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BACHPORT
Clifton Hampden Parish Council

GWP Report No: 170815

c/o
Suzi Coyne Suzi Coyne Planning
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Our ref: sc150817.let.docx
Your ref:

By email: suzi.coyne@ntlworld.com

15 August 2017

Dear Ms Coyne

Review of the County Drainage Engineer and Applicant's Responses on Water-related Concerns regarding the proposed Fullamoor Quarry near Clifton Hampden

Please find below an independent technical review of comments and responses made by the Oxfordshire County Council County Drainage Engineer to: i) the original planning application Ref: MW.0039/16; and ii) later additional responses made by the Applicant to address the County Drainage Engineer's concerns on groundwater impacts of the proposed quarry and restoration at Fullamoor.

The document provided to me by BACHPORT contains an email with: initial comments by the County Drainage Engineer (CDE) (dated 15 March 2017), re-formatted and expanded version of these CDE comments by Ms Gemma Crossley (OCC) on 20 March 2017; later inserted responses by the Applicant's consultants (Land and Mineral) dated 30 March 2017, and a further response by the CDE to these comments (undated but post-dating 20 June 2017).

The following observations and comments are made upon these three sets of comments.

Comments on County Drainage Engineer Initial Response to Application

Mr Hunt (the CDE), in his email of 15 March 2017, has raised 7 points, which mostly address the issues we raised with him regarding inadequate assessment of groundwater impacts, erosion risks and land drainage associated with the operational quarry and the subsequent low level restoration.

These 7 points/concerns are considered in more detail below and are not discussed further here.

Comments on the Applicant's Consultant's responses to the County Drainage Engineer's Initial Response

The responses by the Applicant's consultant are considered individually below.

- 1) The CDE asks for winter & summer monitoring of Greensand groundwater levels.

Applicant's response: the Applicant's consultant states there is no proposal to monitor the Greensand, stating there is poor connectivity to the floodplain aquifer, and noting the Greensand aquifer was included in the numerical groundwater model.

Our response: the Greensand aquifer is in direct hydraulic connection with the Gravel aquifer over the northern half of the site, as shown by BGS boreholes. The Applicant's consultant's response is therefore

technically wrong. We recognise the Greensand was included in the numerical groundwater model but only under the area of the gravel aquifer.

No attempt was made in the model to assess how dewatering would affect off-site wells within the wider regional Greensand aquifer due to de-watering or later groundwater flow truncation and consequential flooding risk. Indeed there was no ground investigation of the Greensand aquifer at all.

We consider this is a materially significant omission - to inadequately assess the environmental impact on the local regional groundwater body – and needs to be addressed with a bespoke investigation of the Greensand aquifer including two years of monitoring data.

- 2) The CDE asks for the effect on the Culham Science Park deep boreholes to be assessed.

Applicant's response: the Applicant's Consultant advises no abstraction boreholes were identified in the Science Park from Environment Agency website.

Our response: The British Geological Survey (BGS) GeoIndex reports 5 well records in the area of Culham Science Park (CSP) and numerous other drilled boreholes on the site.

Given the highly sensitive nature of the research in the CSP – the site has been an atomic research institute for more than 50 years - we would expect the Applicant to demonstrate a dialogue has been undertaken with CSP and the risk to any of their groundwater abstractions, as well as the risk of increasing mobilisation of potentially historically disposed effluents on the CSP site, needs to be assessed and evaluated in sufficient detail so as to determine implications for CSP and/or any health risks that might arise within and beyond the development area, due to potential groundwater contamination migration from CSP.

- 3) The CDE has requested an assessment of the effects of backfilling on water flows and suggested filter drain & gravel designs to mitigate this.

Applicant's response: The Applicant's consultant advises the backfill material will be overburden, mineral waste, sub-soils and some underlying clay. The Applicant's consultant refers to 5 brief paragraphs in the EIA as addressing this issue, and says drainage requirements will be reviewed upon restoration.

Our response: We consider the EIA on this issue is inadequate, in that whilst the impact of groundwater flow truncation has been assessed using a numerical groundwater model and confirms a 1m rise in groundwater levels will occur, the mitigation of this impact is not detailed, does not describe any future groundwater monitoring requirements to observe and confirm mitigation has been adequate, and provides no detailed design to be checked for adequacy or to be conditioned as part of the planning approval (should it be granted).

Given EIA is a planning issue, and an Environmental Permit may not even be required for the site, we would expect to see a detailed design of the groundwater flooding alleviation system prior to planning approval, to demonstrate its efficacy and allow it to be conditioned into any planning approval.

- 4) The CDE has asked whether the lake banks will erode during flood events.

Applicant's response: the Applicant's consultant advises there should not be erosion.

Our response: We consider this response from the Applicant's consultant is wholly inadequate. Their own 2 dimensional hydraulic flood modelling work shows elevated flow velocities at the edges of the excavated pits and restored lakes during flood events. It is inconceivable that these exposed sand & gravel faces will not erode during extreme flood events. Once this type of slope failure occurs, the banks can quickly erode many metres or even 10's of metres.

The Applicant needs to demonstrate clearly that a geotechnical (shear strength) slope stability erosion assessment has been undertaken for extreme flood events, including allowing for floodwaters with entrained large debris (*e.g.* trees, boats, vehicles), using site derived geotechnical parameters (*i.e.* sampling & laboratory testing), and either confirm there is no risk to the working and restoration phase slopes or demonstrate with detailed designs how this erosion risk will be fully mitigated.

It is pointed out that it is possible the Thames Path could be lost entirely on the north bank should a large (or series of large) erosion events occur.

- 5) The CDE asks what effect groundwater level and flow alterations will have on the Scheduled Ancient Monument (SAM).

Applicant's response: the Applicant's consultant advises Historic England (HE) have advised there should not be an impact to the SAM.

Our response: The Applicant's planning submission demonstrates groundwater levels will vary within the SAM area during quarrying dewatering (groundwater level lowering) and after restoration (groundwater level rise). We cannot comment further on whether this has an impact on the SAM structure, materials or contents – and suggest you seek advice from an appropriately qualified archaeologist.

- 6) The CDE requests details of access road drainage back into the site.

Applicant's response: the Applicant's consultants advise the road will drain back into the site and normal sustainable drainage practise will be followed.

Our response: There has been no assessment of the increased storm water run-off leaving the site due to the use of lower permeability materials to restore the site. It is not adequate to state any run-off waters will enter the restoration lakes.

There needs to be a detailed assessment of existing Green Field Run-Off rate and demonstration that this will be sustained post-development. This may or may not involve the restoration lakes, but the calculations need to be made and where necessary the final landform altered to ensure the lakes can i) hold the storm run-off and ii) release it in such a manner and timeliness as to ensure the storm run-off water storage is available for the next storm event in a reasonable period of time.

This is a Surface Water Run-Off (Pluvial) Flooding issue and therefore the responsibility of the CDE to be satisfied. We would expect both the analysis and the detailed designs to be part of the planning application, so the designs can then be conditioned. This is now routine content for an EIA, hence its omission is unacceptable.

- 7) The CDE has asked for details of bund drainage.

Applicant's response: the Applicant's consultant advises bund drainage is not necessary.

Our response: It is not adequate to state the bund storm run-off water will enter the site and remain there. Some of the bunds will be peripheral and close to site boundaries. Their existence will generate more storm water run-off from their steep slopes compared to the pre-development condition.

The Applicant needs to demonstrate how this water will be captured, conveyed, stored and released in a controlled manner so as either to remain on the site or to be released below the Green Field Run-Off rate. This work has not been undertaken or reported.

Detailed designs should be provided where structures/ditches/outfall pipes et al are required. This is routine content for an EIA so its omission is unacceptable.

Comments on the County Drainage Engineer's Responses to the Applicant's Additional Comments

The CDE's 2nd set of responses are minimal with 4 No. given one word answers with no comment and 1 No. (bund drainage) referred to as addressed in a separate email but with no details provided.

The CDE does continue to request for minimal monitoring of the Greensand Aquifer.

The CDE also re-states the need for the Applicant to mitigate the groundwater flooding risk associated with backfilling of the site with lower permeability material.

Our response: This is not a technically rigorous or robust response by the CDE. Having correctly raised these 7 concerns on the inadequacy of the Applicant's groundwater impact assessment, monitoring and impact mitigation, the Applicant's responses fall short of addressing these concerns – with the exception of that relating to the SAM.

There are significant material omissions in the EIA with respect to Points 1, 2 and 4, and additional information shortfalls and assessment inadequacies with respect to Points 3, 6 and 7.

Given the County Council has a duty-of-care to the county's residents to ensure the planning process is robust and planning decisions justified by technically rigorous planning applications, we consider the Applicant's submission including the above responses by the Applicant do not adequately consider, evaluate and mitigate the potential impacts to the groundwater and surface water regimes from the proposed quarry and restoration. Accordingly we consider the necessary standard to allow the planning application to be considered fit-for-purpose is not met.

Yours sincerely



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