

**NOISE ASSESSMENT
Engineering Workshop -
3-13 Wensley Road
Blackburn, BB2 1PX**

Report by
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Site Visited By: S.B. Mellor
Signed:



CONTENTS

1.0 INTRODUCTION	3
2.0 SITE DESCRIPTION.....	4
3.0 NOISE CRITERIA.....	5
4.0 MEASUREMENT PROCEDURE	15
5.0 RESULTS.....	17
6.0 ASSESSMENT OF RESULTS.....	19
7.0 CONCLUSION	20
APPENDIX 1	31
APPENDIX 2	33
APPENDIX 3	34

1.0 INTRODUCTION

On the instruction of Mr. Pervaiz Akhtar, SBM Safety Solutions carried out a noise assessment at the location noted above. This included establishing the current ambient and background noise levels in comparison with future noise from a proposed motor vehicle repair workshop and making recommendations to meet Conditions 9 and 11 from the application decision notice (see below).

Mr. Pervaiz intends to construct a purpose-built workshop on the site. Application reference: **10/17/0648**.

The plot of land is currently unused and features no buildings.

It is understood that the business for which permission to operate has been granted will operate from 8.00am until 8.00pm Monday to Friday and 8.00am until 5.00pm on Saturdays.

Acoustic terminology is explained at Appendix 1 of this report and the author's qualifications and experience are described in Appendix 2 and location images at Appendix 3.

2.0 SITE DESCRIPTION

The development site is located adjacent to an existing scrap metal recycling yard on one side (E – Lancashire Salvage) and an hotel (W - The Lion Hotel) at approximately 33m from the site boundary. Residential properties are located on the opposite side of Wensley Road at approximately 17m from the site boundary (24m from the proposed building).

Figure 1



There are various other business uses in the area as can be seen in Figure 1 above, including a scrap metal company, a household waste recycling centre, diesel specialist, carpet centre and windscreen fitters.

3.0 NOISE CRITERIA

Blackburn and Darwen Borough Council

Blackburn and Darwen Borough Council have stipulated various conditions when permitting this plot to operate as a B2 site for "car repair garage / MOT station". For potential noise issues this includes the following conditions (9 and 11 from the decision notice dated 11th September 2017"):

- 9 Prior to the commencement of development a sound proofing scheme shall be submitted to and approved in writing by the Local Planning Authority. The scheme must identify any building sound proofing measures necessary to reduce vehicle repair & maintenance noise emitted from the proposed building(s) affecting residential amenity in the locality. The applicant shall have due regard to BS 8233: 2014 'Guidance on sound insulation & noise reduction for buildings and the 'Noise Policy Statement for England'.

REASON: To prevent loss of amenity at adjacent dwellings, in accordance with the requirements of Policy 8 of the Blackburn with Darwen Borough Local Plan Part 2

- 11 The commencement of the development shall not take place until there has been submitted to and approved in writing by the Planning Authority a programme for the monitoring of noise & vibration generated during demolition & construction works. The programme shall specify the measurement locations and maximum permissible noise & vibration levels at each location. At each location, noise & vibration levels shall not exceed the specified levels in the approved programme unless otherwise approved in writing by the Planning Authority or in an emergency.
REASON: To minimise noise/vibration disturbance at adjacent residential premises in order to safeguard amenity standards, in accordance with the requirements of Policy 8 of the Blackburn with Darwen Borough Local Plan Part 2

Additionally, for industrial noise BS4142 is normally referenced and used to assess the likelihood of any potential impact on nearby residents.

3.1 BS4142:2014 – Rating Industrial Noise Affecting Mixed Residential and Industrial Areas

BS4142:2014 states, "Response to sound can be subjective and is affected by many factors, both acoustic and non-acoustic. The significance of its impact, for example, can depend on such factors as the margin by which a sound exceeds the background sound level, its absolute level, time of day and change in the acoustic environment, as well as local attitudes to the source of the sound and the character of the neighbourhood...This

British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature”.

BS4142 describes a method for assessing whether a specific sound may have an adverse impact.

The Standard requires that the ambient noise (***totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far***) including the “specific” sound from the source in question is measured in terms of the equivalent continuous sound level LAeq [see Appendix 1 for acoustic terms], which is then corrected for the residual sound (total LAeq excluding the “specific” sound).

A correction for character is made if ***“a tone, impulse or other characteristic occurs”***. For tonality, a correction of between +2dB and +6dB is considered acceptable and for impulsivity between +3dB and +9dB. See table 1 below.

Table 1

Character	Just Perceptible	Clearly Perceptible	Highly Perceptible
Tonality	+2dB	+4dB	+6dB
Impulsivity	+3dB	+6dB	+9dB

Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of +3dB can be applied.

Intermittency

"When the specific sound has identifiable on/off conditions...if the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied".

Where tonal and impulsive characteristics are present in the specific sound within the same reference period then these two corrections can both be taken into account. If one feature is dominant, then it might be appropriate to apply a single correction. Where both features are likely to affect perception and response, the corrections ought

normally to be added in a linear fashion.

The final figure, including any character correction is known as the Rating level. This Rating Level is then compared with the measured background [LA90] level. The greater this difference the greater the likelihood of "adverse impact" (See Notes 1 & 2 from BS4142:2014 below).

"NOTE 1

- a) Typically, the greater this difference, the greater the magnitude of the impact.
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- d) 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.

NOTE 2 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."

3.2 NPPF and PPG

National Planning Policy Framework (NPPF) Section 123 specifies:

Planning policies and decisions should aim to:

- *avoid noise from giving rise to significant adverse impacts²⁷ on health and quality of life as a result of new development;*
- *mitigate and reduce to a minimum other adverse impacts²⁷ on health and quality of life arising from noise from new development, including through the use of conditions;*
- *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their*

business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established;²⁸ and

- *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

27 See Explanatory Note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs).

28 Subject to the provisions of the Environmental Protection Act 1990 and other relevant law.

The national Planning Practice Guidance (PPG) web-based resource was launched by the Department for Communities and Local Government (DCLG) on 6 March 2014 to support the National Planning Policy Framework and make it more accessible. The overall aim of the guidance, tying in with the principles of the NPPF and the Explanatory Note of the Noise Policy Statement for England (NPSE), is to identify whether the overall effect of 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.

A summary of the effects of noise exposure associated with both noise generating developments and noise sensitive developments is presented within the PPG:

Table 2

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 (NOEL)	No Specific Measures Required
Lowest Observed Adverse Effect Level (LOAEL)			
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; closing windows for some of the time because of the noise. Potential for non-awakening 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 (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. 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 a 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 Observed Adverse Effect	Prevent

The NPPF, NSPE and PPG:Noise do not, however, present absolute noise level criteria which define SOAEL, LOAEL and NOEL which is applicable to all sources of noise in all situations. Therefore, within the context of the proposed development, national planning policy and appropriate guidance documents including the 'World Health

Organisation Community Noise Guidelines' (1999) and 'BS 8233 – Guidance on Sound Insulation and Noise Reduction for Buildings (2014), which presents the noise level criteria used as a basis for this assessment.

The PPG:Noise also states that neither the NPSE nor the NPPF (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of the proposed development.

3.3 British Standard 8233:2014 (Guidance on Sound Insulation and Noise Reduction for Buildings)

The latest version of BS.8233 "Guidance on Sound Insulation and Noise Reduction for Buildings", was published in February 2014. BS 8233:2014 adopts guideline external noise values provided in WHO for external amenity areas such as gardens and patios. The Standard states that it is "desirable" that the external noise does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$. Where design standards cannot be achieved for traditional amenity spaces (e.g. gardens and

patios) then the 'lowest practical levels' should be achieved.

An extract of the "Design Range" of BS.8233's Table 4 for indoor noise levels (with Notes 4 & 7) appears below and it should also be noted that the assessment period is for the whole of the day (16 hours) or night (8 hours).

Table 4 Indoor ambient noise levels for dwellings

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

NOTE 4 regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,P}$ depending on the character and number of events per night. Sporadic noise events could require separate values.

NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

"For traditional external areas that are used for amenity space, such as gardens and patios, 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. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable."

3.4 BS 5228-1:2009+A1:2014

Code of practice for noise and vibration control on construction and open sites Part 1 Noise and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration

control on construction and open sites.

The proposed methods for developing the Site may generate noise and reference will be made to appropriate methodologies below.

The significance criteria for the construction noise assessment are based on 'The ABC Method' from BS 5228-1 (See example illustrated in Table 3 below).

Table 3

Assessment Category and Threshold Value Period (L_{Aeq})	Threshold Value, in Decibels (dB)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23.00-07.00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07.00-19.00) and Saturdays (07.00-13.00)	65	70	75

Notes:

1. A potential significant effect is indicated if the site $L_{Aeq,T}$ noise level, exceeds the threshold level for the Category appropriate to the ambient noise level.
2. If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total L_{Aeq} noise level for the period increases by more than 3 dB due to site noise.
3. Applied to residential receptors only.

A). Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
 B). Category B: threshold values to use when the ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
 C). Category C: threshold values to use when the ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.
 D). 19:00-23:00 weekdays, 13:00-23:00 Saturdays and 07:00-23:00 Sundays.

(Source: BS 5228-1:2009+A1:2014, Page 119)

4.0 MEASUREMENT PROCEDURE

The methodology for measurements was discussed and agreed with Blackburn and Darwen Borough council before visiting the site. It was agreed with Andy White, Environmental Protection Officer with Blackburn and Darwen Borough Council, that we would “*need to take account of the background noise level on days and at times when it is relatively low i.e. during the evenings*” – hence a period after 7pm was chosen. It was also suggested that the standards BS4142 and BS5228 should be referenced.

The site was visited on 20th September 2017 and measurements were made on site to establish source noise (machines, plant and activities including vehicle movement) and at the nearest receptors (to the application site) as noted above, to establish the typical ambient and background L90 levels, without the introduction of the source noise.

Because it hasn't yet been established which types of

tools and equipment will be used at this site the author has made presumptions and used data from similar sites (BMW workshop in Bury St. Edmunds for the tools and Primal Equipment, Uttoxeter, for the compressor, from June and April 2017 respectively).

The meter was mounted on a tripod at an approximate height of 1.4m at the receptor. The measurement positions approximated to free field conditions.

Road traffic was paused out to establish the existing background level L90 for the first period and then another sample was taken with road traffic included as a comparison.

The weather conditions during the monitoring period were dry, cloudy and with a temperature of around 11 degrees centigrade. There was wind speed of 3m/s NW (measured on a digital anemometer). It is not considered that the weather conditions would have affected the results.

The sound level meter used was a Svan 979 (s/n 46176) and microphone system mounted on a tripod and fitted with a windmuff. The meter calibrated correctly before

and after the measurements using a Cirrus calibrator type CR:551E (s/n 039816); the instrumentation had been laboratory calibrated within the preceding 2 years.

5.0 RESULTS

5.1 Measurements

The measurement results are shown in tables 1 and 2 below:

Table 3: Existing Environmental Noise – Evening

Date & time	Elapsed time	LAeq	LAFmax	LAFmin	L10	L50	L90	Notes
05/10/2017 19:51:23	00:30:02	53.7	72.5	41.3	58	49.2	44.5	Road traffic paused out
05/10/2017 20:35:42	00:17:01	63.7	80.6	41	67.2	51.8	42.8	Road traffic included

Table 4: Synthetic Data

BMW June 2017														
Tool/Equipment	typical duration / hou	LAeq	LAFmax	LAFmin	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	16000 Hz
1/2" air gun	2 minutes	95.7	102.3	72.7	33.3	51	63.4	66.1	75.9	86	90.5	91.3	89.2	78.4
Battery drill / driver	2 minutes	88.7	99.9	72.4	37.9	52.2	71.2	83.6	78.2	78.5	83.5	85.3	80.8	69.4
Hammer gun	1 minute	87.8	95.7	72.1	35.6	44.5	57.3	68	79.5	80.8	81.5	82.3	78.8	66
3/8" air ratchet	2 minutes	96.2	101.7	72.1	34.8	42.6	52.4	62	75.9	83.7	89.9	91.2	91.6	85.4
Die grinder	1 minute	92.9	95.8	86.2	40.4	36.4	46.6	56.1	64.8	91	81.2	86.2	80.2	74.8
Small battery driver	2 minutes	74.8	76.6	72.5	35.9	38.2	48.3	56.3	64.1	67.8	71.2	67.9	61.3	50.4
Blow gun - air	1 minute	99.9	103.9	96.5	36	46.4	54.4	65.9	77.8	84.8	91.2	95.6	95.4	89.8
1/2" battery gun	1 minute	93.2	104.7	66.5	28.6	41.9	57	61.4	76.9	84	89.7	88.6	83	77.5
42oz hammer	0.5 minute	103.1	107.9	94.5	40.5	53.7	62	70.1	90	96.8	100.3	97.6	86.1	70.8
Compressor	15 minutes	83.6	86.8	81.9	61.5	62.7	65.8	69.6	80.0	79.5	73.4	64.8	58.9	48.6

LAeq, 1 hour = 88.8.6dB

Levels measured at approx. 1m from tool.

Table 5 – Average Octave Band Levels (All equipment)

125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz
48.2	54.9	63.6	69.4	71.0

The LAeq, 1-hour cumulative level assumes that all equipment will be used in any hour for the durations above – unlikely but used as a worst case. The data from the BMW workshop is for typical daily use, so it is very unlikely that the equipment and durations will reflect hourly use e.g. air impact tools are used for loosening wheel nuts and trigger time is for a few seconds per occasion. The workshops were similar so it is assumed that and reflected noise is included in the sample measurements.

5.2 Subjective Impressions (other information)

Wensley Road is a busy road at all times. Indeed, it was difficult to “pause out” passing vehicles.

Other sources of noise observed included distant dogs barking and distant voices from patrons of the hotel (possibly smoking).

6.0 ASSESSMENT OF RESULTS

6.1 Noise Breakout from Building

The dimensions and construction details for the building “break-out” calculation have been taken from the drawings and details provided by Entwistle Design Services. An approximate distance of 24m from the front façade to the nearest house has been used and a presumed -5dBA correction for the proposed fencing / barrier assuming a partial view from ground floor rooms. Windows are only present in the first-floor office rooms and so haven’t been included.

Table 6 – Noise breakout and levels at nearest receptors

"Noise & Noise Control 2nd Ed" Sn 8.22 Method		Adjustment to a Given Level if required						88.8				
		Adjusted Internal Spectrum				62.8	69.5	78.2	84.0	85.6	88.8	
Element		Addntnl	Dimension		Area	Dist	Element Sound Reduction Index [SRI]					Element Contrib
		Atntn	Lgr	Smlr	If Diff							
Frthr Wall	Brick/block/cavity	0.0	18.3	8.3		24.0	41	45	45	54	58	7.7
Near Wall	Brick/block/cavity	0.0	8.2	6.3		24.0	41	45	45	54	58	3.0
Frthr Wnds	None		0.0	0.0		0.0	0	0	0	0	0	0.0
Near Wnds	None		0.0	0.0		0.0	0	0	0	0	0	0.0
Access Dr	Roller Shutter Door	0.0	12.3	4.0		24.0	6.6	14.8	18.9	24.8	17.8	38.0
Roof	None	0.0	0.0	0.0		0.0	0	0	0	0	0	0.0
Vents	None		0.0	0.0		0.0	0	0	0	0	0	0.0
		Barrier Attenuation [-ve values]					-5.0	-5.0	-5.0	-5.0	-5.0	
		Dist over Soft Grnd [BS5228 Correction]					0.0	0.0	0.0	0.0	0.0	
		Façade Reflection					0.0	0.0	0.0	0.0	0.0	
		External SPL/dBLin					24.6	23.1	27.7	27.6	36.2	Tot dBA
												38.0

Predicted level at receptors = 38dBA

6.2 BS4142

Using the measurements taken at the nearest receptors (houses opposite the site) and synthetic motor vehicle repair noise levels, we can use BS4142 to establish any possible impact on these residents. L90 from the period 7.00pm to 7:51pm has been used as the site will not operate after 8pm. Levels to nearest whole decibel.

Table 6: BS4142:2014

Workshop level at receptors	
Workshop – (1-hour ref)	38dB LAeq
Other Sound Characteristics	3 dB
Rating Level	41 dB
Background Noise Level LA90 (7-8pm no activities)	44 dB
Excess over Background [Rating – Background]	= -3dB

Not likely to have an “adverse impact or a significant adverse impact”. Correction included +3Dba for any noticeable sound characteristics which are just audible.

The difference between background and rating levels suggests that noise from engineering activities is not likely to have a significant adverse impact.

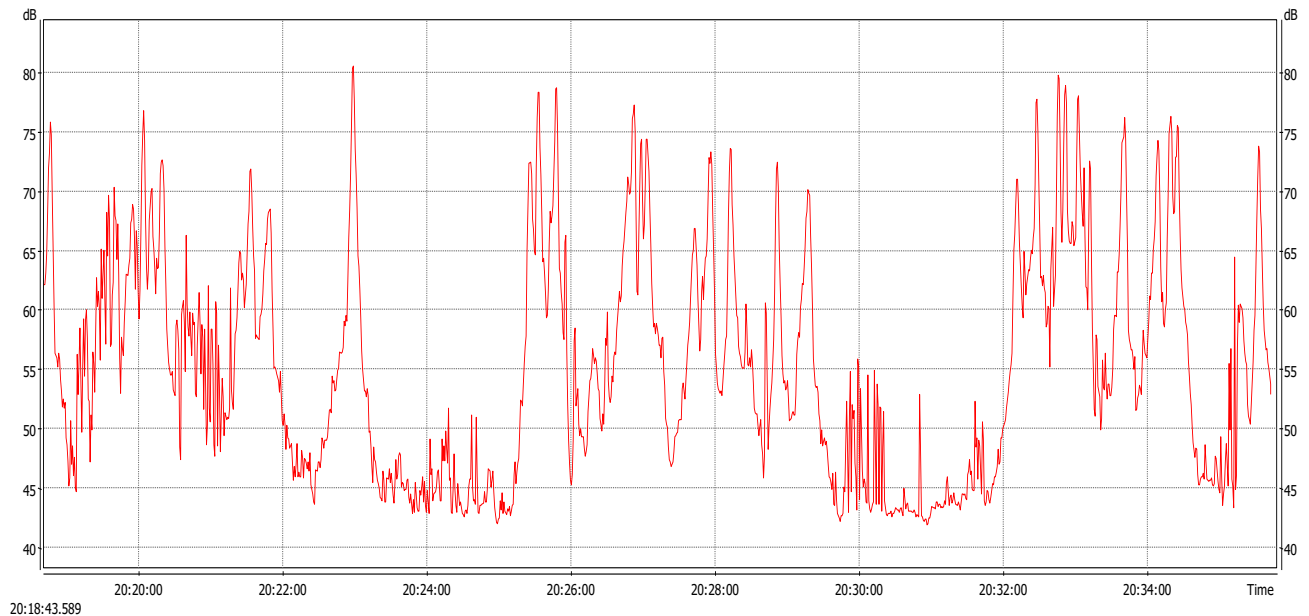
6.3 BS8233

With external levels predicted at 38dBA from workshop activities, desirable internal levels from BS8233 will be met (35dBA for the daytime use of living rooms and bedrooms) even allowing for a partially open window in the Summer (approx. 15dBA of attenuation *from World Health Organisation WHO guidelines for community noise*) and with +5dBA for a clear line of sight from first floor rooms.

6.4 LAmax

Road noise is dominant at this location. The road was very busy even in the evening and likely to be even busier earlier in the day. The LAmax levels shown in the trace below demonstrates that LAmax levels from the workshop, given the distance and building attenuation, are likely to be below the LAmax levels from road traffic, e.g. for the 42oz hammer with the highest LAmax of 107.9dB this would equate to 57.1dB at the nearest receptors. The trace below with traffic included shows that levels regularly exceed 75dBA from passing vehicles.

Figure 2 - L_{Amax} (Vehicles included)



6.5 Construction Noise

A detailed construction programme will not be available until contractors have been appointed and methods of working devised. It is expected that construction will be undertaken during normal construction hours; 07:00 hours to 18:00 hours Monday to Friday and 08:00 hours to 13:00 hours on Saturday.

It is assumed that the construction sequence is likely to consist of: Site preparation, sub-structure works, building construction and external works. The key tasks assumed

as part of each of these stages are shown in Table 1.

At present it is not expected that any piling will be required during construction, therefore significant adverse vibration impacts are not expected and vibration has not been considered further.

Table 7

Activity	Description
Site Preparation	Removal of vegetation/contaminated material/surplus spoil from the Site; Earth moving and site profiling; Erection of Site hoarding/perimeter wall/fence; Excavation to sub-soil.
Sub-structure works	Preparation for foundations and underground services; Trenching works and installation of ground services (e.g. drainage, gas & electric conduits); Construction of concrete footings.
Building Construction	Erect steelwork, brick/block work, roof work Plant and above ground services installation; Internal fit out.
Other Works	Car Parking

To provide an initial conservative appraisal of likely noise impacts, the highest level of plant noise has been referred to. This is likely to lead to an overestimation of the impacts.

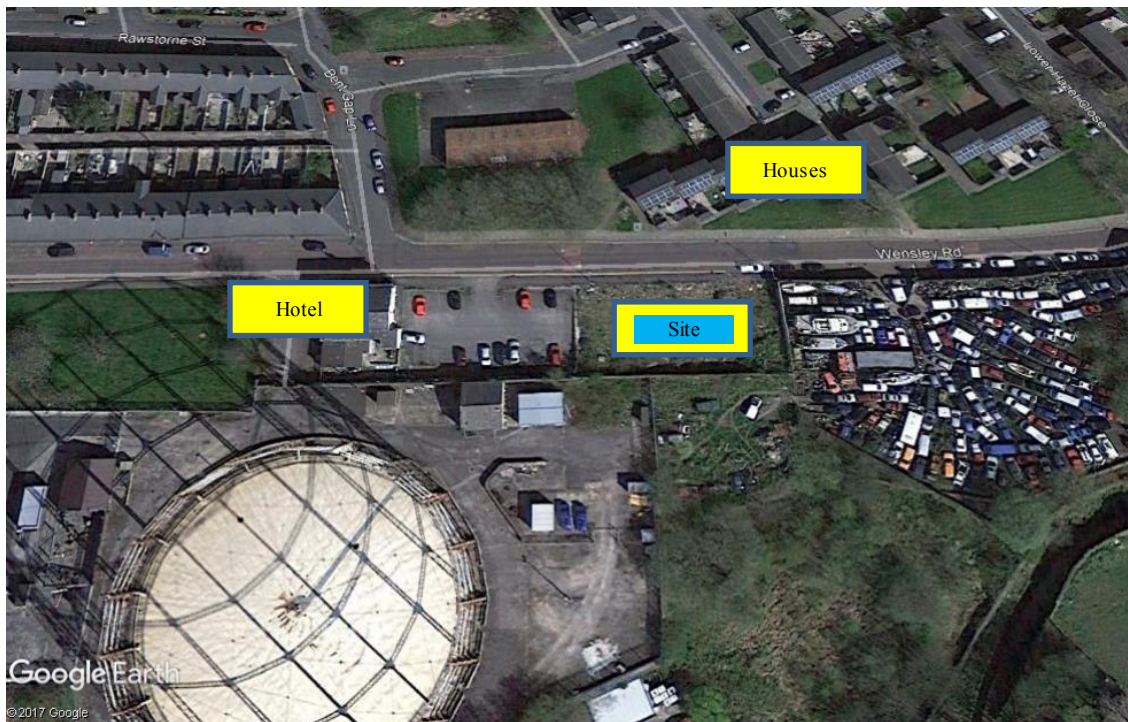
Further details of the construction noise predictions are contained within Table 8 below. The following existing

noise sensitive receptors have been identified as being the closest to the Site boundary in each direction.

Table 8

Receptor Location	Ambient noise Level (dB LAeq)	Approx. distance to closest point on Site (m)	Direction from Site
Houses Opposite	64	24m	North
Hotel	64	33m	West

Figure 3



All receptors are currently assumed to experience ambient noise levels below 65 dB based on the monitoring and therefore fall within Category A of the BS 5228 "ABC" method. The resulting threshold of significance for these receptors is 65 dB LAeq,(12hr) Aeq,12hr.

Predictions of indicative worst case hourly construction noise levels have been undertaken and are presented in Table 7 below.

Table 9

Equipment and Associated Activities with noise levels dBA at 10m

Tracked excavator	77
Vibratory roller	67
Dump truck (tipping fill)	79
Dump truck (empty)	87
Concrete mixer truck (discharging) & concrete pump (pumping)	75
Vibratory tamper	63
Tracked excavator	71
Dumper (idling)	56
Dumper	77
Lorry	80
Mobile telescopic crane	77
Telescopic handler	71
External works Tracked excavator	80
Dumper (idling)	56
Dumper	77
Asphalt paver (+ tipper lorry)	76
Hand-held circular saw (petrol)	87
Road roller	80

Table 10 – Predicted levels at receptors (corrected for distance)

Receptor Location	Highest Predicted Construction Level dB $L_{Aeq,T}$ e.g. Circular saw	Noise	Potential Significant Impact?
Houses Opposite	79		Yes
Hotel	77		Yes

It should be noted that the above predictions are based on worst case assumptions and the highest level of noise. Typically, the 12-hour average construction noise level would be much lower. Best practicable means should be applied in all construction works to minimise noise impacts as far as possible.

Construction noise could potentially increase the ambient noise levels at existing noise-sensitive receptors.

Discussions should be held with the local authority prior to the commencement of any site works and maintained throughout the duration of the works to ensure that appropriate measures are put in place to alleviate any potential disturbance to surrounding noise sensitive receptors.

The contractor and their sub-contractors should at all times apply the principle of Best Practicable Means (BPM) as defined in Section 72 of the Control of Pollution Act 1974 and carry out all work in such a manner as to avoid or reduce any disturbance from noise and vibration as far as possible:

- Follow guidance given in BS5228 Part 1 for controlling Site noise;
- Site hours should be limited to 07:00 to 18:00 hours Monday to Friday and 07:00 to 13:00 hours on Saturday. No works audible outside the development Site boundary should be undertaken outside of these normal hours without the prior agreement of the local authority;
- All plant brought onto the Site should comply with the relevant noise limits applicable to that equipment;
- Each plant item should be well maintained, properly silenced (where relevant) and operated in accordance with manufacturers' recommendations and in such a manner as to minimize noise emissions;
- Electrically powered plant should be preferred, where practicable, to mechanically powered alternatives;
- All mechanically powered plant should also be fitted with suitable silencers, as appropriate;
- Items of plant on Site operating intermittently should be throttled or shut down in the intervening periods between use;
- Where feasible, all stationary plant should be located so that the noise impact at receptor sites is minimised and, if practicable, every item of static plant when in operation should be sound attenuated using methods based on the guidance and advice given in BS5228;
- Careful selection of construction methods and plant should be investigated and utilised;
- The use of temporary acoustic barriers where appropriate and other noise containment measures such as screens, sheeting and acoustic hoarding close to source and/or at the Site boundary should be erected to minimize noise breakout and reduce noise levels at potentially affected receptors;
- Deliveries should be programmed to arrive during daytime hours only and care should be taken when unloading vehicles to minimize noise;
- The Site haul road should be constructed and maintained so that the road surface is reasonably level, the gradient is kept as small as feasible and an appropriate speed limit is applied in order to minimize noise and vibration from heavy vehicles accessing the Site;
- Neighbourhood liaison should be undertaken with local residents and surrounding businesses that are likely to be affected by the works, informing them at least ten days in advance of the nature and expected duration of the works and the proposed hours of work. A notice board should be displayed in a prominent position near the Site detailing named contacts who are able to provide further information and deal with any complaints as appropriate during all working hours;
- If a temporary source of noise or vibration impact cannot reasonably be prevented and the works being undertaken are crucial to progressing the particular project phase, then separate liaison with the local authority and affected neighbours should be held to ensure an acceptable compromise is reached.
- All of the above should also apply in regard to the construction of the proposed workshop.

The above detailed measures should act as a checklist in carrying out routine environmental monitoring checks throughout the duration of works. Particular attention should be paid to avoiding the significant effects and to minimise all other noise effects to as low a level as is reasonably practicable.

Construction noise levels at times are likely to exceed the BS5228 "ABC" method noise significance thresholds at the nearest noise sensitive properties.

The work can be sequenced in order that impact is minimised. With the use of sequencing work, noise screening and other best practicable means, where necessary, the levels should not exceed the significant noise thresholds or at worst case may exceed these levels for limited period of time.

It is not known if piling will be taking place. If there is piling, the use of CFA (continuous flight auger) piling techniques would mean that vibration is not likely to cause any significant impact. Best practicable means should be used to manage noise, as set out above.

7.0 CONCLUSION

Based on the assessment above; with the proposed building construction, screening, distances involved and frequency of use of equipment, there is likely to be sufficient noise attenuation to ensure that any significant impact on the nearest residents is unlikely.

Any vehicles entering / exiting the site will be travelling at a low speed and noise levels likely to be below the existing LAeq and LAm_{ax} noise levels (principally from road traffic).

With careful specification for the building construction and planning and sequencing of construction work the issue of noise the assessment and recommendation above should meet the requirements of conditions 9 and 11 from Blackburn and Darwen Borough Council's approval decision.

Figure 2: Site Location Plan

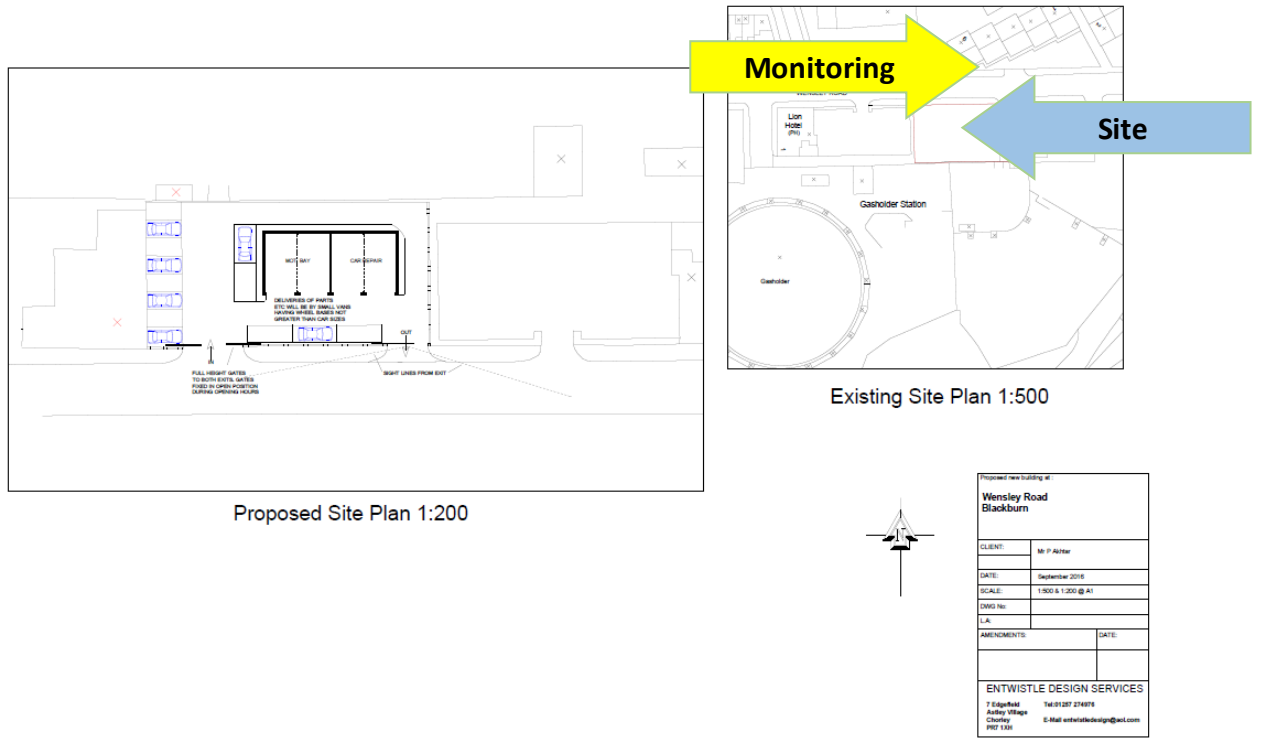
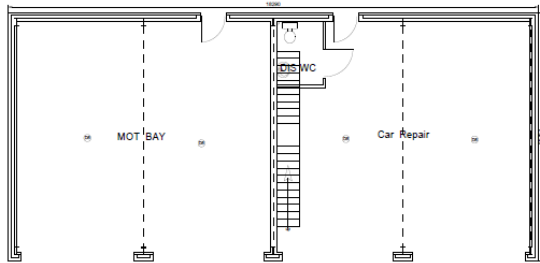
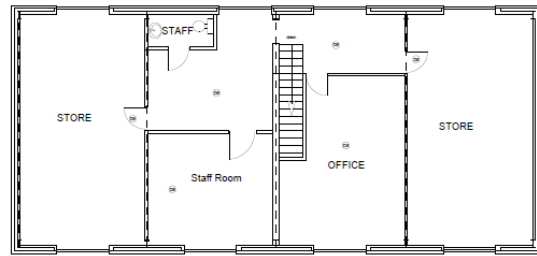


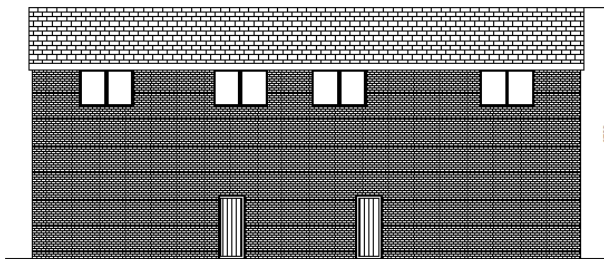
Figure 3: Workshop Building



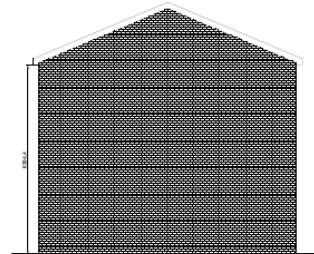
PROPOSED GROUND FLOOR



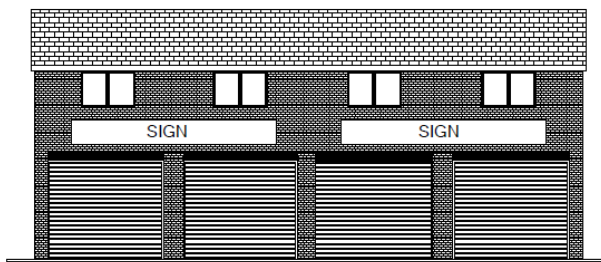
PROPOSED FIRST FLOOR



PROPOSED REAR



PROPOSED SIDE



PROPOSED FRONT

Proposed new building at: Wensley Road Blackburn	
CLIENT:	Mr P Akhtar
DATE:	September 2016
SCALE:	1:50 @ A1
DRAW No:	
L/A:	
AMENDMENTS:	DATE:
ENTWISTLE DESIGN SERVICES 7 Edgely Road Tel: 01257 274076 Ashley Village Chorley E-Mail: entwistle@edesign@aol.com PR07 1300	

APPENDIX 1

EXPLANATION OF ACOUSTIC TERMS

The dB or the decibel, is the unit of noise. The number of decibels or the level, is measured using a sound level meter. It is common for the sound level meter to filter or 'weight' the incoming sound so as to mimic the frequency response of the human ear. Such measurements are designated **dB(A)**.

A doubling of the sound is perceived, by most people, when the level has increased by 10 dB(A). The least discernible difference is 2 dB(A). Thus, most people cannot distinguish between, say 30 and 31 dB(A).

The Background level of noise is most commonly represented by the level which is exceeded for 90% of the time i.e. the LA90.

If a noise varies over time then the **equivalent continuous level, or LAeq**, is the notional constant level of noise which would contain the same amount of acoustic energy as the time varying noise.

The following table gives an indication of the comparative loudness of various noises expressed in terms of the A weighted scale:

Source of noise	dB(A)	Nature of Noise
Inside Quiet bedroom at night	30	Very Quiet
Quiet office	40	
Rural background noise	45	
Normal conversational level	60	
Busy restaurant	65	
Typewriter @ 1m	73	
Inside suburban electric train	76	
Alarm clock ringing @ .5m	80	
Hand clap @ 1m	80	
HGV accelerating @ 6m	92	Very Loud

APPENDIX 2

QUALIFICATIONS AND EXPERIENCE OF S.B. MELLOR

My full name is Steven Brian Mellor. I am the principal of the firm of SBM Safety Solutions Ltd, a consultancy company that specialises in health, safety and environmental services including noise assessment and control.

I hold a Master's degree in Health, Safety and Environmental Law, British Occupational Health Society (BOHS) M104 certificate in Noise and Vibration and Institute of Acoustics Certificate of Competence in Environmental Noise Measurement (Derby University) and Diploma in Acoustics and Noise Control (Bristol University). I am a member of the professional body for noise and vibration specialists, the Institute of Acoustics - MIOA.

I have some 16 years of experience dealing with problems caused by noise and vibration, both regarding noise and vibration in the environment, the workplace and the home. The firm of SBM Safety Solutions Ltd. was formed 13 years ago. During that time, we have advised many groups including employers, residents and developers about the problems of noise and vibration in the workplace and environment.

APPENDIX 3

SITE & MONITORING IMAGES



Site opposite



House Opposite Site