Bagstone and Tytherington 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 2019 – March 2020

Following above average rainfall in June, the summer of 2019 was relatively dry. However, in late Autumn 2019 regional groundwater levels rose sharply and remained high throughout the winter, reaching the highest levels since 2014. February 2020 was particularly wet with 151mm of regional rainfall equating to 228% of the monthly average, as well as the average annual rainfall for preceding 12 months being 122% of the long-term average.

One incident due to inadequate hydraulic capacity (IHC) occurred in each area, Bagstone and Tytherington. This followed heavy rainfall on 19th February. Due to the sewerage system reaching capacity at this time the operational mitigation action plan (OMAP) was initiated allowing over pumping to the stream to relieve/prevent flooding in the area and protect public health. The OMAP ended on 17th March once flows had reduced.

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 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.
- Considered the construction of local boreholes in order to monitor groundwater levels.

	2015-16	2016-17	2017-18	2018-19	2019-20
Length of sewer inspected (m)	-	5,007	1,482	-	-
Length of sewer sealed (m)	-	-	2,248	550	-

Short term

- Undertake rehabilitation work based on the survey findings where cost beneficial.
- Liaise with the Environment Agency about their groundwater warning service.
- Investigate watercourse monitoring in the local area.
- Analyse flows in the sewers using flow surveys and modelling where appropriate.

Medium term

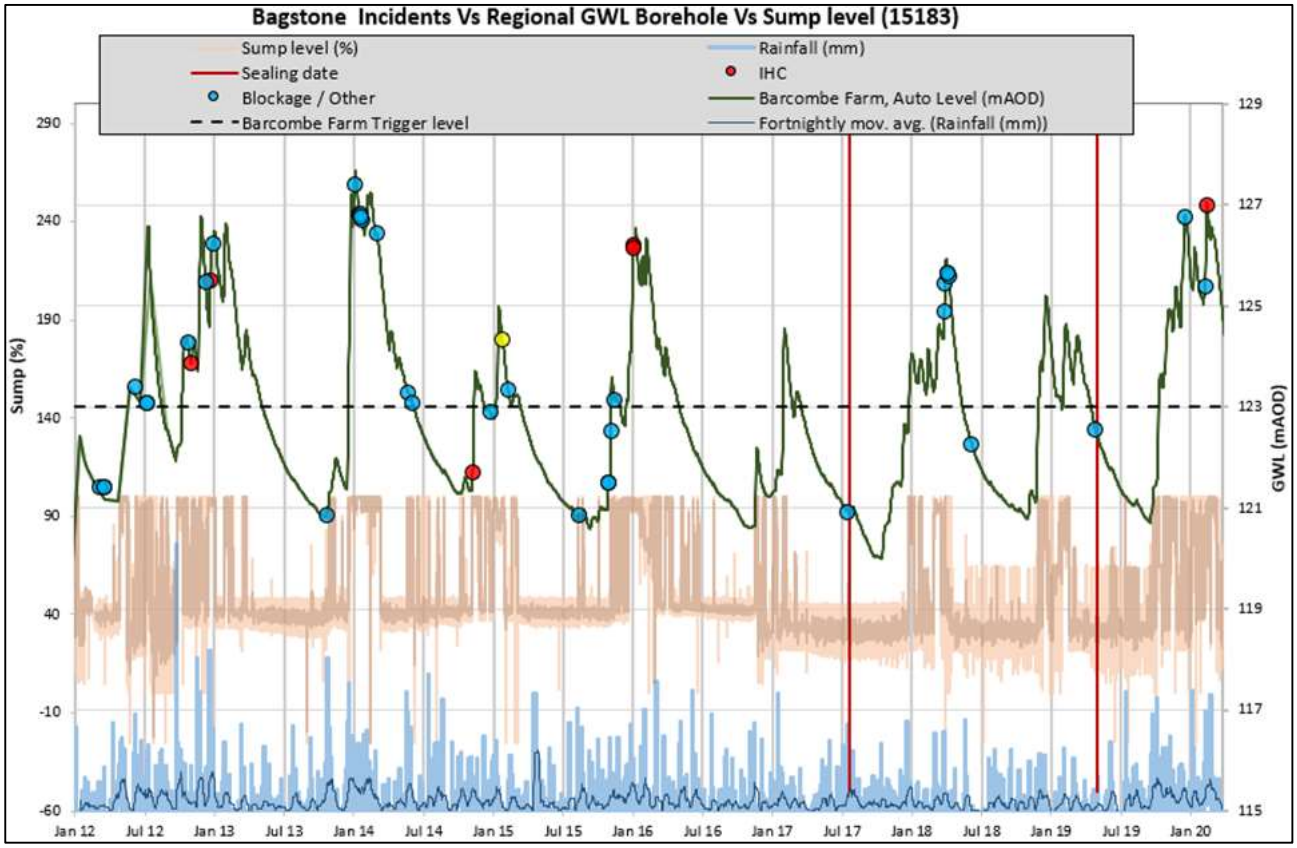
- Identify road gullies and other impermeable areas connected into the foul sewers and remove them where cost effective.
- CCTV and targeted infiltration studies according to analysis from previous surveys and telemetry data.
- Commission pump station surveys where necessary.
- Further infiltration sealing according to study findings.

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

This graph shows incidents against regional groundwater level and the sump level at Bagstone Sewage Pumping Station (SPS). The telemetry shows that there is a strong correlation between the high groundwater levels and the sump levels suggesting the area suffers from infiltration. This trend has continued despite sealing works being completed in 2017 and 2018. During this winter there was an increase of pump activity at Bagstone SPS as the groundwater levels increased.


Bagstone Incidents Vs Regional GWL Borehole Vs Sump level (15183)
Sump level (%)
Sealing date
Blockage / Other
Barcombe Farm Trigger level
Rainfall (mm)
IHC
Barcombe Farm, Auto Level (mAOD)
Fortnightly mov. avg. (Rainfall (mm))
Sump (%)
GWL (mAOD)
290
240
190
140
90
40
-10
-60
129
127
125
123
121
119
117
115
Jan 12
Jul 12
Jan 13
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