Oaksey and Eastcourt 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. There have been no incidents of flooding or pollution attributed to inadequate hydraulic capacity (IHC) during this period, however the groundwater and river levels have been relatively low.

Action Plan

Annual activity

- Monitor the systems performance using telemetry, rainfall records and local groundwater levels.
- Review data, update reports and meet with stakeholders for an annual update to share findings.
- Promote a multiple agency approach and communicate during periods of high groundwater levels.
- Pro-active maintenance of vulnerable sewers including routine jetting.

Completed to date

- Procedure for responding to, investigating, resolving and recording operational contact incidents
- Reviewed historic and current telemetry and rainfall records and update.
- Communicated with other authorities during times of elevated groundwater levels.
- Undertook pro-active inspection of public sewers as set out in Sewerage Risk Management Manual and identified infiltration using CCTV.
- Analysed flows in the sewers, using historic and current telemetry, rainfall, flow surveys and modelling where appropriate.
- Appraisal of flooding incidents.
- Carried out manhole and sewer infiltration sealing of the public network where deemed cost effective.
- Reviewed existing regional borehole data.
- Risk modelling of Wessex Water assets to plan which catchments require proactive surveys as set out in Sewerage Risk Management Manual.
- Considered the construction of local boreholes and installation of web-based auto logging telemetry to monitor groundwater levels.
- Wessex Water infiltration video added to website.
- Liaise with the Environment Agency regarding their groundwater warning modelling and service.

- Initiated monitoring of local watercourse to indicate groundwater levels locally.

	2015-20	2020-21	2021-22
Length of sewer inspected (m)	6,313	1,319	1,029
Length of sewer sealed (m)	719	608	25

Short term

- Produce Operational Mitigation Action Plan (OMAP).
- 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.
- Use of machine learning and rainfall forecasting to predict flows in sewers.

Medium term

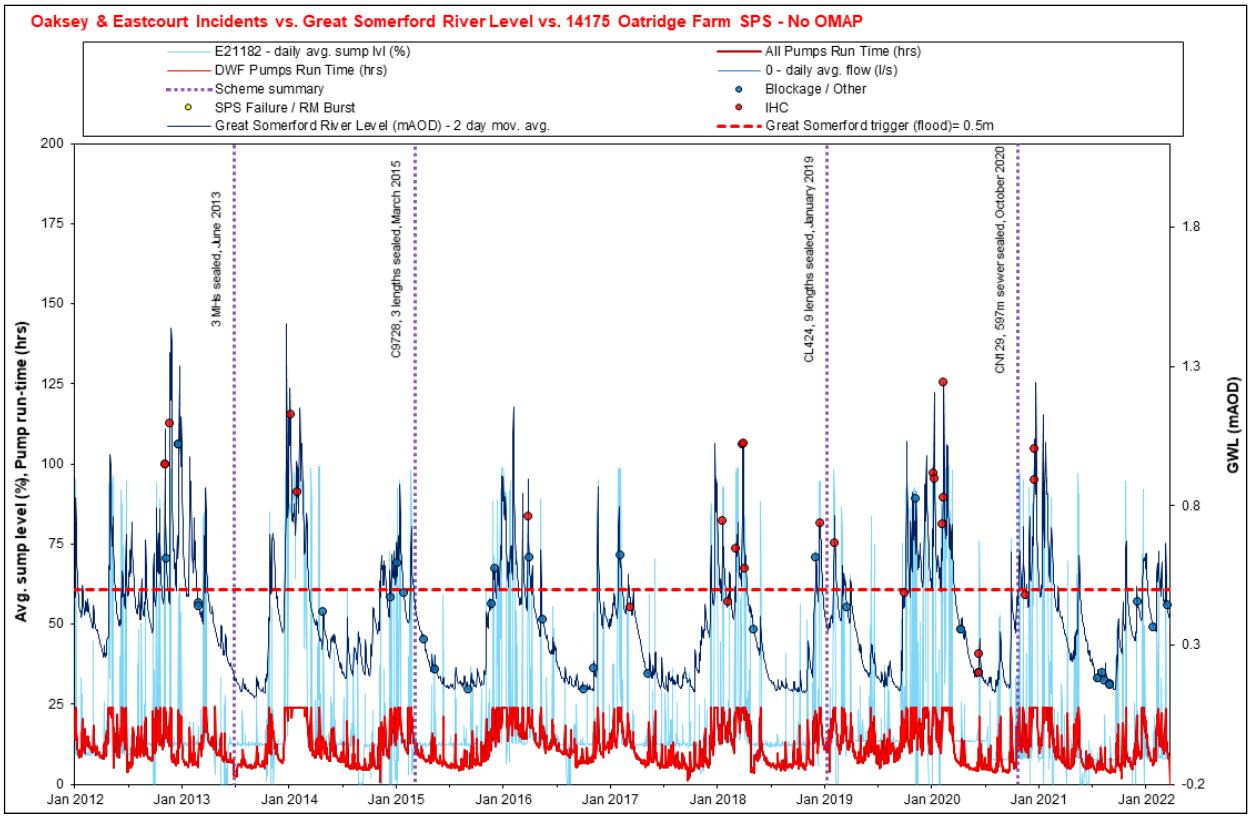
- Commission further pump station surveys of Oatridge Farm SPS where necessary.

Long term

- 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.
- Review long term options for monitoring and improving data collection for example Event Duration Monitoring.
- Inspection of private gullies, drains, and manholes.
- Monitor and regulate surface water disposal to prevent surface water to foul misconnections.

Current Performance

The graph below shows incidents against regional river level (as measured at Great Somerford river gauge) and Oatridge Farm Sewage Pumping Station (SPS) telemetry. Prior to the sewer sealing, to prevent infiltration, there was a strong correlation between groundwater level and Oatridge Farm SPS wet well level/ pump run time. No incidents attributed to inadequate hydraulic capacity (IHC) were reported in 2021/22 however, the river level was relatively low. There remains a correlation between the rise in river level and telemetry at Oatridge SPS however, the SPS was able cope with flows during 2021/22.


Oaksey & Eastcourt Incidents vs. Great Somerford River Level vs. 14175 Oatridge Farm SPS - No OMAP
E21182 - daily avg. sump lvl (%)
DWF Pumps Run Time (hrs)
Scheme summary
SPS Failure / RM Burst
Great Somerford River Level (mAOD) - 2 day mov. avg.
All Pumps Run Time (hrs)
0 - daily avg. flow (l/s)
Blockage / Other
IHC
Great Somerford trigger (flood)= 0.5m
3 MHs sealed, June 2013
C9726, 3 lengths sealed, March 2015
CL424, 9 lengths sealed, January 2019
CN129, 597m sewer sealed, October 2020
Avg. sump level (%), Pump run-time (hrs)
GWL (mAOD)
200
175
150
125
100
75
50
25
0
1.8
1.3
0.8
0.3
-0.2
Jan 2012
Jan 2013
Jan 2014
Jan 2015
Jan 2016
Jan 2017
Jan 2018
Jan 2019
Jan 2020
Jan 2021
Jan 2022