

Barton St. David 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 2021 – March 2022

Winter groundwater levels across the region were relatively low, with peak levels comparable to the winters of 2014/15 and 2016/17. Following high groundwater levels during the preceding winter, groundwater levels rose again in May 2021 with a monthly rainfall 66% above the long-term average (LTA) (fourth highest UK May rainfall on record). This particularly affected areas in the north of the region. During the autumn, heavy rainfall in October (33% above the LTA) caused groundwater levels to rise. However, below-average rainfall between November 2021 and March 2022 meant that most catchments were not severely affected by infiltration. The groundwater in the Barton St David SPS catchment reached critical levels in November 2021 and no incident due inadequate hydraulic capacity (IHC) have been reported. For the rest of the winter period the groundwater was relatively low in comparison to previous years.

Action Plan

Annual activity

- Routine jetting of vulnerable sewers to maximise capacity.
- Undertake pro-active maintenance of sewers as set out in Sewerage Risk Management Manual (6 monthly routine jetting of vulnerable sewers to maximise capacity).
- Continued monitoring of telemetry.
- Promote a multiple agency approach to managing situations during high groundwater levels.

Completed to date

- Wessex Water to put in place a procedure for recording, investigating, and resolving incidents.
- Reviewed existing assets and operational data.
- Reviewed historic telemetry and rainfall records.
- Undertook pro-active inspection of public sewers and Identified infiltration using CCTV.
- Sewer and manhole sealing of the public system where proven to be cost effective based on proactive inspections.
- Carried out pump station surveys and assets update where necessary appraisal of flooding incidents.
- Liaised with the Environment Agency with regards to their ground water warning modelling and service.
- SPS surveys completed, and assets updated where necessary appraisal of flooding incidents.
- Wessex Water infiltration video added to website.
- Monitored local watercourse data and groundwater levels during periods of inundation to inform Operational Mitigation Action Plans (OMAPs).

	2011-20	2020-21	2021-22
Length of sewer inspected (m)	10,853	-	1,416
Length of sewer sealed (m)	30	-	890

Short term

- Add OMAP layer to Drainage and Wastewater Management Plan Hub for Risk Management Authorities.
- Appraisal of flooding incidents.
- Use of machine learning and rainfall forecasting to predict flows in sewers.
- Review long term options for monitoring and improving data collection for example Event Duration Monitoring.
- Use of Artificial Intelligence (AI) to increase the lengths surveyed, targeting high risk sites where pollutions are more likely to occur and identify blockages in hotspots before they lead to a flooding incident.

Medium term

- Educate residents about mechanisms of sewer overloading and the need for a risk-based approach to improvements.
- Commission pump station surveys and asset update, where necessary.
- CCTV and targeted infiltration studies according to analysis from previous surveys of s105a sewers.
- Identify road gullies and other impermeable areas connected into the foul sewers and remove them where is cost effective.

Long term

- Construct observation boreholes and install web-based auto logging telemetry to monitor groundwater levels if needed.
- Consider sustainable solutions such as above ground attenuation.
- Inspection of private gullies, drains and manholes.
- Remedial works of private assets.

Current Performance

This graph compares operational incidents against the river level at Lovington and the flow at Barton St David Sewage Pumping Station. Telemetry at Barton St David shows a strong correlation with river levels, demonstrating the impact of infiltration on the network. River levels and local groundwater were extremely high during the winter of 2019/20, resulting in an increase of incidents attributed to inadequate hydraulic capacity (IHC). However, following the sewer sealing in August 2021 there have been no IHC incidents reported, and the pumping station was able to cope. Whilst groundwater levels were lower in 2021/22, this demonstrates the positive impact of the sealing works thus far.

