

Consultation on the Drought Management Plan 2022

Affinity Water Limited
Tamblin Way
Hatfield
Hertfordshire AL10 9EZ

008 EARA presentation
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1. This document has been prepared by the Ellenbrook Area Residents Association committee and is in response to the Affinity Water Drought Management Plan Consultation.

Affinity Water Ltd have asked Hertfordshire residents to complete a consultation; on a future drought condition and management that may occur in their areas. This is following unusual dry conditions in the winter months where the aquifers have not been replenished by rainwater.

[Affinity Water Have your say | Homepage \(engagementhq.com\)](https://www.affinitywater.co.uk/engage/consultation)

2. Ellenbrook Area residents are extremely concerned that the plan fails to make any reference to the known bromate / bromide contamination in the chalk aquifer.

Drought management is of special interest to residents in Hatfield being a focal point of historic contamination of the chalk aquifer in Hertfordshire. This was the result of the bromate & bromide pollution emanating from dumped chemical in sumps at Steetly chemical works in Sandridge. The plume spread underground from Sandridge in the chalk aquifer under Hatfield and nearby areas (Essendon, and Ware and Hoddesdon) between 1970 and 2000.

It was detected by Affinity Water at Bishops Rise water pumping station (PWS) in 2000. The W.H.O introduced a standard that no more than 10µg/l of bromate is permitted in drinking water.

Bishops Rise (BR) accounted for over 300µg/l of bromate in the groundwater. This led to BR being closed except for remedial work (scavenging) of the contaminant. Re-direction of the water for Hatfield now comes from North Mymms water treatment site – supplied by Essendon, Roestock, Tyttenhanger PWS and local rivers. Later it was found that Essendon PWS was also contaminated and put on a start - stop basis.

Groundwater abstraction accounts for 60% - 80% of the water used for drinking purpose while the rest of the water comes from rivers and reservoirs.

The lack of water in these aquifers will fire various drought trigger points from 1 to 4, the latter being the most severe. The first point is to appeal to the public to reduce water, activate network of intra-company transfer of supplies, the last point to reduce pressure and cut-off supplies.

As there is a huge reliance on groundwater abstraction to provide our drinking water, one would have assumed that any threat to the water supply would be of major concern to Affinity Water. Our concern is that on scanning this document – Drought Management Plan 2022- it appears to ignore the problem of contamination in the chalk aquifer and does not even mention the chemical bromate or bromide causing it.

3. Current issues with local water supplies that should be addressed in the Drought Management Plan

a) Wastage at Hatfield Bishops Rise pumping station

It is clear that the Bishops Rise PWS is only used for remedial work and scavenging the bromate from the plume. It was closed as a public water supply in 2000, and has been pumping **9 million litres/day** of waste water into the drains from 2007. It has two purposes; to remove bromate from the aquifer and deflect the plume from the Essendon PWS.

For more information on the plume: Hatfield quarries and the plume – Ellenbrook Area Residents Association (ellenbrookresidents.org)

b) Remedial plan to release Bishops Rise from scavenging operation.

Although BR has been pumping out bromate and treating it for 14 years it has not made much impression on bromate reducing it to 300 µg/l (micrograms in 1 litre of water).

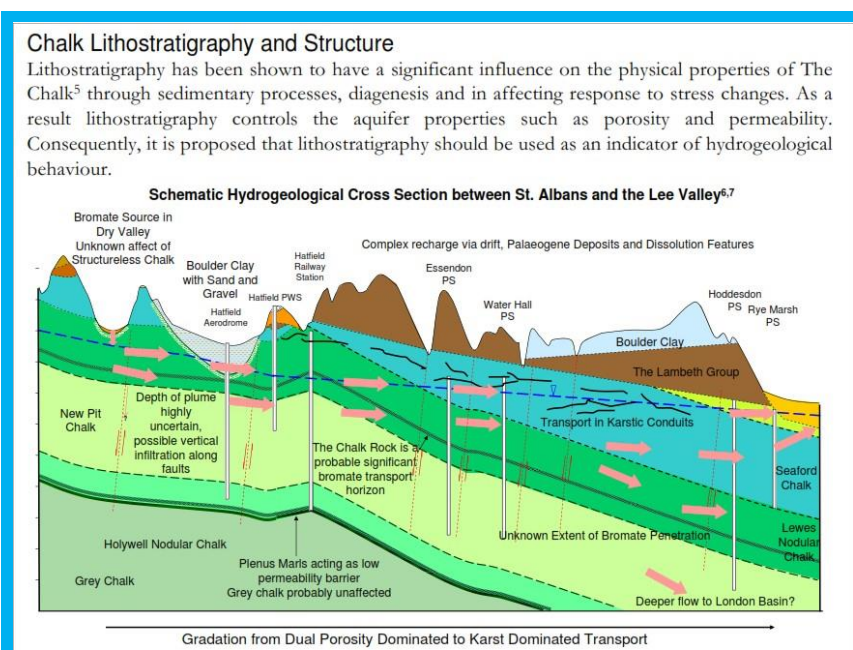
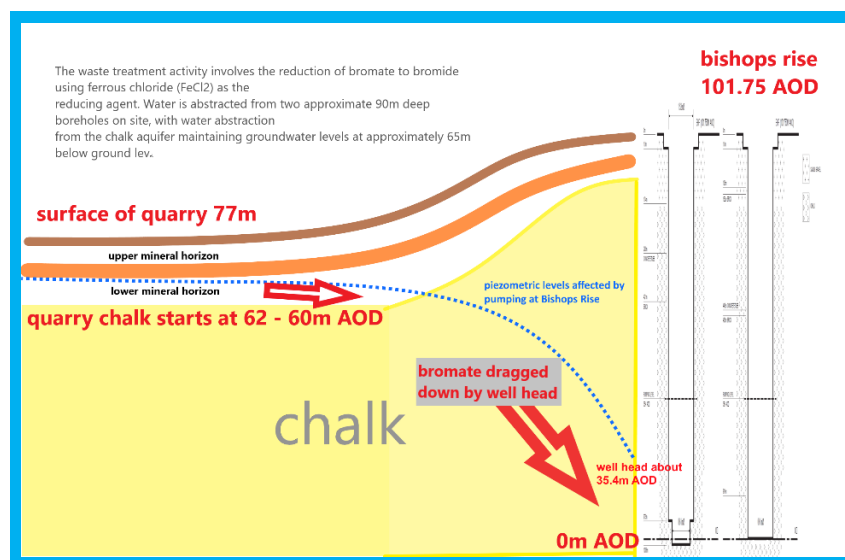
We believe for the sake of our future water supplies that Affinity Water should work with the Environment Agency to achieve an effective remedial plan, hopefully to remove the bromate from localised Hatfield chalk aquifer – or hot spots in the plume.

This may release BR from its scavenging duties in the future and allow it to go back to supplying Hatfield with water.

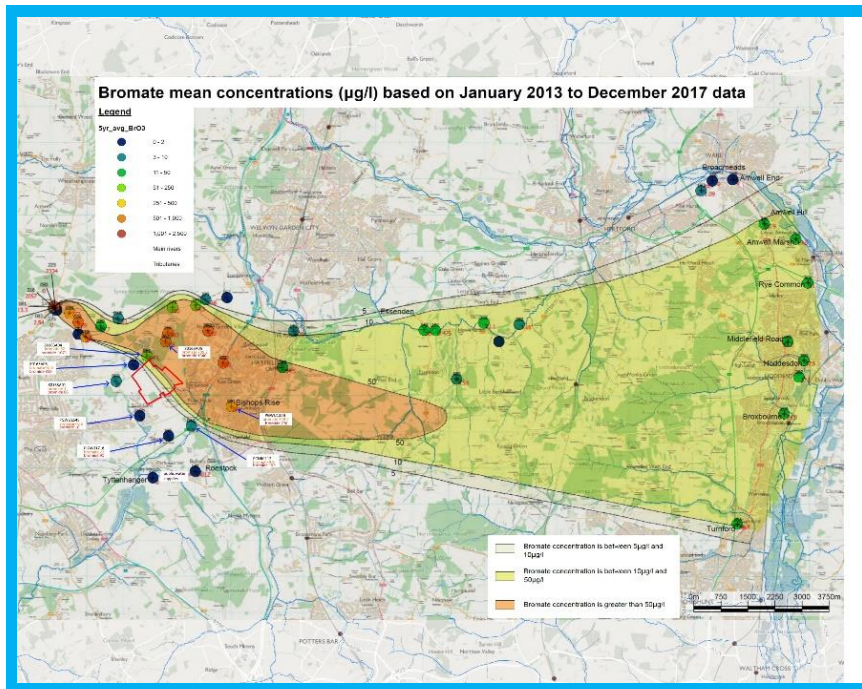
4. Position of the bromate in the aquifer

The depth of the plume at various locations is not clear, but borehole data suggests it is no more than 20m below the ground surface before it reaches Hatfield. It is mainly trapped in the primeval gravel and some in the chalk. The drawdown effect from BR will certainly drag the contamination down to the well head through the chalk aquifer and therefore spread it vertically.

The contamination that escapes BR draw will be 66.35m below Hatfield. It can be proved that the flow through the aquifer due to chalk adits and fissures will be faster therefore reaching Essendon PWS and Wells towards the East much more quickly.



Note the flow from left to right – West to East – to Hoddesdon



The threat to our water supplies is that the plume is only 1.3 miles from Tyttenhanger and 0.9 mile from Roestock. If the carcinogenic bromate levels exceed 10 µg/l then the water supply cannot be taken from these wells.

- Tyttenhanger and Roestock contribute about 8 mega- litres/day.
- Essendon 3 ½ mega- litres/day (but controlled by Bishops Rise pumping)
- Bishop Rise scavenging 9 mega- litres/day (not public water supply).
- Nomansland PWS on B651 near Wheathamstead (clean supply) but 5.6 miles away.
- Other sources including rivers & reservoirs, all treated at North Mymms.

The remedial plan & maps can be viewed at: EAs Remedial Plan – Ellenbrook Area Residents Association (ellenbrookresidents.org)

5. Threat of Quarries

The original source of the bromate contamination came from the Steetley chemical factory in Sandridge. It caused a plume to travel in an easterly direction reaching and closing Bishops Rise PWS in 2000. Some of the intense parts of the plume can be mapped and shown to be prevalent under the existing quarries and proposed quarries.

5.1 The Brett Quarry (proposed)

The proposed Brett quarry is situated on a Protection Zone 2 groundwater aquifer. This PZ2 aquifer feeds the remaining Roestock & Tyttenhanger PWS actively supplying Hatfield with drinking water. The Applicant will remove sand & gravel from the LMH or lower mineral aquifer, where contamination may be present.

Sand and gravel would be worked “wet”, that is, extraction in the lower aquifer groundwater. Water from this operation was originally going to be stored in a massive lagoon to the East of the site, however this idea was deemed unsafe due to cross-contamination, silting up, and flooding.

Despite the proposed quarry being rejected by Hertfordshire County Council, Brett are still pursuing the quarry application and as at July 2021 they are planning to appeal the HCC decision and alongside the appeal are also proposing a new application on the same site with minor variations.

With the threat of drought becoming heightened, EARA are concerned at Affinity Water’s apparent lack of concern at the potential threat of quarrying on a site so close to public water supplies.

The following points are comments and objections made by industry experts during the recent quarry planning application.

Comments from Doctor Rivett: objecting to the quarry application on behalf of Hatfield Town Council and EARA

"1) The most significant groundwater-related problems stem from the proposed excavation of the lower mineral horizon (LMH) gravels located below the protective boulder clay, immediately overlying the Chalk aquifer groundwater resource.

This activity jeopardises:

- *protection of the Chalk groundwater, the sole public drinking water supply to most in Herts;*
- *optimal remediation of the >20 km bromate groundwater plume, Europe's largest plume.*

The quarrying activity fails to recognise the importance of the LMH gravel aquifer for wider protection of water supplies. Critically the proposed quarry, with 4 million tonne backfill, will permanently reduce the capacity of the LMH gravels to store and slow down the bromate plume causing increased bromate risks to downstream public water supplies and reduced remediation performance of Bishop's Rise."

Dr Michael Rivett FGS (Contaminant Hydrogeologist; Director, GroundH2O Plus Ltd)

<https://ellenbrookresidents.org/2021/07/08/groundwater-contamination-by-dr-mike-rivett/>

Affinity Water objection – raising concerns about public water supplies

"Please treat this letter as an objection to this application, pending resolution of the detailed controls necessary to ensure that the proposed quarrying activities pursuant to the proposed permission do not affect the mobilisation of the existing plume of bromate contamination, and thereby render the water currently abstracted by Affinity Water at our Tyttenhanger and Roestock Chalk groundwater sources unfit for public water supply purposes."

"Our Tyttenhanger and Roestock sources are to the south of the existing location of the plume and are outside of its area of influence. There is a risk that quarrying activity could direct the plume towards the south impacting on existing public water supplies at Tyttenhanger and Roestock. They are important and long standing public water supply sources, and it is essential that an appropriate regime is in place to avoid the proposed quarrying activities impacting on the protection of the supply sources from the bromate plume. It is therefore critical that this matter is fully resolved before any permission is granted."

Julie Smith, Affinity Water, Head of Legal Services, 13th August 2018

Further comments from Doctor Rivett regarding the agreement reached between Affinity Water and Brett:

"6. Operating agreement between the developer and water utility – a note. *It is noted that Affinity Water have been able to reach an operating agreement with the developers that appropriately allows them to be confident that operations can be agreed with the developers that will allow safeguard of public water supply. Whilst this is welcomed and does provide much needed assurance to the water utility and in turn their customer base, it is noted that the elements of control agreed under this operating agreement that have allowed Affinity Water to remove their original objections to the proposal are unfortunately not now transparent to the planning process and wider stakeholders involved. It is presumed likely that these agreements are substantially related to control of groundwater contamination risks and hence directly relevant to the concerns raised above. It would hence be reasonable to recommend, for transparency and benefit of all stakeholders, that the operating agreement relevant to the protection of public water supply (and controlled waters) is made available to allow critical evaluation of its effectiveness in achieving that protection and assuring safety of the planned quarry development."*

5.2 Cemex Quarries

Affinity Water: comments on the planning extension to the Cemex quarry operation

“Surface runoff could end up in the lagoons that connect to the lower gravels/chalk, which may potentially deteriorate the water quality of the chalk aquifer. This activity may also change the groundwater level gradient and direct the plume southwards, where our Tyttenhanger and Roestock abstractions are located.”

*Application reference PL\0963\18 for the extraction of sand and gravel at land adjoining Coopers Green Lane.
June 2019*

The existing Cemex quarries have been extended for the next 10 years. Affinity Water (quoted as above) raised concerns that surface water could end up in a lagoon. This could be similar to the picture below. Clearly Affinity Water have significant concerns about the impact of quarrying in the local area and the potential threat on the water supply at Roestock and Tyttenhanger.



Cemex silt lake 2021

Environment Agency: comments on the planning extension to the Cemex quarry operation

“The planning application states that ‘no mineral will be extracted from the lower gravels.’ Based on that affirmation, the submitted information demonstrates that it will be possible to fulfil these points and manage the risks posed to controlled waters by this development”

*Land Adjoining Coopers Green Lane, Coopers Green Lane, Hatfield, Hertfordshire.
EA Feb 2020*

6. Contamination (bromate / bromide) remedial plan

The following is an extract from an Environment Agency document discussing the options to reduce the contamination from St Leonards Court.

ST LEONARD’S COURT decision document part 1 Environment Agency July 2019.

91. Report F1 says it is unlikely, and the Agency agrees, that a sole location up gradient and preferable to Bishop’s Rise will be found.

92. However, additional scavenge pumping location(s) may be beneficial in significantly reducing the contaminant mass within the aquifer, reducing the overall time period for remediation and hence reducing overall cost. Furthermore, scavenge pumping up gradient of Bishop’s Rise may reduce contaminant concentrations sufficiently that treatment to potable quality can be undertaken at, or in the vicinity of Bishop’s Rise at an earlier stage than would otherwise be feasible.

The extract clearly states that additional scavenge pumping stations may be beneficial to reduce the contamination before it reaches Bishops Rise pumping station.

In order to protect our precious local supplies and to take the opportunity to speed up the reinstatement of Bishops Rise as a local supplier of drinking water we propose that an independent group supported by EA and Affinity Water be appointed to investigate the remedial methods as described by the Environment Agency.

7. Summary

- Ellenbrook Area Residents Association has major reservations about the Drought Management Plan 2022 in that it fails to make any reference to the threat to our water supplies from the bromate / bromide plume which is the biggest groundwater contamination disaster in Europe.
- The plan also fails to make reference to the fact that the scavenging operation at Bishops Rise has failed to reduce the threat from the contamination and there is also not an agreed way forward to deal with the contamination.
- The current operation at Bishops Rise is wasting a huge volume of water, circa 9 million litres per day, which is in excess of the volume of water used each day by Hatfield residents. Despite this the plan makes no reference as to how this wastage can be minimised in the event of a period of drought conditions.

Ellenbrook Area Residents Association

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