

Wookey 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 2022 – March 2023

2022-23 was a year of extremes for the Wessex Water region. One of the driest summers since 1976 was followed by one of the wettest autumn-winters in the last 10 years. This caused groundwater levels to rise in mid-January to a level comparable with 2013/14, with many catchments suffering from groundwater inundation.

As the winter progressed, the driest February in 30 years enabled many sites to recover, before the wettest March since 1981 resulted in a sharp increase in groundwater levels. This late wet period particularly affected sites in the northern and eastern parts of the region.

Groundwater reached critical levels in the Wookey catchment resulting in two external flooding incidents attributed to inadequate hydraulic capacity (IHC). No mitigation works were carried out by Wessex Water this winter.

Action Plan

Annual Activity

Review asset and operational data and update annual reports.

Continue to review latest industry research to find innovative technology and methods to detect and prevent groundwater ingress into sewers.

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.

Respond to customer contacts ensuring they are recorded, investigated and resolved in line with procedure.

Risk modelling of Wessex Water sewer network to plan pro-active CCTV surveys.

Undertake pro-active cleaning (jetting) of sewers to maximise capacity.

Proactive inspections and maintenance of sewerage assets.

Investigate nature-based solutions in the catchment.

Monitor and regulate surface water from new developments, through planning and development consultation.

Continue wider customer engagement, including public meetings when applicable. Upload Infiltration Reduction Plans and groundwater impact video on the Wessex Water website [LINK](#).

Engage in regular meetings with Lead Local Flood Authorities (LLFA) and other Risk Management Authorities where appropriate.

Liaise with the Environment Agency with regard to their groundwater warning service.

Completed

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

Reviewed incidents of foul or surface water sewer flooding.

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

Shared long-term strategy with other Risk Management Authorities, for catchments where groundwater infiltration is an issue with other Risk Management Authorities.

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.

Inspected private gullies, drains or manholes to identify points of infiltration.

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

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

Communicated with other authorities during times of elevated groundwater levels and promoted a multiple agency approach.

Short Term

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

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.

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.

Use Artificial Intelligence (AI) to code CCTV footage, increase survey efficiency and help identify defects and hotspots.

Long Term

Identify road gullies and other impermeable areas that are connected into the foul sewers and pass information on to the Council for further action.

Inspect private gullies, drains, and manholes where applicable. Where areas of infiltration in private drainage systems are found pass information on to the Council for further action.

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

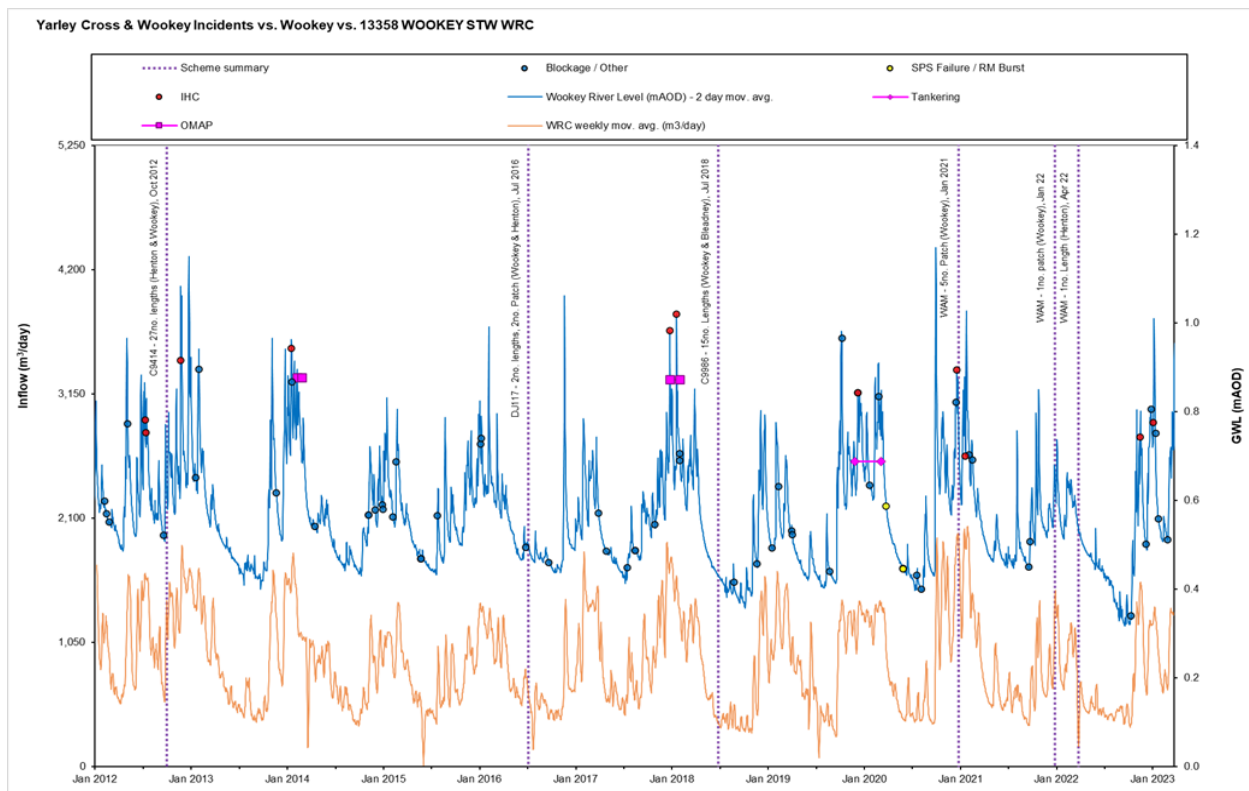
When Necessary

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 displays the incidents against river levels (as measured Wookey) and the inflow at Wookey Water Recycling Centre (WRC). Infiltration sealing in 2014, 2016, and 2017/18 appeared to help reduce incidents due to inadequate hydraulic capacity (IHC). Mitigation action prevented flooding during the winter of 2019/20, when groundwater levels were the highest since 2013/14. However, infiltration remains still an issue in the catchment, with five incidents attributed to IHC recorded between 2020 & 2023. Telemetry data also still shows a correlation between river levels (an indicator of groundwater levels) and inflow to Wookey WRC.



	2011-20	2020-21	2021-22	2022-23
Length of sewer inspected (m)	13475	6573	-	4359
Length of sewer sealed (m)	2554	56	5	923