

Hallen 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 2023 – March 2024

Regional Summary

The Wessex region experienced incredibly wet weather across 2023-24, with higher-than-average rainfall in nine months during the period. February 2024 was both the warmest on record and the wettest in 30 years, with the 12-month sequence to the end of February being the wettest since our records began in 1911.

Groundwater levels rose rapidly during the autumn, and whilst drier weather in January 2024 provided a brief reprieve, levels remained high for the majority of the winter.

[*Warmest February on record for England and Wales - Met Office*](#)

Local Summary

Groundwater had a significant impact on the catchment during the winter period with the operation of the pumping station reacting to the increased inflow. One incident attributed to inadequate hydraulic capacity (IHC) was 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 to inform the operational response during high-groundwater periods, and to monitor changing infiltration levels in the catchment.

Proactive inspections and maintenance of sewerage assets.

Completed

Used machine learning to predict flows in sewers and proactively identify blockages and other issues.

Inspected public sewer network to identify points of infiltration.

Reviewed incidents of sewer flooding.

Installed in-sewer monitors at key locations to better understand flows in the network.

Sealed sewers and manholes to prevent groundwater infiltration.

Upgraded pumping stations where appropriate, to improve the reliability and performance of the site.

Updated the catchment hydraulic model.

Short Term

Undertake pro-active inspection of public sewers and manholes using CCTV to identify points of infiltration.

Undertake review of incidents of sewer flooding suspected to be affected by groundwater infiltration.

Medium Term

Analyse flows in sewers using pumping station surveys, flow surveys and/or hydraulic modelling.

Install in-sewer monitors at key locations to better understand flows in the network.

Infiltration sealing of sewers and manholes, where deemed cost-effective, targeting work according to study findings.

Implement a scheme to improve the local water recycling centre (WRC).

Long Term

Inspect private gullies, drains, and manholes where applicable.

Install permanent flow meters at key pumping stations to continuously record pump performance.

Consider sustainable solutions to rainwater management, for example above-ground attenuation and property-level interventions.

When Necessary

Implement emergency tankering procedure for preventing restricted toilet use and sewer flooding during high groundwater periods, in order to protect public health.

Implement Operational Mitigation Action Plan (OMAP) for discharging excess flows to the environment as a last resort, when tankering would not prevent restricted toilet use or sewer flooding, and public health is at risk.

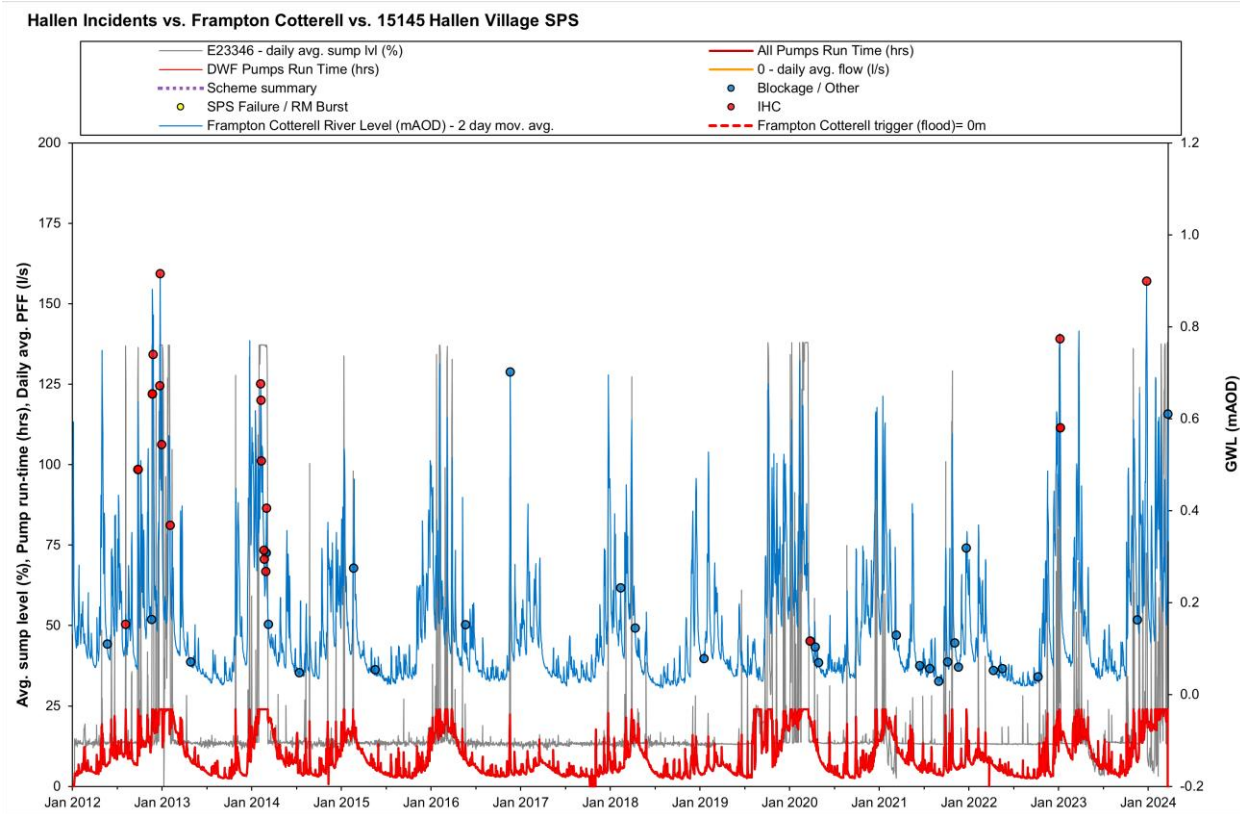
Install sealed covers on manhole chambers vulnerable to overland flow or river water entering through the cover.

Implement a scheme to address capacity issues in the sewer network.

Investigate nature-based solutions in the catchment.

Current Performance

The graph shows incidents against the river level, measured at Frampton Cotterell as an indication of local groundwater levels, and flow at Hallen Village pumping station. Despite sewer sealing in 2014 the pumping station is still affected by groundwater infiltration and incidents due to inadequate hydraulic capacity (IHC) have continued to be reported during wet winters.



Inspection and sealing since 2011

	2011-20	2020-21	2021-22	2022-23	2023-24
Length of sewer inspected (m)	1,246	-	-	-	588
Length of sewer sealed (m)	1,008	-	-	-	-