

Ringwood (Bickerley) 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 Ringwood with Bickerley Sewage Pumping Station (SPS) struggling to cope with the increased inflow. Several incidents of external flooding attributed to inadequate hydraulic capacity (IHC) during January 2023.

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.

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.

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.

Reviewed incidents of foul or surface water sewer flooding.

Sealed sewers and manholes to prevent groundwater infiltration.

Undertaken pumping station or flow surveys to analyse flows in sewers.

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.

Undertake review of incidents of foul or surface water sewer flooding suspected to be affected by groundwater infiltration.

Implement a scheme to improve the local water recycling centre (WRC).

Medium Term

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

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 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.

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

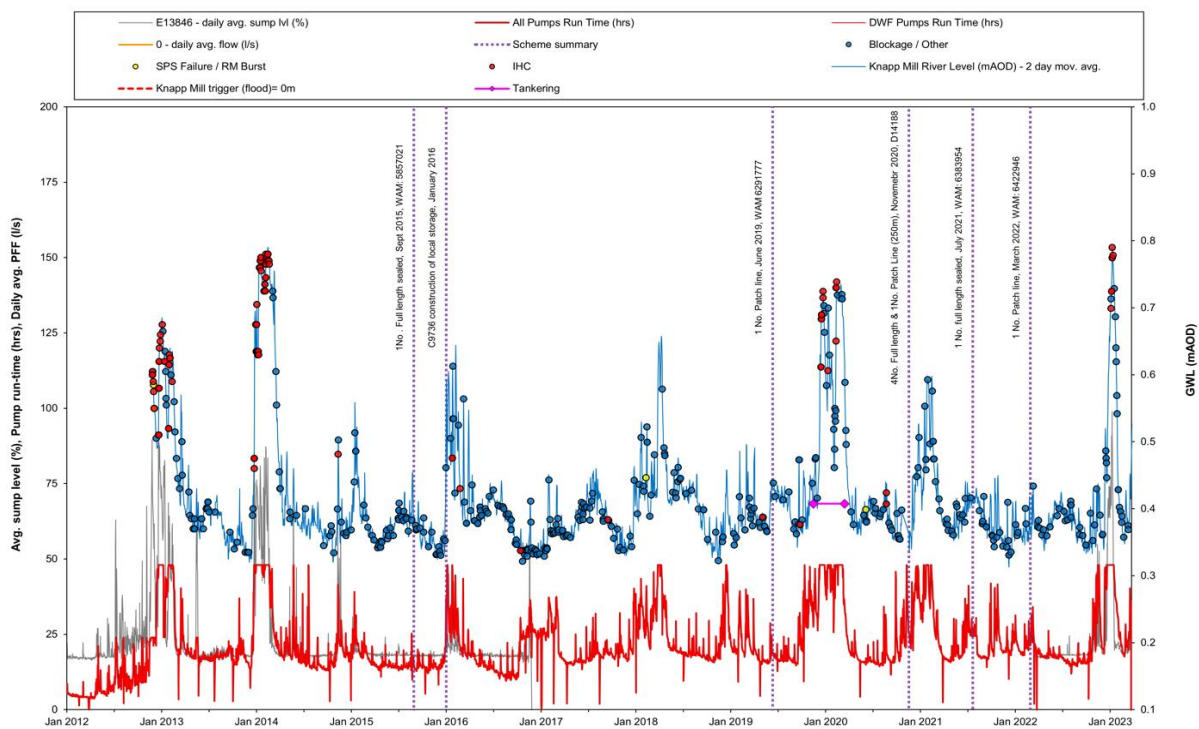
When Necessary (cont.)

Update the catchment hydraulic model.

Current Performance

The graph below displays the incidents against river levels (as measured at Knapp Mill) and the telemetry at Bickerley SPS (14133). During the winters 2012/13 and 2013/14 persistent rainfall caused the water table to rise to extreme levels. This resulted in frequent flooding at properties immediately upstream of Bickerley SPS caused by Inadequate Hydraulic Capacity (IHC). Although there was a significant reduction in incidents post the completion of a capital scheme in 2015/16, following extreme groundwater levels in 2019/2020 & 2022/23, further flooding attributed to IHC was reported indicating the catchment is suffering from infiltration.

Ringwood (Bickerley) Incidents vs. Knapp Mill vs. 14133 Bickerley SPS



	2011-20	2020-21	2021-22	2022-23
Length of sewer inspected (m)	5512	4733	-	-
Length of sewer sealed (m)	15	250	20	-