



By email

Vicki Tilley
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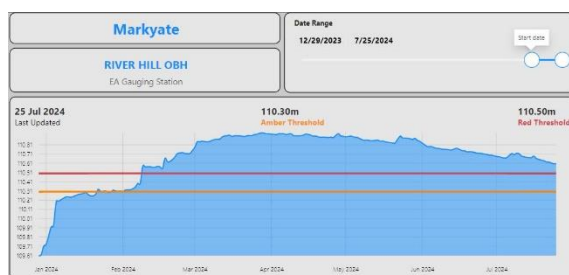
25th July 2024

Reply to your letter dated 3rd July 2024

Dear Vicki

I apologise for the length of time it has taken to respond to your letter, regarding Markyate Sewage Treatment Works. I was waiting for the publication of Ofwat's draft determination in case it had any impact on investment plans for the catchment. I have summarised our local investment plans for the period 2025-2030, below.

Before that, I would like to answer your query regarding what was different between 2021 and this year. Essentially it is the duration of the elevated groundwater levels this year, which has caused more prolonged discharges of stormwater from Markyate. The chart below left shows the River Hill borehole in 2021, which breached the "red threshold" in January, peaked in February and fell steadily until it returned below red, in July. The righthand chart shows the borehole this year, which breached red in February. However instead of peaking, it plateaued between March and June and is not predicted to return below red, until late August.



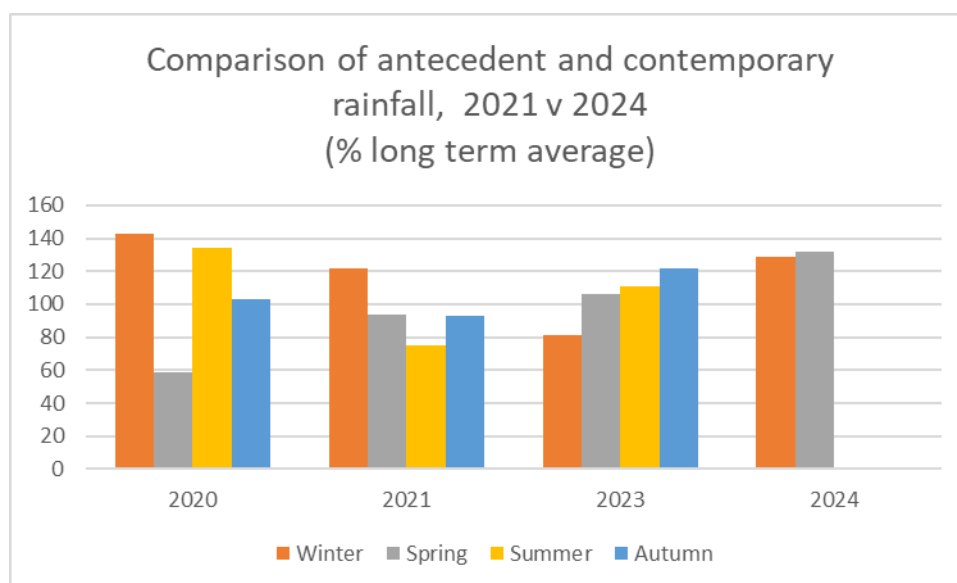
Groundwater levels do not respond solely to the amount of rainfall. Conditions preceding the rainfall and the timing of it, will affect how much the groundwater responds to the rainfall. Rain falling on dry soil will have less impact, as will rain falling during the Summer, when vegetation and evaporation will prevent more of it recharging the groundwater.

The graph below compares the "antecedent" rainfall and the seasonality of rainfall, for the periods 2020-21 and 2023-24 respectively¹.

2020 had a wet winter, followed by a dry spring, wet summer and average autumn. This is reflected in the low groundwater levels in early January 2021. Winter 2021 was wet, but the rainfall then fell below

¹ Met Office Climate Summaries <https://www.metoffice.gov.uk/research/climate/maps-and-data/summaries/index>

average in spring and remained there. So, 2021 began with low groundwater levels, which rose steeply in response to the wet winter, but then receded steadily as the rainfall dropped off.



In contrast, although 2023 started with a dry winter, the rainfall steadily increased through the year, with rain falling on already wet ground. This is reflected in the high groundwater levels in early 2024, which breached the “amber” threshold in mid-January. Consequently, the above average rainfall in winter and spring 2024, fell on wet ground and already elevated groundwater levels. This further raised the groundwater levels and has kept them high.

Link between high groundwater levels and prolonged storm discharge at Markyate

All sewerage systems will experience some groundwater infiltration and a nominal allowance in design is always made for this. However, in some catchments the impact of groundwater infiltration can be considerable, typically during the winter.

Groundwater can enter the sewerage system through the pipes and manholes, this may occur at a defect (crack, hole, displaced joint) or on a normal joint on the sewer or in the manhole. A key point to note is that where infiltration occurs, it is not necessarily an indicator that the sewer is in poor structural state, simply that jointing techniques used are not completely watertight.

In sewerage systems where the influence of groundwater infiltration is viewed as excessive, it is likely to be the source of the prolonged release of untreated or partially treated sewage. Our Groundwater System Management Plan (as agreed with the EA) commits to an ongoing programme of survey and monitoring to identify locations of infiltration for remediation and, to also understand the extent of infiltration in the system, to justify the need for larger investment to solve this issue. The reduction of groundwater ingress into sewers is a long-term, incremental process, with cycles of monitoring followed by remediation, followed by further monitoring.

As part of our work to address the uncontrolled escape of sewerage through this mechanism we have identified the top 56 catchments that are at risk of groundwater infiltration and prioritised them for a holistic catchment approach which will be tracked through the GISMPs. Markyate is one of the 56 catchments.

Markyate sewage treatment works and the River Ver

We share your concerns about the river Ver and all of the globally rare chalk streams in our region. As you point out, the discharge is in the upper reaches of the Ver. In fact, the discharge from our site is effectively the head of the river at this time, which amplifies any impact. This was not the case when the works was originally built, it is the result of upstream abstraction for potable water. This year it is

being made worse because upstream flow is being diverted into a field by an obstruction. The landowner has been approached by the EA but so far, has declined to act. Anything that can be done to increase the flow to our discharge point, will dilute the impact of our discharges.

Our long-term plans for Markyate

We have a project to increase the volume of flow that is fully treated at Markyate, which is due to complete in 2026. Whilst it will not address the issue of prolonged storm discharge during high groundwater periods, it will reduce the frequency and volume of storm discharges during normal conditions.

The challenge of reducing storm discharges by reducing groundwater ingress to the sewers is both complex and costly. Reducing our impact on sensitive environments is a priority for us, but you must appreciate that we must also address 55 similar catchments, of equal priority. We will be publishing an update to the Markyate GISMP in October, and I will make sure that your concerns for the Ver are fed into that process.

In the meantime, we would like to stay in touch and, if you have any further questions, please do not hesitate to contact me.

Yours sincerely,

David Harding

Customer and Stakeholder Manager