Cromhall 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 levels in the Cromhall catchment were exceptionally high this winter, resulting in one incident reported, which was attributed to inadequate hydraulic capacity.

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.
Use machine learning to predict flows in sewers and proactively identify blockages and other issues.
Proactive inspections and maintenance of sewerage assets.
Implement a scheme to address capacity issues in the sewer network.

Completed
Installed in-sewer monitors at key locations to better understand flows in the network.
Reviewed incidents of sewer flooding.
Implemented a scheme to improve the local water recycling centre (WRC).
Updated the catchment hydraulic model.
Undertaken pumping station or flow surveys to analyse flows in sewers.

Completed (cont.)
Installed permanent flow meters at key pumping stations to continuously record pump performance.
Sealed sewers and manholes to prevent groundwater infiltration.
Upgraded pumping stations where appropriate, to improve the reliability and performance of the site.
Inspected public sewer network to identify points of infiltration.
Undertaken pro-active cleaning (jetting) of sewers to maximise capacity.

Short Term
Analyse flows in sewers using pumping station surveys, flow surveys and/or hydraulic modelling.
Install permanent flow meters at key pumping stations to continuously record pump performance.
Infiltration sealing of sewers and manholes, where deemed cost-effective, targeting work according to study findings.
Upgrade pumping stations where appropriate, to improve the reliability and performance of the site.

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

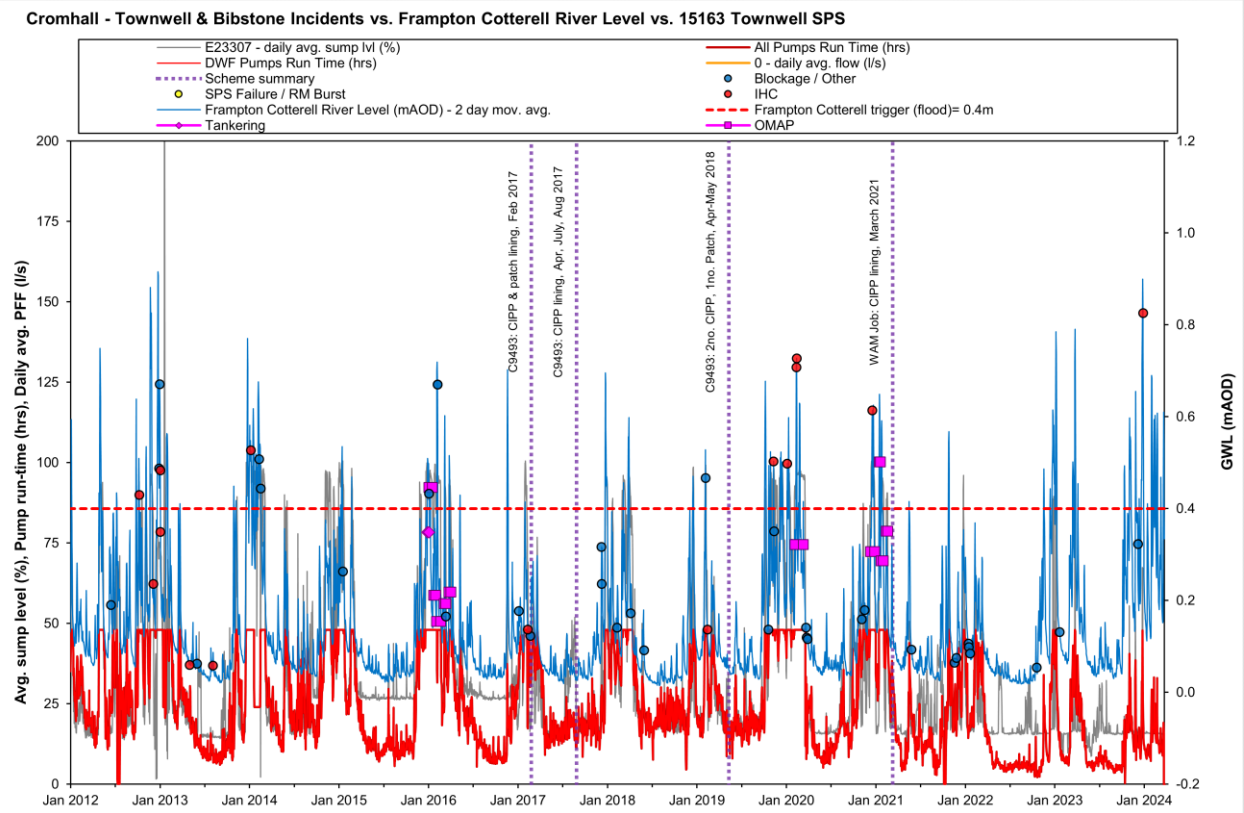
Long Term
Identify road gullies and other impermeable areas that are connected into the foul sewers.
Inspect private gullies, drains, and manholes where applicable.

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.

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

Current Performance

This graph shows incidents against river level (as measured at Frampton Cotterell) and telemetry at Townwell Sewage Pumping Station. The catchment continues to show a response to river levels, indicating that groundwater infiltration remains in the catchment. However, following the sewer rehabilitation works and the improvements to the pumping station under in 2021, the impact of groundwater infiltration has been significantly reduced. This is evident by the reduction in reported incidents attributed to inadequate hydraulic capcity (IHC), and by the reduction in tankering - this has not been required since 2021, despite excpetionally wet winters in 2023 and 2024.



Inspection and sealing since 2011

	2011-20	2020-21	2021-22	2022-23	2023-24
Length of sewer inspected (m)	7,643	1,886	198	271	-
Length of sewer sealed (m)	1,487	10	-	-	-