



Acoustic Survey and Assessment for proposed replacement Mosque at Masjid Al Bilal, Bury Old Road, Prestwich, M25 0ER.

Prepared for

Lumitekton Ltd,
275A Upper Brook Street,
Manchester,
M13 0HR.

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1. Introduction

- 1.1. Martin Environmental Solutions has been commissioned to undertake an acoustic survey and assessment to support a planning application for a proposed redevelopment of the Masjid Al Bilal, Bury Old Road, Prestwich, M25 0ER.

Site Location and Context

- 1.2. The site currently consists of a car park and the existing mosque. Residential properties are located to the north, east and south of the site with the main road to the west. Opposite the site are a row of commercial properties with residential above.
- 1.3. An aerial Photograph is enclosed in Figure 1.
- 1.4. Concerns have been raised over the potential impact on the future residents of the development hence the request for this report.



2. Policy and Guidance

- 2.1. The impact of noise can be a material consideration in the determination of planning applications. The planning system has the task of guiding development to the most appropriate locations. It is recognised that on occasions it will be difficult to reconcile some land uses, such as housing, hospitals, or schools, with other activities that generate high levels of noise. However, the planning system is tasked to ensure that, wherever practicable, noise-sensitive developments are separated from major sources of noise (such as road, rail and air transport and certain types of industrial development).
- 2.2. The Government's publication of the National Planning Policy Framework (NPPF), updated in September 2023, states that planning policies and decisions should prevent new and existing development from contributing to or being put at unacceptable risk from, of being adversely affected by unacceptable levels of noise pollution.
- 2.3. The Government have also issued the Noise Policy Statement for England (NPSE). The NPSE clarifies the Government's underlying principles and aims in relation to noise and sets a vision to promote good health and a good quality of life through the effective management of noise while having regard to the Government's sustainable development strategy. The NPSE aims to mitigate and minimise adverse impacts on health and quality of life through the effective management and control of noise.
- 2.4. The NPSE introduces the following terms, although no sound levels are given to represent these, many authorities have identified the sound level criteria in line with the World Health Organisation, BS8233:2014 and BS4142: 2014 levels. The terms introduced by the NPSE are:
- NOEL – No Observed Effect Level (<30dB(A) inside <50dB(A) outside, 10dB below background)
- LOAEL – Lowest Observed Adverse Effect Level (30-35dB(A) inside 50-55dB(A) outside, background to +5dB)
- SOAEL – Significant Observed Adverse Effect Level (>35dB(A) inside, >55dB(A) outside, >+10dB above background)
- 2.5. The sound levels within the brackets of the previous paragraph are those determined as appropriate levels to indicate the relevant effect levels represented by the NPSE.



- 2.6. Other commonly used examples of standards utilised by Local Planning authorities for the consideration of noise impacts include comparison of the likely noise levels to be experienced at a development, with levels that have been recommended by the World Health Organisation (WHO) as Guidelines for the prevention of Community Noise Annoyance and within BS8233: 2014.
- 2.7. The WHO recommended noise levels for outdoor amenity areas (gardens) that should not be exceeded are 55dB(A) $L_{Aeq,16hr}$ in order to avoid 'Serious Community Annoyance' or 50dB(A) $L_{Aeq,16hr}$ to avoid 'Moderate Community Annoyance' during the day. For indoor levels WHO set 35dB(A) $L_{Aeq,16hr}$ during the day to prevent Moderate Annoyance and 30 dB(A) $L_{Aeq,8hr}$ at night to prevent sleep disturbance.
- 2.8. The WHO guidance also recommends that maximum sound levels at night should not regularly exceed 45dB(A) within bedrooms to prevent sleep disturbance. Regularly is considered to be more than 10 times during any 8-hour night-time period.
- 2.9. BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' also specifies desirable noise levels to be achieved inside dwellings.
- 2.10. BS 8233:2014 'Sound insulation and noise reduction for buildings – Code of Practice' also specifies desirable noise levels to be achieved inside dwellings. BS 8233 presents two levels, the first between the hours of 07:00 – 23:00 and the second between 23:00 -07:00.
- 2.11. The daytime period suggests internal noise levels of 35dB $L_{Aeq,16hr}$, for resting in living rooms and bedrooms while for night-time a level of 30dB $L_{Aeq,8hr}$ is recommended. Criteria for external areas mirrors that within the WHO guidance.
- 2.12. Another commonly used standard is British Standard 4142:2014 'Method for rating industrial and commercial sound' compares the sound predicted by the source in question against the background, L_{A90} sound levels.
- 2.13. The "residual" L_{Aeq} measurement is then subtracted from the "ambient" L_{Aeq} measurement (with the sound source) to calculate the sound level created by the "problem" sound alone -termed the "specific" sound level.



- 2.14. If the "problem" sound is tonal, such as whine or hum, or if it is impulsive such as bangs or clatters or if it is irregular enough to attract attention a correction is added to the "specific level" to produce the "rating level". The "background" L_{A90} measurement is then compared against the "rating level".
- 2.15. If the "rating level" exceeds the "background" by around 10dB(A) or more this "indicates a significant adverse impact". A difference of around 5dB(A) 'indicates an adverse impact. The lower the commercial noise level is, the lower the likely impact.
- 2.16. In addition, the 'ProPG Planning & Noise, Professional Practice Guidance on Planning & Noise, New Residential Development' provides a 4-staged approach to undertaking a risk assessment in relation to anticipated sound levels at new residential development and the provision of mitigation measures. The guidance is principally aimed at sites exposed predominantly to noise from transportation sources.
- 2.17. The first stage consists of an initial noise risk assessment, based on indicative day and night-time *noise* levels. Simply put, the higher the ambient noise in an area the greater the impact. The levels given are shown below although it should be noted that these are in excess of both the WHO and BS 8233: 2014 guidance.

Noise Risk Category*	Potential Effect if Unmitigated	Pre-Planning Application Guidance
0 – Negligible $L_{Aeq,16hr} < 50dB$ $L_{Aeq,8hr} < 40dB$	May be noticeable but no adverse effect on health and quality of life	In this category the development is likely to be acceptable from a noise perspective, nevertheless a good acoustic design process is encouraged to improve the existing environment and/or safeguard against possible future deterioration and to protect any designated tranquil areas. A noise assessment may be requested to demonstrate no adverse impact from noise. Application need not normally be delayed on noise grounds.
1 – Low $L_{Aeq,16hr} 50-63dB$ $L_{Aeq,8hr} 40-55dB$	Adverse effect on health and quality of life	In this category the development may be refused unless a good acoustic design process is followed and is demonstrated via a Level 1 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised and that a significant adverse impact will not arise in the finished development. Planning conditions and other measures to control noise may be required.
2 – Medium $L_{Aeq,16hr} 63-69dB$ $L_{Aeq,8hr} 55-60dB$ $L_{AFmax} > 80dB^{**}$	Significant adverse effect on health and quality of life	In this category the development is likely to be refused unless good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised, and clearly demonstrates that a significant adverse noise impact will not arise in the finished development. Planning conditions and other measures to control noise will normally be required.
3 – High $L_{Aeq,16hr} > 69dB$ $L_{Aeq,8hr} > 60dB$ $L_{AFmax} > 80dB^{**}$	Unacceptable adverse effect of health and quality of life	In this category the development is very likely to be refused on noise grounds, even if a good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement. Applicants are advised to seek expert advice on possible mitigation measures. Advice on the circumstances when the refusal of a new housing on noise grounds should normally be anticipated is included in the ProPG.

2.18. Stage 2, consists of a full assessment of the prevailing ambient noise and requires 4 elements to be considered:

- I. Element 1 – Good Acoustic Design
- II. Element 2 – Internal Noise Level Guidelines
- III. Element 3 – External Amenity Area Noise Assessment
- IV. Element 4 – Assessment of Other Relevant Issues

2.19. A good acoustic design is implicit in meeting the requirements of the NPPF and can help to resolve many potential acoustic issues.

2.20. Details of the criteria considered suitable are provided above for both internal and external sound levels. Element 4 includes such issues as local and national policy, likely occupants, wider planning objectives.



3. The Assessment

The Proposed Development and surrounding area

- 3.1 The proposed development will see the demolition of the existing building and erection of a new purpose built two-three storey community library, youth centre and mosque and associated car parking area.
- 3.2 No external plant or equipment is proposed as part of the development.
- 3.3 It has been confirmed that no entertainment, parties, weddings or similar will be held at the site.
- 3.4 The building is to be constructed from a variety of materials including blockwork, stone with some cladding. Structural non-opening double-glazed windows are to be included at the front and rear of the site. Assuming the attenuation of the building will be equal to the weakest material, the windows, a building attenuation of 30dB R_w has been assumed.
- 3.5 Existing residential properties are located to the north, east and south of the development site. The nearest boundary being 1.5m from the proposed building to the north and 37m to the property, while to the east the boundary is 15m from the proposed building and 25m to the property.

Assessment of the Building

- 3.6 In order to obtain representative background sound levels for the area on site monitoring was undertaken over the 7th-8th February 2024.
- 3.7 A Cirrus Optimus Green sound level meter was used for the monitoring. The meter was placed at the rear of the site adjacent to the neighbouring properties, this being the furthest point from the roadside.
- 3.8 The meters were field calibrated at the start and end of the monitoring period with no significant variation and full laboratory calibration certificates are available on request. The weather during the monitoring was dry with little to no wind.
- 3.9 The full results are shown in Appendix A, with a summary in the tables below.

Start Time	End Time	Duration	L _{Aeq}	L _{A90}	L _{AMax}
07/02/2024 07:00	07/02/2024 23:00	15:59:21	56.3	47.9	90.2
07/02/2024 23:00	08/02/2024 07:00	08:00:00	50.2	29.4	74.8



- 3.10 Background sound levels were dominated by passing traffic.
- 3.11 Activities within the building are not likely to generate a significant sound level. The loudest activities likely to be in the youth centre area and during prayer. An excessive internal level of 85dB(A) has therefore been assumed for internal noise levels.
- 3.12 Based on the above worse-case scenario the sound level from inside the building at the boundary of the neighbouring properties will be 25.5dB(A) to the rear (east) and 45.5dB(A) to the north. Although the rooms to that side of the building will consist of quiet areas – storerooms, offices and classrooms, reducing the internal sound level.

$$SPL_{ext,1m} = SPR_{int} - attenuation (R_w) - 6$$

$$SPL_{ext,1m} = 85 - 30 - 6$$

$$SPL_{ext,1m} = 49dB(A)$$

- 3.13 Entrances into the building have been designed with a double door entry system minimising any potential sound emissions from inside the building during ingress and egress of people.
- 3.14 At the façade of the properties the sound levels will be 25.5dB(A) to the east and 21dB(A) to the north.
- 3.15 The use of the building will therefore result in sound levels below those recommended within BS8233:2014 and by the World Health Organisation of 50dB(A) in garden amenity areas.
- 3.16 Given a 15dB attenuation¹ for an open window the internal sound levels to be experienced by the neighbouring properties will be 10.5dB(A) and 6dB(A) to the east and north respectfully.
- 3.17 The use of the building will not therefore result in any adverse impact on the neighbouring noise sensitive properties.

¹ BS8233: 2014; Guidance on sound insulation and noise reduction for buildings



3.18 The above assumes a flat line of sight. In reality the properties to the east area located at a higher elevation than the development site and a 3.5 barrier will be located between the rear of the building and the garden boundary, reducing sound levels further.



Assessment of the Car park

- 3.19 The existing carparking is to be retained and the use unchanged, the majority of the existing carparking does not form part of the planning application, however 20 car parking spaces are to be created.
- 3.20 The majority of these are to be located along the southern elevation of the building, while nine are to be located at the rear of the site. A retaining wall and fencing is to be erected around the north and east boundary with the properties to east being at a higher elevation than the site finished floor level. A 3.5m high barrier to the car parking area.
- 3.21 Previous monitoring by Martin Environmental Solutions has identified sound levels of 59dB(A) for slow moving vehicles within a car park at a distance of 5m. Assuming a minimum 10dB attenuation for the barrier as the receptors (including the first floor) will not have direct line of sight to the car parking area sound levels in the garden area will be between 50.9-37.0dB(A) depending on the exact location of the car and receiver.
- 3.22 Car parking will only take a minute and are expected to be on site for at least an hour minimising the level of potential disruption. Averaged over this 1-hour period the sound levels fall to 45.7dB(A) at the boundary.

$$SEL = L_{Aeq} + 10 \log(t)$$

$$SEL = 50.9 + 10 \log(60)$$

$$SEL = 68.7$$

$$SEL_n = SEL - 10 \log(t_t) + 10 \log(n)$$

$$SEL_n = 68.7 - 10 \log(3600) + 10 \log(18)$$

$$SEL_n = 45.7 \text{dB(A)}$$

- 3.23 The above calculated sound levels are below the guidance criteria and importantly below the prevailing daytime sound levels, when people are likely to be in the garden amenity areas.



- 3.24 The carparking the southern side of the building will not impact on the properties to the north, with the building acting as a substantial barrier. To the east carparking spaces will be located behind a wall around the rear area. The nearest car being 16m from the eastern boundary and 21m from the southern boundary.
- 3.25 Sound levels before consideration of the barrier attenuation will be 49dB(A) to the east and 46.5dB(A) to the west. Below the current background prevailing sound levels. When averaged over a the course of an hour will be even lower.



4 Conclusion

- 4.1 On-site monitoring has identified existing background sound levels in the area and a consideration of the proposed structure and activities has been undertaken. Excessively high internal sound levels have been used to calculate the impact on the neighbouring property and this has concluded no adverse impact will be experienced.
- 4.2 A further consideration of the car parking area has been undertaken and confirmed no adverse impact will be experienced.
- 4.3 The development will ensure that the internal and external sound levels are acceptable and will result in a No Observe Effect on the neighbouring residents in line with the Noise Policy Statement for England.
- 4.4 As such the development will meet the objectives of the National Planning Policy Framework in ensuring that no significant adverse impact is experienced by the future residents. The development is therefore considered to be acceptable in terms of noise.

Figure 1 – Aerial Photograph





Appendix A – Full Monitoring Results

Time	L _{Aeq} (dB)	L _{AMax} (dB)	L _{A90} (dB)
07/02/2024 07:00	57.0	79.1	50.2
07/02/2024 08:00	57.5	75.9	49.2
07/02/2024 09:00	55.7	78.0	47.5
07/02/2024 10:00	56.0	68.9	47.0
07/02/2024 11:00	56.3	74.7	47.7
07/02/2024 12:00	56.4	78.8	48.4
07/02/2024 13:00	55.9	69.7	48.4
07/02/2024 14:00	56.5	79.4	48.1
07/02/2024 15:00	56.8	72.1	49.7
07/02/2024 16:00	56.2	73.5	50.0
07/02/2024 17:00	57.1	90.2	50.1
07/02/2024 18:00	56.6	81.9	50.8
07/02/2024 19:00	55.6	75.6	48.4
07/02/2024 20:00	55.9	77.7	45.9
07/02/2024 21:00	55.7	73.1	45.5
07/02/2024 22:00	54.9	76.2	43.6
07/02/2024 23:00	51.8	71.9	36.5
08/02/2024 00:00	49.6	71.6	33.9
08/02/2024 01:00	45.7	68.9	29.3
08/02/2024 02:00	44.9	69.7	28.7
08/02/2024 03:00	45.4	68.5	28.1
08/02/2024 04:00	47.0	68.8	28.8
08/02/2024 05:00	51.4	74.8	34.5
08/02/2024 06:00	54.8	69.8	43.8



Appendix B – Report Author Details

This report has been produced by Neil Martin, BSc (Hons), PGDip, CEnvH MCIEH, MIOA.

Neil is the principal acoustic consultant at Martin Environmental Solutions Ltd, a consultancy company specialising in Environmental Health disciplines including environmental noise assessment and control. He holds a Bachelor's degree in Environmental Health and Diploma in Acoustics. He is a Chartered Member of the Chartered Institute of Environmental Health and a Full member of the Institute of Acoustics.

Neil has over 20 years' experience working within a Local Authority Environmental Health setting, principally in the Environmental Protection and Public Health areas and has been working as an acoustic consultant since 2011.

Since its formation, Martin Environmental Solutions has advised and assisted many groups including residents, developers and local authorities about the problems of noise and vibration in the environment and the possible solutions. Neil also acts as an expert witness in the area of acoustics.