Samuel House, 5 Fox Valley Way
Stocksbridge, Sheffield, S36 2AA

Our Ref: MAN.836.001.NO.TL.001
Date: May 2023

Denbighshire County Council

Noise and Vibration Assessment Critical Technical Appraisal – Application No. 01/2022/0523

Proposed Extension to Winning and Working of Limestone, importation of Inert Waste and Restoration to Amenity Lant at Graig Quarry, Graig Road, Denbigh.

Introduction

Enzygo has been instructed by Denbighshire County Council to undertake a critical appraisal of the noise and vibration assessment undertaken to support the planning application for the proposed extension to Graig Quarry, Denbigh.

The application is a consolidation application covering the existing limestone quarry extraction activities and the proposed extension to extract the remaining limestone reserves with a continuation of the workings to the west; along with the importation of inert restoration materials to bring levels back to original ground levels on the north and lower elevations in the main body of the quarry.

The quarrying is intended to last for a period of 25 years at an annual extraction rate of 200,000tpa (including consented material). It is anticipated that 100,000tpa of inert waste, derived from construction, demolition and excavation operations would be imported for restoration purposes.

Within the existing quarry materials would be drilled and blasted loose before being moved to the mobile plant where it will be crushed, screened, and stockpiled by size. Processed and saleable product would be loaded onto and transported off-site by suitable heavy goods vehicles. These techniques will continue to be used in the extension area.

A noise and vibration assessment has been undertaken to consider the potential for noise and vibration generated by the operations associated with the quarry development to give rise to impacts at the nearest sensitive receptors. The assessment has found that noise from future operations would remain within derived limits at the receptors identified and that significant effects from blast-induced vibration are unlikely.

This critical appraisal has been undertaken as a desk study by Mr Darren Lafon-Anthony MSc MIOA FIQ. Mr Lafon-Anthony has over 30 years of experience in acoustics, initially as a designer of industrial noise control equipment, as project manager for the production and installation of noise control equipment throughout the UK, Ireland, France and Holland and, since 2004, as an environmental noise consultant on minerals, waste, energy, industrial and residential developments throughout the UK, Ireland, South Africa, Namibia, Uganda, Mozambique and the Democratic Republic of Congo. Mr Lafon-Anthony is a corporate member of the Institute of Acoustics and a Fellow of the Institute of Quarrying.

Critical Appraisal of ES Noise and Vibration Assessment

This critical appraisal has been undertaken of the noise and vibration assessment contained in Volume 2 of the Environmental Statement undertaken by Pleydell Smithyman Limited referenced M18.155.R.007

dated February 2022. Our comments related to areas of the assessment which we feel are inadequate or consider further information is required.

7.2 Prediction Methodology

The section quotes the types of sources and how they have been modelled. However, it does not state the number of each item of plant in use or the noise emission level of each item of plant. The section does not detail which plant is used for extraction, processing and loadout activities nor for import, tipping and spreading of inert waste for restoration activities.

7.9 Construction Effects

Noise levels generated by minerals development should be assessed in accordance with the guidance contained in MTAN-1.

The authors use of the ABC Method for assessing potential higher noise levels beyond the 8-week threshold is considered unsuitable. Short-term operations lasting longer than 8-weeks should meet the noise limits derived from background noise levels, i.e., not exceed the background noise level by more than 10dB subject to a maximum level of 55dB(A) $L_{Aeq,T.}$ However, the chapter does not appear to refer to the ABC Method within the assessment of potential noise impacts.

7.10 Non-Residential Receptors Impact Thresholds

It is uncertain from where the limits set out in this paragraph are derived; we assume from Category A of the ABC Method from BS5228-1 which would not be appropriate guidance in our opinion. However, no non-residential receptors have been considered within the assessment.

7.12 Noise from Off-Site Preparation Traffic

The section states that "*construction traffic noise is unlikely to have a significant adverse effect on the environment and is therefore not considered further within this ES*". It is uncertain to what operation 'construction traffic' refers.

The assessment does not consider any change in traffic whether they be exporting saleable materials or importing inert waste. It is suggested that this should be quantified and assessed to verify that traffic would have no significant adverse impact.

7.16 Overall Baseline

The chapter uses the baseline noise data gathered during a noise survey undertaken in October 2019 which, at the time of the assessment, was less than 3-years old and would have been considered suitable for continued use.

It is assumed that the author is a member of the Institute of Acoustics and would have followed standard equipment setup procedures when undertaking the baseline monitoring, i.e., fitting a windshield to the microphone.

The results of the baseline monitoring are shown in Table 7.5 which also includes a measurement taken at one of the locations, Bryn Seion, in 2017. Except for the 2017 measurement, all measurements appear to have been made over a very short period, i.e., 15-minutes. It is considered that, to ensure that a representative background noise level is established, baseline noise measurements should be taken over a period of at least 1-hour at each location and preferably in 15-minute non-consecutive measurements

totalling 1-hour at each location. This would enable varying background noise levels at each receptor to be identified rather than relying on a 'snapshot' measurement.

7.18 Assessment of Likely Significant Effects – Anticipated Effects

Noise

As stated within the prediction methodology section above, there is no detail of the number of plant items operating nor their respective noise emission levels.

Table 7.7 of the assessment shows the highest noise level predicted at the most affected property location from each operation in isolation rather than for all operations which would be undertaken simultaneously. Table 7.8 then gives a summary of the worst-case predicted noise levels at each receptor. It is unclear, whether this refers to all operations being undertaken simultaneously or in isolation. Cross-referencing back to Table 7.7, it appears to be the latter.

We would expect that worst-case noise levels would include all operations which are being undertaken simultaneously within the site, i.e., drilling, haul route, crushing, screening, loading, exportation of materials, importation of waste, tipping and spreading of waste, etc., rather than the noisiest individual operation.

Vibration

Based on the use of 80kg as a maximum instantaneous charge weight (MIC) the vibration limit of 6mms^{-1}PPV would be reached at 223m from the blast location. All sensitive receptors are at least 250m from the nearest blast location and therefore vibration levels generated by blasting operations should remain within the limits.

It would have been useful for the author to provide the expected levels of vibration at each receptor, as per the noise assessment. However, I agree with the bullet points under paragraph 7.18.8 and the subsequent conclusion.

7.21 Cumulative Effects

We would have expected to see a table comparing the existing ambient noise levels to predicted future ambient noise levels to show the potential change and cumulative effect against the Institute of Environmental Management and Assessment guidelines.

Mitigation Strategy

The assessment has found that there would be no exceedance of the noise and vibration limits used within the assessment and therefore does not include a mitigation strategy beyond those stated in section 7.18 'Embedded Mitigation Measures'.

A section on good site practices with reference to general mitigation measures would have been a useful addition to the assessment.

Environmental Public Health Service Wales (8th July 2022)

The document highlights that the LPA is satisfied that noise and vibration from blasting operations will cause annoyance.

It is therefore suggested that a scheme is drafted and implemented to ensure that noise and vibration from blasting operations does not exceed the derived limits.

Bimeda (26th July 2022)

Bimeda state that when blasting occurs shockwaves, which vary in magnitude, are felt throughout the Bimeda facility which cause ongoing disruption to their day-to-day operations.

It is understood that blasting only occurs once every 1- to 2-months and would therefore not cause daily disruption to operations. The nearest point within the extension area at which a blasting event would take place is approximately 480m. Given that the MIC is 80kg, the predicted level of vibration at the Bimeda facility would be approximately 1.9mms^{-1}PPV which is well below the limit quoted in MTAN-1.

I have the following comments to the numbered items in the Bimeda letter.

13 Noise and vibration assessment

13.1 The site has the benefit of planning permission which was granted in March 2010. If the use of the Bimeda building post-dated the quarry then it was occupied with the knowledge that the quarry and quarrying activities such as blasting already existed and were not a limiting factor in their occupation of the premises for its intended use.

13.2 The noise and vibration chapter states '*no vibration sensitive premises will be less than 250 metres from the perimeter of the extended quarry'.* Bimeda laboratory is 220m from the eastern quarry boundary but will be 480m from the eastern area of the extended quarry and therefore levels of vibration from blasting events would be lower than those currently/previously experienced.

13.3 Yes. This quote is correct, paragraph 7.18.9 does state that.

13.4 I cannot comment on anecdotal evidence.

General Comment

Noise

We consider that a more extensive baseline noise survey is required to verify that the background noise levels used within the assessment are more representative.

We also consider that more detail is required on the plant and equipment employed at site, including make, model, number of plant and operational noise levels of each item of plant. This should be broken down into the specific operations the plant is undertaking, i.e., loading, haulage, screening and crushing, restoration, etc. The predictions should show the worst-case predicted noise levels for all plant which would be operating simultaneously rather than the item of plant that generates the highest noise level.

We feel that more information/clarification is required for the noise assessment.

Vibration

We accept that the vibration assessment is adequate and agree that, based on the use of 80kg MIC at the distances quoted, vibration levels would meet the MTAN-1 guidance values.

Samuel House, 5 Fox Valley Way
Stocksbridge, Sheffield, S36 2AA

We trust that the above is clear. If you have any queries or comments, please do not hesitate to contact me on **0114 321 5151** or **07496 950010.**

Yours sincerely,

Darren Lafon-Anthony MSc MIOA FIQ
Director of Acoustics