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Dear Sir

NOISE IMPACT ASSESSMENT FOR PROPOSED REMOVAL/VARIATION OF CONDITION RELATING TO ON SITE CRUSHING/SCREENING, UNIT 1-3 SHAWFIELD ROAD, CARLTON INDUSTRIAL ESTATE, S71 3HS

1.00 INTRODUCTION

1.01 Environmental Noise Solutions Limited (ENS) has been commissioned to undertake a noise impact assessment for a proposed removal/variation of a planning condition at Unit 1-3, Shawfield Road, Carlton Industrial Estate (hereafter referred to as the application site).

1.02 Planning permission has previously been granted by Barnsley Metropolitan Borough Council (ref: 2011/0171) for a change of use at the site from general industry (Class B2) to a mixed use of general industry (Class B2) and waste transfer station, subject to a number of Planning Conditions, Condition 11 prohibits the screening and crushing of waste materials on site.

1.03 The operator wishes to submit a Section 73 application to remove this planning condition from the planning consent. The purpose of this report is therefore to:

i. Determine the ambient and background noise climate at the site during representative periods of the daytime to provide a baseline against which to assess predicted noise emissions associated with screening and crushing;

ii. Assess the potential impact of noise emissions associated with the plant (library data measured by ENS will be used to assess the impact of a crusher) with reference to pertinent guidelines (including BS 4142: 1997 Method for rating industrial noise affecting mixed residential and industrial areas); and

iii. Provide recommendations for any appropriate noise mitigation measures and/or management controls to minimise the potential noise impact.

1.04 This report details the methodology and results of the noise impact assessment, together with recommendations (as necessary) for the control of noise associated with the development. It has been prepared to accompany a Section 73 application to be submitted to Barnsley Metropolitan Borough Council.

1.05 This report has been prepared for AA2L Architects for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult AA2L Architects and ENS as to the extent to which the findings may be appropriate for their use.

1.06 A glossary of acoustic terms is contained in Appendix 1 for reference.

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2.00 SITE SETTING

2.01 The application site is located to the north east of Barnsley, and is bound by:

- Existing industrial units to the north, south and east; and
- Shawfield Road to the west, with existing commercial units further west.

2.02 The nearest noise sensitive receptors (NSRs) to the application site are considered to be the residential dwellings to the east on Fylde Close, at a separation distance of approximately 120 metres from the proposed location of the crusher.

2.03 Operations on site include the processing of waste materials (bricks etc). Currently, the materials are sorted by loading them into a tromell, before using a high pressure 'blower' to clear any remaining debris. Proposals are for the crusher to be installed at the end of this process and as such the crusher will only be operational whilst the other existing (and permitted) items of plant are in use.

2.04 The ENS library data for a crusher has been used to assess the potential impact of the proposed plant, with a level of 72 dB $L_{Aeq,T}$ at a distance of 10 metres measured at a similar site (along with a maximum noise level of 80 dB L_{AFmax} at a distance of 10 metres).

2.05 The majority of noise associated with a crusher is due to the crushing of materials themselves, therefore noise levels are not expected to vary significantly between differing models.

3.00 BASELINE NOISE LEVELS

3.01 In order to establish the existing ambient and background noise levels at the site, baseline noise surveys were undertaken during the daytime on Friday 25th April 2014.

3.02 For the purpose of the assessment, a single noise monitoring position was adopted, situated at the end of Fylde Close, in the vicinity of the existing NSRs to the east (the approximate location of the noise monitoring position is contained in Appendix 2).

3.03 Noise measurements were undertaken using a Bruel & Kjaer 2260 Type 1 integrating sound level meter. The measurement system calibration was verified immediately before the commencement of the measurement sessions and again at the end, using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration level was noted. Weather conditions throughout the survey were appropriate for monitoring. A windshield was fitted for all measurements. All noise measurements were made in a free field environment at a height of 1.5 metres above ground level.

3.04 Measurements consisted of A–weighted broadband parameters, together with linear one-third octave band L_{eq} levels. The following table contains a summary of the measurement data for each measurement session, rounded to the nearest decibel.

Table 3.1 – Summary of Noise Measurement Data

Position	Date	Time	L_{Aeq} (dB)	L_{A90} (dB)	Comment
MP1	25/04/14	09:50-10:50	52	48	With application site operational
MP1	25/04/14	10:50-11:50	48	44	Application site dormant, noise associated with other industrial units
Daytime background noise level of 48 dB $L_{A90,T}$ with site operational and 44 dB $L_{A90,T}$ with the site dormant at MP1					

3.05 The ambient noise climate at MP1 was comprised of various industrial noise sources associated with both the application site and the other non-associated industrial units.

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4.00 NOISE IMPACT ASSESSMENT

4.01 British Standard BS 4142:1997 'Method for rating industrial noise affecting mixed residential and industrial areas' (BS 4142) describes methods for determining, at the outside of a building, noise levels from factories or industrial premises and a method for assessing whether the noise is likely to give rise to complaints from people residing in the building. BS 4142 is typically used for the introduction of new industrial sources into an existing noise environment or, to assess whether existing industrial use is impacting on existing residential or other noise sensitive developments. BS 4142 also states in its foreword that the standard may be helpful in certain aspects of environmental planning and may be used in conjunction with recommendations on noise levels and methods of measurement published elsewhere.

4.02 BS 4142 considers that the likelihood of complaints is dependent on the difference between the rating level and background noise level; the greater this difference the greater the likelihood of complaints. Further, it suggests that a difference of around +10 dB or more indicates that complaints are likely, a difference of around +5 dB is of marginal significance and if the rating level is more than 10 dB below the measured background noise level then this is a positive indication that complaints are unlikely.

4.03 The rating level is described as the specific noise level (the equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference period of 1 hour during the daytime and 5 minutes at night) plus any adjustment for the characteristic features of the noise. If the noise contains a distinguishable, discrete, continuous note, or if there are distinct impulses in the noise, or if the noise is irregular enough in character to attract attention, then a 5 dB penalty should be added to the specific noise level. Only a single 5 dB correction is made even if more than one of the above characteristics is present.

4.04 The background noise level is the A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 percent of a given time interval, T, measured using time weighting 'F' and quoted to the nearest whole number of decibels. The residual noise is described as the ambient noise remaining in a given position in a given situation when the specific noise source is suppressed to a degree such that it does not contribute to the ambient noise.

4.05 For the purpose of this assessment, the background noise level has been taken as 48 dB $L_{A90,T}$ with the site operational and 44 dB $L_{A90,T}$ with the site dormant.

4.06 Table 4.1 below details the calculation procedure used to calculate the specific noise level associated with the crusher at the nearest identified NSR. A direct line of sight from the nearest NSR has been assumed. Point source propagation has also been assumed, therefore attenuation due to distance may be calculated as follows:

DA =20 * log (d1/d2)

where:

DA = Distance Attenuation

d1 = Distance to receiver

d2 = Reference distance for plant (10 metres in this case)

4.07 Based on a separation distance of 120 metres to the proposed location of the crusher, 22 dB of distance attenuation may be afforded.

4.08 On the basis of the above, the predicted noise level associated with the proposed crusher is calculated to be 50 dB $L_{Aeq,T}$. A BS 4142 assessment for the proposed crusher is contained in the following table.

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Table 4.1 – BS 4142 Assessment of crusher at residential dwellings to east

Noise Parameter	Value	Comments
(A) Specific noise level	50 dB $L_{Aeq, T}$	
(B) Acoustic feature correction	0 dB	Due to the industrial nature of the existing noise climate
(C) Rating level (A)+(B)	50 dB $L_{Ar, T}$	
(D) Background noise level	48 dB $L_{A90, T}$	Baseline noise monitoring undertaken by ENS at MP1
Excess of rating over background noise level (C–D)	+2 dB(A)	Less than 'Marginal Significance'

4.09 As detailed in Table 4.1 above, when assessed under BS 4142, noise associated with the crusher is predicted to be 2 dB above background noise levels with the application site operational. Under BS 4142 this is assessed as being of less than 'marginal significance'.

4.10 With the site dormant, background noise levels dropped to 44 dB $L_{A90,(1hour)}$. Assessing against this background noise level results in a BS 4142 assessment of +6 dB, i.e. 'marginal significance'.

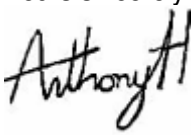
5.00 CONCLUSIONS

5.01 A noise impact assessment has been undertaken to accompany a Section 73 application for the removal of a planning condition to allow for crushing and screening operations to be undertaken at Units 1-3, Shawfield Road, Carlton Industrial Estate, Barnsley.

5.02 Based on ENS library data for a similar operation, noise associated with the crusher has been assessed as of less than 'marginal significance' when assessed under BS 4142 with the site operational in its current form.

I trust the foregoing is sufficient for your needs. Should you have any queries regarding the above, please do not hesitate to contact me.

Yours sincerely



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Appendix 1
Glossary of Acoustic Terms

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 µPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 µPa).

A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T, has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T. $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

$L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background noise.

$L_{AF\ max}$

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

Sound Exposure Level (SEL or L_{AE})

The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events which occur over different lengths of time.

Weighted Sound Reduction Index (R_W)

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (R_W is used to characterise the insulation of a material or product that has been measured in a laboratory).

Appendix 2
Site Location Plan with approximate monitoring position