



Acoustic Survey and Assessment for Proposed Residential development on land at Lancaster Avenue, Whitefield, Manchester, M45 6DX.

Prepared for:

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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 residential development on land at Lancaster Avenue, Whitefield, Manchester, M45 6DX.

Site Location and Context

- 1.2. The development site is situated to the north of Lancaster Avenue. Residential properties lie to the north, east and south of the site, with Lancaster Avenue running immediately to the south. To the west of the site at the top of a high earth bank runs the Greater Manchester Metro line.
- 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 July 2021, 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. 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.

2.13. 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.

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.

2.14. Stage 2, consists of a full assessment of the prevailing ambient noise and requires four 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

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



2.16. 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

- 3.1 In order to obtain representative background sound levels for the area on site monitoring was undertaken over the 12th-14th December 2022.
- 3.2 The sound level meter, a Cirrus Optimus Green unit was located above the fence line along the eastern boundary of the site within the neighbouring garden area.
- 3.3 The meter was field calibrated at the start and end of the monitoring period with no significant variation and full laboratory calibration certificates are available on request.
- 3.4 The weather during the monitoring was cold, dry with no wind.
- 3.5 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}
12/12/2022 17:00	12/12/2022 23:00	05:59:59	51.5	43.8	77.6
12/12/2022 23:00	13/12/2022 07:00	08:00:00	45.3	32.4	73.2
13/12/2022 07:00	13/12/2022 23:00	16:00:00	53.0	42.3	78.0
13/12/2022 23:00	14/12/2022 07:00	08:00:00	47.4	41.3	71.6

- 3.6 Background sound levels were dominated by distant traffic, with the passing trams clearly identified throughout the day from peaks in the sound level.
- 3.7 At night, the maximum sound levels regularly exceeded were due to the passing trams with levels being 65.7dB(A).
- 3.8 The proposed property will have the western façade an addition 6.5m closer to the tram line than the monitoring position, thus the sound levels from the trams will be an additional 5.5dB from those monitored. However, the only windows along western façade are two small highlight windows in the hallway and kitchen.
- 3.9 Given a 15dB attenuation¹ for an open window the sound levels to be experienced by the future occupants are above those identified within the guidance documents detailed in section 2 of the report. Therefore, further mitigation measures are required.
- 3.10 A standard 6/12/6 double glazing unit will provide a sound reduction, $R_w(C;C_{tr})$, of 33(-1;-3). Therefore, adequate to protect the future occupants from the existing prevailing background sound levels. Peaks identified from the passing trams will also be reduced

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



from the identified 71.2dB(A) (monitored 65.7db(A) + 5.5dB distance), to less than 41.2dB(A) throughout the day, below the identified maximum recommended sound level at night.

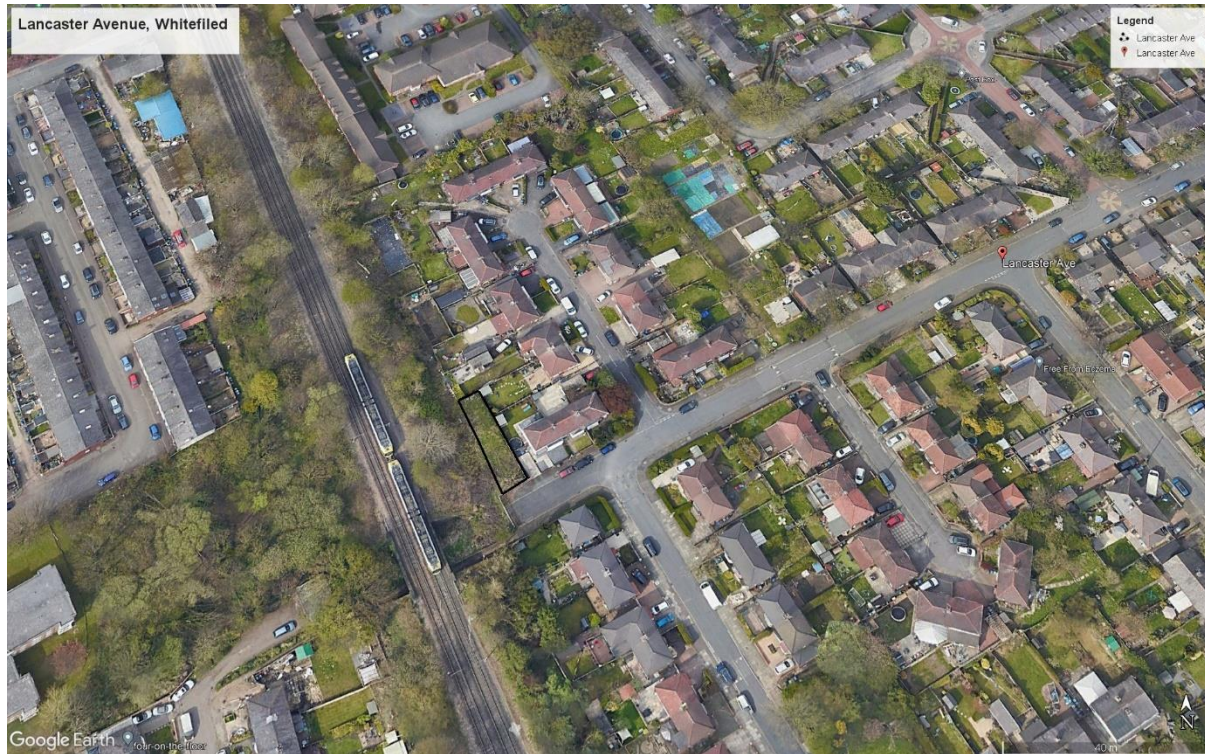
- 3.11 In order to be able to keep windows closed additional ventilation provision must be made for the property. As such it is recommended that a ventilation system is used incorporating acoustic trickle ventilators for all windows to habitable rooms to the proposed properties. The ventilators must achieve a similar or better performance to the windows when open and a number of suitable models are available from suppliers including the Greenwood DN Vent providing 34dB (C_{tr}) attenuation or the Titon, Trimvent Select S13 Ventilator providing 33dB (C_{tr}) attenuation. Other models and manufacturers are available.
- 3.12 Care must be taken to ensure that windows are well fitted and gaps between the window frame and the brick work are minimised. Where gaps do occur, these should be filled with a suitable acoustic material, not expandable foam. The window frame should be sealed across the full depth of the frame and not just around the edges. This will ensure that sound does not 'leak' around the edge of the frame.
- 3.13 For any external garden amenity areas, the daytime (16hr) average sound level has been identified as 53dB(A), including the passing trams. This is in line with the guidance documents discussed above falling between the lower and upper guideline figures.
- 3.14 BS8233:2014 also recognises that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas or adjoining the strategic transport network, a compromise between elevated noise levels and other factors may be warranted. This is commonly considered as a 5dB increase on the above guideline sound levels. The adjacent tram network is a strategic transport network within the Greater Manchester area, with the site being located within a convenient urban location.



4 Conclusion

- 4.1 On-site monitoring has identified existing background sound levels will result in an adverse impact on the internal environment within the proposed property. As such additional mitigation measures are required.
- 4.2 These have been identified as standard double-glazing units with trickle window vents to ensure a suitable level of ventilation is achieved.
- 4.3 The inclusion of the above mitigation measures to all habitable rooms will ensure that the internal and external sound levels are acceptable and will result in a No Observe Effect on the future 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	Duration	L _{Aeq} (dB)	L _{AMax} (dB)	L _{A90} (dB)
12/12/2022 17:00	01:00:00	51.5	72.2	43.5
12/12/2022 18:00	01:00:00	52.0	72.2	45.6
12/12/2022 19:00	01:00:00	54.2	77.6	46.9
12/12/2022 20:00	01:00:00	50.9	73.5	45.6
12/12/2022 21:00	01:00:00	48.7	69.5	42.6
12/12/2022 22:00	01:00:00	49.3	70.2	43.2
12/12/2022 23:00	01:00:00	48.7	69.7	41.4
13/12/2022 00:00	01:00:00	42.5	71.2	33.9
13/12/2022 01:00	01:00:00	35.6	44.1	32.2
13/12/2022 02:00	01:00:00	36.7	60.7	31.2
13/12/2022 03:00	01:00:00	40.3	68.6	31.0
13/12/2022 04:00	01:00:00	44.0	73.2	32.4
13/12/2022 05:00	01:00:00	46.2	70.1	38.9
13/12/2022 06:00	01:00:00	49.8	73.2	41.4
13/12/2022 07:00	01:00:00	52.1	73.6	39.9
13/12/2022 08:00	01:00:00	52.7	73.8	41.2
13/12/2022 09:00	01:00:00	53.5	74.5	41.6
13/12/2022 10:00	01:00:00	52.5	74.0	41.3
13/12/2022 11:00	01:00:00	54.0	77.0	43.0
13/12/2022 12:00	01:00:00	54.2	75.1	42.9
13/12/2022 13:00	01:00:00	52.7	74.9	42.6
13/12/2022 14:00	01:00:00	53.7	76.5	42.6
13/12/2022 15:00	01:00:00	53.5	78.0	45.4
13/12/2022 16:00	01:00:00	52.9	74.2	46.3
13/12/2022 17:00	01:00:00	53.1	72.7	47.6
13/12/2022 18:00	01:00:00	53.6	72.2	48.6
13/12/2022 19:00	01:00:00	54.5	77.7	49.9
13/12/2022 20:00	01:00:00	52.0	69.3	48.8
13/12/2022 21:00	01:00:00	50.4	71.6	46.3
13/12/2022 22:00	01:00:00	49.9	72.1	46.0
13/12/2022 23:00	01:00:00	49.3	71.5	44.4
14/12/2022 00:00	01:00:00	44.7	65.1	41.7
14/12/2022 01:00	01:00:00	44.5	51.5	41.7
14/12/2022 02:00	01:00:00	44.9	65.7	40.2
14/12/2022 03:00	01:00:00	44.4	65.4	39.8
14/12/2022 04:00	01:00:00	44.5	65.1	40.8
14/12/2022 05:00	01:00:00	47.9	65.7	44.9
14/12/2022 06:00	01:00:00	51.7	71.6	48.3

