Collingbourne Ducis 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. Local groundwater levels near Collingbourne Ducis did not reach critical levels during the winter of 2021/22 and no incidents due to inadequate hydraulic capacity (IHC) were reported.

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.

Completed to date

- Procedure for recording, investigating and resolving incidents in place.
- Undertook proactive inspection using CCTV of vulnerable sewers.
- Sewage pumping station surveys completed, and assets updated where necessary.
- Analysed inspection data to identify infiltration.
- Analysed flows in the sewers using flow surveys and modelling.
- Undertook infiltration sealing where cost effective.
- Identified areas of infiltration in private drainage.
- 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.
- Improved pass forward flow at the pumping station.
- Liaised with the Environment Agency about their groundwater warning service.
- Meteor camera installed at Collingbourne Ducis Sewage Pumping Station (SPS).
- Initiated monitoring of local borehole to indicate groundwater levels locally and inform Operational Mitigation Action Plan (OMAP).

- Collingbourne Ducis Water Recycling Centre (WRC) added to the Storm Harvester programme to enable real-time detection of blockages and pump issues.

	2015-20	2020-21	2021-22
Length of sewer inspected (m)	4752	1534	-
Length of sewer sealed (m)	625	-	-

Short term

- Add OMAP layer to Drainage and Wastewater Management Plan Hub for Risk Management Authorities.
- Undertake rehabilitation work based on the survey findings where cost beneficial.

Medium term

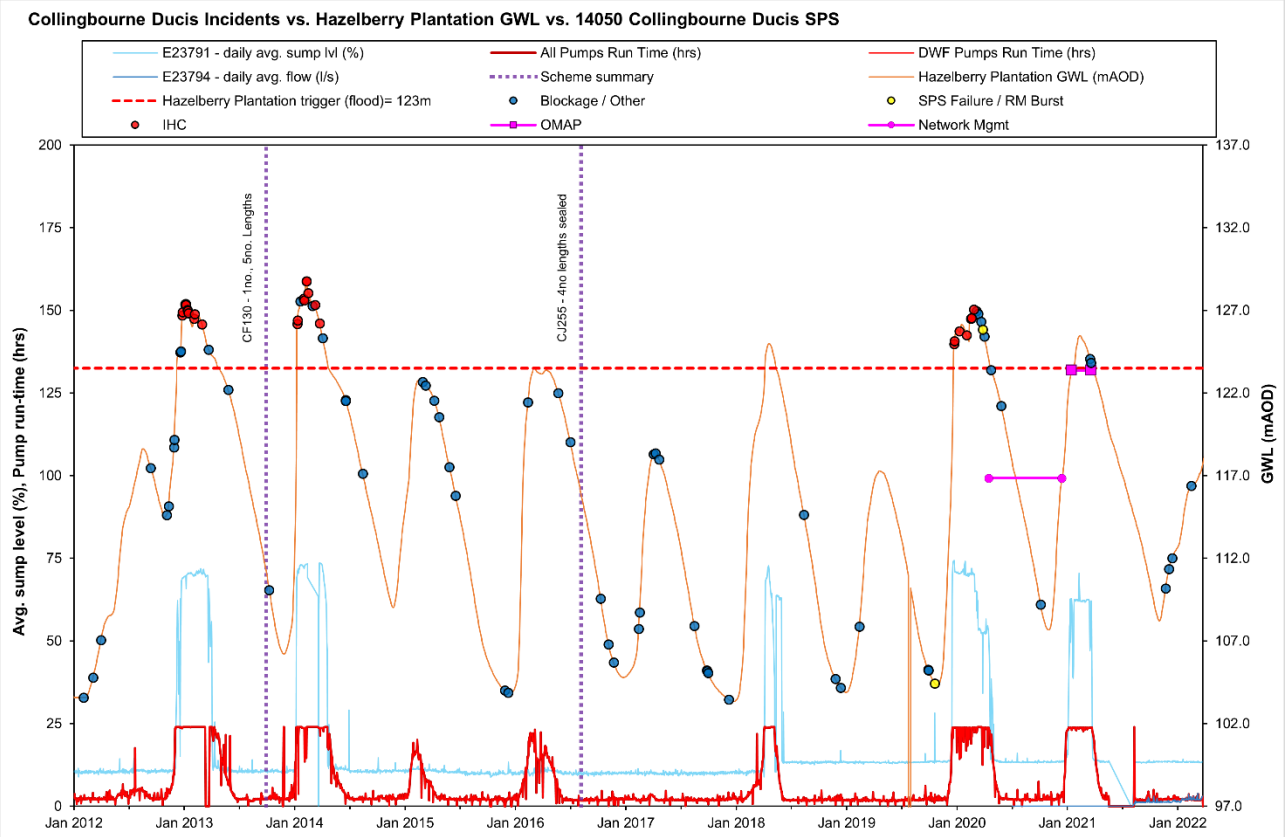
- Identify road gullies and other impermeable areas connected into the foul sewers and remove them where cost effective.
- Commission pump station surveys where necessary.
- Investigate the use of Artificial Intelligence to code CCTV footage, increase survey efficiency and help identify defects and hotspots.

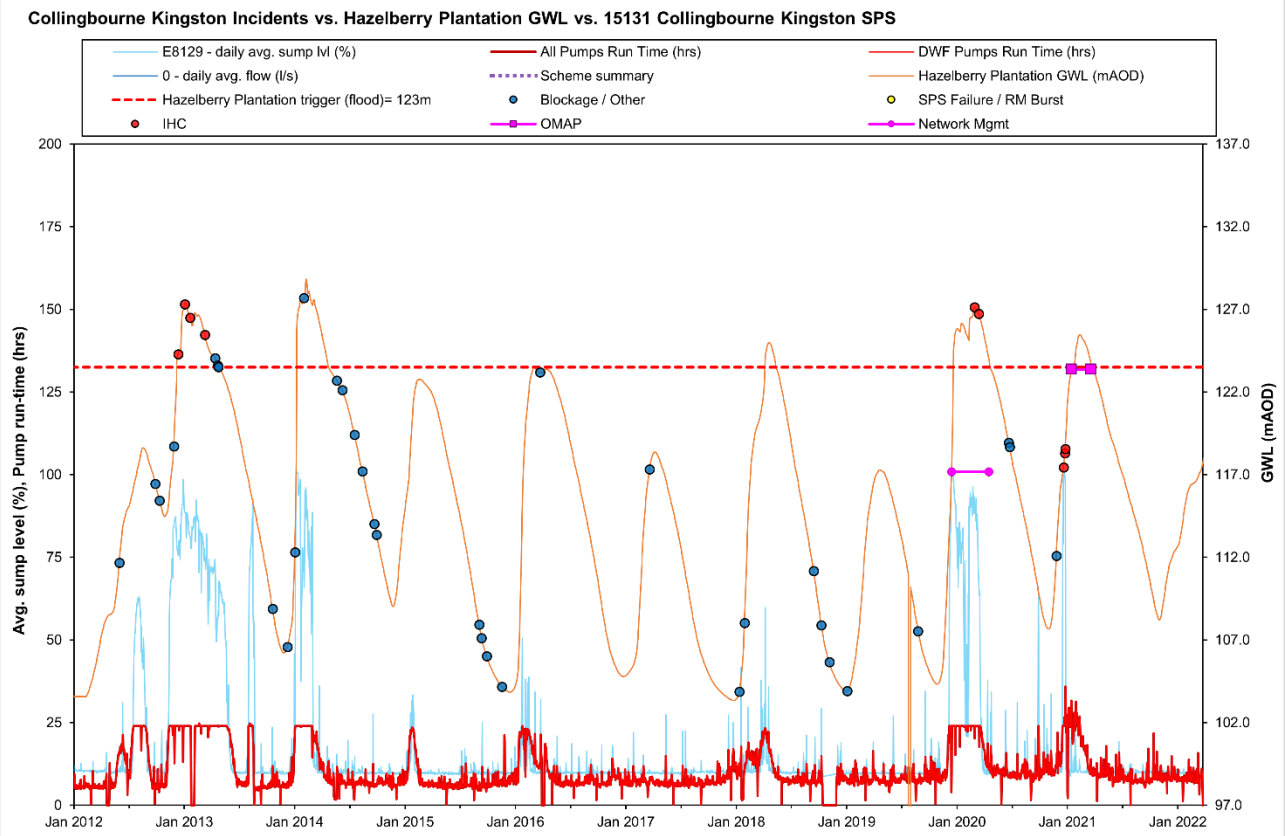
Long term

- Inspection of private gullies, drains, and manholes.
- Remedial works of private assets.
- Monitor and regulate surface water deposal to prevent foul sewer infiltration.
- Consider sustainable solutions.

Current Performance

The graphs below display incidents against local groundwater levels, and the inflow to Collingbourne Ducis SPS and Collingbourne Kingston SPS. Prior to the sewer sealing, to prevent infiltration, in 2013 and 2016/17, there was a strong correlation between groundwater levels and pump run times. Post sealing, there were no incidents attributed to Inadequate Hydraulic Capacity (IHC) reported in the winter of 2017/18 and 2018/19. However, following the extreme groundwater levels in 2019/20 and relatively high levels in 2020/21, there has been a significant increase incidents. There still remains strong trend between the rise in groundwater levels and inflow suggesting there is infiltration in the catchment, much of the this may be through private laterals. Groundwater levels during the winter period of 2021/22 were significantly lower and which was reflected in the inflow to the SPSs suggesting infiltration was not prevalent this winter.





Note. Network management refers to pumping from one manhole and discharging back to the network further downstream.