF169: 6 lengths sealed, April 2014
C9788: 1 length & 2 MHs sealed, July-August 2015
CL433: 8 lengths relined, July - August 2019
CP0126: 1 MH sealed, August 2021
Avg. sump level (%), Pump run-time (hrs)
GWL (mAOD)
200
175
150
125
100
75
50
25
0
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
Jan 2012
Jan 2013
Jan 2014
Jan 2015
Jan 2016
Jan 2017
Jan 2018
Jan 2019
Jan 2020
Jan 2021
Jan 2022