

Muckleford 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 in 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 level peaked in November 2021, one incident due to inadequate hydraulic capacity (IHC) was reported at this time. For the rest of the winter period the groundwater level was relatively low in comparison to previous years.

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.
- Promote a multiple agency approach and communicate during periods of high groundwater levels.

Completed to date

- Procedure for recording, investigating and resolving incidents put in place.
- Analysed flows in the sewers, using historic and current telemetry, rainfall, flow surveys and modelling where appropriate.
- Undertook pro-active inspection of public sewers as set out in Sewerage Risk Management Manual and identified infiltration using CCTV.
- Sewer and manhole sealing of the public system where proven to be cost effective based on proactive inspections.
- Analysed inspection data to identify infiltration.
- SPS surveys completed, and assets updated where necessary appraisal of flooding incidents.
- Continued customer engagement about mechanisms of sewer overloading and the need for a risk-based approach to improvements.
- Monitored local watercourse data and groundwater levels during periods of inundation to inform operational mitigation plans.
- Reviewed existing regional borehole data.
- Reviewed telemetry and compared with a variety of hydraulic factors to assess residual levels of infiltration.

- Wessex Water infiltration [video](#) added to website.
- Reviewed long term options for monitoring and improving data collection for example Event Duration Monitoring.
- Where areas of infiltration in private drainage systems are found, pass information on to the Council for further action. Wessex Water to consider funding private improvements.
- Liaise with the Environment Agency with regards to their groundwater warning modelling and service.

	2015-2020	2020-2021	2021-2022
Length of sewer inspected (m)	7703	-	-
Length of sewer sealed (m)	179	-	-

Short term

- Continue sewer and manhole sealing of the public system where proven to be cost effective based on proactive inspections.
- Add Operational Mitigation Action Plan layer to Drainage and Wastewater Management Plan Hub for Risk Management Authorities.
- Review long term options for monitoring and improving data collection for example EDM.
- Investigate the use of Artificial Intelligence (AI) to code CCTV, increase survey efficiency and help identify defects and hotspots.

Medium term

- CCTV and targeted infiltration studies according to analysis from previous surveys of s105a sewers.
- Where areas of infiltration in private drainage systems are found, pass information on to the Council for further action. Wessex Water to consider funding private improvements.
- Commission pump station surveys where necessary.
- Identify road gullies and other impermeable areas connected into the foul sewers and remove them where is cost effective.

Long term

- Remedial works of private assets.
- Inspect private drainage networks and remediate where appropriate.
- Monitor and regulate the surface water to prevent surface water to foul misconnections.
- Consider sustainable solutions to surface water management such as above ground attenuation.

Current Performance

This graph compares operational incidents against groundwater at Barcombe and the flow at Frampton (Muckleford) Sewage Pumping Station (SPS). Groundwater levels were extremely high during winter of 2019/2020 resulting in an increase of the incidents attributed to inadequate hydraulic capacity (IHC). Groundwater levels peaked in early November 2021 with one incident due to IHC occurring during this time. Telemetry at Muckleford SPS shows a correlation with groundwater levels however, the pumping station was able to cope.

