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Noise Impact Assessment

Land at Station Road, Wombwell, Barnsley, S73 0BS

Hartwood Estates Limited
SHF.1122.009.NO.R.001

'Experience and expertise working in union'

enzygo.com

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Noise Impact Assessment

Project:	Land at Station Road, Wombwell, Barnsley, S73 0BS
For:	Hartwood Estates Limited
Status:	DRAFT
Date:	February 2023
Author:	Darren Lafon-Anthony MSc MIOA FIQ
Reviewer:	Mark Harrison BSc (Hons) MIOA

Contents

Tables & Figures

1 Introduction

1.1 Project Introduction

1.1.1 Enzygo Limited (Enzygo) has been commissioned by Hartwood Estates Limited to undertake an environmental noise impact assessment to support a planning application for the change of use of land at Station Road, Wombwell, Barnsley, to B8 Open-air Storage and Distribution.

1.1.2 The assessment has been undertaken to assess compliance with the relevant standards at the nearest noise-sensitive receptors and to provide outline mitigation advice, where considered necessary.

1.1.3 Details of the assessment methodology employed, together with the results of the baseline survey, assessment and conclusions are presented within this report.

1.2 Project Description

1.2.1 The proposed site is roughly triangular and extends to circa 3.6Ha. To the south of the site is B6096 Station Road with residential properties on both the northern and southern sides of the road. To the east the site shares a boundary with the long narrow gardens of the properties on the B6096 Stonyford Road. Adjacent to the northern boundary of the site is the River Dove beyond which is woodland and the playing fields of Netherwood academy (north and properties on Bramham Croft (northeast). The western boundary follows Bulling Dyke beyond which is an industrial estate on Valley Road.

1.2.2 Access to the site would be via the existing site access off Valley Road.

1.2.3 The proposed development site was historically utilised for employment/industrial use. Buildings on the site were demolished between 2002 and 2008 and the site is presently vacant unsecure land subject to anti-social behaviour.

1.2.4 The proposed open-air storage and distribution use of the site would make effective use of the land, generating employment opportunities, securing biodiversity benefits and securing the site against anti-social behaviour.

1.2.5 The site and noise-sensitive receptors are shown in Figure 1-1 with the site layout shown in Figure 1-2.

1.3 Noise Assessment Methodology

1.3.1 The noise assessment has been conducted in accordance with the guidance contained within British Standard 4142:2014+A1:2019 '*Method for rating and assessing industrial and commercial sound*' (BS4142).

1.3.2 Noise levels generated by the proposed development have been predicted to the nearest noise-sensitive receptors, using the calculation methodology outlined in ISO9613:1996 '*Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation*' (ISO9613) using the proprietary noise modelling software CadnaA.

Figure 1-1: Site and Receptor Locations

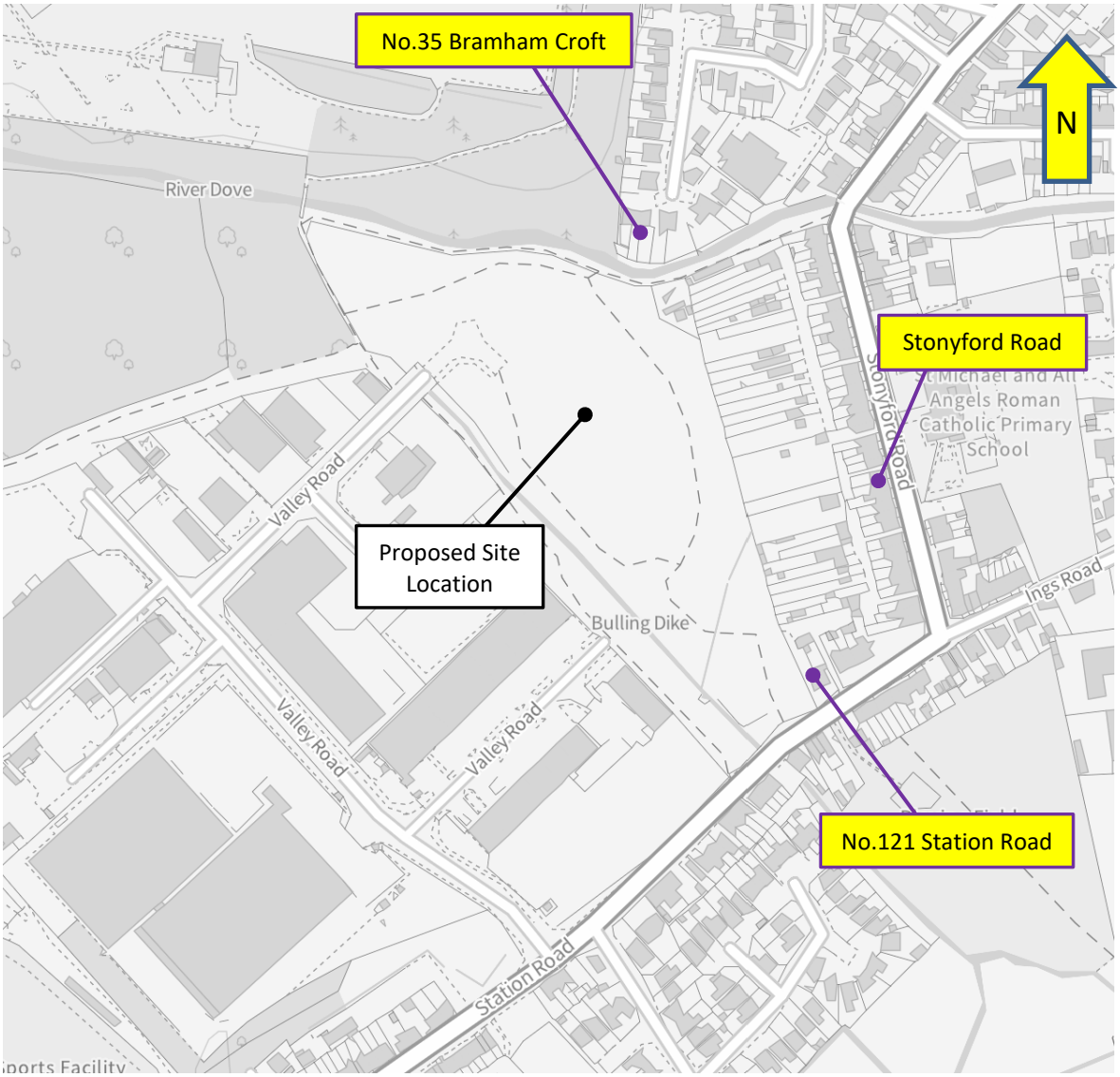
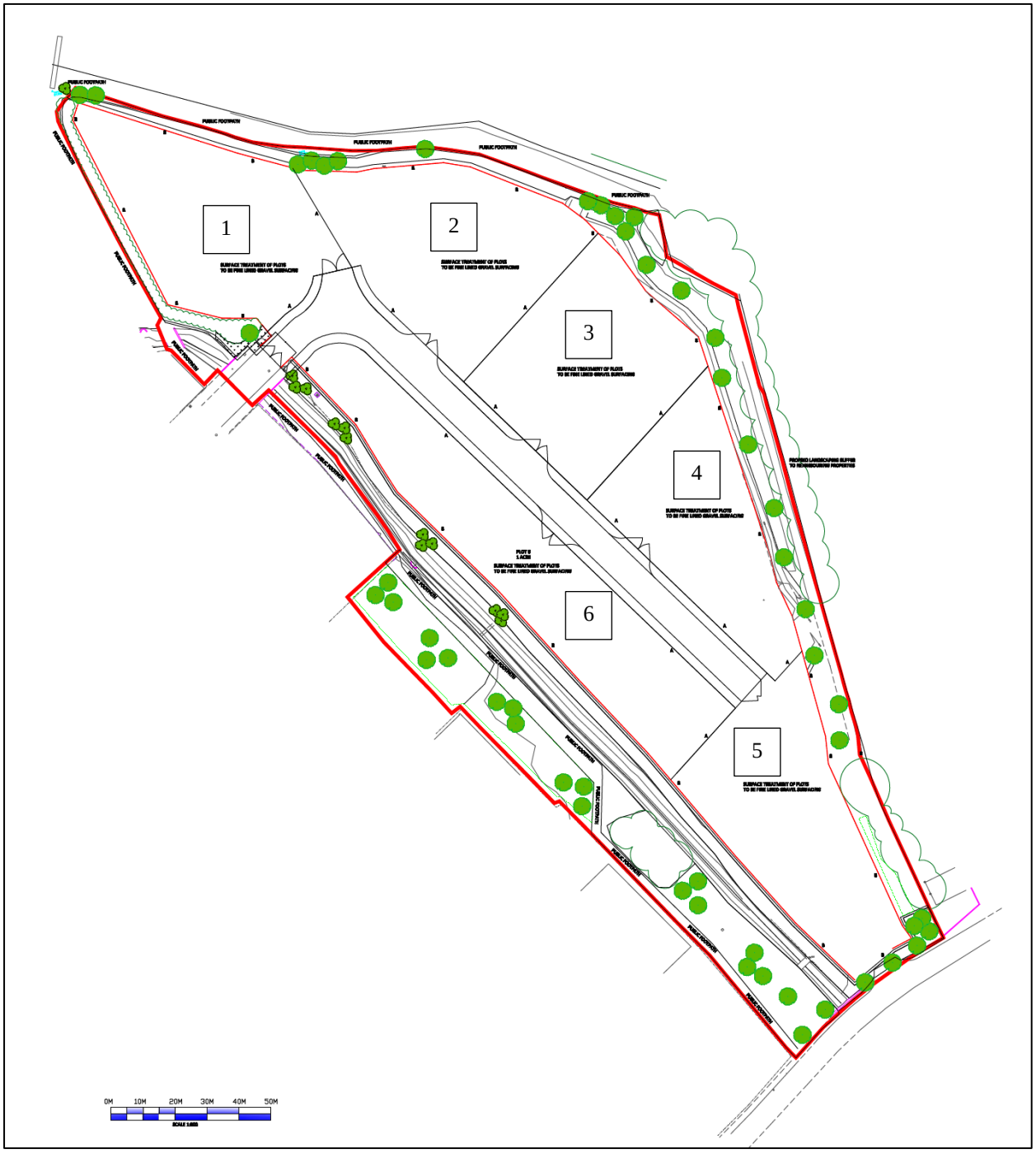


Figure 1-2: Site Layout



2 Standards and Guidance

2.1 Planning Practice Guidance: Noise

2.1.1 The Planning Practice Guidance: Noise is the Government's online guidance on managing potential noise impacts from new developments.

2.1.2 The guidance includes a noise exposure hierarchy table which relates response to noise and example outcomes to effect levels. The hierarchy table also identifies actions required for each effect level.

2.1.3 Particularly relevant to this assessment are the No Observed Effect Level and the No Observed Adverse Effect Level (NOAEL) to which the guidance states:

Table 2-1: Noise Hierarchy Table Excerpt

Response	Example of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not present	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude, or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life	No Observed Adverse Effect	No specific measures required

2.2 British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*

2.2.1 BS4142 provides a methodology for rating and assessing sound associated with both industrial and commercial premises. The purpose of the Standard is clearly outlined in the opening section where it states that the method is appropriate for the consideration of:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and,
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

2.2.2 The Standard is based around the premise that the significance of the noise impact of an industrial/commercial facility can be derived from the numerical subtraction of the background noise level (not necessarily the lowest background level measured, but the typical

background of the receptor) from the measured/calculated rating level of the specific sound under consideration. This comparison will enable the impact of the specific sound to be concluded based upon the premise that typically "*the greater this difference, the greater the magnitude of the impact*". This difference is then considered as follows:

- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5dB is likely to be an indication of an adverse impact, depending upon context; and,
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

2.2.3 BS4142 further states that "*where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact*" again depending upon the specific context of the site. The Standard further qualifies the assessment protocol by outlining conditions to the comparative assessment and stating that "*not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact*", thus implying that all sites should be assessed on their own merits and specifics.

2.2.4 The Standard quantifies the typical reference periods to be used in the assessment of noise, namely:

Typical Daytime	07:00 – 23:00	1-hr assessment period
Typical Night-time	23:00 – 07:00	15-min assessment period

2.2.5 The Standard outlines methods for defining appropriate "*character corrections*" within the rating levels to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency. These are a) the Subjective Method, b) the Objective Methods for tonality and c) the Reference Method. It is noted by the Standard that where multiple features are present the corrections should be added in a linear fashion to the specific level.

2.2.6 The Subjective Method is based on the following corrections:

Table 2-2: BS4142 Subjective Method Rating Corrections

Level of Perceptibility	Tonal Correction	Impulsivity Correction	Correction for "Other sound characteristics"	Intermittency Correction
No Perceptibility	+0 dB	+0 dB	Where neither tonal nor Impulsive but clearly identifiable +3 dB	If intermittency is readily identifiable +3 dB
Just Perceptible	+2 dB	+3 dB		
Clearly Perceptible	+4 dB	+6 dB		
Highly Perceptible	+6 dB	+9 dB		

2.3 British Standard 8233:2014 *Guidance on sound insulation and noise reduction for buildings*

2.3.1 BS8233 provides guidance and recommendations for the control of noise from outside sources to maintain an internal acoustic environment appropriate for the intended use. The Standard

suggests appropriate criteria and limits for differing situations which are, primarily, intended to guide the design of new or refurbished buildings undergoing a change of use rather than to assess the effect of changes to the external noise climate. However, it is considered that the guidance provides suitable criteria for the assessment of internal noise levels in this instance.

2.3.2 The Standard suggests suitable guidance values for residential dwellings shown in Table 2-3.

Table 2-3: BS8233 Indoor Ambient Noise Levels for Dwellings

Activity	Location	07:00 to 23:00 Hours	23:00 to 07:00 Hours
Resting	Living room	35dB $L_{Aeq,16hr}$	-
Dining	Dining room/area	40dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hr}$	30dB $L_{Aeq,8hr}$

2.3.3 Whilst it is considered desirable to achieve these internal noise levels with the windows open, it is not stipulated within the Standard which states:

"*If relying on closed windows to meet the guide values, there needs to be appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.*"

2.3.4 The Standard suggests that the level of noise reduction provided by a partially open window would be approximately 15dB.

2.3.5 BS8233 also sets out a design-criteria for external noise in external amenity spaces such as gardens and patios stating:

"*it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments.*"

2.3.6 These guideline design-criteria values are meant for new residential development rather than for assessing new noisy development being introduced into a residential area. However, the guideline values provide good noise limits to attain in this instance.

2.4 ISO9613 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation*

2.4.1 The noise levels generated by the operation of the proposed development have been predicted using the calculation methodology set out in ISO9613-2. The methodology considers the distance between the sources and the receptors and applies the amount of attenuation due to atmospheric absorption and other site-specific characteristics.

2.4.2 The methodology assumes downwind propagation, i.e., a wind direction that assists the propagation of noise from the source to all receptors.

3 Baseline Noise Monitoring Survey

3.1 Baseline Noise Survey

3.1.1 Baseline noise surveys were undertaken on Wednesday 8th and Thursday 9th February 2023 to quantify background and ambient noise levels at locations representative of the nearest noise-sensitive receptors to the proposed development site.

3.1.2 The monitoring location used for the survey is detailed in Table 3-1 and shown in Figure 3-1 below. The measurement microphone was mounted on a tripod with a windshield approximately 1.5m above the ground in free-field conditions.

Table 3-1: Noise Monitoring Location

Location/Receptor	Approximate Distance from Site Boundary	Reflecting Surfaces between Source & Receptor(1)	Topography of Intervening Ground	Justification for Choice of Measurement Location
MP1 No.121 Station Road	5m	Garden fence	Garden fence and tree line	Nearest residential receptor to Plot 5 of the proposed development
MP2 No.35 Bramham Croft	30m	None	River Dove, open ground and tree line	Nearest residential receptor to the northeast of the site
MP3 Stonyford Road	70m	Garden fences/buildings	Gardens	Nearest residential receptors to the east

Note (1) – Reflecting surfaces other than the ground

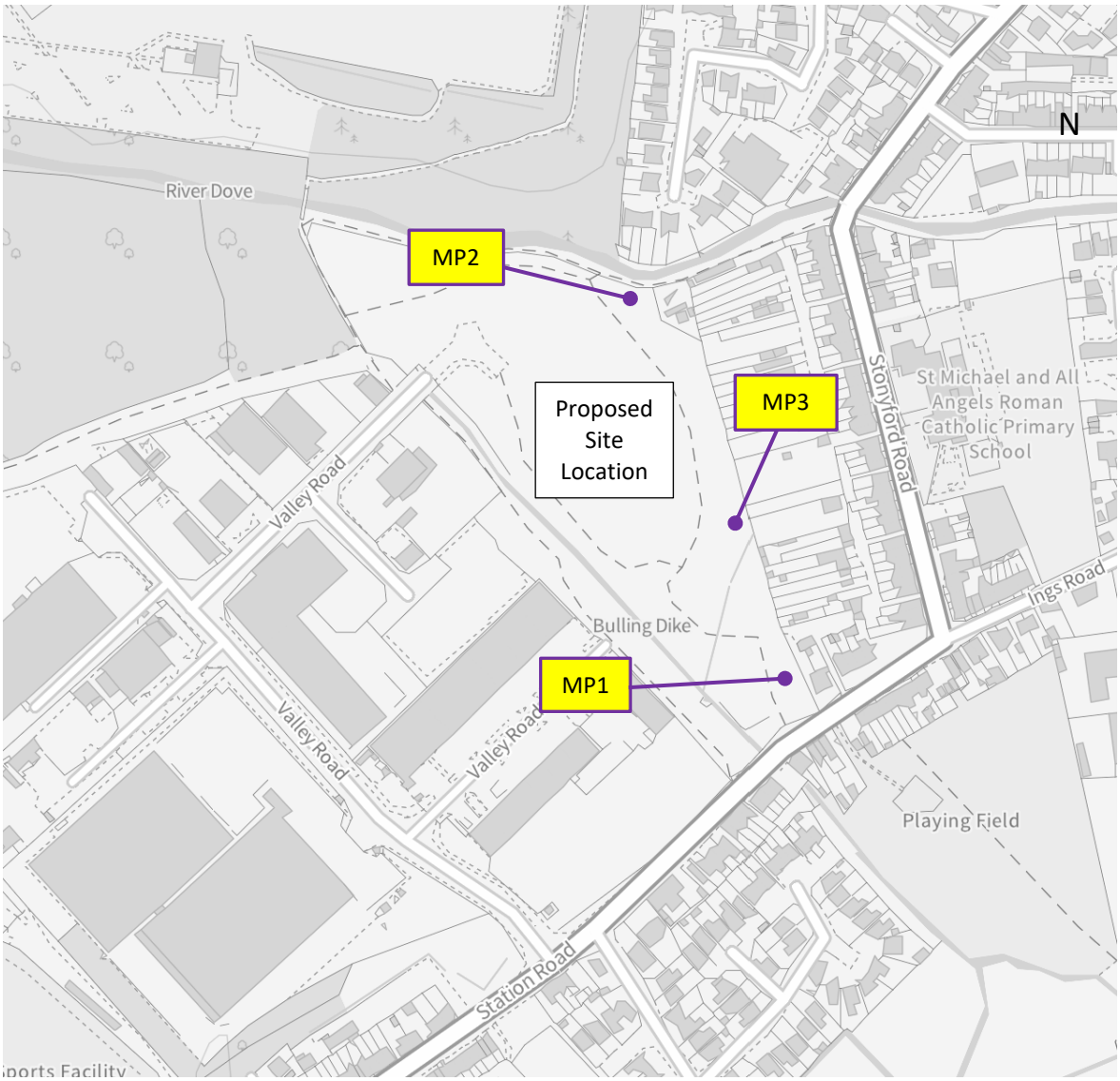
3.1.3 The noise monitoring equipment used during the survey is shown in Table 3-2, and was set to record a number of parameters, including the $L_{Aeq,T}$, L_{A90}, L_{A10} and L_{AFmax}.

Table 3-2: Survey Equipment

Location	Equip. Make & Model	Class	Calibration Level, dB	Serial No.	Calibration Date Prior to Survey
MP1	01dB Solo Sound Level Meter	1	93.7	065396	February 2022
MP2	01dB Solo Sound Level Meter	1	94.0	065446	November 2022
MP3	RION NL-52 Sound Level Meter	1	94.0	0052099	August 2022
All	RION NC-75 Acoustic Calibrator	-	-	34724233	August 2022

3.1.4 The sound level meter was field calibrated, using an electronic calibrator, prior to and upon completion of the overall survey. No drift in calibration was noted. The external calibration documentation for the equipment used is available upon request.

Figure 3-1: Noise Monitoring Locations



3.2 Weather

3.2.1 The weather conditions during the survey period are detailed in Table 3-3 below.

Table 3-3: Weather Conditions

Date	Period	Precipitation	Cloud Cover	Max. wind-speed	Wind Direction	Temperature
Wednesday 8th February	Day	None	20%	<5.0m/s	S	7°C
Thursday 9th February	Night	None	100%	<5.0m/s	W	6°C

3.3 Survey Results

3.3.1 The 15-minute L_{Aeq}, L_{A90}, L_{A10} and L_{AFmax} results the measurement position are summarised in Table 3-4.

Table 3-4: Summary of Baseline Survey Results, dB

Location	Period	Average[1)] $L_{Aeq,T}$	L_{Afmax}[2)]	L_{A90}[3)]	L_{A10}[3)]
MP1 No.121 Station Road	Daytime	57.0	78.6	48.3	60.0
	Night-time	52.1	77.9	33.7	48.2
MP2 No.35 Bramham Croft	Daytime	52.0	76.5	46.6	53.9
	Night-time	46.2	69.9	39.8	44.6
MP3 Stonyford Road	Daytime	49.5	68.7	46.2	51.2
	Night-time	42.8	70.6	34.1	41.8

Note:
1) Logarithmic average of the L_{Aeq} parameter
2) Maximum recorded L_{Afmax} value reported
3) Arithmetic average value reported

3.4 Subjective Field Monitoring Notes

3.4.1 The daytime noise climate at the site comprised background road traffic noise from the local road network, industrial noise sources (reversing beepers, bangs, clangs, etc.) from the factory units on Valley Road, birdsong, and occasional pedestrians.

3.4.2 The night-time noise climate at the site comprised background road traffic noise. Some noise from the industrial area was audible (fan noise) though there were no other noticeable activities. Police cars and helicopter passed at 01:10 hours.

4 Noise Assessment

4.1 Introduction

4.1.1 As shown in Figure 1-2, the proposed open-air storage and distribution development would be divided into 6no. 'plots' of varying sizes.

4.1.2 At this stage, there are no specific details regarding who or what type of business would use each individual 'plot' or the type of 'goods' to be stored, the method for loading/unloading 'goods', nor movement method of 'goods' to/from each individual 'plot'. It is noted that each yard could be leased as either a long- or short-term storage area.

4.1.3 As there are no details of the end use of each plot, a full noise impact assessment for the proposed development cannot be undertaken. Therefore, noise limits based on the measured background noise levels have been derived. These derived limits would be controlled by the imposition of a carefully worded planning condition which would need to be discharged by the end user of each plot as, and when, they take ownership.

4.1.4 It would be the end-user's responsibility to provide, install and maintain any mitigation measures necessary to ensure that and conditioned noise limits are met.

4.2 Derived Noise Limits

4.2.1 BS4142 states:

"The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs."

4.2.2 The average measured background sound levels are considered typical of the area and have been used to derive the noise limits.

4.2.3 As indicated in paragraph 2.2.2, BS4142 considers an adverse noise impact to occur at a rating noise level of 5dB above the typical background sound level. This limit has been applied for the daytime period.

4.2.4 For the night-time period, BS4142 states *'the primary concern is the potential for disturbance of residents who could be sleeping with open bedroom windows'*. In this regard, the standard suggests that *'other guidance, such as BS8233 might also be applicable'.*

Table 4-1: Derived Noise Limits

Location	Period	Background Noise Level dB L_{A90}	Derived Noise Limit at the Property dB $L_{Ar,T}$
No.121 Station Road	Day (07:00 – 23:00 hrs)	48	53
	Night (23:00 – 07:00 hrs)	34	45*
No.35 Bramham Croft	Day (07:00 – 23:00 hrs)	47	52
	Night (23:00 – 07:00 hrs)	40	45*
Stonyford Road	Day (07:00 – 23:00 hrs)	46	51
	Night (23:00 – 07:00 hrs)	34	45*
* Derived from achieving L_{Aeq} 30dB through a partially open window (+15dB)			

4.2.5 The noise limits derived above are in keeping with the guidance of relevant British Standards and the Planning Practice Guidance for Noise. Adherence to the noise limits above would ensure that, while noise from the proposed development may be audible, it would not illicit any change in behaviour, i.e., closing windows, etc., and would be considered at the 'No Observed Adverse Effect' level.

4.2.6 The noise limits apply to the cumulative noise from the entire development site. As such, it may be necessary to apportion the noise limit successively between the operators, i.e., if the first operator achieves 5dB above the background sound levels, it would be necessary for a subsequent operator to achieve a rating noise levels 10dB below this to ensure no cumulative rise over the cumulative noise limit.

4.3 Suggested Condition

4.3.1 The following is a suggested wording for a planning condition which could be imposed to ensure that the proposed use would meet the limits derived above.

"Prior to end user activities first being undertaken within the leased, purchased, or otherwise acquired plot, a noise assessment shall be provided to ensure that proposed activities would meet the following noise levels at nearby sensitive receptors:

1. During the daytime, between 07:00 and 23:00 hours, cumulative noise levels including uses of other plots within the site, shall not exceed a rating noise levels of 5dB above the background noise level when assessed over a 1-hour period.

2. During the night, between 23:00 and 07:00 hours, cumulative noise levels with other uses of other plots within the site shall not exceed 45dB $L_{Aeq,15min}$ at the façade of any residential property.

The noise assessment shall detail any mitigation measures considered necessary to ensure that the above noise limits can be achieved. Mitigation measures should installed and maintained by the occupant of the plot and remain in place for the duration of the occupancy.

Reason: to protect the amenity of occupants of nearby residential properties."

5 Conclusion

5.1 Background

5.1.1 Enzygo Limited (Enzygo) has been commissioned by Hartwood Estates Limited to undertake an environmental noise impact assessment to support a planning application for the change of use of land at Station Road, Wombwell, Barnsley, to B8 Open-air Storage and Distribution.

5.1.2 As there are no details of the end use of each plot, a full noise impact assessment for the proposed development cannot be undertaken. Therefore, noise limits have been derived based on the measured background noise levels during the daytime and the recommended internal ambient noise levels for sleeping in bedrooms at night.

5.2 Noise Assessment

5.2.1 The derived noise limits outlined in this report should ensure that use of the land would meet the no impact requirements of BS4142:2014+A1:2019 and fall into the No Observed Adverse Effect Level (NOAEL) threshold of impact through the application of a carefully worded planning condition.

Glossary of Terminology

Noise is defined as unwanted sound. The range of audible sound is known to be from 0dB (threshold of hearing) to 140dB (threshold of pain). Examples of typical noise levels relating to 'everyday' occurrences are given in Table G-1 below.

Table G-1: Typical Noise Levels

Source	Sound Pressure Level in dB(A)	Subjective Level
Gun shot	160	Perforation of eardrum
Military Jet take-off	140	Threshold of pain
Jet Aircraft at 100m	120	Very Loud
Rock Concert, front seats	110	Threshold of Sensation
Pneumatic Drill at 5m	100	Very Loud
Heavy goods vehicle from pavement	90	
Traffic at kerb edge	70 – 85	Loud
Vacuum Cleaner, Hair Dryer	70	
Normal conversation at 1m	60	Moderate
Typical Office	50 – 60	
Residential area at night	40	Quiet
Rural area at night, still air	30	
Leaves Rustling	20	
Rubbing together of fingertips	10	
	0	Threshold of hearing

The frequency response of the human ear to noise is usually taken to be around 18Hz (number of oscillations per second) to 18,000Hz. However, the human ear does not respond equally to different frequencies at the same level; it is more sensitive in the mid-frequency range than lower and higher frequencies and, because of this, when undertaking the measurement of noise the low and high frequency components of any given sound are reduced in importance by applying a filtering (weighting) circuit to the noise measuring instrument. The weighting which is widely accepted to correlate best with the subjective nature of human response to noise and is most widely used to quantify this is the A-weighted filter set. This is an internationally accepted standard for noise measurement.

For variable noise sources within an area an increase of 3dB(A) would be the minimum perceptible to the human ear under normal conditions. It is generally accepted that an increase/decrease of 10dB(A) corresponds to a doubling or halving in perceived loudness. The 'loudness' of a noise is a purely subjective parameter, dependant not only upon the sound pressure of the event but also on the dynamics of the listener's ear, the time of the day and the general mood of the person.

With regard to environmental noise levels (in the open air), these are rarely steady but rise and fall according to the activities being undertaken within the surrounding area at any given time. In an attempt to produce a figure that relates this variable nature of noise to human subjective response, a number of statistical noise metrics have been developed. These and other useful terminology and descriptors are presented in Table G-2 below.

Table G-2: Terminology

Term	Definition
Sound	Pressure fluctuations in a fluid medium within the audible range of amplitudes and frequencies which stimulate the organs of hearing.
Noise	Unwanted sound emitted from a source and received by the sensitive receptor.
Decibel (dB)	Unit most often used to describe the sound pressure level. A logarithmic number, it correlates closely to the way in which humans perceive sound. Its wide range of values helps quantify sound pressures from a large variety of magnitudes.
A-Weighting (dB(A))	Human perception of sound is frequency dependant. A-weighting applies a range of corrections at each frequency to provide a 'human-averaged'. Can be frequency band or broadband values.
Frequency (Hz)	The number of cycles per second, for sound this is closely related (and often mistaken for) pitch.
Frequency Spectrum	A more detailed analysis of the frequency components that comprise a sound source.
$L_{A10,T}$	The 10th statistical percentile of a measurement period, i.e. the level that is exceeded for 10% of the measurement duration. Closely correlates with traffic sources, A-weighted.
$L_{A90,T}$	The 90th statistical percentile of a measurement period, i.e. the level that is exceeded for 90% of the measurement duration. Used to describe background sound levels, as this value is affected less by short, transient sound sources, A-weighted.
L_{Amax}	The root mean square (RMS) maximum sound pressure level within a measurement period, A-weighted.
Ambient Sound	The total sound climate of all sources incident at one location, both in the near- and far-field (*The ambient sound comprises the residual sound and the specific sound when present)*.
Ambient Sound Level $L_a = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
Background Sound Level $L_{A90,T}$	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
Equivalent Continuous A-weighted Sound Pressure Level $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation:

Term	Definition
	$$L_{Aeq,T} = 10lg_{10}\left\{\left(\frac{1}{T}\right)\int_{t1}^{t2}\left[p_A\frac{(t)^2}{{p_0}^2}\right]dt\right\}$$ Where p_0 is the reference sound pressure (20µPA); and $P_A(t)$ is the instantaneous A-weighted sound pressure level at time t.
Measurement Time Interval T_m	Total time over which measurements are taken (*This may consist of the sum of a number of non-contiguous, short-term measurement time intervals)*
Rating level $L_{Ar,Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound, over a period of time, T.
Reference Time Interval, T_r	Specified interval over which the specific sound level is determined (This is 1hr during the day from 07:00 to 23:00 hours and a shorter period of 15-min at night from 23:00 to 07:00 hours).
Residual Sound	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.
Residual sound level $L_r = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the residual sound in a given situation at the assessment location over a given time interval, T.
Sound Pressure Level	The level of fluctuation in air pressure, caused by airborne sound sources. Measured in Pascals (Pa).
Sound Power Level	The rate at which sound is radiated by a source. This parameter is useful as it describes sound energy before environmental or decay factors. Quantified in dB and notated usually as L_w or SWL.
Specific sound level $L_s = L_{Aeq,Tr}$	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given time interval, T.
Specific Sound Source	Sound source being assessed.

Statement of Uncertainty

This report is based upon a range of measurements, a system of calculations and noise predictions. As such, this report attempts to quantify fluctuations in air pressure and is subject to the effects of meteorology, physical and perceived anomalies, tolerances within the measuring and monitoring equipment and accuracy margins within the noise modelling software. In the interests of repeatability, this report must be considered as being affected by common factors involved in the measurement and calculation of noise propagation.

All measurement values, outcomes and assumptions are subject to a margin of uncertainty. This has been quantified and assessed as follows:

- Rounding errors – systemic tolerance of ±1dB;
- Type 1 sound level meter – operational tolerance of ±1.1dB;
- Meteorology – allowance of ±1.9dB; and
- CadnaA noise propagation modelling software – operational accuracy of ±2.1dB

The most influential uncertainty factors for the assessment of noise are deemed to be equipment tolerances, meteorology and software accuracy. A root-sum-square statistical average has been used to provide an overall margin of uncertainty of ±3dB.

Statement of Competency

Darren Lafon-Anthony MSc MIOA FIQ

The assessment has been undertaken by, or under the supervision of, Mr. Darren Lafon-Anthony who is the Director of Acoustics at Enzygo Limited. Mr. Lafon-Anthony holds a Master of Science Degree in Applied Acoustics and has been a Corporate Member of the Institute of Acoustics since July 2004 having previously been an Associate Member of the institute since October 2001. Mr. Lafon-Anthony is also a Fellow of the Institute of Quarrying based on his contribution to the assessment of noise and the application of mitigation for minerals and mining sites, a qualification he has held since September 2014.

Mr. Lafon-Anthony has worked in acoustics since January 1981. Initially as an engineer designing and overseeing manufacture of noise control equipment for the water industry, standby power diesel generator and power generation markets for several noise control equipment manufacturers and, since February 2004, as an environmental noise consultant in various sectors, including mineral and mining sites, waste disposal and recycling sites, large industrial developments, energy supply projects (EfW, STOR and Battery Energy sites) and residential developments in the UK, Europe and sub-Saharan Africa.

Mark Harrison BSc(hons) MIOA

The assessment has been reviewed by Mr Mark Harrison, Principal Acoustic Consultant at Enzygo Limited. Mr Harrison holds a Batchelor of Science degree in Music Technology and a post graduate Diploma in Acoustics and Noise Control.

Mr Harrison has worked in acoustic consultancy since 2007 and has worked on noise and vibration assessments in several sectors including industrial / commercial developments; power generation and distribution; residential developments; transport schemes; and mineral extraction and processing.

APPENDIX A – Baseline Noise Data

Table B-1: Baseline Noise Data – MP1 No.121 Station Road, Daytime

Time	L_{Aeq} (dB)	L_{AFMax} (dB)	L_{A90} (dB)	L_{A10} (dB)
08/02/2023 13:36	56.9	68.4	48.1	60.1
08/02/2023 13:51	55.9	65.4	47.0	59.4
08/02/2023 14:06	55.5	63.0	47.1	59.1
08/02/2023 14:21	55.5	62.8	46.3	59.3
08/02/2023 14:36	57.8	78.6	47.7	60.4
08/02/2023 14:51	57.4	68.7	50.1	60.2
08/02/2023 15:06	58.1	72.8	49.6	60.7
08/02/2023 15:21	58.0	73.2	50.2	60.6
Overall	57.0	78.6	48.3	60.0

Table B-2: Baseline Noise Data – MP1 No.121 Station Road, Night-time

Time	L_{Aeq} (dB)	L_{AFMax} (dB)	L_{A90} (dB)	L_{A10} (dB)
09/02/2023 01:00	57.1	77.9	35.2	54.2
09/02/2023 01:15	42.9	56.8	34.0	45.3
09/02/2023 01:30	48.4	67.6	33.1	45.7
09/02/2023 01:45	47.3	64.4	32.5	47.6
Overall	52.1	77.9	33.7	48.2

Table B-3: Baseline Noise Data – MP2 No.35 Bramham Croft, Daytime

Time	L_{Aeq} (dB)	L_{AFMax} (dB)	L_{A90} (dB)	L_{A10} (dB)
08/02/2023 13:25	54.6	76.5	48.2	54.9
08/02/2023 13:40	53.6	63.3	50	55.3
08/02/2023 13:55	51.7	61.5	48.1	53.8
08/02/2023 14:10	50.8	65.9	46.1	52.3
08/02/2023 14:25	48.7	63.2	45.6	50.9
08/02/2023 14:40	52.1	69.4	46.4	54.7
08/02/2023 14:55	51.7	64.3	46.9	53.9
08/02/2023 15:10	49.9	57.9	47.2	52.2
Overall	52.0	76.5	46.6	53.9

Table B-4: Baseline Noise Data – No.35 Bramham Croft, Night-time

Time	L_{Aeq} (dB)	L_{AFMax} (dB)	L_{A90} (dB)	L_{A10} (dB)
09/02/2023 01:00	45.7	63	40.3	46.4
09/02/2023 01:15	40.8	45.1	39.9	41.5
09/02/2023 01:30	47.9	69.9	39.8	43.1
09/02/2023 01:45	47.5	64.1	39.1	47.2
Overall	46.2	69.9	39.8	44.6

Table B-5: Baseline Noise Data – MP3 Stonyford Road, Daytime

Time	L_{Aeq} (dB)	L_{AFMax} (dB)	L_{A90} (dB)	L_{A10} (dB)
08/02/2023 13:15	49.6	68.6	45.4	50.8
08/02/2023 13:30	51.2	68.7	46.5	53.4
08/02/2023 13:45	49.9	62.5	45.4	52.4
08/02/2023 14:00	48.7	67.6	45.6	50.6
08/02/2023 14:15	48.0	66.4	44.4	50.0
08/02/2023 14:30	48.9	65.1	45.3	50.1
08/02/2023 14:45	49.3	65.8	45.8	50.8
08/02/2023 15:00	50.2	67.7	46.6	52.0
08/02/2023 15:15	48.8	60.1	45.8	50.7
08/02/2023 15:30	49.2	57.6	46.8	51.0
08/02/2023 15:45	49.5	58.6	47.5	51.2
08/02/2023 16:00	50.1	62.6	48.2	51.4
08/02/2023 16:15	49.7	58.6	47.8	51.2
Overall	49.5	68.7	46.2	51.2

Table B-6: Baseline Noise Data – MP3 Stonyford Road, Night-time

Time	L_{Aeq} (dB)	L_{AFMax} (dB)	L_{A90} (dB)	L_{A10} (dB)
08/02/2023 23:00	41.0	51.7	37.5	43.5
08/02/2023 23:15	41.8	54.3	36.9	45.0
08/02/2023 23:30	40.5	54.2	35.0	44.1
08/02/2023 23:45	38.7	56.6	35.3	40.6
09/02/2023 00:00	39.1	52.6	35.3	41.3
09/02/2023 00:15	37.4	47.9	34.4	39.5
09/02/2023 00:30	38.4	49.5	34.1	41.1
09/02/2023 00:45	35.1	52.0	32.8	37.0
09/02/2023 01:00	48.3	69.6	34.5	48.3
09/02/2023 01:15	36.6	46.8	33.6	39.2
09/02/2023 01:30	47.2	70.6	32.8	42.3
09/02/2023 01:45	45.7	66.9	30.6	45.0
09/02/2023 02:00	41.4	64.1	30.6	36.7
Overall	42.8	70.6	34.1	41.8

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