

Sturminster Marshall and Shapwick 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 the catchment, and no incidents due to inadequate hydraulic capacity (IHC) were reported.

Action Plan

Annual activity

- Review asset and operational data and update annual reports.
- Continue monitoring system performance using telemetry, rainfall records and local groundwater levels.
- Communicate with other authorities during times of elevated groundwater levels and promote a multiple agency approach.
- Pro-active maintenance of vulnerable sewers including routine jetting.

Completed to date

- Proactive inspection using CCTV of vulnerable public sewers.
- Analysis of inspection data to identify infiltration.
- Analyse flows in sewers using flow survey and modelling.
- Commission pump station survey and asset update.
- Appraise incidents of sewer and surface water flooding.
- Review of historic telemetry and rainfall records.
- Carried out significant infiltration sealing of sewer and manholes where deemed cost-effective, targeting work according to study findings.
- Raise awareness about mechanisms of sewer overloading and need for risk-based approach for improvements.
- Routine review of telemetry and compare with borehole, watercourse, rainfall data and customer incidents to assess infiltration levels.
- Monitored local watercourse data and groundwater levels during periods of inundation to inform Operational Mitigation Action Plan (OMAP).

	2015-20	2020-21	2021-22
Length of sewer inspected (m)	1,874	-	-
Length of sewer sealed (m)	2,002	2	-

Short term

- Undertake rehabilitation work based on the survey findings where cost beneficial.
- Investigate watercourse monitoring in the local area.
- Use of machine learning and rainfall forecasting to predict flows in sewer.
- Commission pump station surveys where necessary.
- 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.

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.
- Further infiltration sealing according to study findings.

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.

Current Performance

The graphs below show operational incidents against Iwerne Hill farm groundwater level (GWL) and the flow at Stewards Lane and Newton Road Sewage Pumping Stations (SPSs). Prior to the sewer sealing and maintenance works in 2015-2016 there was a clear correlation between GWL and the number of flooding incidents recorded as inadequate hydraulic capacity (IHC) incidents. However, post sealing and pump station improvements, incidents reported have reduced in number; however, there is still evidence of infiltration.

No incidents due to inadequate hydraulic capacity (IHC) have been recorded in Shapwick since 2016, and only three in Sturminster Marshall. This is despite 2019/20 groundwater levels being the highest since 2014, and 2020/21 levels comparable to 2015/16.

No other incidents due to IHC have been reported since 2020, this shows that past sealing work to prevent infiltration, storage improvements and the instigation of OMAPs have improved the capacity of the network during periods of elevated groundwater. The ongoing mitigation measures and action plan remain in place as there is still a clear correlation between GWL, rainfall and the sump levels and pumps run time at Stewards Lane SPS and Newton Road SPS.

