Bleadon 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

Local groundwater reached critical levels during the winter period with the operation of the pumping station reacting to the increased inflow. There were three incidents reported during this time attributed to inadequate hydraulic capacity (IHC).

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.
Undertake pro-active cleaning (jetting) of sewers to maximise capacity.
Proactive inspections and maintenance of sewerage assets.

Completed
Installed in-sewer monitors at key locations to better understand flows in the network.
Installed permanent flow meters at key pumping stations to continuously record pump performance.
Inspected public sewer network to identify points of infiltration.
Sealed sewers and manholes to prevent groundwater infiltration.
Undertaken pumping station or flow surveys to analyse flows in sewers.

Completed (cont.)

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.

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

Medium Term

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

Long Term

Identify road gullies and other impermeable areas that are connected into the foul sewers.

Inspect private gullies, drains, and manholes where applicable.

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

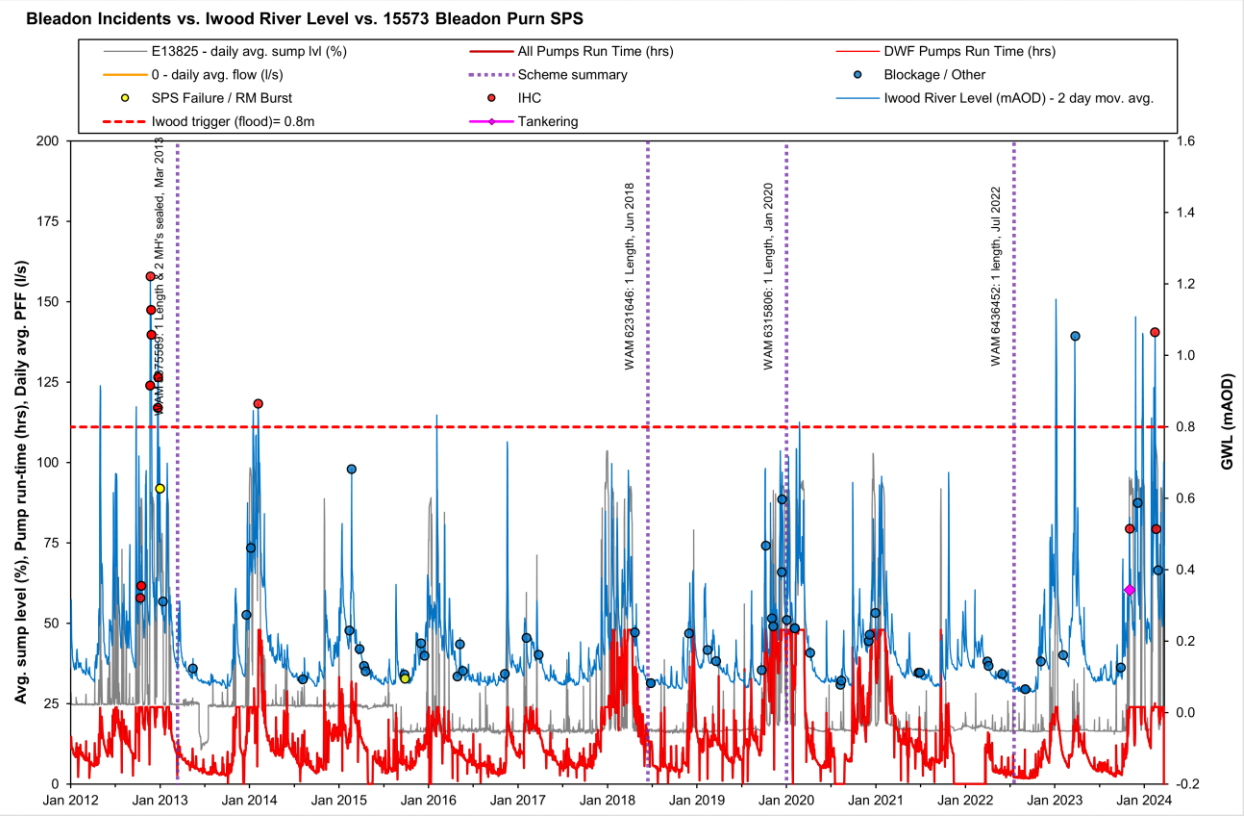
When Necessary

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.

Current Performance

The graph below compares the Iwood River level and telemetry at Bleadon Purn Sewage Pumping Station (SPS). The river level is used to indicate groundwater levels in the area. The pump activity at the Bleadon Purn shows a clear correlation with the increased gorundwater, showing the impact of infiltration on the network. Incidents due to inadequate hydraulic capcity (IHC) were reported in the catchment during the winter of 2023/24.



Inspection and sealing since 2011

	2011-20	2020-21	2021-22	2022-23	2023-24
Length of sewer inspected (m)	3,294	-	-	-	-
Length of sewer sealed (m)	38	-	-	7	-