Charlton Adam 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 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 levels did not reach critical levels during April 2021 – March 2022 and there were no incidents attributed to inadequate hydraulic capacity (IHC) during this period.

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.
- Communicate with other authorities during times of elevated groundwater levels and promote a multiple agency approach.
- Pro-active maintenance of vulnerable sewers including routine jetting.

Completed to date

- Procedure for recording, investigating and resolving incidents in place.
- Undertook pro-active inspection using CCTV of vulnerable public sewers.
- Undertook infiltration sealing where cost effective.
- Sewage pumping station (SPS) surveys completed, and assets updated where necessary.
- Reviewed historic telemetry and rainfall records.
- Educated some residents on mechanisms of sewer overloading.
- Reviewed existing boreholes in the area.
- Reviewed telemetry and compared it with data collected from the area to assess residual levels of infiltration.
- Wessex Water infiltration video added to website.
- Liaised with the Environment Agency about their groundwater warning service.
- Appraisal of flooding incidents in Keinton Mandeville.
- Added routine jetting upstream of Charlton Adam SPS.
- Monitored local watercourse data and groundwater levels during periods of inundation to inform Operational Mitigation Action Plans.

	2015-20	2020-21	2021-22
Length of sewer inspected (m)	6392	1420	-
Length of sewer sealed (m)	245	-	30

Short term

- Undertake rehabilitation work based on the survey findings where cost beneficial.
- Analyse flows in the sewers using flow surveys and modelling where appropriate.
- Further infiltration sealing according to study findings.
- CCTV and targeted infiltration studies according to analysis from previous surveys and telemetry data.
- Use of machine learning and rainfall forecasting to predict flows in sewer.

Medium term

- Identify road gullies and other impermeable areas connected into the foul sewers and remove them where cost effective.
- Commission pump station surveys where necessary.

Long term

- 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

The graphs below compare the Somerton River level and telemetry at Charlton Adam SPS and Keinton Mandeville SPS. The river level is used to indicate groundwater levels in the area, it shows that pump activity at Charlton Adam SPS increases at times when the river level is high. This winter has seen much lower river levels than previous winters and no incidents due to IHC have been reported.