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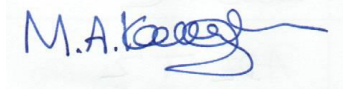
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NOISE ASSESSMENT Proposed Conversion to B8 (storage) Particular Baptist Church Rochdale Road, Manchester M4 4HT

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Site Visit: N/A

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1.0 INTRODUCTION

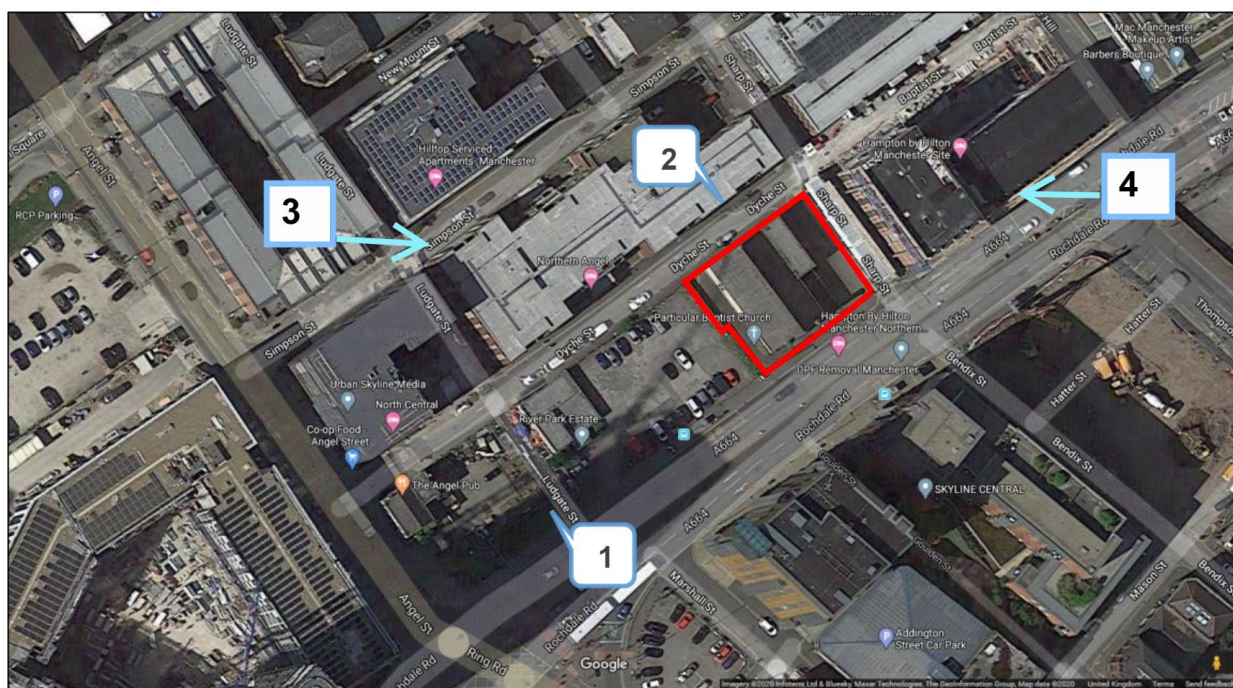
On the instructions of Howard and Seddon Architects, Martec Environmental Consultants Ltd carried out a noise assessment of a proposed conversion of The Particular Baptist Church, Rochdale Road, Manchester to Class B8 (Storage) use.

This report considers appropriate assessment criteria, measurements of the existing background noise climate [made by others], proposes a suitable noise condition and draws conclusions as to the acceptability of the proposals.

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

2.0 BACKGROUND TO ASSESSMENT

Figure 1 below shows the area around the development site which is marked with a red outline; it is an amended extract from Reference 5 and it also indicates where noise measurements have been made over recent years. In particular Position '2' in the figure, is the front façade of a block of apartments in Dyche Street and corresponds to the nearest residential properties to the current application.



Measurement locations (© maps.google.co.uk)

Figure 1: Area Plan showing Site [RED |] with various background noise measurement locations [Blue Boxes] from Section 6.2 of Reference 5 plus Amendments

Under the proposals, a new entrance would be formed in the eastern façade of the existing building to improve access to the interior and facilitate its use for storage.

Clearly storage does not usually generate significant levels of noise and therefore it is considered that a noise limit condition would be appropriate under these circumstances.

Figure 2 below shows the proposed building plan.

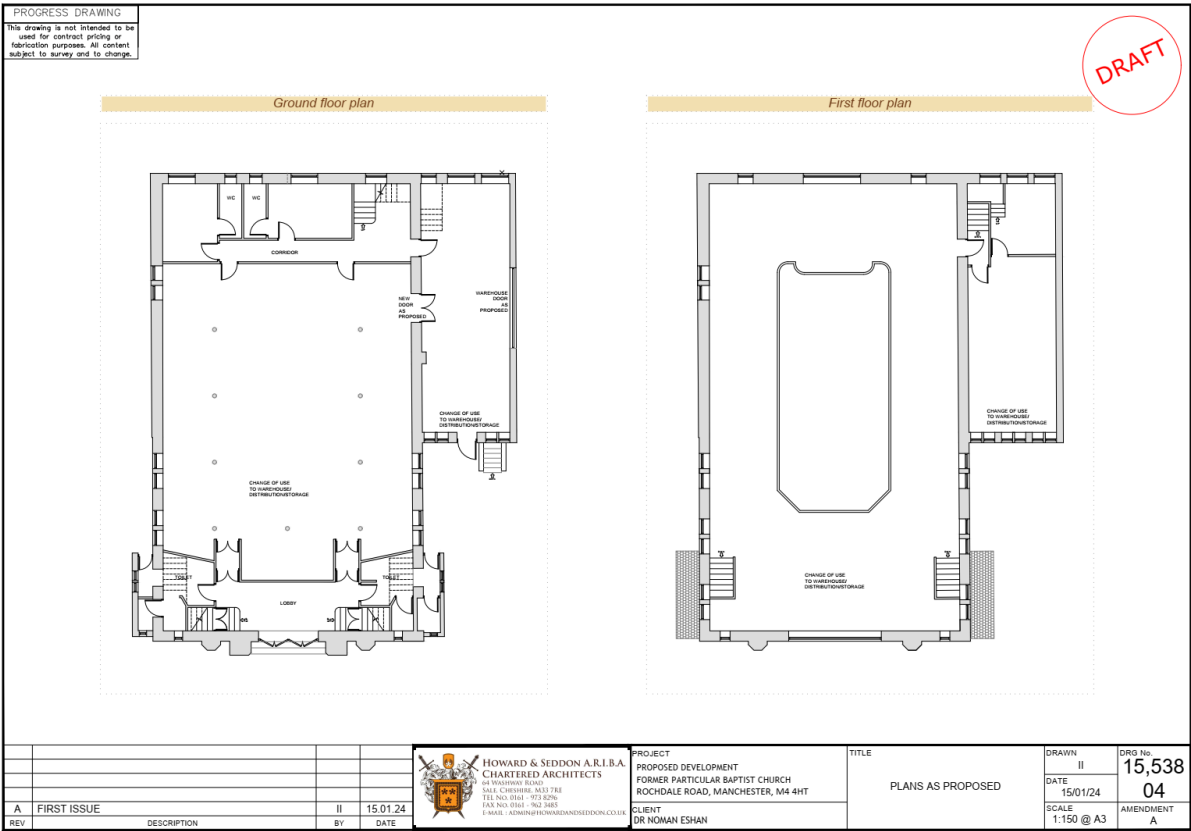


Figure 2: Proposed Building Plan

3.0 NOISE CRITERIA

BS4142:2014+A1:2019 - Method for Rating and Assessing Industrial and Commercial Sound

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”.

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 3 and 9dB. See table below.

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 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.

Intermittency

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. This can necessitate measuring the specific sound over a number of shorter sampling periods that are in combination less than the reference time interval in total, and then calculating the specific sound level for the reference time interval allowing for time when the specific sound is not present. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.”

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."

It would be usual to assess noise impact in external amenity spaces which are generally rear gardens but could include larger balconies where might be expected to spend some leisure time.

4.0 MEASUREMENT RESULTS

In Figure 1 above it can be seen that around the development site, noise measurements have been made at four locations around the site. These measurements are discussed in the following sections.

4.1 Positions 1 and 2 in Figure 1 [Reference 5]

These measurements are detailed in Reference 5 and were made over the course of several days from Friday 6th March 2020 to Tuesday 11th March 2020; this was prior to the first covid restrictions in the UK, which commenced on 16th March 2020 with an instruction to cease non-essential contact and travel; therefore, these measurements should have been unaffected.

Of the two positions No.2 was located halfway along the southern façade of the flats on Dyche Street “...*approximately 3m above ground level, overlooking Rochdale Road*” which is directly behind the Baptist church in the current application, and therefore, representative of the noise climate of the nearest properties to the current application.

Reference 5 reports the daytime and nighttime background noise in its Section 6.5. For reasons that are not clear, the background is detailed as the ‘Typical Lowest’ reading of 49 LA90 for daytime and 45 LA90 for nighttime.

Reference 5 does not explain the term 'typical lowest'. BS4142 has a specific methodology to determine representative background noise levels made on average and modal levels during the given time period, i.e. BS4142 does not use the lowest readings.

Reference 5 only reports the measurements in bar graph form so it has not been possible to determine background levels in terms of BS4142; however, so conclusions can be drawn. Figure 3 shows the measurements at Position 2, onto which the lines at corresponding to the daytime [49 LA90] and nighttime [45 LA90] 'typical lowest' levels and the nighttime periods have been plotted.

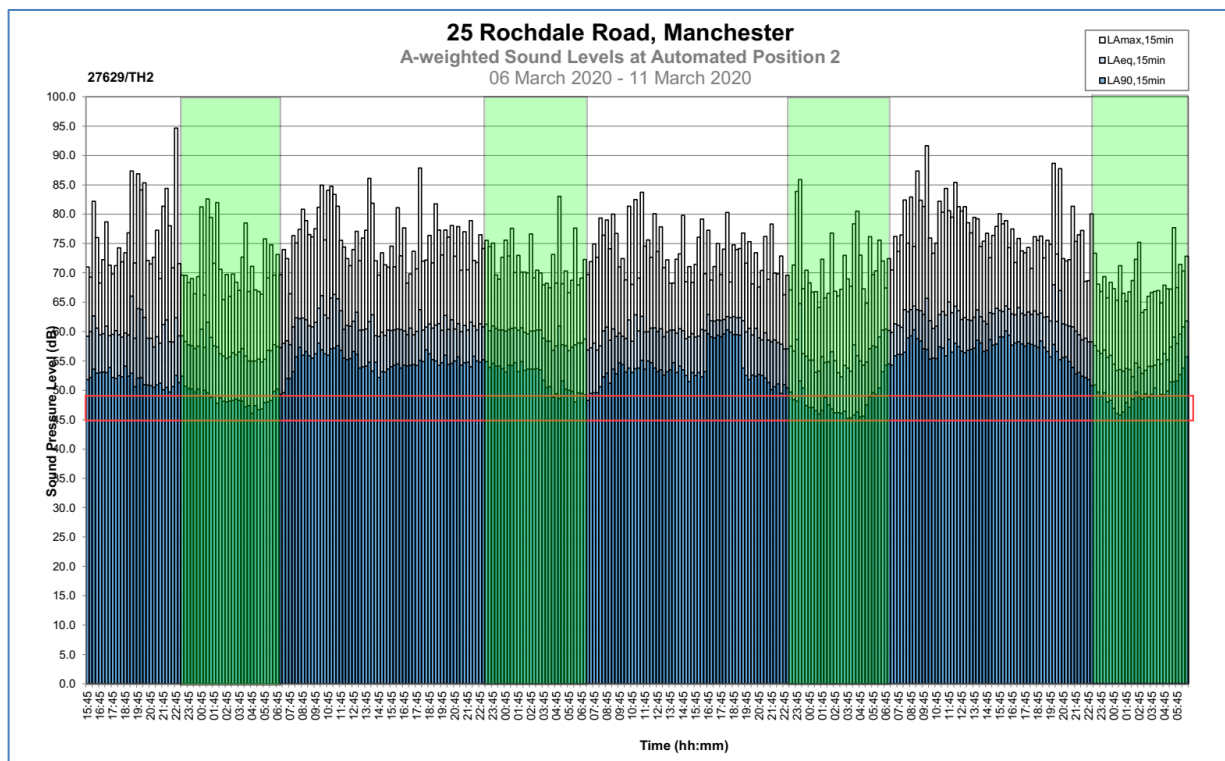


Figure 3: From Appendix B Reference 5 - Amended

From Figure 3 above, it can be seen that ‘typical lowest’ readings for daytime and nighttime appear to correspond to the actual lowest readings during those periods. Consequently, it can be concluded that the mode and average readings and hence the BS4142 background will be higher than ‘typical lowest’ figures used in Reference 5.

4.2 Position 3 in Figure 1 [Reference 6]

This was the position of the measurements made in March 2023 , which was described as *“Microphone attached to a lamppost at the rear of the site, on Simpson Street. Height of microphone approximately 4m above ground level.”* So, this measurement location was better screened from the main source of background noise in the area [Rochdale Road] than the nearest receptors in the current application; however, the results would be expected to exhibit the same distribution of results. Figure 4 below shows the daytime distribution of result at Position 3:

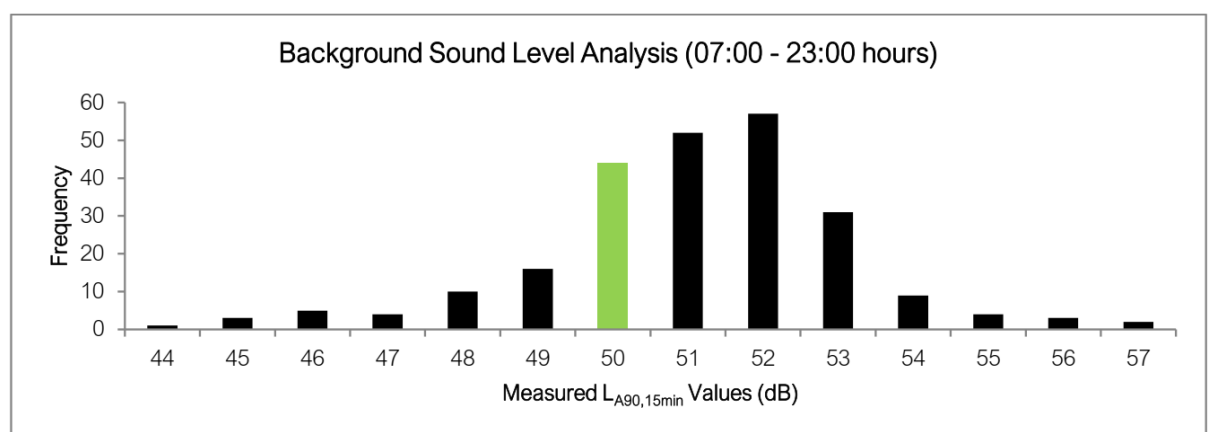


Figure 4: Daytime Background Analysis from Reference 6

It can be seen that in that instance the authors of the report used a figure of 50 LA90 to represent daytime background levels [column marked in green], which was 6dB higher than the lowest figure that they measured [44 LA90]. Similarly, from Figure 5 they used a Figure of 43 LA90 to represent nighttime which was 4dB higher than the lowest figure measured.

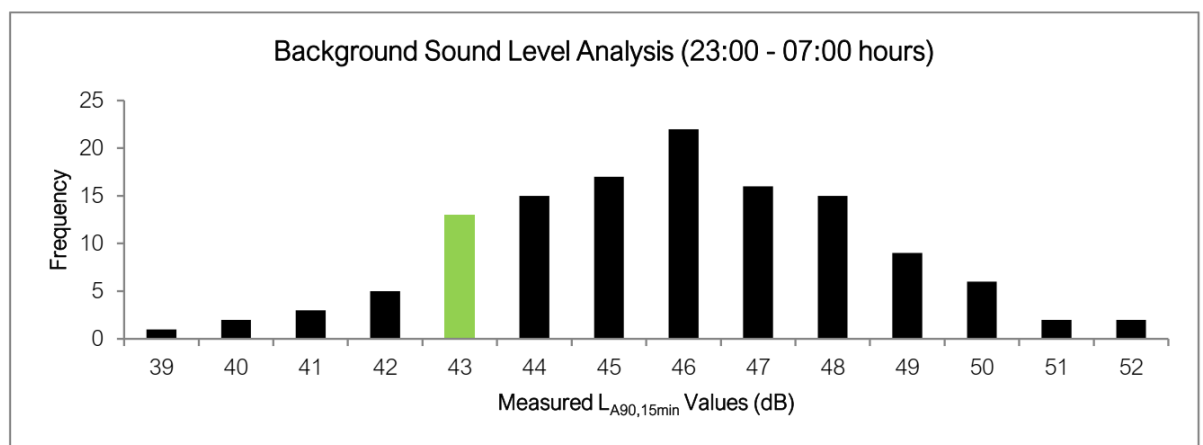


Figure 5: Nighttime Background Analysis from Reference 6

4.3 Position 4 in Figure 1 [Reference 7]

Prior to construction of the building currently in situ in this location, noise measurements were made at Position 4 on an open lot [Referred to as 'Location L' in Reference 7]. The measurement position was closer to Rochdale Road than the flats on Dyche Road, i.e. levels would be expected to be higher especially during the daytime; These measurements were made in 2016; however, the distribution of noise levels would be expected to be similar.

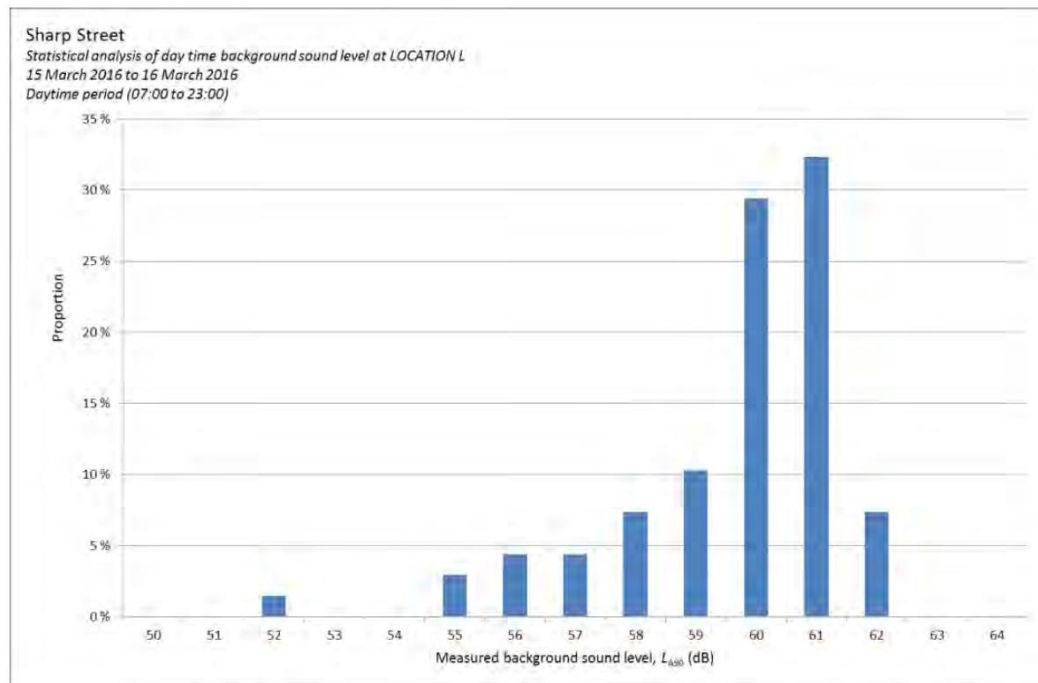


Figure 6: Daytime Background Analysis from Reference 7

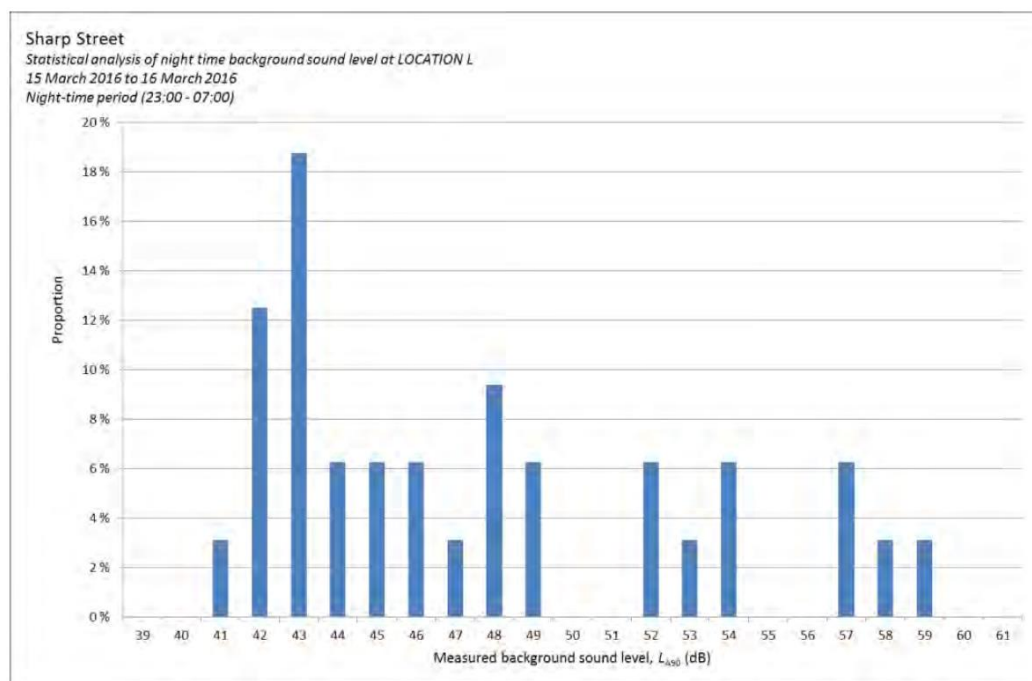


Figure 7: Nighttime Background Analysis from Reference 7

Background Noise levels at Position 4 were taken as 61 LA90 [daytime] and 43 LA90 [nighttime], some 6 and 3 dB above the corresponding minimum values measured during these periods.

4.4 Summary to Background Noise Levels

Based on the above studies, it is considered reasonable to assume that daytime background noise levels at the nearest dwelling to the current development [Position 2] should be taken as:

‘BS4142 Background’ Daytime = 55 LA90

‘BS4142 Background’ Nighttime = 45 LA90

The above assumes that warehousing operations take place during the normal working week [say 8am to 6pm 5½ days/week] and outside of these hours only plant such as air-conditioning might be operating.

5.0 CONCLUSIONS

The above background noise levels can form the basis of a noise limit condition for the proposed storage use of the building. Accordingly, it is considered that the noise impact should NOT bar the grant of planning consent for the development.

The noise limit condition could be as follows:

“The rating level of the noise emitted from the site shall not exceed the existing background noise level by more than 5 dB. The noise levels shall be determined at the southeastern façade of the dwellings on Dyche Street. The measurements and assessment shall be made according to BS 4142:1990 with background noise levels having been determined as 55 dB LA90 [free-field] for daytime and 45 dB LA90 [free-field] for nighttime.”

REFERENCES

1. Section 8.22 of "Acoustics and Noise Control - 2nd Edition" - Smith, Peters & Owen - 1996.
2. BS.8233:2014 "Guidance on Sound Insulation and noise reduction for buildings."
3. National Planning Policy Framework:
<http://www.communities.gov.uk/publications/planningandbuilding/nppf>
4. BS.4142:2014+A1:2019 "Methods for Rating and Assessing Industrial and Commercial Sound"
5. Hann Tucker Report HT:27629/NIA1 submitted as part of MCC Planning Application 127537_FO_2020 and available in public domain from MCC website.
6. Nova Acoustics Report NP-009142 submitted as part of MCC Planning Application 135803_FO_2022 and available in public domain from MCC website.
7. Sandy Brown Report 16099-R03-B submitted as part of MCC Planning Application 111921_FO_2016 and available in public domain from MCC website.

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 approximate 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	25-30	Very Quiet
Quiet office	40-45	
Rural background noise	35-45	
Normal conversational level	55-65	
Busy restaurant	65-75	
Inside suburban electric train	70-80	
Hand clap @ 1m	75-85	
HGV accelerating @ 5m away	85-90	Very Loud

APPENDIX 2

QUALIFICATIONS AND EXPERIENCE OF M. A. KENYON

My full name is Melville Alexander Kenyon. I am the principal of the firm of Martec Environmental Consultants Ltd, a consultancy company that specialises in environmental noise assessment and control. I graduated in 1982 with a Bachelor's degree in Engineering and subsequently a Master's degree in Environmental Acoustics. I have been a corporate member of the professional body for noise and vibration specialists, the Institute of Acoustics, since 1988, and have sat on the British Standards Committee dealing with noise in buildings [BS.8233:1999].

I have lectured at Liverpool John Moores University on the Diploma of Acoustics course and at Manchester Metropolitan University on their Environmental Health degree course. I have been an MSc Dissertation Supervisor at The University of Manchester.

The firm of Martec Environmental Engineering was formed in the 1970's and joined The Association of Noise Consultants in 1996. It is now known as Martec Environmental Consultants Ltd.

Since its formation, Martec has advised many groups of both residents and developers about the problems of noise and vibration in the environment.