Charlton Adam 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 levels were high throughout the winter period with four incidents attributed to inadequate hydraulic capacity (IHC) being reported in the catchment.

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 permanent flow meters at key pumping stations to continuously record pump performance.
Reviewed incidents of sewer flooding.
Inspected public sewer network to identify points of infiltration.
Undertaken pumping station or flow surveys to analyse flows in sewers.
Inspected private gullies, drains or manholes to identify points of infiltration.

Completed (cont.)

Sealed sewers and manholes to prevent groundwater infiltration.

Short Term

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

Long Term

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

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

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

Inspect private gullies, drains, and manholes where applicable.

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

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

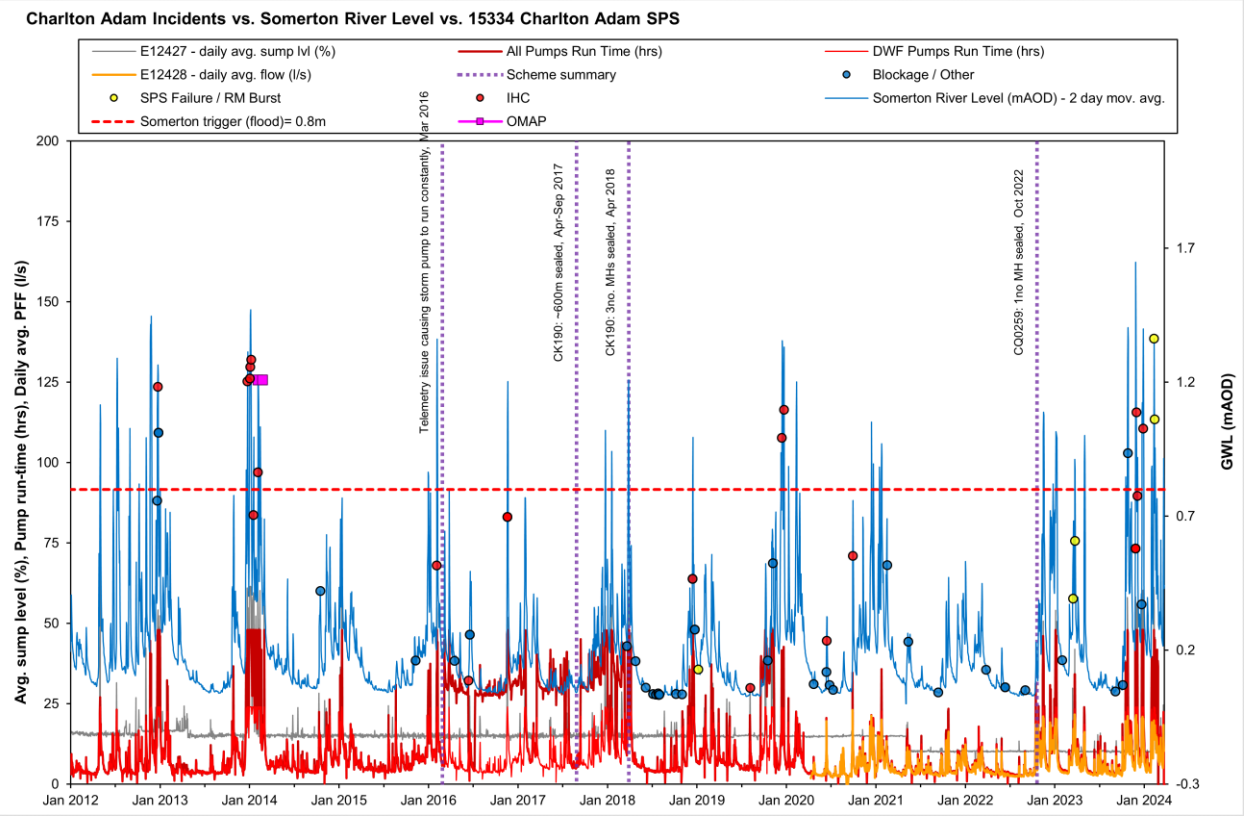
When Necessary

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 Somerton River level and telemetry at Charlton Adam sewage pumping station (SPS). The river level is used to indicate groundwater levels in the area, it shows that pump activity at Charlton Adam SPS increases at times when the river level is high. While river levels have not been as high as 2013/14, it appears that infiltration sealing has made some improvement, as the number of incidents attributed to inadequate hydraulic capacity (IHC) has reduced.



Inspection and sealing since 2011

	2011-20	2020-21	2021-22	2022-23	2023-24
Length of sewer inspected (m)	6,392	1,420	267	-	-
Length of sewer sealed (m)	245	-	30	-	55