

Our ref: [REDACTED]

27th January 2016



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Dear Sirs,

**NOISE SURVEY AND ASSESSMENT
PROPOSED DEVELOPMENT (USE CLASS B2 AND/OR B8)
LAND BETWEEN WHITEHALL ROAD AND WHITECHAPEL ROAD, SCHOLES**

1.00 INTRODUCTION

1.01 Environmental Noise Solutions Limited (ENS) has been commissioned by Martin Walsh Architectural to undertake a noise survey and assessment for a proposed development (Use Class B2 (Industrial) and/or B8 (Storage and Distribution) at land between Whitechapel Road and Whitehall Road, Scholes, West Yorkshire (hereafter referred to as the site).

1.02 The objectives of the noise survey and assessment were to:

- Establish the ambient noise levels at the site and its surrounding environs
- Assess the suitability of the site for the proposed development (outline master plan stage at the time of writing)

1.03 This report details the methodology and results of the noise survey and assessment.

1.04 This report has been prepared for Martin Walsh Architectural 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 Martin Walsh Architectural and ENS as to the extent to which the findings may be appropriate for their use.

1.05 A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

2.00 SITE SETTING AND PROPOSED DEVELOPMENT

2.01 The site is located on open land to the west of the M62 motorway near the village of Scholes, West Yorkshire. It is bound by:

- The A58 Whitehall Road to the north
- The B6120 Whitechapel Road to the south (residential dwellings on opposite side of road)
- The M62 motorway to the east (note: residential dwellings towards south east corner)
- A cemetery and open land to the west (residential dwellings further west)

2.02 The illustrative outline master plan layout is reproduced in Appendix 2 for reference. The proposed development consists of a number of units for Use Class B2 (Industrial) and/or B8 (Storage and Distribution).

2.03 The access/egress to/from the site is located on the A58 Whitehall Road to the north (note: no noise sensitive receptors in this locality).

2.04 It is assumed 24/7 use would be required by the proposed development.

3.00 BASELINE NOISE SURVEY

- 3.01 In order to establish the ambient and background noise levels at the site and its environs, a baseline noise survey was undertaken on Monday 21st December 2015.
- 3.02 For the purpose of the assessment the following noise monitoring positions were adopted, (see Appendix 2 for reference) in a free field environment at 1.5 metres above ground level:
- MP1 was located on the southern boundary (10 metres to the B6120 Whitechapel Road)
 - MP2 was located on the western boundary (adjacent to the cemetery)
 - MP3 was located on the northern boundary (10 metres to A58 Whitehall Road)
 - MP4 was located in the central site area
 - MP5 was located on the eastern boundary (adjacent to the M62 motorway)
- 3.03 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. Measurements consisted of A-weighted broadband parameters, together with linear octave band L_{eq} levels. The following table contains a summary of the measurement data.

Table 3.1 – Noise Measurement Data

Position	Date	Time	LAeq (dB)	LA90 (dB)	LA10 (dB)	LA1 (dB)	Comments
MP1	21/12/15	1205–1235	65	62	68	71	B6120 Whitechapel Road traffic (350 veh/hr)
MP1	21/12/15	1720–1735	64	58	67	70	
Daytime ambient and background noise levels 64–65 dB LAeq,T and 58–62 dB LA90,T, respectively							
MP2	21/12/15	1250–1320	60	58	62	66	Distant traffic (M62, A58 & B6120)
MP2	21/12/15	1655–1710	58	55	59	63	
Daytime ambient and background noise levels 58–60 dB LAeq,T and 55–58 dB LA90,T, respectively							
MP3	21/12/15	1400–1430	73	64	77	79	A58 Whitehall Road traffic (350 veh/hr)
MP3	21/12/15	1630–1645	72	61	75	78	
Daytime ambient and background noise levels 72–73 dB LAeq,T and 75–77 dB LA90,T, respectively							
MP4	21/12/15	1510–1525	59	57	60	63	Distant traffic (M62, A58 & B6120)
Daytime ambient and background noise levels 59 dB LAeq,T and 57 dB LA90,T, respectively							
MP5	21/12/15	1540–1610	73	71	74	75	M62 traffic
Daytime ambient and background noise levels 73 dB LAeq,T and 71 dB LA90,T, respectively							

- 3.03 The ambient and background noise levels at the site and its environs are considered commensurate with the site setting.
- 3.04 The daytime background noise level at the western boundary of the site ranged from 55 to 58 dB $L_{A90,T}$ (primarily due to the M62 motorway). Based on experience of similar localities, it is expected that the night time background noise level would be of the order of the 45 to 50 dB $L_{A90,T}$.
- 3.05 The night time background noise level can be determined at a later stage (note: this was prevented by adverse weather during late December and early January). For the purpose of the noise impact assessment, however, the adoption of a night time background noise level of 45 dB $L_{A90,T}$ at the residential dwellings on the B6120 Whitechapel Road immediately to the south of the site (the nearest and most noise sensitive receptors) is considered very robust.

4.00 NOISE IMPACT ASSESSMENT CRITERIA

- 4.01 In terms of noise impact assessment criteria, Paragraph 123 of the National Planning Policy Framework states that planning policies and decisions should aim to '*avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development*'.
- 4.02 Planning Practice Guidance specifically dealing with noise was uploaded to the Government's Planning Portal in March 2014 as an accompaniment to the National Planning Policy Framework. This guidance is summarised herein.
- 4.03 The guidance states that noise needs to be considered when new developments may create additional noise. Whilst noise can override other planning concerns, neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement for England) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of proposed development.
- 4.04 In order to determine noise impact, local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:
- Whether or not a significant adverse effect is occurring or likely to occur
 - Whether or not an adverse effect is occurring or likely to occur, and
 - Whether or not a good standard of amenity can be achieved
- 4.05 In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.
- 4.06 In terms of Observed Effect Levels:
- No Observed Adverse Effect Level (NOAEL) – This is the level of noise exposure below which no effect at all on health or quality of life can be detected
 - Lowest Observed Adverse Effect Level (LOAEL) – This is the level of noise exposure above which adverse effects on health and quality of life can be detected, and
 - Significant Observed Adverse Effect Level (SOAEL) – This is the level of noise exposure above which significant adverse effects on health and quality of life occur
- 4.07 At the lowest extreme, when noise is not noticeable, there is by definition no effect. As the noise exposure increases, it will cross the no observed effect level as it becomes noticeable. However, the noise has no adverse effect so long as the exposure is such that it does not cause any change in behaviour or attitude. The noise can slightly affect the acoustic character of an area but not to the extent there is a perceived change in quality of life. If the noise exposure is at this level no specific measures are required to manage the acoustic environment.
- 4.08 As the exposure increases further, it crosses the lowest observed adverse effect level boundary above which the noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).
- 4.09 Increasing noise exposure will at some point cause the significant observed adverse effect level boundary to be crossed. Above this level the noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is above this level the planning process should be used to avoid this effect occurring, by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused.

4.10 At the highest extreme, noise exposure would cause extensive and sustained changes in behaviour without an ability to mitigate the effect of noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be prevented from occurring.

4.11 The following table summarises noise exposure hierarchy, based on likely average response.

Table 4.1 – Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

4.12 The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. These factors include:

- The source and absolute level of the noise together with the time of day it occurs
- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise
- The spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features)
- The local acoustic character of the area

4.13 In addition to the National Planning Policy Framework Planning Practice Guidance on Noise, further useful contextual guidance is provided in British Standard 4142:2014 'Methods for Rating and Assessing Industrial and Commercial Sound' (BS 4142).

4.14 With respect to sound from fixed installations which comprise mechanical and electrical plant and equipment, guidance is provided in BS 4142 which 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 ... Typically, the greater this difference, the greater the magnitude of the impact. For example:

- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context*
- *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context*
- *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. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context*

Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

4.15 It should be noted that the World Health Organisation's Night Noise Guidelines Europe state that an external noise level of 40 dB $L_{Aeq}(2300-0700)$ represents the Lowest Observed Adverse Effect Level (LOAEL).

5.00 NOISE IMPACT ASSESSMENT

5.01 With respect to the proposed development, the potential principal noise impacts are considered as:

- Noise associated with fixed plant and equipment
- Noise associated with operations inside the industrial units
- Noise associated with servicing operations outside the industrial units

Noise Associated with Fixed Plant and Equipment

5.02 It is anticipated that the proposed development may include fixed installations (mechanical and electrical plant and equipment) that could have the potential to generate noise. At this master plan stage, however, details of the proposed type, location and number of items are not available. It is therefore considered appropriate to specify suitable noise limits to which any such plant items should conform (note: it is considered that compliance with such limits would be readily achievable with judicious plant selection and siting). These limits should take account of the background noise level at the nearest noise sensitive receptor (in this case the residential dwellings on the B6120 Whitechapel Road are considered appropriate).

- 5.03 It is considered that the operation of the fixed installations of mechanical and electrical plant and equipment can be controlled by a suitably worded planning condition, which would typically be as follows:

The cumulative noise levels associated with fixed installations of mechanical and electrical plant items should not exceed the appropriate background noise level

Noise Associated with Operations Inside the Industrial Units

- 5.04 At this master plan stage, the occupancy of the proposed industrial units is not known. For the purpose of the assessment which is to assess the feasibility of the proposed development in terms of potential noise impact, it is assumed that
- A relatively high internal reverberant noise of circa 90 dB(A) may occur within the proposed industrial units
 - The sound reduction index of the building envelope of the proposed industrial units is at least 45 dB(A) (note: this is based on insulated cladding with an internal liner)
 - The proposed industrial units are circa 40 metres from the nearest noise sensitive receptor (in this case the residential dwellings on the B6120 Whitechapel Road)
- 5.05 The break-out noise level immediately outside a proposed industrial unit is calculated at circa 40 dB(A) (= 90 dB(A) less 45 dB(A) building envelope sound reduction less 6 dB(A) internal reverberant to free field external correction).
- 5.06 The break-out noise level would be further reduced by distance attenuation. Distance attenuation is based on the physical size of the industrial unit, however, based on the illustrative outline master plan, distance attenuation would be of the order of 15 dB(A) between a proposed industrial unit on the southern boundary and the nearest noise sensitive receptor (in this case the residential dwellings on the B6120 Whitechapel Road).
- 5.07 Break-out noise levels from a proposed industrial unit of the order of 25 dB(A), which is very, very low (particularly in the context of the night time background noise level of the order of 45 dB L_{A90}). Even allowing for the cumulative effect associated with a number of proposed industrial units in the locality (for example there is 4 industrial units illustrated on the southern boundary), the cumulative break-out noise level would remain very, very low.
- 5.08 In conclusion, the potential noise impact associated with operations inside the proposed industrial units can be readily controlled such that it is negligible.

Noise Associated with Servicing Operations Outside the Industrial Units

- 5.09 The access/egress to/from the site is located on the A58 Whitehall Road to the north (note: no noise sensitive receptors in this locality).
- 5.09 The service areas to the proposed industrial units may be screened from the nearest noise sensitive receptors (in this case the residential dwellings on the B6120 Whitechapel Road) by either the units themselves and/or additional boundary treatments. There is also a reasonable separation distance to the nearest noise sensitive receptors, which themselves are subject to road traffic noise.
- 5.10 It is therefore considered that the noise associated with servicing operations outside the proposed industrial units can be adequately mitigated such that does not exceed the existing night time ambient noise level. In accordance with the National Planning Policy Framework Planning Practice Guidance on Noise, such noise would be noticeable but not disruptive (i.e. such noise can be heard, but would not cause any change in behaviour or attitude and although such noise could slightly affect the acoustic character of the area) and would therefore be at the No Observed Adverse Effect Level.

6.00 CONCLUSIONS

- 6.01 Environmental Noise Solutions Limited (ENS) has undertaken a noise survey and assessment for a proposed development (Use Class B2 (Industrial) and/or B8 (Storage and Distribution) at land between Whitechapel Road and Whitehall Road, Scholes, West Yorkshire.
- 6.02 The objectives of the noise survey and assessment were to: establish the ambient noise levels at the site and its surrounding environs; and assess the suitability of the site for the proposed development (outline master plan stage at the time of writing).
- 6.03 It is concluded that, subject to layout considerations, boundary treatments and appropriately worded planning conditions, the potential noise impact of the proposed development can be controlled such that it is negligible.

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,

Jonathan Rigg
Environmental Noise Solutions Limited
MIOA, Diploma in Acoustics & Noise Control, MEng (Hons)

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 μ Pa 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 μ Pa).

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
Illustrative Outline Master Plan
(insert latest sketch master plan)

Appendix 3 Noise Monitoring Positions

