PLANNING APPLICATION BY BREEDON SOUTHERN LTD FOR THE EXTENSION OF STOWE HILL QUARRY & RETENTION OF MINERAL PROCESSING PLANT IN CLEARWELL QUARRY

Ref: 17/0122/FDMAJM

Supplementary Response by Newland Parish Council

March 2018 (v.2)

NEWLAND PARISH COUNCIL

Supplementary Response to Gloucestershire County Council to Planning Application 17/0122/FDMAJM

CONTENTS

A INTRODUCTION

Following the submission by BSL of revised versions of:

Environmental Statement Chapter 10 – Hydrogeological impact Assessment & Flood Risk Assessment

Environmental Statement Chapter 10A – Technical Analysis

Environmental Statement Chapter 10E – Risk Assessment

This supplemental response deals solely with hydrogeological aspects of the application (section B in our original response). It is annotated as an extension of the original, starting with Clause 27 and should be read in conjunction with the original response dated February 2018.

EXECUTIVE SUMMARY

The amended documentation submitted by BSL, despite assertions that the changes are minor, still contains contradictions* and errors. There is concern that an applicant of the standing of BSL has paid so little attention to some detail in both the original and revised documents, that doubt must be cast on the confidence with which any part of the application may be relied upon.

We highlight in this response alteration etc from the original and raise questions against some of them which, we suggest, the MPA should seek credible answers to. There are other issues which we are not qualified to address but to which we look to the regulatory authorities to be entirely satisfied with.

We have highlighted four instance** in the new submission which, until resolved, must be considered under the **Precautionary Principle**.

CONCLUSION

The conclusion we draw from this revised document is that it changes nothing so far as the original application is concerned, it does not address the concerns already expressed, and our original response remains that the application should be REFUSED.

*(contradictions & errors) B47, 54, 56 & 59

**(Precautionary Principle must be applied) B46, 52, 55 & 58

B HYDRO-GEOLOGY

[This is covered in Chapter 10 of the Revised Environmental Statement]

Relevant legislation / guidance
Adopted MLP Policy E11. "Mineral development which is likely to have a significant negative quantitative and / or qualitative impact on the water environment, will not be permitted unless appropriate measures can be imposed to mitigate any harmful effects."

Introduction

B24 The complete revision of Chapter 10 and two appendices were submitted to the MPA in February 2018; this supplemental responses address the issues raised.

B25 Clause 10.1.7 states that the revised version of the documents was issued to "take account of preliminary comments made by Natural England and the Environment Agency at a meeting on 15 December 2017. Most of those comments were directed at Appendix A v.2 of this Chapter, which has been revised and re-written. Changes to this Chapter and Appendices 10E are relatively minor".

BB26 The remainder of our comments are in tabular form comparing the original submission with the new one.

B	Original version	Revised version	Newland Parish Council comment
27		(New Clause 10.2.20) "The exact interface within the Slade Brook is extremely difficult to determine. [Then quotes a reference]. On this basis and our own observations we agree…that there is little potential for flow through the limestone below Slade Brook".	Acknowledges the technical difficulties and yet makes the statement about potential flow.
28	(Clause 10.2.40) "It is understood…that 4 natural solution features have been historically identified in the direct vicinity of Stowe Hill Quarry…"	(Clause 10.2.41) "It is understood…that 4 natural solution features have been historically identified in Stowe Hill Quarry, ***within the limits of the original extension in 2005"***	

29		(New Clause 10.2.42) [Referring to 4 natural solution features detailed in 10.2.40] “While excavation of these features was included in previous extension planning applications, this is NOT the case in THIS planning application.”	
30	(Clause 10.2.70)	(Clause 10.2.72 – additional sentence) “The contours are not being used to define a groundwater catchment area, as would be done in a traditional porous media aquifer setting.”	Why are the contours not being used?
31	(Clause 10.2.131 - final sentence.) “The ancient woodland soils also represent high production, as is generally expected.”	(Clause 10.2.133) This sentence omitted.	Why omitted?
32		(New Clause 10.2.134) “What is counter intuitive is that the ancient woodland soils show lower values of pCO2. This may be a function of the very short data record.”	Admission of shortcomings in data record
33		(New Clauses 10.3.7 – 10.3.9) 10.3.7 “Within this context it is important to recognise the importance of the subsurface transfer or drainage paths. In some ways subsurface karst drainage is analogous to surface drainage through streams and rivers. However, unlike most surface water catchments, underground karst catchments can experience significant divergent flow, where groundwater originating in one area of the catchment is distributed over several springs, which may be hundreds or	Demonstration that there can be widely divergent flows via underground karst systems leading to great uncertainties about where surface water will percolate to and where it will flow underground and finally emerge at the surface.

		thousands of metres apart, via a complex conduit network which defines karst terrains. Historic tracer testing around Stowe Hill demonstrates that such features are present around the quarry." 10.3.8 "Recharge mechanisms to karst systems are different from recharge to porous media aquifer systems, in that recharge can be diffuse (dispersed) and can be concentrated via sink holes, dolines etc. It is also important to recognise both autogenic and allogenic recharge. An example of allogenic concentrated recharge is associated with the sink holes that bound the southern and eastern sides of Orles Wood." 10.3.9 "These factors must be borne in mind when considering and defining karst catchments."	
34	(Clause 10.4.4 final sentence.) "The fast flow catchment calculated for a dry condition with low intensity rainfall, corresponds to the total area of the mapped Slade brook valley and enclosed depressions mapped as contributing to the discharge by tracer tests."	Sentence omitted.	Why omitted?
35	(Clause 10.4.5) "The larger fast flow catchment areas are less than the slow flow catchment area, and therefore the slow flow catchment area does not need to be extended to accommodate them."	Paragraph omitted.	Why omitted?

36	(Clause 10.4.6) "The quarry extension area…covers an area of 0.12km^2…represents circa 5-7% of the slow flow catchment"	(Clause 10.4.5) "The quarry extension area…covers an area of ***0.073km^2…represents circa 3.5-4.5%*** of the slow flow catchment."	One has to question whether the applicant actually knows the area involved. [This amendment occurs in several places in the revised version]
37	(Clause 10.6.3 - bullet point 1) "Surface water drainage, although it is noted that no drainage will leave the site as all will drain in to the quarry sump."	(Clause 10.6.3 - bullet point 1) "Surface water drainage, although it is noted that no drainage will leave the site as it will all drain to ***an area at the southern end of the quarry where it allowed to pond and percolate***."	The southern end of the quarry is closest to the Slade brook, hence an increased risk of pollution
38		(Clause 10.6.3 - new bullet point 3) "The site water management plan does cover a contingency where water can be discharged from the pond via sinkhole, in the unlikely event that levels rise. The assessment recognises this pathway"	
39	(Clause 10.6.9) "Slade brook SSSI lies some 0.9km to the south-south-east…"	(Clause 10.6.9) Excludes the words "lies some 0.9km to the south-south-east…"	Why exclude the distance – to lessen the apparent impact?
40	(Clause 10.6.10 – 12) 10.6.10 "Within the wider groundwater and surface water catchment, changes to the groundwater regime can affect the chemistry of the water forming the source of the Brook. Potentially increasing the groundwater hydraulic gradient feeding the springs will reduce the residence time of the groundwater within the aquifer which Stowe Hill Quarry Proposed Extension Chapter 1 - Hydrology JD/v1. 49 12/11/2017 may potentially reduce the content of major and minor ions. Reduced unsaturated zone and removal of the soil zone during operations will reduce the pCO2 in the	(Clause 10.6.10 – 12) Completely re-written 10.6.10 "Within the wider groundwater and surface water catchment, changes to the groundwater regime can affect the chemistry of the water forming the source of the Brook and the potential for the precipitation of minerals."	An attempt to lessen the impact?

	recharge water in the extension area. This may lead to a reduction in the saturation index, and subsequently the amount of mineral precipitation which occurs within the spring. Tufa formation relies predominantly upon the precipitation of these minerals, and thus there may be a reduction in the accumulation of the tufa observed." 10.6.11 "Long periods of low groundwater flow are required to allow degassing of the CO2 at the spring. This process is also tied into the precipitation of calcite and dolomite which actively forms the tufa. The proposed extension will not affect the slow flow processes." 10.6.12 "Due to the complex chemical and microbiological process which are ongoing in the Brook, it is sensitive to changes both within its profile. Specifically changes in the channels gradient, microbiological content and sunlight will have a potential impact upon the tufa formation. The proposed development will not change any of these aspects."	10.6.11 "Low groundwater flows are required to allow degassing of the CO2 at the spring. This process is also tied into the precipitation of calcite which actively forms the tufa." 10.6.12 "Due to the complex chemical and microbiological process which are ongoing in the Brook, it is sensitive to changes both within its profile. Specifically changes in the channels gradient, microbiological content and sunlight will have a potential impact upon the tufa formation."	The removal of the words "The proposed extension will not affect the slow flow processes." Implies that the extension **will** affect the slow flow process. The removal of the words "The proposed development will not change any of these aspects." Implies that the extension **will** change these aspects.
41	(Clause 10.6.13) "Reduction in calcium carbonate content of the groundwater entering the headwater springs could reduce tufa perpetration. A reduction in the precipitation of calcium carbonate has the potential to reduce the active formation of the tufa. The potential that changes in the calcium carbonate content of groundwater therefore may reduce the status of the SSSI"	(Clause 10.6.13) "Reduction in the calcium carbonate content of the groundwater entering the headwater springs could reduce tufa precipitation and therefore may reduce the status of the SSSI"	The removal of the words "A reduction in the precipitation of calcium carbonate has the potential to reduce the active formation of the tufa" is an attempt to lessen the perceived possible impact.

42	(Clause 10.6.15 - final sentences.) "Progressive restoration to a land use consistent with rest of catchment will return the soil profile as soon as practically possible, while a minimum 2m epikarst recreation will allow continued CaC dissolution. In addition, drainage system will be maintained and water logging will be prevented by allowing storm event drainage to flow to the southern end of the quarry, as now."	Omitted.	Why omitted?
43		(New Clause 10.6.16) "The proposals do not include the removal or disturbance of any sinkholes or dolines and therefore will not affect concentrated recharge."	(See B33 above) Demonstration that there can be widely divergent flows via underground karst systems leading to great uncertainties about where surface water will percolate to and where it will flow underground and finally emerge at the surface.
44	(Clause 10.6.16 - final sentence) "It is therefore important to re-establish active soil management and agriculture good practice in line with surrounding fields to ensure that following the restoration of the site, residence times are returned to their pre-quarrying conditions."	(Clause 10.6.18 - final sentence) "It is therefore important to re-establish active soil management and agriculture good practice in line with surrounding fields to ensure that following the restoration of the site, ***soil based CO2 concentrations are established as soon as possible***."	
45		(New clause 10.6.38) "In the unlikely event that discharge needs to occur to the sinkhole close to the southern end of the quarry, this will only be done under controlled conditions and if the water minimal suspended soils" (?)	What are those controlled conditions?
46		(New clause 10.8.5) "Given that an ongoing basis groundwater level data is of limited value in a karst setting, a revised groundwater monitoring network, based on the boreholes already installed	This creates a distinct uncertainty on groundwater levels. Groundwater levels MUST be established with a high degree of certainty. Until that is achieved the **Precautionary Principle** must be applied.

		and operating at the quarry will be agreed with the MPA prior to works commencing."	
47	(Clause 10.9.1 - bullet point 3) "The calculated slow flow catchment area extends to 1.94km^2 and the proposed extension represents 6% of the catchment."	(Clause 10.9.1 - bullet point 3) "The calculated slow flow catchment area extends to ***1.9km^2*** and the proposed extension represents ***4%*** of the catchment"	The same area (c.1.9km^2) **CANNOT** be equal to both 4% and 6%. More inaccuracies in the application.

ENVIRONMENTAL STATEMENT – CHAPTER 10A – TECHNICAL ANALYSIS

B	Original version	Revised version	Newland Parish Council comment
48		(Clause 2) Additional text: "The aspects above link to the fundamental generic karst conceptual model proposed by Gunn in 1985 (Ref. 1) which comprises; Recharge, Storage and Transfer. Recharge within a karst catchment is described as a matrix as shown in Table 1. Any combination of the processes within the matrix can operate across the catchment. Table 1 Karst Recharge Matrix Autogenic* Allogenic+ Diffuse (dispersed) Concentrated Autogenic recharge* refers to recharge that originates directly on the karst system, while allogenic recharge+ originates as runoff from a neighbouring (or overlying) geology that is not karst. Thus, the recharge links to the topography, geology and karst exposure. Diffuse and concentrated refers to whether the recharge is really distributed over the karst exposure or is concentrated within enclosed depressions, such as sinks, dolines etc. An additional factor important in the definition of karst catchments is the nature of the subsurface transfer paths. In some ways subsurface karst drainage is analogous to	Highlights the extreme difficulties involved in confidently predicting subterranean flows within a karst system.

		surface drainage through streams and rivers. However, unlike most surface water catchments, underground karst catchments can experience significant divergent flow, where groundwater originating in one area of the catchment is distributed over several springs, which may be hundreds or thousands of metres apart, via a complex conduit network which defines karst terrains. Historic tracer testing around Stowe Hill demonstrates that such features are present around the quarry. It is therefore important that these features are considered when defining the catchment.	
49		(Clause 3.2.1) Additional Table 4. Monthly rainfall figures 2007 – 2016 from the 'Parkend' gauge	These figures correlate roughly to those recorded at a private weather station in Clearwell. Annual totals at Clearwell are in the range 78%-84% for 2007-10 and 90%-99% for 2011-2016 of the Parkend gauge.
50		(Clause 3.3.2) Additional sentence ***"It should be note that a site inspection on 11 January 2018 identified that the culvert had been squeezed and the vertical diameter is smaller than the horizontal (Figure 6), particularly at the discharge end"***	Casts doubt on the accuracy of the data.
51		(Clause 3.3.2 – additional sentence ***"The monitoring has not been designed to resolve the accretion flows down the Slade Brook valley, or assess the relative or absolute contribution from the northern and southern tributaries."***	Why has the monitoring not been so designed?
52		(Clause 3.3.3 - additional final para.) "***Envireau Water have undertaken a detailed and systematic review of the data which is described below. The conclusions of that***	Emphasises shortcomings in the data and draws unsubstantiated conclusion. The **Precautionary Principle** must be applied.

		review are that while there are gaps in the data, the majority of the data that has been collected records correct data and measures the correct flow at the time of measurement."	
53	(Clause 3.3.3 - Measurement of High Flows paras 2 & 3	Omitted	Implies that because of the several uncertainties stated, that the removal of these paragraphs is an attempt to ignore the issues.
54	(Clause 3.3.4) "A total of 94,936 data points…is available for data evaluation and analysis. This equates of approximately 60% of the dataset"	(Clause 3.3.4) "A total of 94,848 data points…is available for data evaluation and analysis. This equates of approximately 60% of the dataset"	Overstatement of available data in original submission – or another error.
55		(Clause 3.3.5) Complete section re-written with the exception of the 1st para. "***The assessment has gone through several analytical stages following feedback from the Environment Agency and Natural England regarding the analysis and validity of the data. Review of the data by the EA and NE during previous planning applications raised concerns that the spread and trends within the dataset appear false, incongruent and disjointed, and as such raised questions regarding historic validity and analysis of the data. The data has been concentrated on understanding and if possible addressing these issues"***	This statement acknowledges concerns expressed by the NE and the EA but there is no evidence, that they have been addressed, or any methodology as to how they will be addressed. The **Precautionary Principle** must be applied.
56	(Clause 4.1) "The catchment defined has an area of circa 4.46km^2"	(Clause 4.1) "The catchment defined has an area of circa 12.6km^2"	Does the applicant actually know what area he is talking about? Which is correct?
57		(Clause 4.3 2 new paras.) *"The shape of the catchment is somewhat arbitrary, in that it is not possible in a karst catchment to be precise about a catchment boundary. However, the area of the*	An admission that it is not possible to be precise, and the conclusion is simply conjecture.

		catchment must be balanced with the recharge and the discharge (assuming no change in storage in the long term or on annual basis. Envireau Water consider that the slow flow catchment shown on Figure 17 is a fair representation and is appropriate within the context of assessing the risks associated with the proposed development, particular to the Slade brook SSSI."	
58		(Para 5.5 - new 3rd para.), final sentence: *"It is recognised that there are significant gaps in the data set."*	Admission of incomplete data The **Precautionary Principle** must be applied.
59	(Clause 5.5) "The quarry extension area (as opposed to the planning red line boundary) covers an area of 0.12k^2 and is within the slow flow groundwater catchment to the Slade brook. The quarry extension area therefore re4presents circa 5-7% of the slow flow groundwater catchment."	(Clause 5.5) "The quarry extension area (as opposed to the planning red line boundary) covers an area of 0.073km^2 and is within the slow flow groundwater catchment to the Slade brook. The quarry extension area therefore represents circa 3.5-4.5% of the slow flow groundwater catchment."	Does the applicant actually know what area he is talking about? Which is correct?

B 60 ENVIRONMENTAL STATEMENT – CHAPTER 10E – RISK ASSESMENT TABLES

The complete section has been re-written. The applicant has adopted the traditional method of analysis of grading, ie:

- "magnitude of impact",
- "likelihood of occurrence" and
- "significance of effect"

to produce the overall "risk assessment".

What is concerning is that under every hazard heading they have graded the Risk Analysis as either "none", "very low", "low" or "medium" which results in a residual risk, after mitigation of:

- "none" in 1 case,
- "very low" in 15 cases
- and – at worst – "low" in 4 cases.

One has to question the bases upon which each of these hazards has been graded.