



Noise Impact Assessment for the Proposed Bar & Restaurant

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Site Address: 273-275 Bury New Road, Whitefield, Manchester M45 8QP

Date: 25/08/2021



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Executive summary

An environmental noise survey and noise impact assessment have been undertaken at 273-275 Bury New Road, Whitefield, Manchester M45 8QP to assess the potential increase in noise levels from the proposed Bar & Restaurant on the surrounding Noise Sensitive Receptors. The measured ambient sound levels have allowed a BS4142:2014 Assessment to be carried out.

The BS4142 assessment shows that the external noise levels do not exceed the lowest statistically most repeated measured background sound level during the proposed operational times. This indicates 'Negligible Impact' when assessed in accordance with BS4142 and 'No Observed Effect Level' when assessed in accordance with the NPSE and NPPF.

An overview of the recommendations can be found below:

Recommendations and Mitigation Overview

- The premises should not operate outside the proposed opening times (12:00 – 02:00).
- The internal noise levels should not exceed the octave bands and overalls noise levels listed in Table 3.0.
- The glazed elements installed in the proposed development must meet the minimum required sound reduction as shown in Table 6.0.
- All mechanical plant associated with the development should not exceed the cumulative plant noise limit level of 35.0 dBA at the closest NSR.
- Once all plant has been specified a suitably qualified person assess all emissions and plant locations to ensure the cumulative plant limit level can be achieved.

The findings of this report will require written approval from the Local Authority prior to work commencing.

1. Introduction

1.1 Overview

NOVA Acoustics Ltd has been commissioned to prepare a noise assessment for the proposed commercial development ('the Proposed Development') at 273-275 Bury New Road, Whitefield, Manchester M45 8QP ('the Site').

The applicant is preparing a planning application to be submitted ('the Application') to Bury Council.

The following technical noise assessment has been prepared to support the planning application to Bury Council. This report details the ambient sound climate at the proposed development site and provides a sound insulation scheme to protect the amenity of the occupants of the proposed residential dwellings.

This noise assessment is necessarily technical in nature; therefore, a glossary of terms is included in Appendix A to assist the reader.

1.2 Scope & Objectives

The scope of the noise assessment can be summarized as follows:

- Baseline sound monitoring survey to evaluate the prevailing background sound levels at the nearest sensitive receptor ('NSR') to Site;
- Detailed acoustic calculation and analysis in accordance with ISO9613 – 1 prediction methodology to predict sound levels at the NSR.;
- A detailed assessment of the suitability of the Site, in accordance with relevant standards in respect of sound from the surrounding noise sources; and
- Recommendation of mitigation measures, where necessary, to comply with the requirements of the National Planning Policy Framework (2019), Noise Policy Statement for England (2010) and British Standard BS84142:201. Further information on the legislation can be found in Appendix B.

2. Environmental Noise Survey

Measurement Methodology

In order to characterise the sound profile of the area at the proposed development, an environmental sound survey has been carried out from 13/08/2021 to 16/08/2021. The monitoring positions were chosen in order to collect representative sound levels at the proposed development during the day and night. The sound level meter was positioned on a lamppost at approximately 3.5m above ground level. The monitoring locations are shown in Figure 1.0.

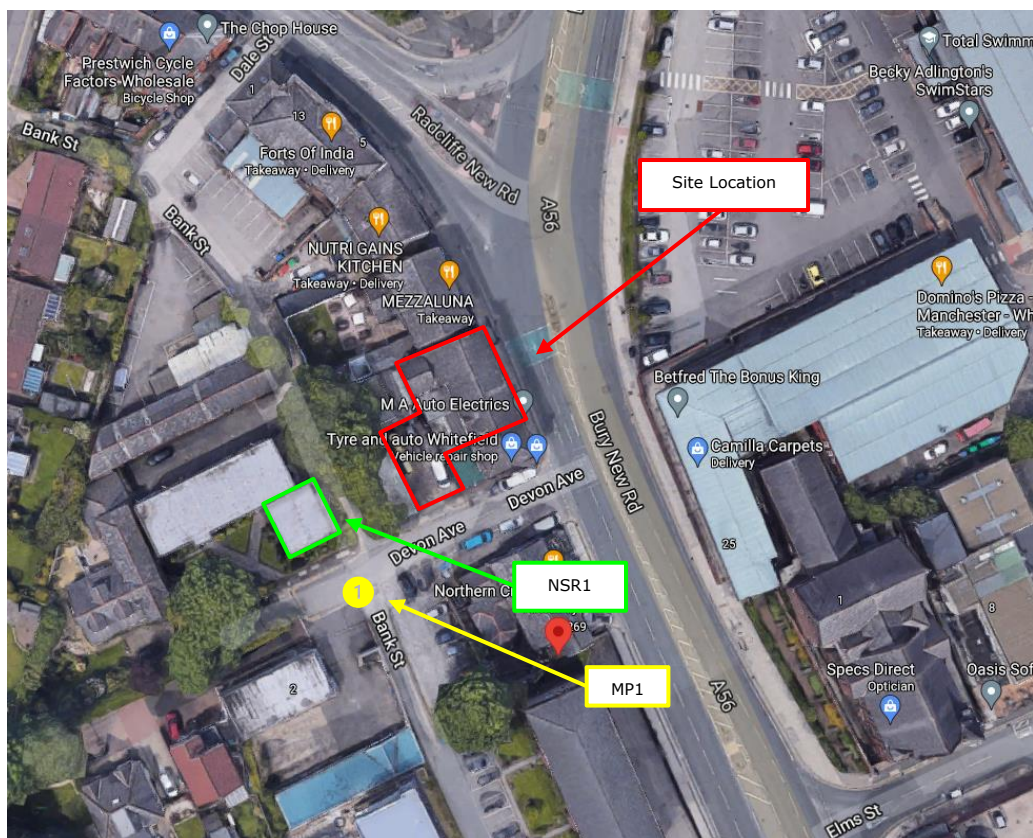


Figure 1.0 - Indicative Site Layout

2.1 Context & Subjective Impression

The area surrounding the site is primarily commercial mixed in nature with residential dwellings. To the east runs Bury New Road (A56) which facilitates moderate to high levels of traffic flow. Various shops (Betfred, Specs Direct), bars (Northern Crafthouse) and office spaces (Rose & Co. Accountants) can be found along Bury New Road. To the rear of the site, Devon Avenue provides access to the residential units situated west of the site. Whitefield Autos & Repair is also directly adjoining the site to the west. The noise profile of the area is dominated by traffic flow mixed in nature with other noise sources i.e. auto repair workshop to the rear.

2.2 Environmental Noise Survey Results

The proposed new building may operate daily from 12:00 to 02:00. The table below outlines the ambient and background sound levels during the operational period of the centre that will be used

as the baseline for the noise assessment. Further summary results for the entire measurement period can be found in Appendix D.

Measurement Position MP1				
Measurement Period ('t')	L _{A90,15min}	*SMR L _{A90,15min}	Min. L _{A90,15min}	Max. L _{A90,15min}
Night 3 – 15/08/2021 – 23:00 – 02:00	42.0	41.0	40.0	45.0

Table 1.0 – Sound Level Summary Results

**Statistically Most Repeated*

As can be seen in Table 1.0 above, the statistically most repeated L_{A90,15min} value is 41 dB. The range of measured background sound levels is moderate and, as such, the statistically most repeated L_{A90,15min} value is deemed 'Typical' and will be used in the noise analysis providing a robust assessment. Below in Table 2.0, we find the measured octave band L_{A90,15min} values for the same time period.

Measurement Position MP1							
Measurement Period ('t')	Octave Band (Hz)						
	63	125	250	500	1k	2k	4k
Night 3 – 15/08/2021 – 23:00 – 02:00	53.0	49.0	47.0	44.0	46.0	40.0	32.0

Table 2.0 – Octave Band Sound Level Summary Results

It is understood that using the noise levels listed above presents a worst-case scenario as the quietest period of the opening hours have been used (23:00 – 02:00).

3. Noise Assessment

3.1 BS4142:2014 Breakout Noise Assessment

The following section of the report assesses the expected noise emissions of the proposed bar & restaurant. Conversations with the client have suggested that there is to be background music only in the venue.

Note that taking measurements of the current operations has not been possible as the development is not yet operational. The table below outlines the expected music level associated with a bar playing background music. The example noise levels have been taken from a report* compiled "ACA Acoustics Limited" in a busy bar of a larger size with background music playing, therefore these octave band values should be applicable in this scenario providing a conservative approach.

Description	Octave Band $L_{Aeq,t}$ Hz							Overall (dB)
	63	125	250	500	1K	2K	4K	
Busy Bar with Background Music Sound Levels*	87.0	87.0	86.0	86.0	87.0	82.0	78.0	90.0

Table 3.0 – Octave Band Sound Levels of a Busy Bar

*(<https://www.molevalley.gov.uk/CausewayDocList/DocServlet?ref=MO/2018/0273&docid=799930>)

3.1.1 Noise Breakout Assessment

The following table assesses the noise emissions at the closest NSR1 due to the predicted internal noise breaking out of the proposed bar & restaurant. It is assumed the glazing will be the weakest element of the façade. The sound reduction of the glazed elements is taken from Pilkington's Optiphon range, assuming a typical 4mm glass – air cavity – 4mm glass.

Bar & Restaurant	Octave Band $L_{eq,t}$ Hz							
	63	125	250	500	1K	2K	4K	Overall
Busy Bar Internal Level	87.0	87.0	86.0	86.0	87.0	82.0	78.0	90.0
Window Reduction (Rw)	-19.0	-21.0	-17.0	-25.0	-35.0	-37.0	-31.0	-29.0
External noise level (L1-Rw-6)	62.0	60.0	63.0	55.0	46.0	39.0	41.0	55.0
Shielding (partial)*	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Distance attenuation (10m)	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0
Level at NSR Window	39.0	37.0	40.0	32.0	23.0	16.0	18.0	32.0
$L_{A90,t}$	53.0	49.0	47.0	44.0	46.0	40.0	32.0	41.0
Exceedance over $L_{A90,t}$	-14.0	-12.0	-7.0	-12.0	-23.0	-24.0	-14.0	-9.0

Table 4.0 – Noise Breakout Assessment – Bar & Restaurant

*2 A shielding correction is applicable as the line of sight between the source of noise and the NSR is blocked by a solid body (garage building)

Discussion:

As can be seen in the assessment above, provided the internal noise levels do not exceed the levels stated in the table above and the minimum sound reduction of the glazing is achieved, the noise breaking out level at the NSR falls a minimum of 7dB below the background sound level. This indicates 'Low Impact' or 'No Observed Effect Level' when assessed in conjunction with the NPPF and NPSE.

3.2 BS4142:2014 Industrial Noise Assessment

The following section of the report analyses the impact of any proposed plant units that may be installed on site.

Cumulative Plant Rating Noise Limit Level

In this section of the report, a plant noise limit level for any external plant will be set based on the measured background levels at the site. The specification and exact locations of all external plant have not yet been defined, consequently, a cumulative plant noise limit level has been provided to ensure all plant noise emissions fall significantly below the background sound level at the surrounding NSRs.

The table below shows the cumulative plant noise limit level at the NSRs. The plant rating limit level has been defined to ensure that all external plant noise falls below the lowest measured background sound level, as stated in Section 6.2 of the "Supplementary Planning Document – Adopted 2009 – Local Development Framework", it also has taken into account the addition of a rating penalty for a possible tonal component to the sound spectrum of the plant. This is shown in the table below.

Description	Value (dBA)
Lowest measured $L_{A90,t}$	40.0
Tonality Correction	-2.0
Intermittency Correction	-3.0
Cumulative Plant Noise Limit Level at NSR	35.0

Table 5.0 – External Plant Limit Level

Discussion:

As can be seen in the assessment above, provided that the Cumulative Plant Limit Level is adhered to, all noise emissions for the proposed plant should fall below the lowest $L_{A90,15mins}$ background sound level. When assessed in accordance with BS4142:2014 this indicates 'Low Impact'. When assessed in accordance with the NPPF the noise from all plant will indicate 'No Observed Effect Level'.

Given the outcome of the assessment, no further mitigation measures are required.

3.3 Recommendations & Mitigation

The following section outlines the mitigation measures that are necessary to reduce the impact of the proposed Bar & Restaurant.

- The premises should not operate outside the proposed opening times (12:00 – 02:00).
- The internal noise levels should not exceed the octave bands and overalls noise levels listed in Table 3.0.
- The glazed elements installed in the proposed development require the minimum sound reduction as shown in the following table.

Glazing	Octave Band $L_{eq,t}$ Hz							
	63	125	250	500	1K	2K	4K	Rw
Minimum Sound Reduction	5.0	9.0	10.0	13.0	12.0	13.0	17.0	20.0
Proposed Glazing	<i>Double Glazing: 4mm glass / 16mm Cavity / 5mm glass.</i>							
	19.0	21.0	17.0	25.0	35.0	37.0	31.0	29.0

Table 6.0 - Minimum Glazing Sound Reduction

The glazing suppliers are required to demonstrate the acoustic performance of their proposed system either by providing an acoustic test report in accordance with BS EN ISO 10140-2:2010 or an evidence-based calculation.

- All mechanical plant associated with the development should not exceed the cumulative plant noise limit level of 35.0 dBA at the closest NSR.
- Once all plant has been specified a suitably qualified person assess all emissions and plant locations to ensure the cumulative plant limit level can be achieved.

Appendix A – Acoustic Terminology

Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of 20µPa (20x10 ⁻⁶ Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s_1 and s_2 is given by $20 \log_{10} (s_1 / s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20µPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the "average minimum" noise level and is often used to describe the background noise.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m
Facade	At a distance of 1m in front of a large sound reflecting object such as a building façade.
Fast Time Weighting	An averaging time used in sound level meters. Defined in BS 5969.

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided. The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0 dB (the threshold of hearing) to over 120 dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

The ear is less sensitive to some frequencies than to others. The A-weighting scale is used to approximate the frequency response of the ear. Levels weighted using this scale are commonly identified by the notation dB(A).

In accordance with logarithmic addition, combining two sources with equal noise levels would result in an increase of 3 dB(A) in the noise level from a single source. A change of 3 dB(A) is generally regarded as the smallest change in broadband continuous noise which the human ear can detect (although in certain controlled circumstances a change of 1 dB(A) is just perceptible). Therefore, a 2 dB(A) increase would not be normally be perceptible. A 10 dB(A) increase in noise represents a subjective doubling of loudness.

A noise impact on a community is deemed to occur when a new noise is introduced that is out of character with the area, or when a significant increase above the pre-existing ambient noise level occurs.

For levels of noise that vary with time, it is necessary to employ a statistical index that allows for this variation. These statistical indices are expressed as the sound level that is exceeded for a percentage of the time period of interest. In the UK, traffic noise is measured as the L_{A10} , the noise level exceeded for 10% of the measurement period. The L_{A90} is the level exceeded for 90% of the

time and has been adopted to represent the background noise level in the absence of discrete events. An alternative way of assessing the time varying noise levels is to use the equivalent continuous sound level, L_{Aeq} .

This is a notional steady level that would, over a given period of time, deliver the same sound energy as the actual fluctuating sound. To put these quantities into context, where a receiver is predominantly affected by continuous flows of road traffic, a doubling or halving of the flows would result in a just perceptible change of 3 dB, while an increase of more than 25%, or a decrease of more than 20%, in traffic flows represent changes of 1 dB in traffic noise levels (assuming no alteration in the mix of traffic or flow speeds).

Note that the time constant and the period of the noise measurement should be specified. For example, BS4142:2014 specifies background noise measurement periods of 1 hour during the day and 15 minutes during the night. The noise levels are commonly symbolised as $L_{A90,1\text{hour}}$ dB and $L_{A90,15\text{mins}}$ dB. The noise measurement should be recorded using a 'FAST' time response equivalent to 0.125ms.

Appendix B – Legislation, Policy and Guidance

This report is to be primarily based on the following legislation, policy and guidance.

B.1 - National Planning Policy Framework (2019)

Government policy on noise is set out in the National Planning Policy Framework (NPPF), published in 2019. This replaced all earlier guidance on noise and places an emphasis on sustainability. In section 15, Conserving and enhancing the natural and local environment, paragraph 170e, it states:

Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;

Paragraph 180 states:

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- b) Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- c) Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

B.2 - Noise Policy Statement for England (2010)

Paragraph 180 of the NPPF also refers to advice on adverse effects of noise given in the Noise Policy Statement for England (NPSE). This document sets out a policy vision to:

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

To achieve this vision the Statement identifies the following three aims:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- Avoid significant adverse impacts on health and quality of life;*
- Mitigate and minimise adverse impacts on health and quality of life;*
- Where possible, contribute to the improvement of health and quality of life.*

In achieving these aims the document introduces significance criteria as follows:

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur. It is stated that “significant adverse effects on health and quality of life should be avoided while also considering the guiding principles of sustainable development”.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected. It is stated that the second aim above lies somewhere between LOAEL and SOAEL and requires that: “all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also considering the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur.”

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise. This can be related to the third aim above, which seeks: “where possible, positively to improve health and quality of life through the pro-active management of noise while also considering the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.”

The NPSE recognises that it is not possible to have a single objective noise-based measure that is mandatory and applicable to all sources of noise in all situations and provides no guidance as to how these criteria should be interpreted. It is clear, however, that there is no requirement to achieve noise levels where there are no observable adverse impacts but that reasonable and practicable steps to reduce adverse noise impacts should be taken in the context of sustainable development and ensure a balance between noise sensitive and the need for noise generating developments.

Any scheme of noise mitigation outlined in this report will, therefore, aim to abide by the above principles of the NPPF and NPSE whilst recognizing the constraints of the site.

B.3 - BS 4142:2014

BS4142:2014 sets out a method to assess the likely effect of sound from factories, industrial premises or fixed installations and sources of an industrial nature in commercial premises, on people who might be inside or outside a dwelling or premises used for residential purposes in the vicinity.

The procedure contained in BS4142:2014 for assessing the effect of sound on residential receptors is to compare the measured or predicted sound level from the source in question, the $L_{Aeq,T}$ ‘specific sound level’, immediately outside the dwelling with the $L_{A90,T}$ background sound level.

Where the sound contains a tonality, impulsivity, intermittency and other sound characteristics, then a correction depending on the grade of the aforementioned characteristics of the sound is added to the specific sound level to obtain the $L_{Ar,T}$ ‘rating sound level’. A correction to include the

consideration of a level of uncertainty in sound measurements, data and calculations can also be applied when necessary.

BS4142:2014 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". An estimation of the impact of the specific sound can be obtained by the difference of the rating sound level and the background sound level and considering the following:

- "Typically, the greater this difference, the greater the magnitude of the impact."
- "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 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 negligible impact, depending on the context."

Interpreting the guidance given in BS4142:2014, with consideration of the guidance given in the NPSE and NPPG Noise, an estimation of the impact of the rating sound is summarised in the following text:

- A rating sound level that is +10 dB above the background sound level is likely to be an indication of a Significant Observed Adverse Effect Level;
- A rating sound level that is +5 dB above the background sound level is likely to be an indication of a Lowest Observed Adverse Effect Level;
- The lower the rating sound 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 sound level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact, and would therefore classified as a No Observed Adverse Effect Level.

During the daytime, the assessment is carried out over a reference time period of 1-hour. The periods associated with day or night, for the purposes of the Standard, are 07.00 to 23.00 and 23.00 to 07.00, respectively.

Rating Penalty

Section 9 of BS4142:2014 describes how the rating sound level should be derived from the specific sound level, by deriving a rating penalty.

BS4142:2014 states:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level. This can be approached in three ways:

- a) subjective method;
- b) objective method for tonality;
- c) reference method."

Due to the nature of the development, the subjective method has been adopted to derive the rating sound level from the specific sound level. This is discussed in Section 9.2 of BS4142:2014, which states:

"Where appropriate, establish a rating penalty for sound based on a subjective assessment of its characteristics. This would also be appropriate where a new source cannot be measured because it is only proposed at that time, but the characteristics of similar sources can subjectively be assessed. Correct the specific sound level if a tone, impulse or other characteristics occurs, or is expected to be present, for new or modified sound sources."

BS4142:2014 defines four characteristics that should be considered when deriving a rating penalty, namely; tonality; impulsivity; intermittency; and other sound characteristics, which are defined as:

a) *Tonality*

A rating penalty of +2 dB is applicable for a tone which is "just perceptible", +4 dB where a tone is "clearly perceptible", and +6 dB where a tone is "highly perceptible".

b) *Impulsivity*

A rating penalty of +3 dB is applicable for impulsivity which is "just perceptible", +6 dB where it is "clearly perceptible", and +9 dB where it is "highly perceptible".

c) *Other Sound Characteristics*

BS4142:2014 states that where "the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinct against the residual acoustic environment, a penalty of +3 dB can be applied."

d) *Intermittency*

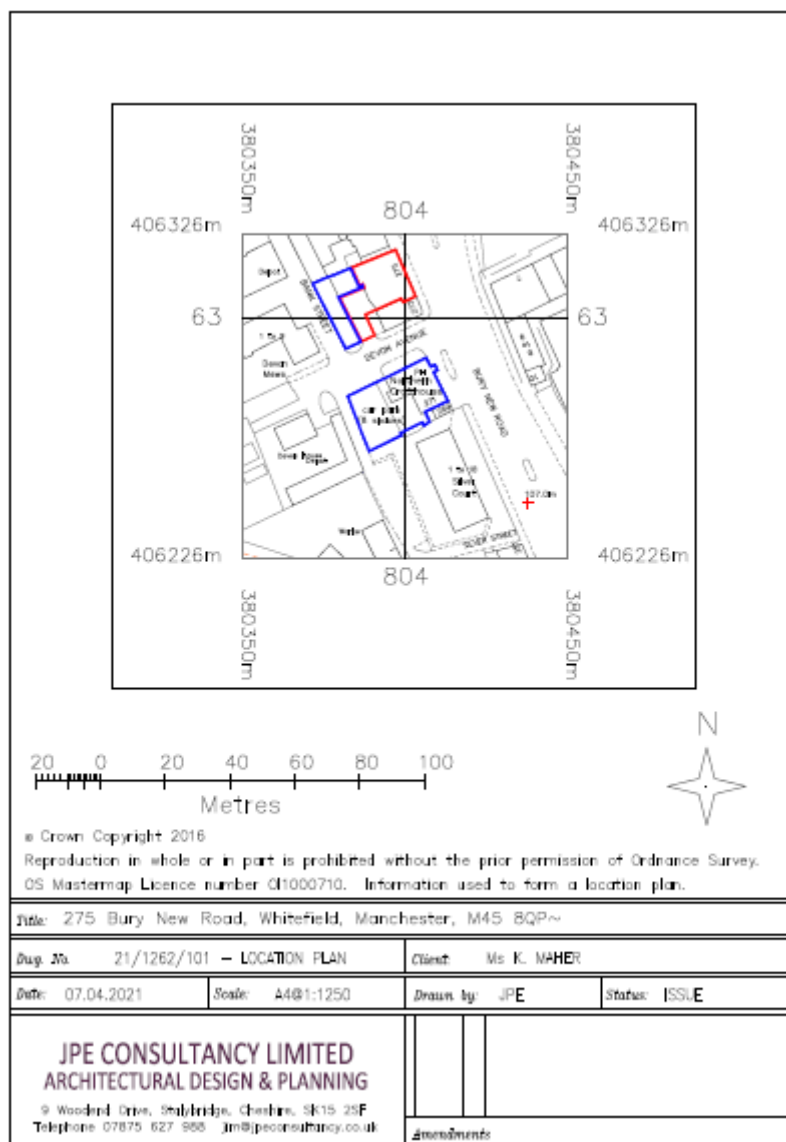
BS4142:2014 states that when the "specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on-time if the intermittency is readily distinctive against the residual acoustic environment, a penalty of +3 dB can be applied."

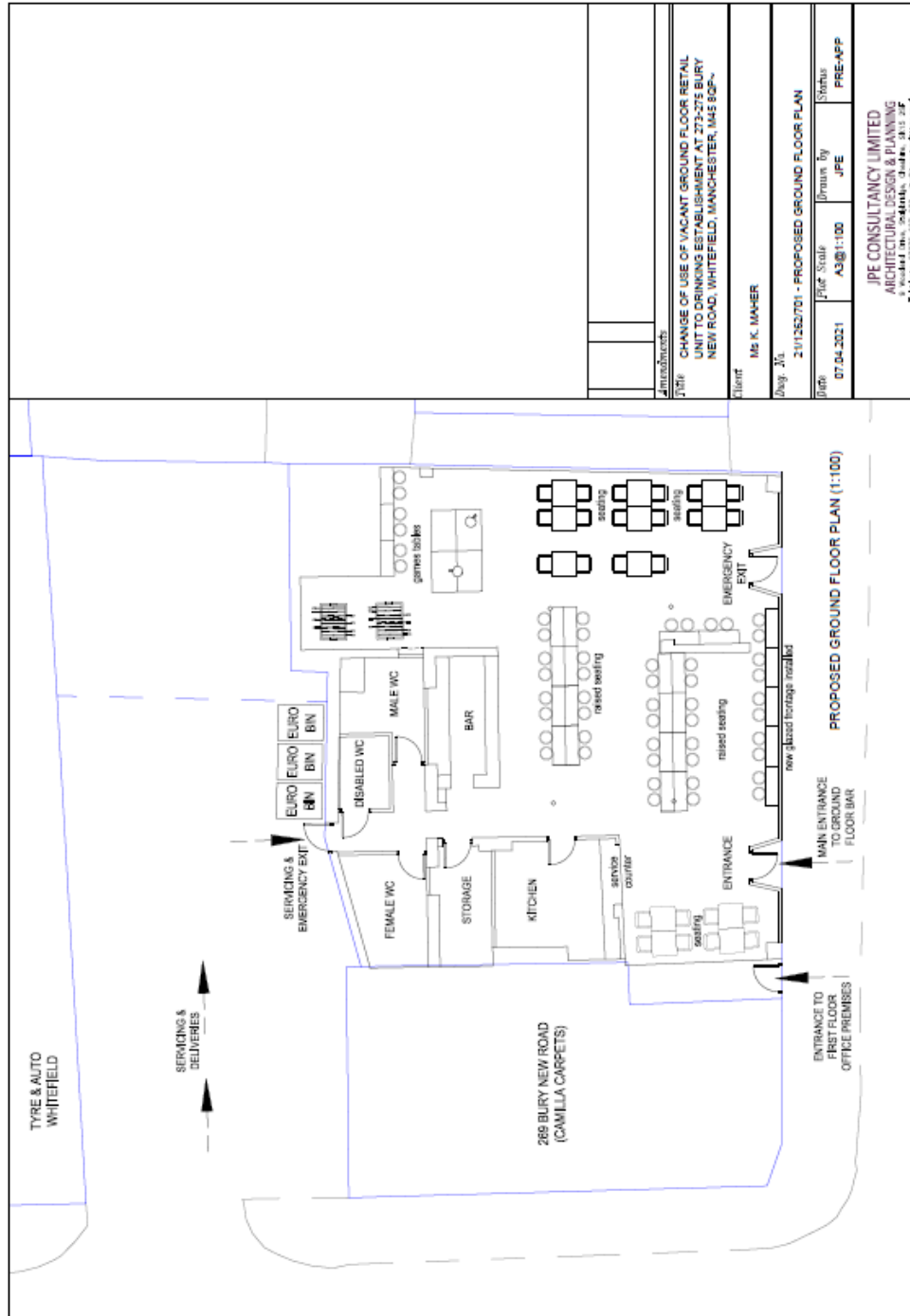
ISO 9613-2 Attenuation of sound during propagation outdoors

The ISO 1996 series of standards specifies methods for the description of noise outdoors in community environments. Part 2 of ISO 9613 is intended to enable noise levels in the community to be predicted from sources of known sound emission. The method is general in the sense that it may be applied to a wide variety of noise sources, and cover most of the major mechanisms of attenuation.

This standard provides guidance on the outdoor propagation of sound. It is widely used to establish the different attenuations that occur during the transmission of the sound from the sources to the receivers. The total attenuation is the sum of the following: geometrical divergence, atmospheric absorption, ground effect, barriers, and miscellaneous other effects.

Appendix C – Site Plans





Appendix D – Environmental Survey

3.4 D.1 Tabulated Summary Noise Data



Table 7.0 – Sound Survey Summary Results

3.5 D.2 Surveying Equipment

Piece of Equipment	Serial No	Calibration Deviation
CESVA SC420 Class 1 Sound level meter	T246452	≤0.5
CESVA CB006 Class 1 Calibrator	901997	

Table 8.0 – Measurement Equipment

All equipment used during the survey was field calibrated at the start and end of the measurement period with a negligible deviation of ≤0.5 dB. All sound level meters are calibrated every 24 months and all calibrators are calibrated every 12 months, by a third-party calibration laboratory. All microphones were fitted with a protective windshield for the entire measurements period. Calibration certificates can be provided upon request.

3.6 D.3 Meteorological Conditions

As the environmental noise survey was carried out over a long un-manned period no localized records of weather conditions were taken. However, during the set up and collection of the monitoring equipment the weather conditions have been documented in the following table. All measurements have been compared with met office weather data of the area, specifically the closest weather station, the data from the weather station is outlined in the table below. When reviewing the time history of the noise measurements, any scenarios that were considered potentially to be affected by the local weather conditions have been omitted. The analysis of the noise data includes statistical and percentile analysis and review of minimum and maximum values, which aids in the preclusion of any periods of undesirable weather conditions. The weather conditions were deemed suitable for the measurement of environmental noise in accordance with BS7445 Description and Measurement of Environmental Noise. The table below presents the average temperature, wind speed and rainfall range for each 24-hour period during the entire measurement.

Weather conditions – Chadderton Weather Station				
Time period	Air temp (°C)	Rainfall mm/h	Prevailing Wind Direction	Wind Speed (m/s)
13/08/2021 – 00:00 – 23:59	13.9 – 19.6	0.0	WSW	0.45 – 6.1 (mean 3.05)
14/08/2021 – 00:00 – 23:59	13.7 – 16.2	0.0	WSW	0.0 – 2.6
15/08/2021 – 00:00 – 23:59*				
15/08/2021 – 00:00 – 23:59	12.9 – 15.9	0.0 – 0.2	WNW	0.0 – 3.9

Table 9.0 – Weather Summary

*weather conditions data not available