

Claire Westwood
Development Management Team Leader
Development Management
Three Rivers District Council
Three Rivers House, Northway
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24th September 2019

Ref: 19/1179/FUL

Dear Claire,

DESCRIPTION: Comprehensive redevelopment to provide 2 no. single storey warehouse Class B1c/B2/B8 units comprising a total of 16,590 sqm including 1,986 sqm ancillary B1a office space, access, landscaping and associated works.

LOCATION: Development Site, Maple Lodge, Maple Lodge Close, Maple Cross, Hertfordshire.

Thank you for your endeavour to address our concerns with your letter dated 10th September 2019. We are not satisfied that these statements represent an accurate understanding of the local geology/hydrogeology. We would suggest arranging a meeting with us to discuss and share our understanding from our investigations of the chalk aquifer in this region. Please see our comments below as a response to each statement.

1. *"The ground conditions at the site have been shown to comprise River Terrace deposits which directly overlie the Chalk Aquifer. During all investigation works, there has been no distinction between the groundwater present in the drift deposits and the deeper groundwater below. It is therefore evident that the groundwater within the shallow gravels is in direct hydraulic conductivity to the Chalk Aquifer and therefore it is not possible that driven piles would create a new pathway when groundwaters are already freely able to move between strata."*

We know that from our hydrogeological investigations that the chalk is hydraulically disconnected from the gravel aquifer in several locations in the Middle Colne valley. This is likely to be the case due to the hydraulic characteristics of the "putty" chalk, the low permeability sediments present at the base of the gravel aquifer and the marl bands present in the chalk that are known to impede vertical flow.

2. *"The site boundary does not fall within the former landfill site boundary; this landfill site is present to the northeast of the study site. In addition, the site investigations to date have found very little made ground at the site. Granular Made Ground was encountered at depths of between 0.00m bgl and 0.70m bgl in the northern, eastern and southern areas of the Site. The majority of Made Ground was encountered within the north-eastern corner of the Site. The Made Ground was generally recovered as brown, slightly clayey, slightly gravelly, silt. Gravel is angular to subangular, fine to coarse of, chalk, flint, glass, concrete, tile, ceramic and brick fragments. These deposits are not consistent with a landfill site."*

The Made Ground identified onsite including glass, concrete, tile, ceramic and brick fragments do not suggest that there is no contamination on site. The supplementary site investigation report mentions on p.10 that the historic refuse tip located immediately adjacent to the north-eastern corner of the site accepted both domestic and industrial waste. Cyanide and Nickel were also identified at trace leachable concentrations on site.

- 3. The proposed development is to be founded on driven piles which are a percussive and penetrative action. The risk of increased turbidity with the use of driven piles is much lower than CFA or rotary borehole piles and therefore will be restricted to the area directly surrounding the piles and, even then, only for the duration of the piling works. Water well uses are unlikely to be affected by the construction and operation of the proposed development, given the distance of the site from the closest abstraction well. Indeed, such water quality well issues are more likely to be affected by regional natural water quality characteristics and their natural variability.*

The distance of the site from our abstraction source at [REDACTED] is [REDACTED] from the site boundary and [REDACTED] from the edge of the adit, which is not considered a significant distance and is within the groundwater source protection zone 1 of this abstraction. It needs to be noted that there are also other abstraction sources to the north and south of the proposed development that could be affected by the piling activity, depending on the depth of the piles and the local hydrogeology. In order to further understand the risks from the proposed activity, a groundwater risk assessment would need to be undertaken as a minimum.

- 4. "The Chalk bedrock below the site was encountered at depths below 4.4m bgl, as completely weathered to structureless putty in the upper sections (Dm grade) at depths up to circa 6m bgl becoming weathered and clast supported (Dc grade) to depths of circa 11m bgl with structured grade Chalk at greater depths. The highly weathered nature of the Chalk means that significant fissures are extremely unlikely to have formed or stayed open during the recent geological past. As such, the risk of the driven piles blocking said fissures and restricting water supplies is considered to be negligible.*

Notwithstanding the above, we note that the Environment Agency has not raised an objection to the proposed scheme, and has proposed a condition in respect of penetrative piling requiring written consent from the LPA in advance of such piling methods being carried out. Therefore, ensuring that the proposed development will not pose a risk to the public water supply."

The supplementary site investigation report states that p.19 "the results of the assessment indicate that the Site is located in an area of Moderately High risk from dissolution features and therefore additional consideration should be given to this as part of the proposed development." We also have information from our downhole inspections, geophysical and CCTV surveys that indicate major flow horizons being present within the top 30-40m of the chalk where most of the groundwater flow occurs. We would be happy to discuss our findings further in a meeting.

We would strongly recommend we meet and discuss our concerns as mentioned above to ensure these are addressed and mitigate the risks posed to public water supply. If the above is not considered and mitigation is not put in place, then this could potentially leave the developer liable for contamination of a public water supply source.

Thank you for your consideration and I look forward to hearing from you.

Yours sincerely,

Hannah Verman
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