



## Sewage Sleuthing

*Investigations into the source of the faecal pollution at Cambridge's swimming spots*

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## Summary

Cam Valley Forum has been monitoring the water quality in the Cam for several years. **Analysis of the results of this work strongly suggests that the poor bacterial water quality at Cambridge's popular swimming spots is primarily due to the old and overloaded sewage treatment infrastructure in the Haslingfield and Harston Area, which can no longer cope with the amount of sewage, rainwater and groundwater flowing into it.** We want Anglian Water to make the necessary investments to improve the infrastructure, so it can cope.

Our analysis shows that contamination peaks just downstream of Haslingfield sewage treatment works at an average of nearly 10 times the threshold level for safe swimming. Spills from the sewer network and sewage pumping stations in Harston and Haslingfield villages seem also to be contributing.

We have applied for Bathing Water Designation for the Cam at Sheep's Green, because this will create statutory obligations to get the necessary investigations and investment, to help improve the water quality. This is important for the many people that enjoy being in or on the River Cam.

We are grateful to the many Cam Valley Forum members and volunteers that have helped with this work, and the production of this report.

## Water Quality Monitoring

We have been monitoring levels of the faecal indicator bacteria, E. coli and Intestinal Enterococci in the River Cam and its tributaries for several years. Initially we did the monitoring ourselves, helped by several local businesses and some charitable grants that contributed to the cost of the laboratory analysis. Then from September 2022-October 2023, Anglian Water took weekly readings for us at the 16 sites that we specified, between a spot upstream of Melbourn on the River Rhee, and at Clayhithe on the River Cam, downstream of Cambridge.

This report focusses on the results between Harston and Cambridge, in order to look at the impact on the popular Cambridge swimming spots of Grantchester Meadows, Newnham Riverbank Club and Sheep's Green. If the River Cam receives Bathing Water Designation, the Environment Agency will be monitoring faecal bacteria at Sheep's Green and publishing the results on the Defra [Swiminfo](#) website weekly during the bathing season.

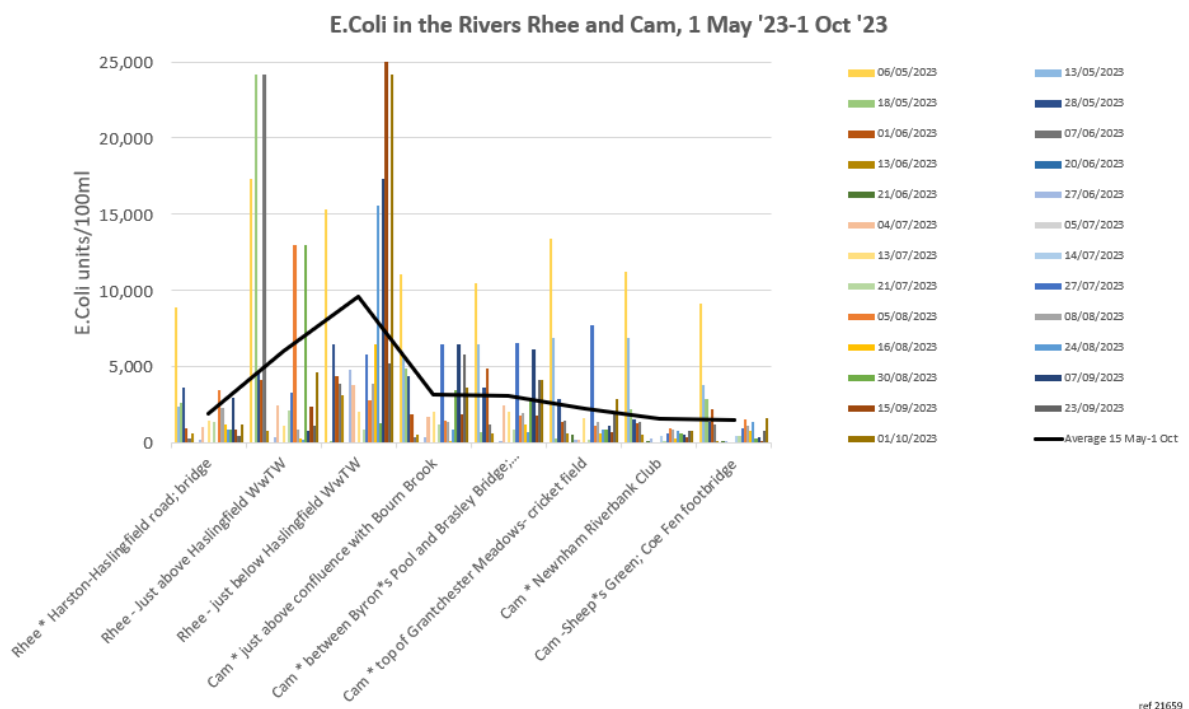
*Sewage treatment works: red circle,  
Sewage pumping stations: red dot.  
Test locations: blue dots.*



## Analysis

To explore the likely sources of faecal contamination at the Cambridge swimming spots, we have analysed [the test results for E. coli](#), taken for us by Anglian Water last year. The results are compared to the threshold of around 1000 bacterial units /100ml, above which levels of E. coli may be “considered elevated”, and likely to result in a “poor” official rating for Bathing Water Quality.

As the graph for the period 1 May – 1 October 2023 below shows, the level of pollution varies a lot from week to week, but on average is very much higher than the 1000 units/100ml threshold. Anglian Water’s test results also confirm the earlier Cam Valley Forum testing that showed that there is a near constant discharge of treated effluent from Haslingfield sewage treatment works, containing a significant level of pollutant bacteria and viruses.



## Harston and Haslingfield villages

This analysis strongly suggests that **the sewage infrastructure at Haslingfield is a major source of the faecal bacteria that is polluting Cambridge’s swimming spots**. However, the problem is not JUST the sewage treatment works (which is about 1km downstream of Haslingfield village).

As the figure above shows, the water quality in the River Rhee starts getting worse as it flows past Harston and Haslingfield villages.

We strongly suspect that this is due to problems with the ageing and overwhelmed pumping stations at Harston and Haslingfield, and the Rising Main pipeline (bringing sewage from the villages of Harston and Haslingfield to the sewage treatment works). These appear to be prone to equipment failures, blockages, and being overwhelmed by groundwater and rainwater runoff.

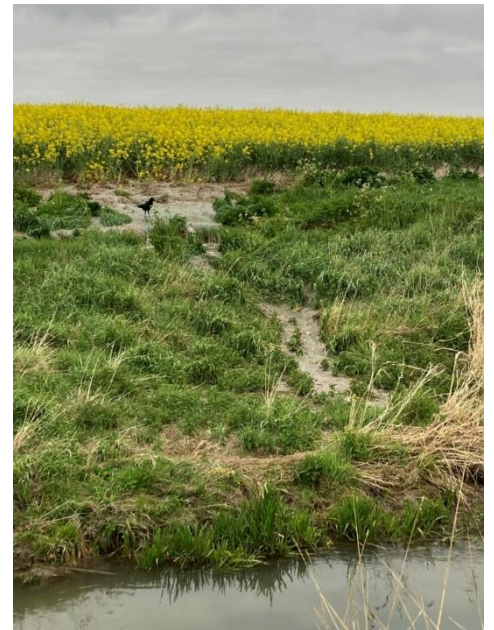


We wanted to get more information on the possible causes of the problems, upstream of the sewage treatment works in the Harston and Haslingfield area. In October 2023 we submitted an Environmental Information Request to Anglian Water asking for details of any “incidents” that resulted in the release of waste water outside the Anglian Water facilities in Harston and Haslingfield parishes, since 1 January 2021.

This, together with follow-up discussion, showed that, shockingly, the pressurised “rising main” burst on 3 separate occasions in 2022 (April, July and October). Each time it released pressurised raw sewage creating one ‘category 3’ and two, less serious ‘category 4’ incidents.

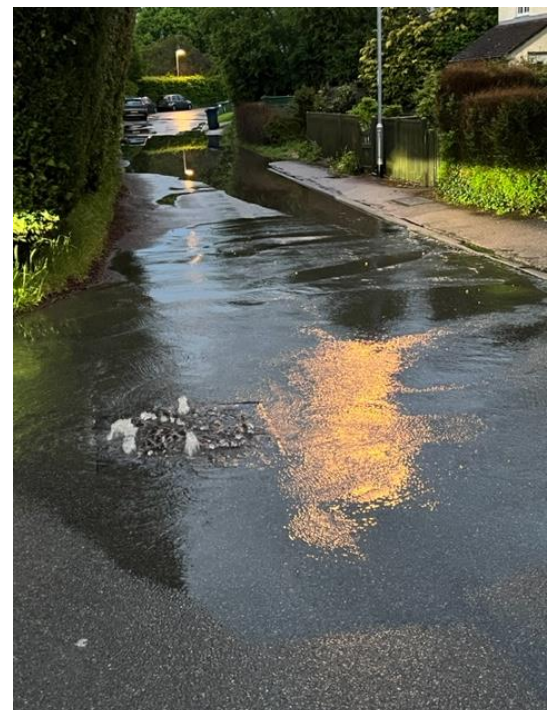
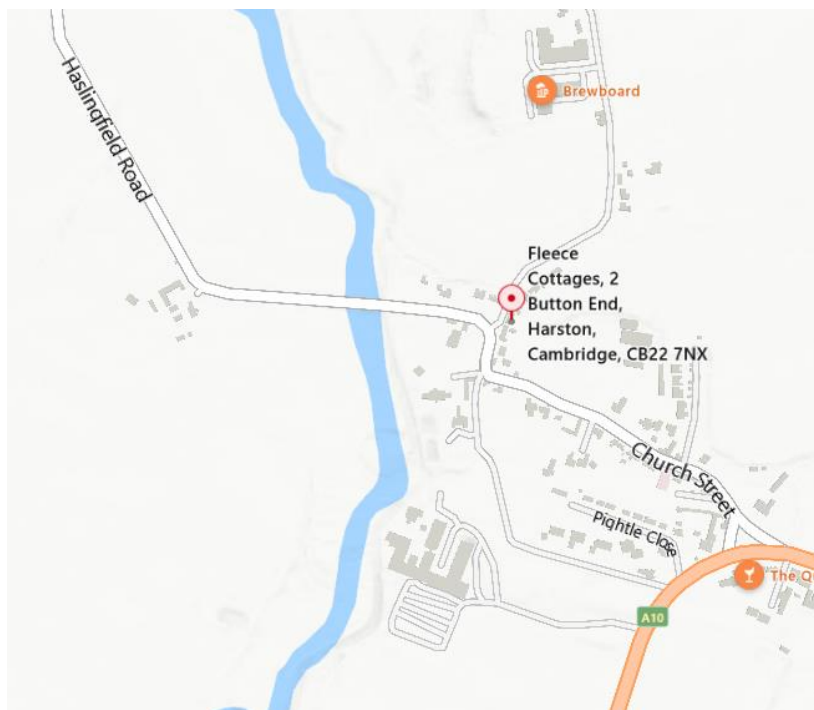
We wonder if this had anything to do with the unusually hot dry weather that year, which is known to cause soil shrinkage that can in turn damage pipelines.

In contrast, in the wetter years of 2021 and in the period January - October 2023, there were no reported incidents with the rising main, but the pumping stations in Harston and Haslingfield were overwhelmed by surface water 10 times (6 times in 2021, none in 2022 and 4 times in 2023) They were also blocked twice. Each time they released dilute sewage into the surroundings. Although discharges due to “hydraulic overload” are legally permitted in “exceptional circumstances”, having 4-6 discharges a year seems to us to be more “routine” than “exceptional”.



*Untreated sewage leaking from broken rising main at Haslingfield, April 2022*

These discharges must surely be contributing to the occasionally high levels of faecal contamination that we see in the river in the Harston and Haslingfield area.



*Diluted sewage in the street at Button End, Harston. May 2023*

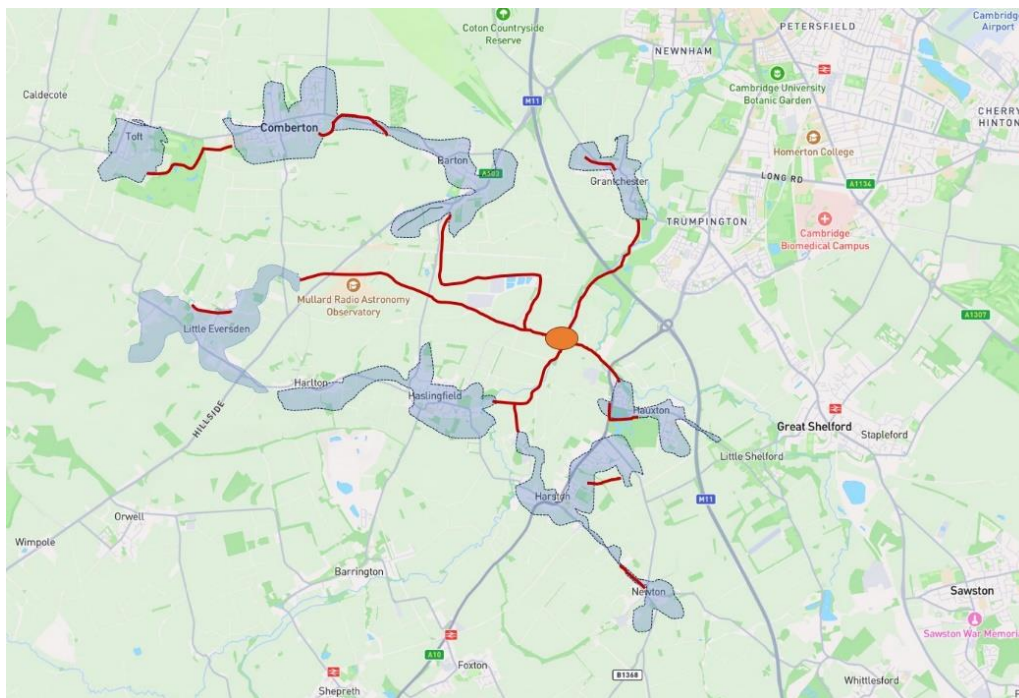
## Haslingfield sewage treatment works

Downstream of Haslingfield village, the contamination level in the river increases and peaks at Haslingfield sewage treatment works (our monitoring point is 200m downstream of the outflow from the treatment works). This peak averages 9,604 units/100ml which is nearly 10 times the threshold level. The worst reading during the summer was just below the sewage treatment works, with an E. coli level in the River Rhee reaching 64,000 units/100ml on 15/9/23. This level of contamination, roughly 64 times higher than the threshold, shows why we definitely wouldn't advise anyone to swim just downstream of a sewage treatment works.

Note that test results in winter show a similar pattern but with around double the contamination levels. This is presumably due to wetter weather more frequently overloading the sewage infrastructure and washing diluted sewage into the rivers. As our analysis of the 2024 "EDM" [data release on sewage discharges](#) showed, [Haslingfield sewage treatment works was spilling sewage into the River Cam for a shocking 34% of the time](#) during the relatively wet 2023: 10 times longer than during the drier 2022.

Contamination levels in the river are often high, even when the weather appears to be dry. This may in part be due to drought reducing the flow of water in the river, which in turn reduces the dilution of the treated effluent from the sewage treatment works.

Haslingfield sewage treatment works has a surprisingly large catchment area, treating sewage from the villages of Comberton, Barton, Grantchester, Harlton, Harston, Haslingfield, Hauxton, Little Eversden, Newton and Toft. This catchment area is shown on the sketch map below, in which the red lines are the pressurised rising mains. Elsewhere, the sewage flows by gravity.



We understand that these gravity fed sewers are often vulnerable to being overwhelmed by ground water, because of cracks and leaking joints which allow groundwater to be pushed into the sewer when ground water levels rise higher than the sewer. We suspect climate change may be aggravating this: during droughts and heatwaves, soil movement increases the cracks in the pipelines, which can then leak or let in more ground water during wet spells.

Given the growing threat of climate change, the population growth in the area in the last 30 years, and the Ofwat restrictions that have limited investment in sewage treatment works, it is unsurprising that Haslingfield sewage treatment works now struggles to cope with the volume of sewage and surface water coming into it.



## Downstream of Haslingfield sewage treatment works



*Paddleboarders on the River Cam, near the top of Grantchester Meadows*

Downstream of Haslingfield Sewage treatment works, the average *E. coli* contamination level drops by two thirds over the next 1.5km to Byron's pool, presumably due to a combination of solids settling out, some filtration by the dense vegetation in the River Rhee, biological action, and the summer sunlight steadily degrading the bacteria. Then, just above Byron's pool, the contaminated water in the River Rhee is diluted by the much cleaner water flowing down the River Granta. This has a much more acceptable average *E. coli* level of 584 units/100ml (This was measured at Hauxton, 2 km upstream of the confluence with the Rhee.)

Nevertheless, at Byron's Pool, (just above the confluence with Bourn Brook) the *E. coli* level still averages 3000 units/100ml, which is around 3 times the threshold level. This is concerning, because although few people now swim here, young children enjoy paddling in the newly created Byron's Pool fishpass.

Water quality continues to improve as the river flows the next 4km to Sheep's Green in Cambridge. This improvement is probably because of the continuing action of sunlight on the *E. coli* bacteria as the river flows gently past Grantchester Meadows. At Sheep's Green, the *E. coli* levels are half what they were just downstream of Byron's Pool. However at an average of 1468 units/100ml during the summer months, it would still be likely to result in a "poor" rating for Bathing Water quality.

If the River Cam at Sheep's Green receives Bathing Water Designation and the Environment Agency monitoring confirms the "Poor" water quality, there will be official "source apportionment" investigations to identify the cause. Assuming these confirm our suspicions that a major cause of the faecal pollution is the sewage infrastructure in the Harston and Haslingfield area, this in turn should result in significant investment by Anglian Water to improve it.

**We welcome the prospect of this investment, because it will help make the water safer for the many people that enjoy being in or on the River Cam.**