Downton 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

Incidents due to inadequate hydraulic capacity (IHC) were reported in the South Lane Sewage Pumping Station (SPS) catchment in the winter 2023/24, due to groundwater reaching critical levels. Regular tankering was required from November to February to alleviate the network, with the Operational Mitigation Action Plan instigated in March and April due to exceptionally wet conditions.

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.
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.
Implemented a scheme to improve the local water recycling centre (WRC).
Implemented a scheme to address capacity issues in the sewer network.
Inspected public sewer network to identify points of infiltration.
Undertaken pumping station or flow surveys to analyse flows in sewers.

Completed (cont.)
Sealed sewers and manholes to prevent groundwater infiltration.
Upgraded pumping stations where appropriate, to improve the reliability and performance of the site.

Short Term
Use machine learning to predict flows in sewers and proactively identify blockages and other issues.
Install in-sewer monitors at key locations to better understand flows in the network.

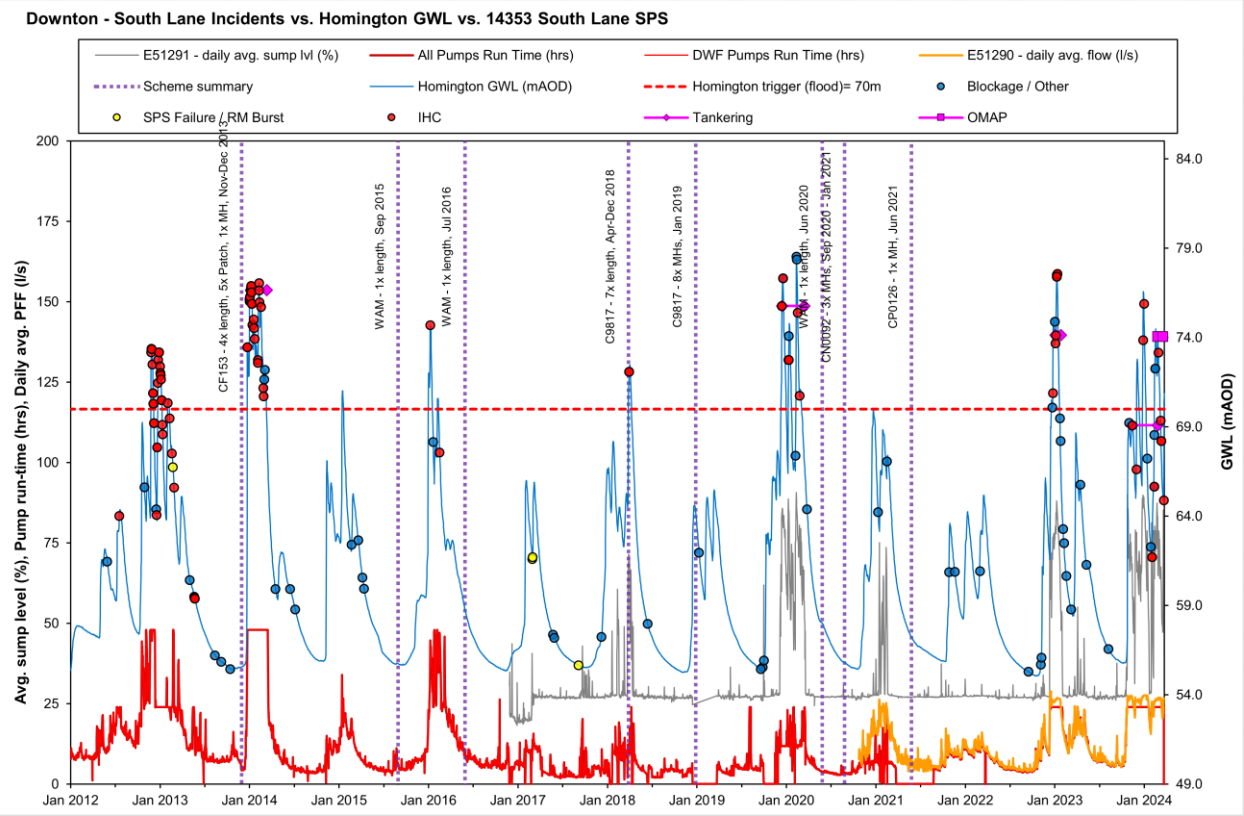
Medium Term
Undertake pro-active inspection of public sewers and manholes using CCTV to identify points of infiltration.
Analyse flows in sewers using pumping station surveys, flow surveys and/or hydraulic modelling.
Infiltration sealing of sewers and manholes, where deemed cost-effective, targeting work according to study findings.

Long Term
Identify road gullies and other impermeable areas that are connected into the foul sewers.
Inspect private gullies, drains, and manholes where applicable.
Update the catchment hydraulic model.
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 operational incidents with telemetry at Downton South Lane Sewage Pumping Station (SPS) and groundwater levels at Homington Borehole. Incidents attributed to inadequate hydraulic capacity (IHC) have occurred only when groundwater levels are exceptionally high indicating groundwater inundation is the main cause of flooding within the catchment. Extensive sewer lining, manhole sealing and pump station improvements have been carried out in the catchment, which initially reduced the number of incidents attributed to IHC. However, during the winters of 2019/20, 2022/23 and 2023/24, properties upstream of South Lane SPS reported further incidents due to IHC. Groundwater level during these winters were comparable to 2013/14 and the SPS was surcharged for a prolonged period of time.



Inspection and sealing since 2011

	2011-20	2020-21	2021-22	2022-23	2023-24
Length of sewer inspected (m)	9,025	-	-	2,025	1,318
Length of sewer sealed (m)	670	22	-	22	22