

**EARA and SRA statement of case
APP/M1900/W/21/3278097**

Against appeal proposal:

Planning Appeal

Statement of Case

Application for the establishment of a new quarry on land at the former Hatfield Aerodrome, including a new access onto the A1057, aggregate processing plant, concrete batching plant and other ancillary facilities, together with the importation of inert fill materials for the restoration of the minerals working

Planning Application Reference APP/M1900/W/21/3278097

Prepared on behalf of Ellenbrook Area Residents Association and Smallford Residents Association

September 2021

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1. Introduction

- 1.1 This statement of case has been prepared by Ellenbrook Area Residents Association (EARA) and Smallford Residents Association (SRA) who represent the interests of over 700 households bordering the Ellenbrook Fields.
- 1.2 Note land at the former Hatfield Aerodrome is also referred to as Ellenbrook Fields or Ellenbrook Country Park.
- 1.3 The land at Ellenbrook Fields was promised to the local residents as part of the redevelopment of the old Hatfield Aerodrome under a Section 106 agreement. The agreement was that the open space would be accessible to the public to use as a country park. It has been over two decades since both financial and legal promises have failed to materialise as there has been no agreement reached between all interested parties. When the quarry came to the Planning Committee in January 2020 the landowners sent correspondence to the Council on the morning of the meeting, and indicated within this that if the quarry was to be approved by the Council, the land owners would then finally sign the s106 agreement that had been in dispute for such a long time. This caused discomfort with the Councillors and those opposing the quarry.
- 1.4 EARA and SRA conducted a lengthy investigation into the quarry proposals over a period of 5 years and as a result of those investigations objected to the original application in 2016, and again in 2019/2020. A large number of other objections to the quarry were also submitted by local residents with further support through a number of petitions and calls to stop the quarrying proposal.
- 1.5 In January 2020 Hertfordshire County Council refused planning permission for Brett Aggregates to quarry on Ellenbrook Fields
- 1.6 Our approach to the quarry proposal is that we believe that the authorities should adopt a zero risk strategy toward quarrying on this land which has been affected by the worst contamination disaster in Europe, namely bromate pollution.
- 1.7 As Residents Association groups, we do not understand how an application to quarry on a site, that is so close to the bromate plume, can even be considered and we have consistently asked for a proper risk assessment to being carried out by independent, qualified experts in this field.
- 1.8 Our original objections on the quarry still stand as outlined in the documents on the Hertfordshire County Council (HCC) planning portal
- 1.9 This statement of case will concentrate on the following areas.
 - **Ground Water Management Plan**
 - **Local Lead Flood Authority**

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- **Cumulative impact on area and unrealistic timescales**
- **Pollution and bromate – a risk to health**
- **Public Water Resources**
- **Environment Agency Remediation Plan**



This is our park not a brownfield site

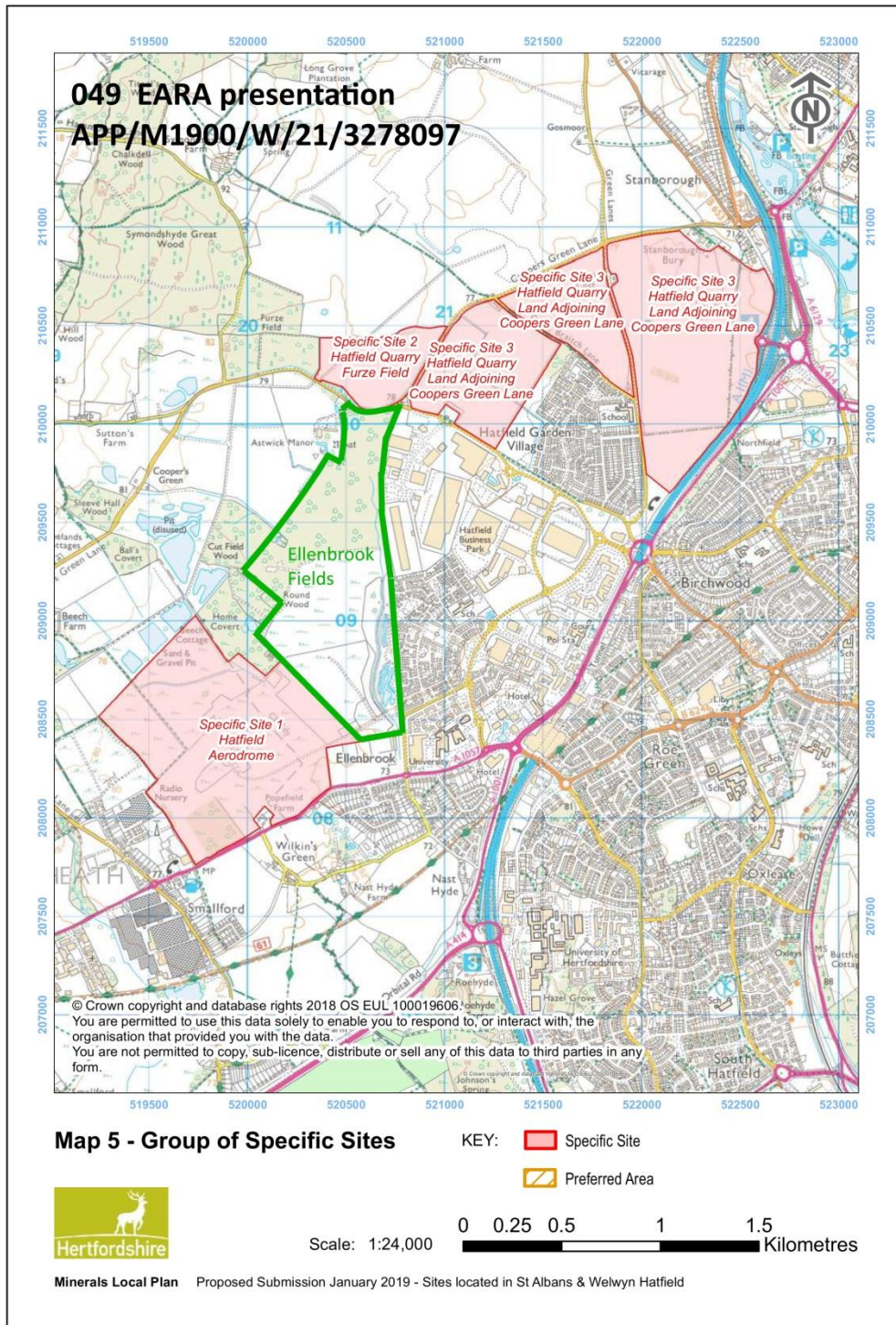
2. Location of quarry site in relation to the two resident association areas and the University of Hertfordshire

- 2.1 The proposed quarry site is located on Ellenbrook Fields, it covers an area of 86 hectares, which is roughly half of Ellenbrook Fields. The two Residents Association areas are also shown on the map bordering the proposed quarry site on the SW and SE perimeters.

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MAP of site and EARA and SRA



2.2 The perimeter of the quarry site borders the area known as Ellenbrook, and the area known as Smallford. The quarry also borders the University of Hertfordshire and its associated sports facilities, and Popefield Farm, a Grade II listed building.

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- 2.3 The Nast Brook which runs through the quarry site also runs through the Ellenbrook area.

3. Location of the bromate plume

3.1 Ellenbrook Fields lays over an area which is contaminated by bromate, a known carcinogen, which occurred as a result of a major pollution disaster discovered in approx. 2000. The pollution originated as a result of a major chemical spill at Steetly Chemical Factory, Sandridge, some 50 years previously, resulting in a bromate plume which has travelled underground all the way from Sandridge to Broxbourne, part of which is underneath Ellenbrook Fields. The plume has travelled approximately 20 km. This contamination is considered by the experts to be the worst ground water contamination event in Europe.

3.2 The spillage was not commonly known about by the general public or by the Residents Associations until much later, post the date when the local mineral plan was adopted in March 2007.

3.3 There is only one reference to the bromate in the Local Mineral Plan as follows:

"The proposed site lies over an area contaminated with a plume of Bromate. A more robust risk assessment may be required at this site in order to determine the risk of impact on the Three Valleys Water source at the public water source at Bishops Rise."

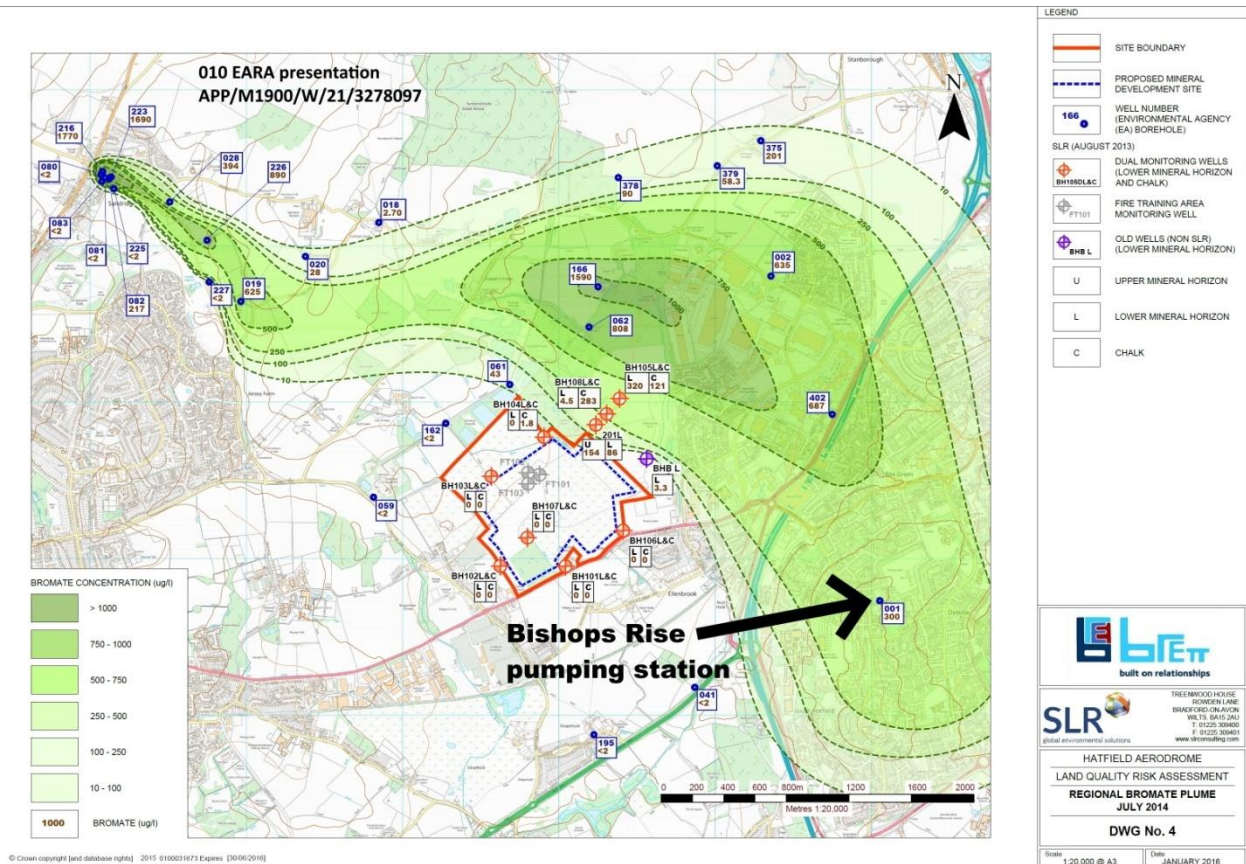
Clearly the magnitude of the bromate contamination was not taken into account when the Local Minerals Plan was drawn up.

3.4 A remediation plan to deal with the bromate pollution was established 10 years ago and managed by the Environment Agency (EA), but unfortunately the remediation plan has failed to significantly reduce the levels of bromate within the area. A new remediation plan now awaits an inquiry after the main parties failed to agree on a new plan.

Map of Ellenbrook Fields and the bromate plume

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4. EARA & SRA Areas of concern

4.1 Ground Water Management Plan (version5)

4.1.1 We would like to demonstrate that the GWMP is flawed and not sound.

4.1.2 The GWMP should have responsibility to do the following:

- Protect the public water supplies
- Prevent cross contamination
- Prevent local flooding
- Facilitate the EA remediation plan

EARA & SRA believe that the GWMP will not be able to fulfil its responsibilities and is therefore unsound. The detail is shown in document EARA 041 and summarised under the following areas.

4.1.3 Extraction of gravel from phases A to G

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- 4.1.3.1 The ground water flow will be diverted around clay barriers, and this will change the natural S.W flow to a N.E flow.
This is a high-risk strategy and breaks condition ii, "any activity close to the plume must not change the existing hydrogeological flow regime"

4.1.4 Lower mineral horizon gravel extraction

- 4.1.4.1 Working in wet conditions can allow cross contamination of the two aquifers and presents a very high risk. Removing so much water from the lower mineral aquifer (LMA) may cause a drawdown effect and therefore potentially drag in bromate to the site.

4.1.5 Three filter ponds

- 4.1.5.1 Brett's method of working will include three filter ponds. All washing, and construction water must be cleaned and filtered before it is pumped back to the aquifers via the upper mineral lagoon (UML) & lower mineral lagoon (LML).
The filter ponds shown in the plant diagram seem to be too small to do this job and should be split to do different functions.

4.1.6 Excess rainfall on site

- 4.1.6.1 EARA and SRA believe that excess rainfall has NOT been included in the calculations, potentially leading to flooding.

4.1.7 Incident rainfall and runoff

- 4.1.7.1 Rainfall and mineral working (possibly with bromate) will be infiltrated into the ground upper mineral aquifer (UMA) – that surface water will recharge the Nast Brook and discharge into the Ellen Brook.
This action cross contaminates the aquifers and discharges into the river system. All surface water and mineral water should be contained on the site.

4.1.8 Lower Mineral Lagoon depth

- 4.1.8.1 Brett's method of working uses a clay buttress around the perimeter of each phase
The construction relies on a clay buttress around the perimeter and again this is a high-risk strategy.
Due to the proximity of the bromate just outside this site, there is a high risk that the plume will be drawn into the LML construction area. The depth of this lagoon suggests it descends into the lower mineral horizon (LMH) and has direct hydrological contact with the Lower Mineral Aquifer.

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4.1.9 Lack of information

- 4.1.9.1 EARA and SRA are extremely concerned at the responses to straight forward questions, and the lack of knowledge shown by Brett's technical expert and the Environment Agency when questioned at the planning committee meetings where the quarry application was discussed. It can be seen that reasonable questions were raised by councillors and Brett's technical expert repeatedly failed to provide comprehensive accurate answers to their questions. In addition to this we feel that the EA expert also failed to directly answer some of the questions posed. The detail is shown in documents EARA 040, 017, 018, 033
- 4.1.9.2 We would expect both Brett and the EA to have a thorough understanding of the bromate plume and its likely behaviour. The GWMP underpins the safety of the quarry activities and we have to ensure that it is sound. At the moment EARA and SRA are not convinced that it can fully discharge its responsibilities.

4.1.10 Proximity to Cemex site

- 4.1.10.1 Whilst the Application concentrates on the site and the GWMP, it is silent on the impact to the GWMP in respect of the surrounding area. This is a particularly worrying omission as it is clear that the Cemex Quarry is subject to a stringent GWMP rigorously enforced by the EA yet the impact of the new quarry on this is not recognised or considered.
- 4.1.10.2 As stated previously the quarrying on the Cemex site concentrates on the UMH and does not reach anywhere close to the LMH and the Chalk Aquifer. This is due to the strong recognition that the LMH and the quarrying could impact the movement of the bromate plume. Indeed, Cemex have in the past quarried the LMH. However, upon detection of the plume they ceased this due to the problems they encountered. An area of their site bordering the proposed Brett quarry site is off limits with many warning notices due to bromate contamination resulting from quarrying before the Bromate Plume was detected.
- 4.1.10.3 It is interesting given their experience with the bromate plume that Cemex with their already fully established processing plant on the boundary with the proposed new quarry have not sought to quarry Ellenbrook Fields and we can only assume this is on the basis that they would only take the UMH due to their experience with the LMH and as such the site becomes unviable even when they do not need to build a new processing centre.
- 4.1.10.4 The impact of the Brett GWMP takes no consideration of the Cemex GWMP which uses a network of lagoons on site to control the water. The risk of this being disturbed and water being sucked away from the Cemex site is not considered by Brett or indeed Cemex though we believe that

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the implications of this have recently become apparent to Cemex and is causing some concern given that they will operate for at least a further ten years on the site and the need to keep their water on site.

4.1.10.5 It seems appropriate that an overall GWMP is prepared considering all quarries operating in the area and dealing with all concerns in respect of the bromate contamination and indeed the water run-off and control. This GWMP should at least cover the area quarried by Cemex and the proposed new site and consider the interaction of both facilities as well as the impact on the locality, especially given the recent local flooding events.

4.1.10.6 It is a fact that the Cemex site is heavily monitored by the EA in respect of the bromate plume with monthly and weekly sampling and a great deal of data and control being collected and exerted by the EA on the activities there. It seems incongruous that a 100m away the attitude of the EA is one of a relaxed monitoring and there is no way of knowing whether the bromate plume is present without this proactive monitoring regime and we would ask that should the quarry application be granted and indeed if it is not that the EA take a more proactive approach and be held to account.

4.1.10.7 In summary EARA and SRA believe that the GWMP is not sound, and as it potentially has a direct influence on public water supplies, bromate contamination of groundwater, local flooding downstream of the site and EA's remediation plan II, it must provide cast iron guarantees that quarrying will be safe and can deliver its responsibilities. The nearest parallel quarry site is the Cemex site which has been in operation for years. This site is outside the Source Protection Zone 2 for PWS and only extracts the upper minerals in the upper mineral horizon (UMH). Its "green" approach, using conveyer belt transport means the land is permeable unlike clay open plan quarries. They do not work "wet" and therefore there are no hold ups.

4.2 Flooding

4.2.1 The results from the Local Lead Flood Authority are out of date and have not taken into consideration the impact of climate change and a number of other issues as described below. The detail is shown in document EARA 049 and summarised below.

4.2.2 The quarry location slopes from 80 AOD (80' above sea level) in the N.W to 73 AOD in the S.E. As a result, natural surface water runs into the NAST, an ephemeral brook crossing the site where it eventually joins the Ellenbrook River, just south of the A1057 road. In laymans terms the

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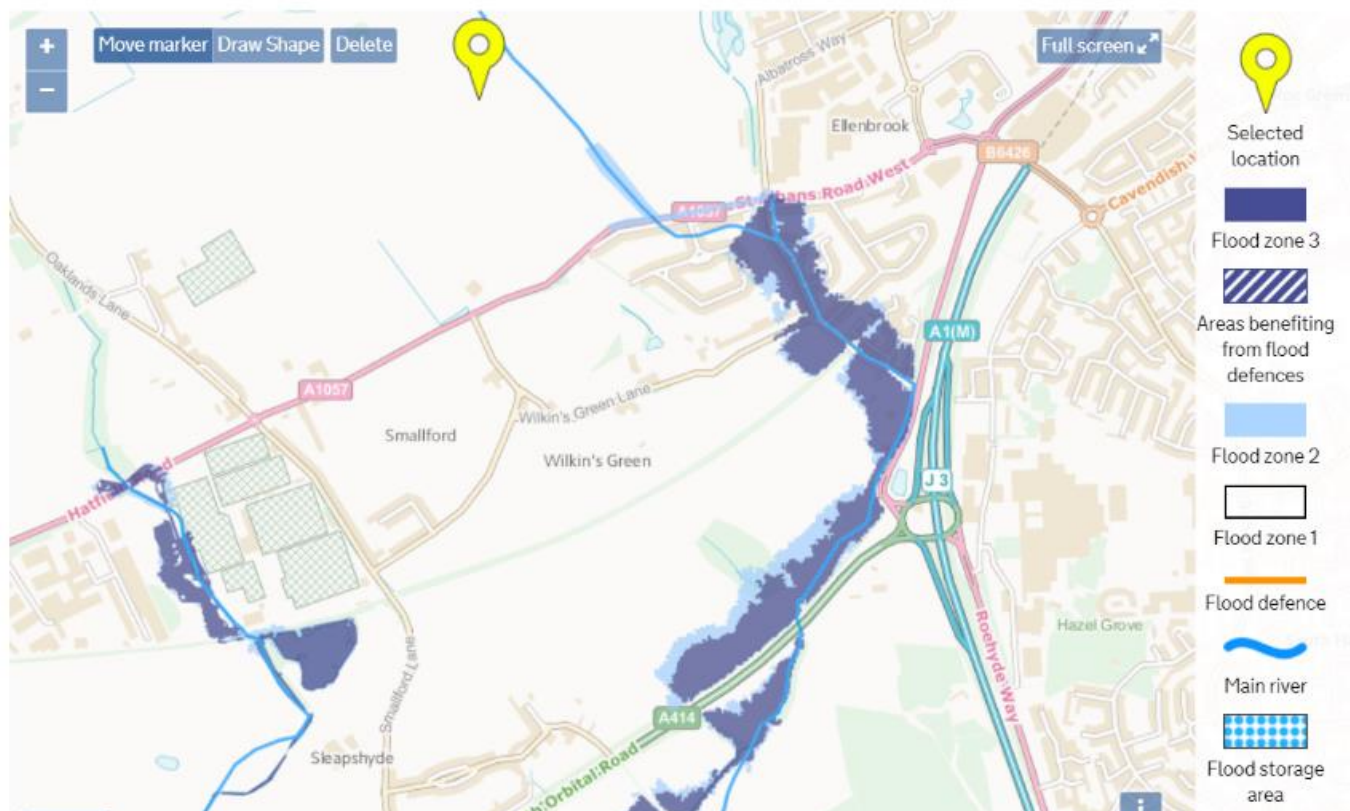
residential areas of Ellenbrook and Smallford are lower than the quarry site and water runs downhill!

- 4.2.3 Managing flood risk is a way of life for some parts of our community, areas in the immediate vicinity are already classed as a High Risk for flooding. There has been some extreme flooding events over the last few years, notably last winter, in particular on the actual dig site at the Aerodrome old taxiway, the roundabout of Ellenbrook Lane and St Albans Rd West, Wilkins Green Lane near Nast Hyde Farm and outside Popefield Farm whose entrance floods even when there is a small amount of rainfall.
- 4.2.4 One does not have to be a flood expert to recognise that surface water will flow from a higher location to a lower one and the loss of a large amount of permeable land must result in an increase in surface water flooding, migrating to the lowest points and increasing the levels of flooding.
- 4.2.5 In a letter from the Local Lead Flood Authority (LLFA) to Chay Dempster dated 19 June 2018, regarding the risk of surface water flooding, the LLFA have advised the Lead Planning Authority that the site can be adequately drained. Reference document EARA 048
- 4.2.6 EARA and SRA disagree with this assessment for the following reasons:
- Issue 1 - Increased flood risk due to the impact of climate change
 - Issue 2 - Flood risk to the surrounding area if the proposed lagoons overflow
 - Issue 3 - Changes to the hydrogeological regime of the flow of the aquifer
 - Issue 4 - The impact of changing large swathes of land from permeable to non / lower permeable land and the resulting run off of large quantities of surface water to residential areas too close to the lagoons
- 4.2.7 Issue 1 - Increased flood risk due to the impact of climate change
- 4.2.7.1 There is no doubt, and supported by recent weather events across England, that climate change is here, and that flooding is no longer a rare event but one that is increasingly occurring.
- 4.2.7.2 The area south of the proposed quarry site has already been identified as a flood risk by the Environment Agency. The map below shows the location of the quarry (selected location) and just south of the site flood

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zones 2 (medium probability light blue) and 3 (high probability dark blue) covering areas of both Ellenbrook and Smallford.



4.2.7.3 Data shows that the annual rainfall and the number of rainy days has increased dramatically over the last 3 years, increasing not only the threat with increased flood alerts but actual flood occurrences on the road infrastructure and soft environment in these flood zones in the area of Ellenbrook and Smallford.

4.2.7.4 The current flood defences are at full capacity, any additional water coming as a result of the quarry process will mean that the high level of risk we are at already, accompanied by an increase in occurrence due to climate change will put the area at greater all-round risk of experiencing a severe flood.

4.2.7.5 EARA and SRA are concerned that responses from the EA regarding the flood risk are based on 2016 information, which is significantly out of date. We believe that there is a significant chance of flooding to the residential homes of Ellenbrook, Smallford, SW Hatfield, and to the University of Hertfordshire, as well as further disruptive flooding to the road network.

4.2.7.6 In May 2016 the EA objected to planning permission for the quarry with concerns over downstream flooding, moving the Nast Brook and the

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absence of a flood risk assessment. This objection was later lifted on 5th September 2016, before the application came to the full DCC planning on 25th January 2017.

We believe that the EA withdrew their objection based on information available in 2016, however the increase in rainfall and the increased likelihood of extreme flood events should be reassessed by the EA and taken into consideration when making an assessment of the impact the proposed quarry will have on the surrounding area. We consider that their four objections (shown below) are more relevant than ever today, and the objection should not have been lifted.

Environment Agency position

In the absence of an acceptable Flood Risk Assessment (FRA) we object to the grant of planning permission and recommend refusal on this basis for the following reasons:

Reason

The FRA submitted with this application does not comply with the requirements set out in paragraph 9 the Technical Guide to the National Planning Policy Framework. The submitted FRA does not therefore, provide a suitable basis for assessment to be made of the flood risks arising from the proposed development. In particular, the submitted FRA fails to:

1. Ensure that any off-site flood risk from the development site does not increase the risk of flooding to downstream properties in extreme flood events.
2. Demonstrate that the diversion proposals for the River Nast will not increase the risk of flooding on the development site in extreme flood events.
3. Consider the temporary diversion of the River Nast in an open channel.
4. Consider an open channel watercourse on the proposed permanent line of the River Nast after restoration.

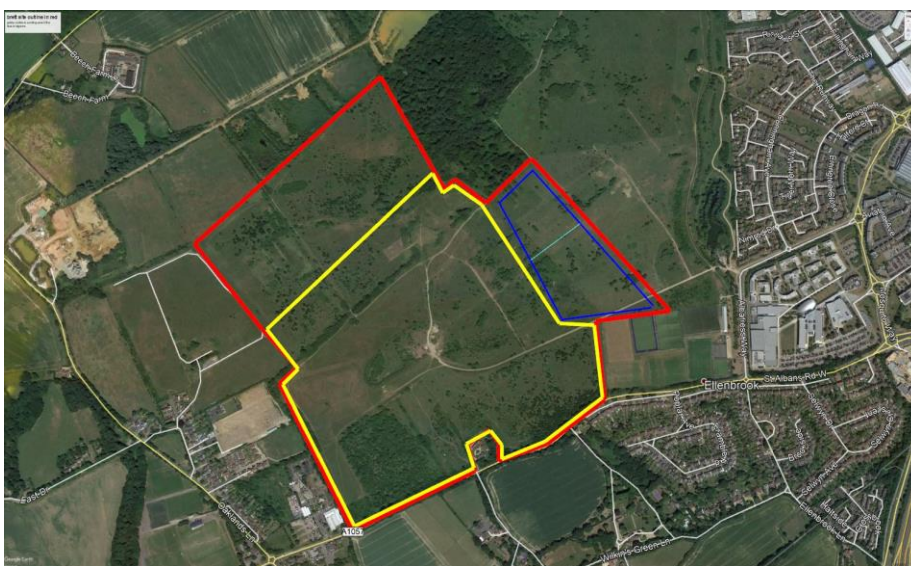
This objection is in line with your Waste Core Strategy Policy 16: Soil Air and

Environment Agency
Apollo Court, 2 Bishops Sq Business park, Hatfield, Herts, AL10 9EX.

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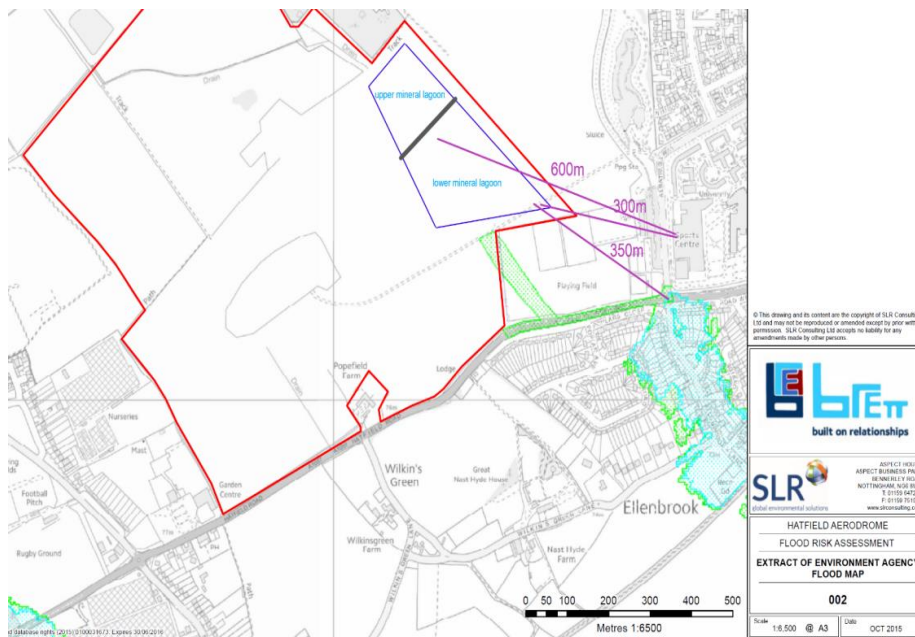
- 4.2.8 Issue 2 - Flood risk to the surrounding area if the proposed lagoons from the quarry overflow.
- 4.2.8.1 For the quarry to operate, as the sand is dug out, there is a need to get rid of excess water. The proposal put forward by the applicant is that this excess water will be stored in specially constructed lagoons and the water will infiltrate back into the ground over time.
- 4.2.8.2 The quarry site is huge, covering 86 hectares in total (shown in red) with a working area of 53 hectares (shown in yellow) which excludes the lagoons (blue) and plant site, as shown on the map below:



- 4.2.8.3 The quarry site is located in close proximity to the University of Hertfordshire, a busy main road and housing. The map below shows a natural slope to the S.E and a short distance of 300 metres to the university. It also shows how vulnerable we would be to the lagoons and subsequent flooding from them.

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4.2.9 Issue 3 – Changes to the hydrogeological regime of the flow of the aquifer

4.2.9.1 The Environment Agency has recommended a number of conditions as part of their response to the planning application that should be met as follows:

- No mineral is extracted from within the existing plume of bromate and bromide groundwater pollution
- Any activities close to the plume must not change the existing hydrogeological flow regime
- Any activities close to the plume must not interfere with the remediation of the bromate and bromide pollution.

4.2.9.2 EARA and SRA believe that the second condition regarding the hydrogeological flow regime cannot be met. The reasons for this are illustrated as follows.

4.2.9.3 From the groundwater management plan, it appears that the Upper Mineral Horizon Lagoon is designed to infiltrate water back into the UMH aquifer. This is taking water from the area which would have dissipated into the ground throughout the dig site area and focussing the discharge back into the aquifer at a single location. The additional designed buttresses within the lagoon are designed to prevent the flow of water in all directions and prevent it going back onto the dig site. This method of working will potentially alter the hydrogeological regime and break condition 2.

4.2.9.4 The bromate plume is too close to the site. Approximately 66 metres from the edge of the lagoon is borehole BH201 which shows high levels of

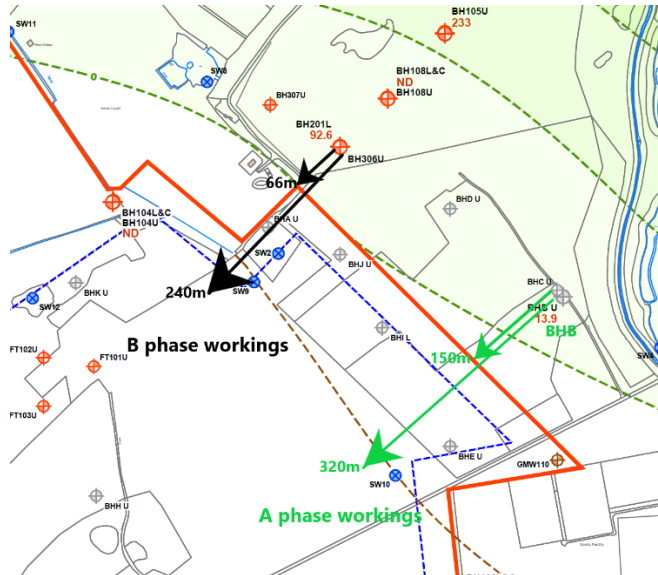
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bromate 92.6µg/l. This borehole is situated N/E of the lagoon and directly below the UMA flow direction

4.2.9.5 The map below shows the close proximity of the plume(green) to the site.



4.2.10 Issue 4 – The impact of changing large swathes of land from permeable to non / lower permeable land.

4.2.10.1 We believe that the impact of removing topsoil and leaving clay on top has not been sufficiently considered.
It is not clear how rainfall and runoff will predominantly infiltrate into the ground – the quarry working area is clay based and therefore 80% of water will not be absorbed into the ground. On the working area of 53hectares, rainfall runoff must go somewhere. It is assumed it will be discharged into the upper mineral lagoon and infiltrate back into the upper mineral aquifer. Very little of the original permeable surface will be left to dissipate the water gradually.

4.2.10.2 We believe that de-vegetation on the whole site could contribute a difference of 4263 (clay) -1598 (untouched fields) =2665m³/hour of runoff.
This additional huge volume of water running off the site is likely to have a significant effect on flooding in the local area.

4.2.10.3 We estimate that in the event of heavy rain all day (as seen increasingly over the last year) the lagoon will fill up in 6 hours. During a 1 in 100 year storm event it will fill up in less than an hour.

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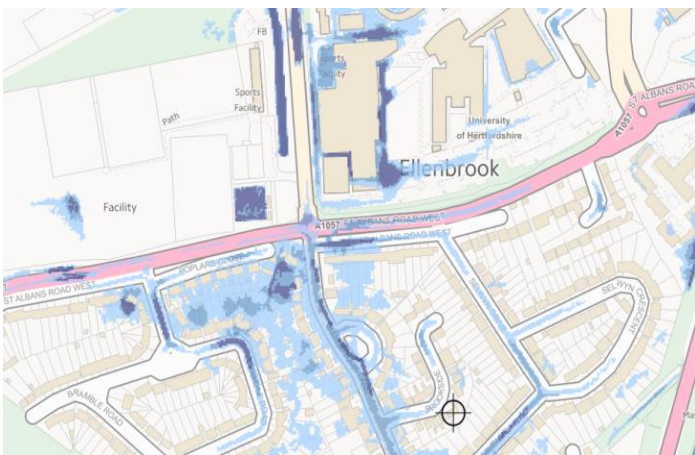
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4.2.10.4 The area around the quarry is already at risk from river and surface water flooding as demonstrated on the EA maps below.

**Environment Agency Maps – High Risk areas shown in Dark Blue –
Medium in Light Blue**

Surface Water flood zones

Ellenbrook, Hatfield and the University
to the South East of the quarry



Smallford, St Albans
to the South West of the quarry



River Flood Risk – Immediately South of the proposed quarry site



In summary we do not believe that the flood risk assessment is up to date and does not take into the account the issues described above.

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4.3 Cumulative impact and unrealistic timescales

4.3.1 EARA and SRA have studied in detail the proposed method of working for the quarry and believe that the suggested timescale of 32 years has been underestimated, and that in fact the true timescale is more likely to be circa 40 years.

4.3.2 The area of challenge is at the quarrying stage as shown in the table below

Activity	Brett estimated timescale	Comments	EARA and SRA estimated timescale due to new groundwater management plan	Comments
Construction	1½ years		1½ years	
Quarrying	28 years (7 phases at 4 years)	No cell working but using a quick 360° excavator	35 years (7 phases at 5 years) based on Brett's revision in their new scoping document. *	No 360° hydraulic excavator to remove LMH gravel The clay interburden will be removed from above the LMH in small operating cells circa 100m x 30m in size Extra time in extraction due to cell working Shoring up the dig site against bromate infiltration
Restoration phase	2 years		2 years	
Total elapsed time	31 ½ years		38½ years	
Return to original condition	3-10 years		3-10 years	Landscaping /vegetation to be established
Total elapsed time to return Ellenbrook Fields back to original position	34½-41½ years		41½-48½ years	

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- 4.3.3 * The water management plan requires a new way of working in operating cells using different equipment. This method is likely to take longer than the previous method, hence the increase in time for each phase from 4 years to 5 years. Note that Brett have estimated the time per phase in their revised quarry scoping document as 5 years, which will use exactly the same method of extraction as the appeal application. This confirms the theory that 4 years is an underestimation. So, not only was the original timescale believed to be contrary to Mineral Policy 13, 2 and 18 but it would appear to be likely to exceed that even further.
- 4.3.4 Brett use the words “temporary” and “of reasonable duration” a number of times in their statement of case. We would challenge anyone to think that 32+ years’ timescale can ever be described as temporary.
- 4.3.5 This small area of Hatfield has been subjected to decades of quarry working since the 1950s, with extensions granted to those quarries already established. This proposal is neither reasonable nor temporary.
- 4.3.6 As stated in Brett’s statement of case there is no guidance on what is a reasonable duration. EARA and SRA residents take a different view to Brett and HCC planning officers in the interpretation of what is a reasonable duration.
- 4.3.7 Brett also state in their SoC that “the overall duration of the proposals is around 32 years (which is obviously dependent on fluctuations in the demand for aggregates)”. This statement rings alarm bells that there is potential for the quarrying to slow down depending on the levels of demand, elongating the timescales beyond their suggested 32 years.
- 4.3.8 Without wishing to over dramatize this point, many of us will be dead by the time Ellenbrook Fields is reinstated. This is not a temporary operation, more like a lifetime.
- 4.3.9 Brett also discusses the length of time other quarries within Hertfordshire have operated for, suggesting that long timescales are effectively the norm. Regardless of whether other quarries in Hertfordshire have had lengthy durations, this should not be used as an argument for granting this application, in fact we believe that this strengthens the case that yet another quarry application should not be allowed to operate for an extremely long duration.
- 4.3.10 In addition to the challenge above, EARA and SRA are extremely concerned that if bromate is identified anywhere on the dig site once quarrying commences, thus breaching the EA conditions, these timescales will then increase significantly as digging will cease whilst investigations take place to determine the risk. We are extremely concerned that the

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area will effectively become a “no-go” site poisoned by bromate and become derelict leaving us living on the doorstep of a public health disaster. There needs to be recognition of the prospect of failure with guarantees that it is Brett and the Landowner who put it right, not the taxpayer.

- 4.3.11 In summary EARA and SRA believe that 32 plus years is not a reasonable duration, and that there are too many quarries in one small area of Hertfordshire which also have been quarrying for a very long time.

4.4 Pollution and Bromate

- 4.4.1 When the “resolve to grant” planning permission was originally agreed in 2016, the bromate plume was barely referred to at the planning meeting. Since then, mainly due to the persistence of local residents, the dangers posed by the bromate plume have been highlighted and the risk to health and our water supply have become clearer. The initial remediation plan implemented by the EA to eradicate the plume has proved to be extremely challenging and in fact despite 10 years attempting to reduce the bromate, there has actually been no reduction at all. No new remediation plan has been agreed at the time of writing this report.
- 4.4.2 We find it extraordinary that there is no reference at all to the EA remediation plan in Brett’s original planning application nor in the statement of case appeal document.
- 4.4.3 EARA and SRA believe that quarrying on this site is too high a risk to take for the following reasons:
- 4.4.3.1 The site is too close to the bromate plume, less than 100m. Although a rough outline of the plume has been identified, clearly the bromate does not travel in straight lines and does not recognise map boundaries and its location has been determined by borehole readings. The bromate will travel through fissures and could be anywhere. We would argue therefore that there is no absolute way to prove that the quarry site is **not** in fact over the bromate plume.
- 4.4.3.2 There is only one active borehole actually on the dig site (BHG) which has had sporadic readings showing the presence of bromate. There is another borehole BH107 but no information has been provided since 2015 from this borehole. It is vital that full up to date data covering the whole site is available and that this data is interpreted by independent experts to ensure the safety of the public and indeed the public water supply.
- 4.4.3.3 Bromate has been detected on the perimeter of the site. At times the boreholes around the site have shown realistic readings over 2microg/l.

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- 4.4.3.4 Bromate is a known carcinogen, but very little research is available to understand the health implications for the local population. Potential exposure to this deadly product is an unacceptable risk for residents. Cancer rates in Hatfield need to be examined as a result of the bromate being in the drinking water at Bishops Rise prior to the discovery in the early 2000s.
- 4.4.3.5 Bromate is extremely difficult to eradicate. Once it is in the chalk aquifer it can take decades to remove, as shown by the failure of the initial EA remediation plan
- 4.4.3.6 Quarrying on land contaminated by bromate & bromide is covered by the National Planning Policy Framework February 2019. We believe that the application for the quarry does not comply with the framework for a number of reasons including the fact that the land is contaminated and the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment.
- 4.4.3.7 Other local quarries do not operate using such a risky method. Brett intends to dig down to the lower mineral horizon which is more likely to disturb the bromate and potentially cause it to change direction. Cemex, the neighbouring quarry operator, only dig down to the upper mineral horizon taking a much lower risk approach.
- 4.4.3.8 An independent hydrogeologist, Dr Rivett, has recommended that there should be boreholes on the actual dig site to determine the presence of bromate or not, which would offer a more risk adverse approach. This way any presence of bromate could be made before the area is dug and irreparable damage is done.
- 4.4.3.9 Dr Rivett also states that there is insufficient data available to make these decisions. This is contrary to the EA approach. Dr Rivett is an academic and expert in his field as described in document EARA 030 and 031.
- 4.4.3.10 Bromide (a precursor to bromate) is also present on the site. The planning inspector for the hearing regarding the Bromate remediation plan has said that the location of the plume can also be determined by the presence of high levels of bromide. The applicants/EAs own figures show extremely high concentrations of bromide all around the perimeter of the site, but for some reason Brett and the EA are deeming to ignore the direction of the planning inspector in this respect, stating that the bromide may be present for other reasons. We have challenged the EA regarding this, but they were not able to say categorically what has caused these very elevated bromide readings. Again, this lack of investigation leads us to believe the site is at high risk of being already or becoming further polluted by bromate. Reference document EARA 042

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- 4.4.3.11 If the quarrying disturbs the chalk aquifer it will potentially affect our water source, which could lead to the further closure of more pumping stations, Bishops Rise Pumping Station has already been taken out of public supply due to the contamination found pre 2000. Essendon, Tyttenhanger and Rostock Public Water Supply are also under threat if the plume changes its direction.
- 4.4.3.12 We believe that Brett will not be able to comply with the EA three conditions which are:
- No mineral is extracted from within the existing plume of bromate and bromide groundwater pollution
 - Any activities close to the plume must not change the existing hydrogeological flow regime
 - Any activities close to the plume must not interfere with the remediation of the bromate and bromide pollution.
- 4.4.3.13 The applicant's (Brett) Statement of Case is relying on the fact that the Environment Agency and Affinity have not raised any objections to the quarrying if there is a ground water management plan in place to mitigate the risk. We would argue that the GWMP is flawed and should not be relied upon for mitigation. Reference document EARA 041
- 4.4.3.14 In Brett's statement of case it writes - in relation to bromate, the assessment concluded that there is a risk that pumping groundwater from the Lower Mineral Horizon would intercept the bromate plume potentially causing the plume to spread. It went on to add that measures are incorporated into the design and operation of the site so that this risk would not be significant."
- In terms of calculating whether or not a risk is significant, a risk matrix is often used. The calculation in the matrix is a combination of the impact of the risk and the likelihood of the risk occurring. EARA and SRA would argue that the impact of the bromate spreading is huge, both in terms of the difficulty of eradicating it and the potential impact on water supplies. We also contend that the likelihood of it occurring is unknown. We would therefore argue that the risks are significant regardless of any mitigation plans.
- An example risk matrix is shown below which could be used to assess the risk posed by the quarry.
- 4.4.3.15 EARA and SRA would argue that the quarry risk definitely does not fall into the green area and therefore should not be permitted. The impact is too high.

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Risk probability	Risk severity				
	Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent 5	5A	5B	5C	5D	5E
Occasional 4	4A	4B	4C	4D	4E
Remote 3	3A	3B	3C	3D	3E
Improbable 2	2A	2B	2C	2D	2E
Extremely improbable 1	1A	1B	1C	1D	1E

4.4.3.16 Finally the only other quarry we can find digging so close to a bromate plume is the Cemex Quarry next to the applicants (Brett) quarry. The method of extraction on Cemex quarry is to only dig in the upper mineral horizon and to not touch the lower mineral horizon (as proposed by Brett). We believe that Cemex’s method is a safer approach to quarrying.

4.4.3.17 In summary we believe that a zero risk approach should be taken to manage the plume.
 Quarrying on this land does not have to happen, there are alternative sites in Hertfordshire that come with a lower risk profile.

4.5 Public Water Resources

4.5.1 We do not believe that any risks should be taken with our water resources for the following reasons.

4.5.1.1 The bromate plume has already affected the land and consequently the water supply in Hertfordshire. Two local pumping stations have already been affected by the plume; one in Hatfield (Bishops Rise) had to be closed when it was realised this was putting contaminated water into the public water systems, and one in Essendon which is closely monitored to ensure that the drinking water remains below WHO guidelines. If the plume moves in a southerly direction due to quarrying activity, there is a threat to the remaining uncontaminated water pumping stations at Tyttenhanger and Roestock. We do not believe that any risks to the remaining supplies in the area should be taken, particularly as Affinity Water have recently stated that there is potential for water shortages. Reference map EARA 007

4.5.1.2 We recognise the importance of the remediation work (circa 2008) to remove the bromate that has been undertaken by Affinity Water, who operate the Water Pumping Stations in our area. However over the past

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10 years this remediation work has sadly failed, despite the huge financial cost and more importantly the ongoing loss of millions of litres of precious and scarce water, made no noticeable difference to the level of contamination in the source water arriving at Bishops Rise Water Pumping Station which was formally used for our drinking water. Thus, this and possibly other water pumping stations will close or remain closed for the supply of water and will do so for many years to come.

- 4.5.1.3 We believe that the risk to public water supplies contravenes MLP policies 17 and 18. Policy 17(iv) provides that development would not be permitted if it would have a negative quantitative and/or qualitative impact on groundwater resources, unless appropriate measures can be imposed to mitigate any harmful effects.
- 4.5.1.4 We believe that the risk to the groundwater resources on Ellenbrook Fields is very high; the mitigation proposed by the applicant does not eliminate the risk entirely and therefore the application should not be approved, and the groundwater resource should not be put at any risk.
- 4.5.1.5 We are extremely concerned that the quarry may have potentially catastrophic effects on the scarce water resource in the aquifer under the proposed dig site, used as the source for our public water supplies and do not believe that any risk to the water source should be taken.
- 4.5.1.6 We are aware that Affinity Water will not put contaminated water into the public network, but we will risk losing this valuable resource for decades at the least if any bromate leaks into the source water area.
- 4.5.1.7 The following are extracts from a speech made by Dr Bryan Lovell, OBE, CGeol, a geologist based at the University of Cambridge regarding the pollution impact on a proposed quarry at Bengoe.

“The problem with the chalk aquifer is this: very quick pollution, very slow decontamination”

“Monitoring of pollution as it takes place is not the main issue: pollution must be prevented from the word go”.

This quote from an academic expert in the field of geology reinforces our view that we have to prevent the bromate from spreading and potentially contaminating our water source.

- 4.5.1.8 Dr Rivett has commented on the operating agreement reached between Affinity Water and Brett Aggregates. In the interests of transparency and to allay the concerns of local residents and councils it would seem reasonable that the agreement is made public to allow critical evaluation of its effectiveness in achieving that protection and assuring safety of the

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planned quarry development. This agreement is not currently available for open viewing which seems odd and deliberate given that we are talking about the largest contamination issue in Europe.

- 4.5.1.9 There is a concern that Brett Aggregate extracting gravel from the LMH and subsequent in-fill of the void may cause the plume to move and increase the level of bromate in nearby water pumping stations (PWS).
- 4.5.1.10 Affinity Waters' lack of objection to the Brett proposal seems to be in contradiction to their objection to the extension of the neighbouring quarry at Furze Field and Stanborough. This is even more strange as Cemex do not touch the LMH aquifer and extract dry gravel from the UMH only.
- 4.5.1.11 In summary we do not believe that the ground water management plan is a strong enough safeguard and leaves too high a risk to take with the source water. Putting our water supply at any risk seems to be a highly dangerous strategy. Once the aquifer is contaminated it is too late. The proposal would thereby be contrary to the provisions of the Hertfordshire mineral local plan (policy 17(iv)) which does not permit mineral development resulting in negative impact on the water environment and the provisions of the NPPF (par 170) for conserving and enhancing the natural environment.

4.6 Environment Agency Remediation plan

- 4.6.1 We believe that no quarrying should occur on land close to the bromate plume until the bromate has been eradicated.
- 4.6.2 The Environment Agency are responsible for the remediation plan to manage the "clean up" of the bromate plume, yet despite this, after 10 years of remediation work the plume shows little sign of abatement and continues to spread across Hertfordshire. The fact that the bromate plume appears to not be fully understood by the experts regarding its movement and behaviour is of major concern to us. This alone, reinforces our view that we do not believe that sufficient knowledge and expertise exists within the Environment Agency to reliably and accurately predict the impact that quarrying may have on the plume. The plume is an unknown phenomenon that is difficult to predict and therefore no risks should be taken. Pollution of this nature is a rare event and little academic research exists on which to base theories on its behaviour.
- 4.6.3 The pollution is currently managed by scavenge pumping at Bishops Rise, which is a process whereby the contaminated groundwater is pumped from a closed public water supply well, treated and discharged to foul sewer.

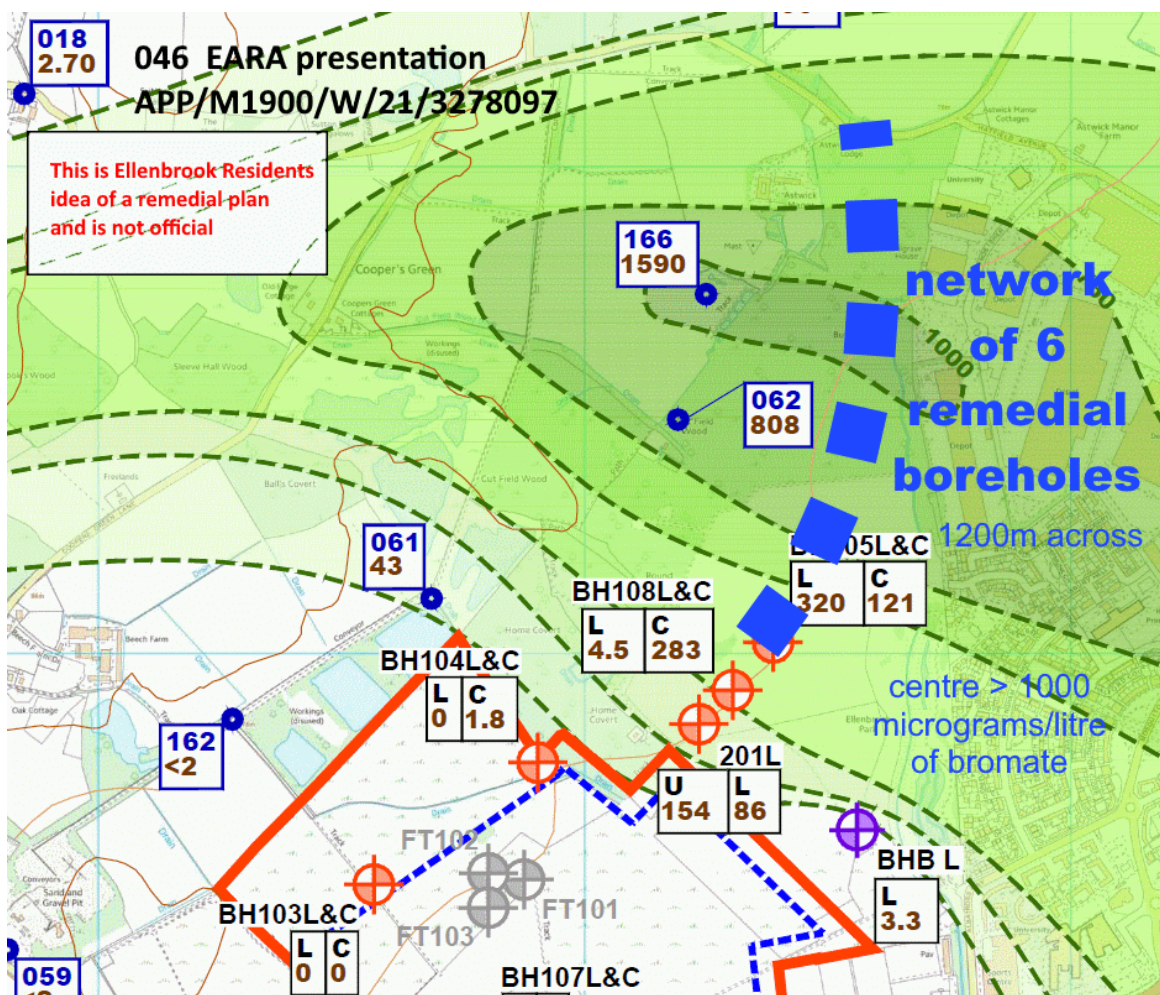
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- 4.6.4 The first 10 year remediation plan has failed to clear the bromate, a second remediation plan was put out for consultation in 2019. Following the consultation, EA amended the draft remediation notice. In July 2019 a second remediation notice, St Leonards Court Decision document was served. Both parties (Crest and Redland) appealed and requested the matter be heard at a public inquiry. The Planning Inspectorate, Environment Agency, Crest, and Redland have agreed a period of abeyance to discuss a voluntary scheme of remediation. Affinity Water continues to carry out the 'Scavenge Pumping' during these discussions. So essentially the first plan has failed and the second one awaits a public inquiry.
- 4.6.5 The Environment Agency St Leonards Court Decision document part II paragraph 91/92 clearly states that additional scavenge pumping stations may be beneficial to reduce the contamination before it reaches Bishops Rise pumping station.
- 4.6.6 An EARA committee member recommended as part of the St Leonards Court consultation that an array of boreholes could be located in an area where the highest bromate readings occur to gain maximum effectiveness, potentially in Ellenbrook Fields on or near the quarry site.
- 4.6.7 This delicate and experimental remediation plan could be completely compromised if quarrying were to go ahead in such a close proximity to the additional boreholes.
- 4.6.8 If this proposal to remediate the plume in or around the quarry site is accepted, the quarry application would then be breaking the third EA condition "Any activities close to the plume must not interfere with the remediation of the bromate and bromide pollution."
- 4.6.9 The map below shows a suggested location for the second remediation plan boreholes in the centre of the plume.

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4.6.10 The following extracts from the Affinity Water yearly monitoring report are of extreme concern to us particularly as a new remediation plan has not been agreed and despite large quantities of bromate and bromide being removed, the pollution continues to spread. Extracts from Aquifer Remediation at HATF for Bromate Licence Report 2017 published June 2018 (Note HATF refers to Bishops Rise)

"During the period from January 2017 to December 2017, a further 258kg of bromate and 623kg of bromide were permanently removed from the Chalk aquifer at HATF, bringing the totals removed to 5038kg of bromate and 12,137kg of bromide.

The continuously high concentrations of bromate and bromide observed within the monitoring network, the large volumes already permanently removed from the aquifer and the rapid increase in concentrations when the abstraction ceases, even for short periods, indicate that there must be a significant continuing source of both contaminants upstream.

This approach remains a valid interim remediation strategy, but does not address the full pollution issue. The Appropriate Persons (APs) still need to

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develop and implement a full remediation strategy that adequately protects the affected public water supply abstractions in advance of a revised remediation notice which will be issued in 2019. A remedial pumping test has been undertaken by the APs in early 2018, alongside additional bromate monitoring being undertaken along the River Colne. Analysis of this pumping test data should lead to the definition of a longterm remediation strategy as the current practice is of concern to Affinity Water due to the operational challenges and the associated implications. It is our expectation that a long-term strategy based on the outcomes of the remedial pumping test will be put forward in advance of the revision and reissue of the remediation notice.”

4.6.11 In summary the EA remediation plan has not worked, and a new plan has not been approved. In light of this we do not believe that any quarrying should be considered on Ellenbrook Fields until the bromate is completely eradicated.

The second EA remediation plan should retain the option to carry out any activities that they and Affinity Water believe will assist with removing the bromate as quickly as possible with the least damage. If this activity is best located on Ellenbrook Fields that area should be kept available for them.

All efforts should be made to ensure that the bromate plume is not allowed to expand or spread any further and that it is dealt with as close to the source as possible.

5. Conclusion

5.1 EARA and SRA strongly oppose the Brett application to quarry on Ellenbrook Fields for a number of reasons, as outlined above. We do not believe that there is enough benefit to quarrying this land that could outweigh the potential catastrophic impact that could result if our predictions were to be correct. Our predictions and concerns are based on science, data and significant research. This quarry has the potential to impact on local residents for decades to come and the significant ramifications should be fully taken into consideration and not underestimated.

5.2 The council's reasons for refusing the appeal are fully justified and the Inspector is requested to refuse the appeal and decline planning permission for the quarry on Ellenbrook Fields.

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Glossary / key

UMH – Upper Mineral Horizon
LMH – Lower Mineral Horizon
UMA – Upper Mineral Aquifer
LMA – Lower Mineral Aquifer
UML – Upper Mineral Lagoon
LML – Lower Mineral Lagoon
EA - Agency – The Environment Agency
Affinity – Affinity Water plc
Brett – Brett Aggregates Limited
CQA – Construction Quality Assurance
mAOD – metres above ordnance datum
bgl – below ground level
PWS – public water supply
SPZ 2 – source protection zone 2
EF – Ellenbrook Fields
EARA – Ellenbrook Area Residents Association
SRA – Smallford Residents Association
BH – borehole
LMP – local mineral plan
HATF – Bishops Rise

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Reference documents

- 001. map of quarries – cumulative
- 002. Ellenbrook fields, not brownfield site
- 003. chemical potassium bromate, affects us
- 004. plume in red over EA map (not official)
- 005. bromate around quarry & chart
- 006. 66m to site from BH 201
- 007. official EA plume
- 008. drought document Affinity consultation
- 010. SLR (green) plume
- 011. EA to HCC the 3 conditions
- 012. BH 107 LMH/chalk depth
- 013. BH107 chalk depth to 23.3m
- 014. picture of bh107s and 2 x testing boreholes
- 015. Simon Tracy Brett on BH107
- 017. Debbie Jones EA transcript
- 018. Keith Spence EA transcript
- 019. flood risk to us
- 020. bromate trapped in gravel
- 021. EA 2017 excel chart
- 022. Brett phases A to G plan
- 023. map of area with boreholes, PWS supplies
- 024. Keith Spence EA reply
- 025. timescale
- 026. Brett flyer, estimate 5yrs/phase
- 027a. bromate chart
- 027b. bromate ringed BHs outside of quarry
- 028. LMP Affinity early objection

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- 029. source protection zone 2 for PWS
- 030. Dr M. Rivett 14th dec 2019 expert opinion
- 031. Dr M. Rivett 18th march expert opinion – inert filling
- 032. Dr M. Rivett SLR response
- 033. P. Robe Brett transcript
- 034. Thames Water bromate
- 038. Cemex pump
- 039 Cemex lakes – silt & clear pump. Google earth.
- 040. information from experts – Brett, EA
- 041 EARA view on GWMP
- 042. bromide map/chart
- 043. EARA critic of EA on 24th Sept DCC
- 044. Affinity to HCC 18th dec 2018
- 045. SLR map piezometric ground flow UMH
- 046. our remediation plan using 6 BHs
- 047. EF to Roestock/Tyttenhanger distance map
- 048. LLFA response
- 049. map of EF & quarry
- 050. history of Steetly factory & plume