MEC Consulting Group

ACOUSTIC AIR

Land South of Sacheverell Way, Groby
Acoustics Assessment
August 2025

Report Ref: 28953-ENV-0401 Rev A

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REPORT REF: 28953-ENV-0401 Rev A

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REGISTRATION OF AMENDMENTS

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CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 MEC Consulting Group Ltd (MEC) has been commissioned by Bloor Homes Ltd, to undertake an Acoustics Assessment for the proposed residential development on Land South of Sacheverell Way, Groby (hereafter referred to as 'the Site').

Existing Site

1.2 The Site, comprised of arable land, is bound by Sacheverell Way to the north, with existing residential located beyond; the A46 to the east; arable land to the south, with the A46 and existing commercial uses located beyond; and arable land to the west, with the M1 motorway located beyond.

1.3 The principal source of noise affecting the Site is predicted to be from road traffic using Sacheverell Way, the A46 and the distant M1.

1.4 An approximate redline boundary is presented in Figure 1.1.

Figure 1.1: Approximate Redline Boundary

Development Proposals

1.5 Development proposals for the Site comprise the erection of residential dwellings, with associated infrastructure and access via Sacheverell Way.

1.6 An initial masterplan is provided in **Appendix A**.

Assessment Scope

1.7 The following scope of works has been undertaken:

- An Environmental Sound Survey has been undertaken within the Site in order to determine the prevailing acoustic conditions;
- An acoustic model has been created in order to predict sound level across the Site for comparison against relevant criteria contained within ProPG[1], BS 8233[2]; and AVOG[3]; and
- Where required, appropriate mitigation measures have been provided to demonstrate compliance with the relevant standards.

1.8 The conclusions of this report aim to demonstrate to the Local Authority that external and internal acoustic conditions will be compliant with the relevant British Standards and Acoustics Guidance.

Disclaimer

1.9 MEC has completed this report for the benefit of the individuals referred to in Paragraph 1.1 and any relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use or rely upon the contents of this report unless explicit written approval has been gained from MEC.

1.10 MEC accepts no responsibility or liability for:

- The consequence of this documentation being used for any purpose or project other than that for which it was commissioned;
- The issue of this document to any third party with whom approval for use has not been agreed.

[1] Professional Practice Guidance on Planning and Noise, May 2017.
[2] BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'
[3] Acoustics Ventilation and Overheating, Residential Design Guide, V1.1. January 2020.

2.0 STANDARDS AND GUIDANCE

General

2.1 An acoustics glossary is provided in **Appendix B** to assist the reader.

Summary of Guidance and Standards

2.2 The following guidance and standards relevant to the assessment are outlined below:

- National Planning Policy Framework (NPPF) 2024;
- Noise Policy Statement for England (NPSE) 2010;
- Professional Practice Guidance on Planning and Noise (ProPG) 2017;
- BS 8233:2014 *'Guidance on sound insulation and noise reduction for buildings'*; and
- Acoustics Overheating and Ventilation Guide (AVOG) 2020.

2.3 For conciseness, the guidance and standards most appropriate to this assessment are summarised in this section.

Professional Practice Guidance on Planning and Noise (ProPG) 2017

2.4 ProPG seeks to secure good acoustic design for new residential developments. The guidance includes a framework to enable situations where noise is not an issue but to help identify the extent of risk at noisier sites. The guidance does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy.

2.5 The guidance is restricted to sites that are exposed predominantly to noise from transportation sources. Where industrial or commercial noise is present on the site but is "not dominant", its contribution may be included in the noise level used to establish the degree of risk. However, if the industrial/commercial source is dominant, an assessment in accordance with BS 4142 should be conducted.

2.6 A two-stage approach is considered whereby:

- Stage 1 – an initial noise risk assessment of the proposed development site is undertaken;
- Stage 2 – a systematic consideration of internal and external noise levels is considered ensuring good acoustic design and consideration of other relevant issues is recognised.

2.7 ProPG also references the World Health Organisation (WHO) guidance on maximum noise levels at night. Guidance from the WHO states that indoor sound pressure levels should not exceed approximately 45 dB L_{AFmax} more than 10 – 15 times per night. ProPG indicates that individual noise events do not exceed 45 dB L_{AFmax} more than 10 times a night and therefore this is considered as criteria in addition to that outlined in Table 2.2.

2.8 Whilst ProPG does not define a measurement interval for the assessment of L_{AFmax} levels, research undertaken by Paxton et al[4] indicates that, for Maximum Event Level assessments, a sampling interval of

[4] Paxton et al., Assessing L_{max} for residential development: The AVO Guide Approach, Institute of Acoustics, 2019

between 1 and 3 minutes relates most closely to how awakening events are experienced by people in reality when compared to longer sampling periods.

2.9 For brevity, within the study, the majority of people (circa 75-85%) under test returned to a sleep state by approximately 2.5 minutes after the initial awakening event.

2.10 In summary, a longer sampling period can result in the under assessment of the 10th highest maximum level, therefore, based upon research and the recommendation of the Institute of Acoustics (IOA), a sample measurement of 2 minutes has been used to inform this assessment.

2.11 Upon completion of the ProPG's Stage 1 and 2 assessments, the findings should enable one of four possible recommendations to be presented to the decision maker, namely to grant permission without conditions, grant with conditions, 'avoid' or 'prevent'.

BS 8233:2014 *'Guidance on sound insulation and noise reduction for buildings'*

2.12 BS 8233 provides recommendations for the control of noise in and around buildings.

2.13 The guidance provided includes appropriate internal and external noise level criteria which are applicable to residential buildings exposed to steady external noise sources. It is stated in the British Standard that it is desirable for internal ambient noise levels to not exceed the criteria set out in Table 2.2.

Table 2.2: BS 8233: 2014 Table 4 – Indoor Ambient Noise Levels for Dwellings

Activity	Location	07:00 – 23:00 $L_{Aeq, 16hr}$ dB	23:00 – 07:00 $L_{Aeq, 8hr}$ dB
Resting	Living Room	35	-
Dining	Dining Room/Area	40	-
Sleeping (daytime resting)	Bedroom	35	30

2.14 Additional guidance in BS 8233 indicates that appropriate ventilation should be provided, if relying on closed windows to meet the guide values, and that such ventilation should not compromise the façade insulation and resulting noise levels.

2.15 BS 8233 additionally includes guidance on external amenity areas whereby it states that external noise levels should not exceed 50 dB $L_{Aeq, T}$ with an upper guideline of 55 dB $L_{Aeq, T}$ which would be acceptable in noisier environments.

2.16 Furthermore, due to the nationwide difficulty in satisfying the external criteria outlined above, the standard provides an over-arching consideration of how to treat external amenity areas as follows:

"... it is also recognized 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 adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development

needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."

Acoustics Overheating and Ventilation Guide (AVOG) 2020

2.17 The AVOG was published by the Association of Noise Consultants (ANC) and The Institute of Acoustics (IOA) in 2020. The guide outlines a methodology for the assessment of airborne sound during overheating conditions, and emphasises the co-dependency of acoustics, ventilation and overheating design.

2.18 Many developments require closed windows to provide good internal acoustic conditions. This is in direct contrast to the fact that residents typically open windows in order to keep a building cool. These opposing requirements are becoming a major issue in the design of buildings, in particular for housing, especially as the aim is to avoid widespread use of mechanical ventilation and cooling systems.

2.19 AVOG prescribes a two-level assessment procedure, as follows:

- Level 1 – Site Risk Assessment, based on external free-field noise levels (similar to that of ProPG); and
- Level 2 – Assessment of Adverse Effect, based on internal ambient noise level and duration.

2.20 An AVOG Level 2 assessment gives consideration to internal noise levels on a sliding scale depending on the likelihood and duration of overheating.

2.21 This report considers an AVOG Level 1 assessment.

3.0 ENVIRONMENTAL SOUND SURVEY

3.1 An environmental sound survey was undertaken between Thursday 12th and Friday 13th September 2024. The survey was undertaken in full accordance with the guidance set out in BS 7445[5].

3.2 Sound Level Meters (SLMs) were installed at three locations, as follows:

- Continuous Measurement 1 (CM1): along the northern boundary, approximately 7m from the carriageway edge of Sacheverell Way;
- Continuous Measurement 2 (CM2): along the south-western boundary, approximately 12m from the carriageway edge of the A46; and
- Continuous Measurement 3 (CM3): to the southwest of the Site, approximately 355m from the carriageway edge of the M1.

3.3 The measurement positions are identified in Figure 3.1.

Figure 3.1: Measurement Positions

Equipment

3.4 Measurements were taken using Class 1 integrating/averaging SLMs housed in environmental protection apparatus. The SLMs were installed in a free field position at a height of 1.5m above local ground level, and

[5] BS 7445-1:2003 *'Description and measurement of environmental noise, Part 1: Guide to quantities and procedures.'*

field calibrated before and after the survey using a Class 1 calibrator, with no significant drift in calibration noted.

3.5 The SLMs were set up to capture the following parameters at a minimum: L_{Aeq}, L_{A90} and L_{AFmax} values, and full details of the equipment used to undertake the survey are presented in Table 3.1.

Table 3.1: Equipment and Calibration Details

Measurement Position	Description	Manufacturer & Type No.	Serial No.	Calibration Due Date
CM1	Sound Level Meter	Type NOR140	1407932	26/02/2025
	Pre-Amplifier	Type 1209	23695	
	Microphone	Type 1225	505583	
	Calibrator	Norsonic 1255	125525494	21/08/2025
CM2	Sound Level Meter	Type NOR140	1407599	20/08/2026
	Pre-Amplifier	Type 1209	22646	
	Microphone	Type 1225	384571	
	Calibrator	Norsonic 1251	34315	07/04/2025
CM3	Sound Level Meter	Type NOR140	1407773	27/03/2025
	Pre-Amplifier	Type 1209	23168	
	Microphone	Type 1225	413180	
	Calibrator	Norsonic 1251	34315	07/04/2025

Meteorological Conditions

3.6 During setup of the SLMs, weather conditions were cloudy with light drizzle and wet ground, and westerly winds of up to 4.6 m/s. On collection, conditions were sunny and dry, with westerly winds of up to 2.8 m/s.

3.7 The wet conditions during equipment setup on the Thursday will have increased the noise exposure, and will represent a worst case when defining mitigation.

Observations

3.8 Site notes indicate the dominant source of noise across the Site to be from road traffic using Sacheverell Way and the A46, with the M1 only faintly audible.

3.9 There was no audible noise from the commercial area to the south of the A46, and certainly no dominant noise that would warrant assessment under BS 4142.

Results

3.10 Time history graphs for each measurement position are presented in **Appendix C**.

3.11 Table 3.2, Table 3.3 and Table 3.4 provide a summary of the measured assessment appropriate sound levels at CM1, CM2 and CM3 respectively.

Table 3.2: Summary of Measured Sound Levels at CM1, dB

Date	Daytime 07:00 – 23:00	Night-time 23:00 – 07:00	
	$L_{Aeq,T}$	$L_{Aeq,8hr}$	Typical Maximum Event Level[a] $L_{AFmax,2min}$
Thu 12th	63[b]	58	75
Fri 13th	64[c]	-	-

[a] Maximum noise level not exceeded more than 10 times per night.
[b] T = 11hr
[c] T = 5hr

3.12 At CM1, the derived daytime $L_{Aeq,16hr}$ was 64 dB (rounding to the nearest whole number for assessment purposes), while the measured night-time $L_{Aeq,8hr}$ was 58 dB.

3.13 Analysis of the night-time $L_{AFmax,2min}$ noise levels shows that the individual noise events did not exceed 75 dB more than 10 times during either measured night-time period. Analysis of the audio recordings show that all events above 75 dB were caused by vehicular 'pass-bys', with no significant low frequency spectral content. Therefore, a value of 75 dB $L_{AFmax,2min}$ is considered appropriate value for assessment purposes.

Table 3.3: Summary of Measured Sound Levels at CM2, dB

Date	Daytime 07:00 – 23:00	Night-time 23:00 – 07:00	
	$L_{Aeq,T}$	$L_{Aeq,8hr}$	Typical Maximum Event Level[a] $L_{AFmax,2min}$
Thu 12th	73[b]	69	79
Fri 13th	74[c]	-	-

[a] Maximum noise level not exceeded more than 10 times per night.
[b] T = 11hr
[c] T = 5hr

3.14 At CM2, the derived daytime $L_{Aeq,16hr}$ was 74 dB, while the measured night-time $L_{Aeq,8hr}$ was 69 dB.

3.15 Analysis of the night-time $L_{AFmax,2min}$ noise levels shows that the individual noise events did not exceed 79 dB more than 10 times during either measured night-time period. Analysis of the audio recordings show that all events above 79 dB were caused by vehicular 'pass-bys', with no significant low frequency spectral content. Therefore, a value of 79 dB $L_{AFmax,2min}$ is considered appropriate value for assessment purposes.

Table 3.4: Summary of Measured Sound Levels at CM3, dB

Date	Daytime 07:00 – 23:00	Night-time 23:00 – 07:00	
	$L_{Aeq,T}$	$L_{Aeq,8hr}$	Typical Maximum Event Level[a] $L_{AFmax,2min}$
Thu 12th	57[b]	58	64
Fri 13th	57[c]	-	-

[a] Maximum noise level not exceeded more than 10 times per night.
[b] T = 11hr
[c] T = 5hr

3.16 At CM3, the derived daytime $L_{Aeq,16hr}$ was 57 dB, while the measured night-time $L_{Aeq,8hr}$ was 58 dB.

3.17 Analysis of the night-time $L_{AFmax,2min}$ noise levels shows that the individual noise events did not exceed 64 dB more than 10 times during either measured night-time period. Analysis of the audio recordings show that all events above 64 dB were caused by vehicular 'pass-bys' or bird-song, with no significant low frequency spectral content. Therefore, a value of 64 dB $L_{AFmax,2min}$ is considered appropriate value for assessment purposes.

4.0 ASSESSMENT METHODOLOGY

Acoustic Modelling

4.1 An acoustic model of the Site and environs has been generated in Datakustik CadnaA® modelling software. Noise source emissions have been informed by the environmental sound survey presented in Section 3.0.

4.2 Based on the environmental sound survey, the sound levels used to calibrate the 3D acoustic model are presented in Table 4.1.

Table 4.1: Sound Levels Used to Calibrate 3D Acoustic Model, dB

Parameter	CM1	CM2	CM3
Daytime Ambient $L_{Aeq,16hr}$	64	74	57
Night-time Ambient $L_{Aeq,8hr}$	58	69	58
Night-time Maximum $L_{AFmax,2min}$	75	79	64

4.3 CadnaA® considers various inputs, including topography, buildings and road noise sources, and calculates sound levels in accordance with national and international standards; in this case, the relevant UK standards are the procedures set out within ISO 9613-2[6].

4.4 The modelling assumptions and input information for the acoustic model are as follows:

- Digital Terrain Model – Lidar 1m (Environment Agency, downloaded on 20th September 2024);
- Open Street Map data (publicly available);
- Ground absorption for the Site = 0.5 (mixed ground);
- Building heights estimated following site observations or based upon masterplan;
- Buildings set to be reflective only with no absorption coefficient;
- First order reflections included in the modelling;
- Temperature set to 10°C; and
- Relative humidity set to 70%.

4.5 With reference to the noise criteria outlined in Section 2.0, the acoustic model has been used to predict sound levels across the Site in the following scenarios:

- Daytime $L_{Aeq,16hr}$ external sound levels at ground floor (1.5m) height;
- Night-time $L_{Aeq,8hr}$ external sound levels at first floor (4m) height; and
- Night-time $L_{AFmax,2min}$ external sound levels at first floor (4m) height.

[6] ISO 9613-2 *'Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation.*

5.0 ACOUSTICS ASSESSMENT

5.1 For conciseness, this report tabulates the most exposed receptors on the Site to give context to the most stringent mitigation measures. As plot numbers are not currently available, the most exposed receptors are identified as Plot X overlooking Sacheverell Way, Plot Y overlooking the A46, and Plot Z overlooking the distant M1, as identified in **Appendix D**. All other receptors are assessed through the various sound level contour and mitigation reference drawings presented in the various appendices to this report.

ProPG Initial Noise Risk Assessment

5.2 As required by the ProPG, an Initial Noise Risk Assessment (INRA) is presented Table 5.1, based on the modelled sound levels.

Table 5.1: Initial Site Noise Risk Assessment, dB

Risk	Negligible		Low		Medium		High	
Period	Day	Night	Day	Night	Day	Night	Day	Night
Pro PG Threshold	< 50	< 40	50 – 60	40 – 50	60 – 70	50 – 60	> 70	> 60
Plot X			59			55		
Risk Assessment			Low			Medium		
Plot Y					64			61
Risk Assessment					Medium			High
Plot Z			57			57		
Risk Assessment			Low			Medium		

5.3 Based on the modelled sound levels, sound levels adjacent to Sacheverell Way (Plot X) and the site boundary overlooking the distant M1 (Plot Z) fall within the ProPG risk category of 'Low' risk during daytime, for which the guidance states "*the Site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed*".

5.4 The noise exposure increases during the night-time, with new dwellings overlooking these roads falling within the 'Medium' risk category, for which the guidance requires that the Site should follow a good acoustic design process which confirms how the adverse impacts of noise will be mitigated and minimised.

5.5 Sound levels for new dwellings overlooking the A46 (Plot Y) fall within the 'Medium' risk category during the daytime, which increases to a 'High' risk during the night-time, for which the guidance indicates that the Site is less likely to be suitable from a noise perspective, and applicants are strongly advised to seek expert advice. The guidance goes on to state that the Site should follow a good acoustic design process which clearly demonstrates how the impacts of noise will be mitigated and minimised and that a significant adverse noise impact will be avoided in the finished development.

5.6 This report is considered to form the basis of the 'Acoustic Design Statement', which considers appropriate design measures to achieve suitable acoustic conditions for residential amenity.

BS 8233 External Amenity Criteria

5.7 The acoustics criterion often the most difficult to meet in residential environments situated next to busy transportation sources is BS 8233's criterion of 55 dB $L_{Aeq,16hr}$ applicable to private external amenity spaces such as gardens.

5.8 There are significant site constraints that restrict the use of boundary screening adjacent to the A46, notably, the existing easements associated with the utilities and drainage infrastructure. Subsequently, extensive testing of the Site in terms of dwelling orientation, site density and stand-off to the A46 has been undertaken to formulate the initial masterplan, and protect private amenity as far as practicable.

5.9 Based on the initial masterplan, indicative dwellings for the most part, have been assumed to face the respective road sources, with gardens used for amenity purposes located behind and thereby, experiencing additional distance attenuation as well as screening from the dwellings themselves. In addition, gaps between dwellings overlooking the A46 have been kept to a minimum to protect external garden areas.

5.10 In this scenario, drawing 28953_04_120_01 in **Appendix D** indicates that, through the provision of standard 1.8m high close boarded timber fencing, and with the use of 2.5m high acoustic garden fencing at select locations as identified within the drawing, BS 8233's criterion of 55 dB will likely be satisfied across the Site.

BS 8233 Internal Acoustic Criteria

5.11 Table 5.2 presents the required external to internal reduction requirements for the most exposed indicative receptors overlooking Sacheverell Way (Plot X), the A46 (Plot Y), and the distant M1 (Plot Z).

Table 5.2: Required Façade Performance, dB

Plot	Parameter	External Level	Internal Criteria	Required Reduction
X	Daytime Ambient $L_{Aeq,16hr}$	59	35	24
	Night-time Ambient $L_{Aeq,8hr}$	55	30	25
	Night-time Maximum $L_{AFmax,2min}$	73	45	28
Y	Daytime Ambient $L_{Aeq,16hr}$	64	35	29
	Night-time Ambient $L_{Aeq,8hr}$	61	30	31
	Night-time Maximum $L_{AFmax,2min}$	70	45	25
Z	Daytime Ambient $L_{Aeq,16hr}$	57	35	22
	Night-time Ambient $L_{Aeq,8hr}$	57	30	27
	Night-time Maximum $L_{AFmax,2min}$	65	45	20

5.12 For the most exposed receptor overlooking the Sacheverell Way (Plot X), the results in Table 5.2 show that a sound reduction of up to 24 dB will be required to achieve the $L_{Aeq,16hr}$ criteria within habitable rooms during the daytime, with a sound reduction of up to 28 dB required to achieve the L_{Amax} criteria within bedrooms during the night-time.

5.13 For the most exposed receptor overlooking the A46 (Plot Y), a sound reduction of up to 29 dB will be required to achieve the $L_{Aeq,16hr}$ criteria within habitable rooms during the daytime, with a sound reduction of up to 31 dB required to achieve the $L_{Aeq,8hr}$ criteria within bedrooms during the night-time.

5.14 For the most exposed receptor overlooking the distant M1 (Plot Z), a sound reduction of up to 22 dB will be required to achieve the 35 dB $L_{Aeq,16hr}$ criteria within habitable rooms during the daytime, with a sound reduction of up to 27 dB required to achieve the $L_{Aeq,8hr}$ criteria within bedrooms during the night-time.

AVOG Level 1 Assessment

5.15 AVOG prescribes a two-stage assessment. Level 1 looks to determine if overheating needs to be considered further, based on the predicted external façade levels for the most exposed receptors.

5.16 The initial Level 1 assessment is presented in Table 5.3.

Table 5.3: AVOG Level 1 Assessment

Plot	Parameter	Predicted External Level dB	Level 1 Risk Grading	Level 2 Advised?
X	Daytime Ambient $L_{Aeq,16hr}$	59	Medium	Recommended
	Night-time Ambient $L_{Aeq,8hr}$	55	High	Recommended
Y	Daytime Ambient $L_{Aeq,16hr}$	64	High	Recommended
	Night-time Ambient $L_{Aeq,8hr}$	61	High	Recommended
Z	Daytime Ambient $L_{Aeq,16hr}$	57	Low	Optional
	Night-time Ambient $L_{Aeq,8hr}$	57	High	Recommended

5.17 The results demonstrate that at the most exposed receptors, an AVOG Level 2 assessment is recommended due to the high risk grading and therefore, further investigation into internal acoustic conditions during periods of overheating will be required.

5.18 Nevertheless, demonstrating a suitable overheating strategy is not an outline planning application consideration, and could therefore be considered at the Reserved Matters stage, or as part of other Building Control matters.

6.0 MITIGATION

External Sound Levels

6.1 Modelling has demonstrated that, with careful consideration to the Site layout, coupled with the use of 2.5m high acoustic garden fencing at the most exposed garden areas, BS 8233's criterion of 55 dB will be satisfied across the Site.

6.2 Where acoustic fencing is used as part of any boundary screening, the following specification is recommended as a minimum:

- Good quality timber with no warping, knots etc;
- At least 25mm thick in all places;
- Close-boarder and continued across the front of posts to minimise gaps;
- Boards should overlap 25mm as a minimum;
- No gaps should be present between gravel board and the ground; and
- Minimum mass of 10 to 15kg/m^2.

Internal Sound Levels

6.3 Acoustic modelling has demonstrated potential façade sound levels and, in accordance with BS 8233, ProPG and AVOG, sound reduction performance requirements of the façade have been determined.

6.4 In terms of acoustics, windows and ventilation strategies are the 'weakest' acoustics point in any façade and subsequently, the composite sound reduction performance is typically dominated by these elements. Therefore, minimum performance requirements to be provided by the glazing and ventilation elements at all dwellings are presented herein.

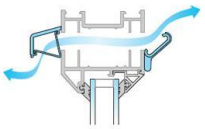
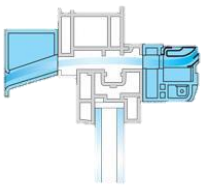
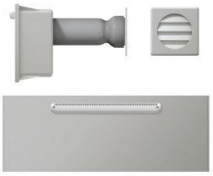
6.5 Drawing on the above, and the acoustic modelling undertaken, Table 6.1 provides typical reduction requirements and potential glazing and ventilation solutions across the Site in order to demonstrate compliance with the internal sound level criteria outlined in BS 8233, and ProPG, and the ventilation requirements of AD-F[7].

6.6 This table should be read in conjunction with the drawings in **Appendix E** whereby drawing 28953_04_120_04 demonstrates the required reduction for bedrooms and drawing 28953_04_120_05 demonstrates the required reduction for all other habitable rooms.

6.7 For each reference in Table 6.1, the sound reduction performance requirements, in octave band and weighted reduction format, are presented in **Appendix F**.

[7] The Building Regulations 2010, Ventilation, Approved Document F, 2021 Edition.

Table 6.1: Suggested Internal Mitigation Measures

Mitigation Ref.	Example Glazing Solution	Example Whole-Dwelling Ventilation Solution (AD-F)
Ref. A	4mm glass panel 12mm air gap 4mm glass panel Approx. 27 dB $R_w + C_{tr}$	<u>Standard Non-Acoustic Trickle Vent</u> Direct airpath trickle vent located in the top of the window frame  Approx. $D_{n,e,w} + C_{tr}$ = 32 dB
Ref: B	8mm pane 12mm air space 10mm pane Approx. $R_w + C_{tr}$ = 33 dB	<u>Acoustically Rated Trickle Vent</u> Slots typically located in the window frame with more torturous path and acoustic lining  Approx. $D_{n,e,w} + C_{tr}$ = 35 dB
Ref: C	6mm pane 18mm air space 9.5 mm laminated pane Approx. $R_w + C_{tr}$ = 36 dB	<u>Acoustically Rated Through Wall Trickle Vent</u> Through wall trickle vent with torturous airpath.  Approx. $D_{n,e,w} + C_{tr}$ = 42 dB

7.0 CONCLUSIONS

7.1 MEC has been commissioned by Bloor Homes Ltd, to undertake an Acoustics Assessment for the proposed residential development on Land South of Sacheverell Way, Groby.

7.2 Detailed assessments of the Site, during typical conditions, have been undertaken in accordance with BS 8233 and ProPG criteria whilst giving consideration to typical condition ventilation requirements in AD-F.

7.3 Based on the initial masterplan, indicative dwellings for the most part, have been assumed to face the respective road sources, with gardens used for amenity purposes located behind and thereby, experiencing additional distance attenuation as well as screening from the dwellings themselves. In addition, gaps between dwellings overlooking the A46 have been kept to a minimum to protect external garden areas.

7.4 In this scenario, modelling has demonstrated that, with careful consideration to the Site layout, coupled with the use of 2.5m high acoustic garden fencing at the most exposed garden areas, BS 8233's criterion of 55 dB will be satisfied across the Site.

7.5 With regards to internal acoustic conditions, the majority of new dwellings will satisfy the criteria in BS 8233 and ProPG through the provision of standard thermal double glazing and direct airpath window mounted trickle ventilators to achieve the whole-dwelling ventilation requirements of AD-F, with uprated acoustic glazing and through wall ventilators required for the most exposed plots overlooking the respective road sources.

7.6 When considering the planning guidance outlined in AVOG, an open window acoustics strategy is not permissible for the most exposed dwellings during periods of overheating. Therefore, further investigations will be required under AD-O at Building Control stage. However, as this is not a planning consideration the application should not be delayed on these grounds.

7.7 It is therefore considered that with the implementation of the recommended mitigation strategy, the Site is suitable for residential development.

MEC
Consulting Group

APPENDICES

APPENDIX A

LEGEND

- Site Boundary
- Land in Control of Applicant
- Residential
- Primary Road
- Secondary Street
- Tertiary Street
- Mews Street
- Public Open Space
- Pedestrian / Cycle Link
- Footpath Link
- Public Footpath (route on the ground)
- Public Footpath (mapped route)
- Permissive Route
- Attenuation Basin
- Swale Corridor
- Existing Ditch / Drain
- Existing Tree / Hedgerow / Vegetation
- Indicative Proposed Tree Planting
- Productive Landscape
- Play Area (LEAP)
- Entrance Green Space

Define.

15 50
0m 25 100 150

N

Scale	1:3,500 @ A3
Revision	Rev I
Date	29/07/025
Prepared by	EHS

Bloor Homes Ltd	**Client**
Sacheverell Way, Groby	**Project**
Masterplan	**Title**
DE.393_SW01	**Ref.**

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APPENDICES

APPENDIX B

GLOSSARY OF TECHNICAL TERMS

Noise

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurements, and the levels are denoted as dB(A) or L_{Aeq}, L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

Typical sound levels found in the environment

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

Descriptor	Terminology
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure 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 s1 and s2 is given by 20 log10 (s1 / s2). 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.
$L_{AFmax, T}$	A noise level index defined as the maximum noise level during the measurement period. L_{Max} is sometimes used for the assessment of discrete loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. It is typically 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.
Façade	At a distance of 1m in front of a large sound reflecting object such as a building facade.
Fast/Slow Time Weighting	Averaging times used in sound level meters.
Octave Band	A range of frequencies whose upper limit is twice the frequency of the lower limit
One-third Octave Band	A frequency band in which the upper limit is 21/3 times the frequency of the lower limit.
Rating Level	The specific sound level, plus any adjustment for characteristic feature of sound in BS 4142.
Specific Sound Level	The A-weighted L_{eq} sound level produced by a sound source during a specified period of time. Commonly known as the sound source under investigation as defined in BS 4142.
Typical Maximum Level	The 90th percentile maximum event level (L_{AFmax}) measured during a period. Used for assessing night-time maximum levels under typical and overheating conditions.

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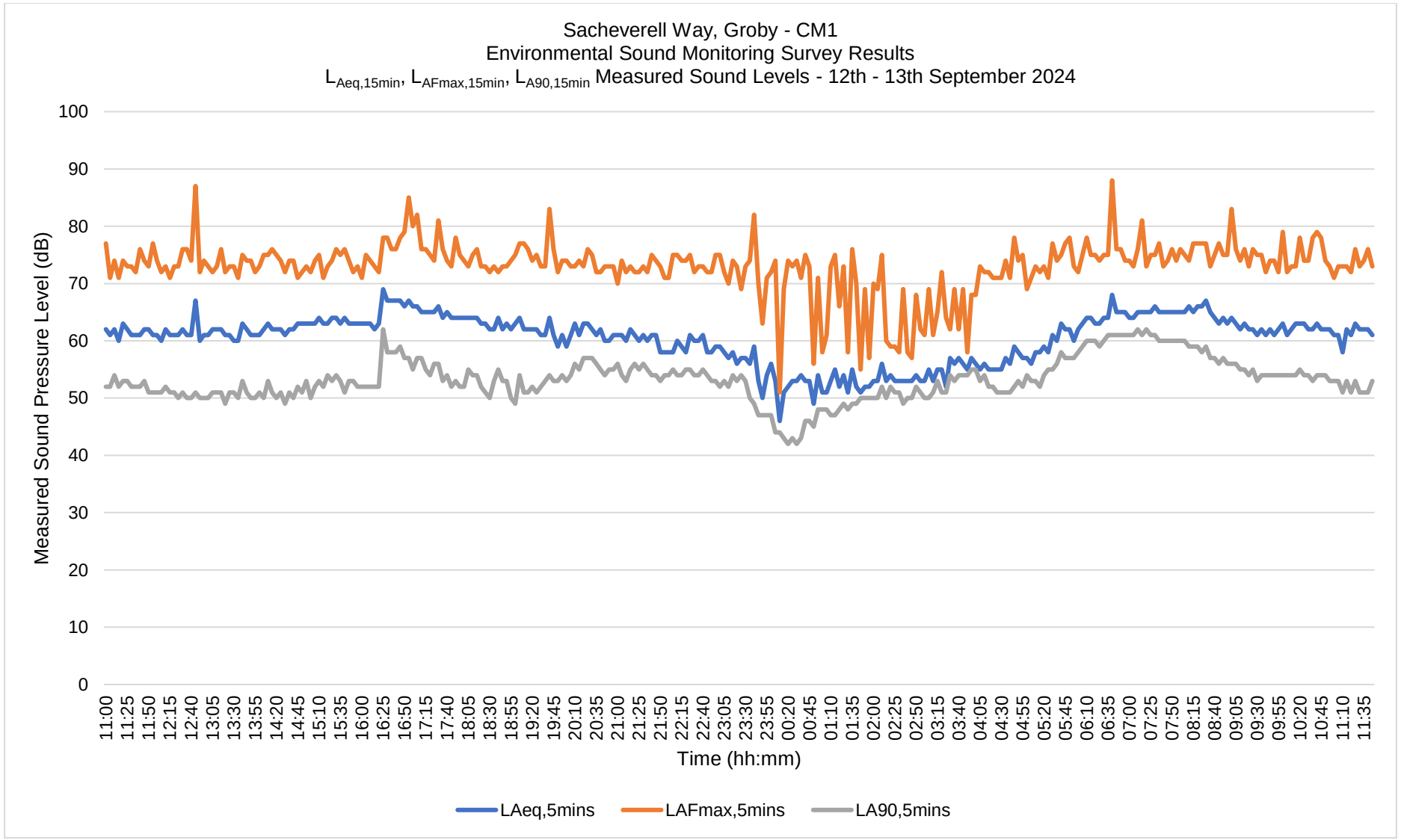
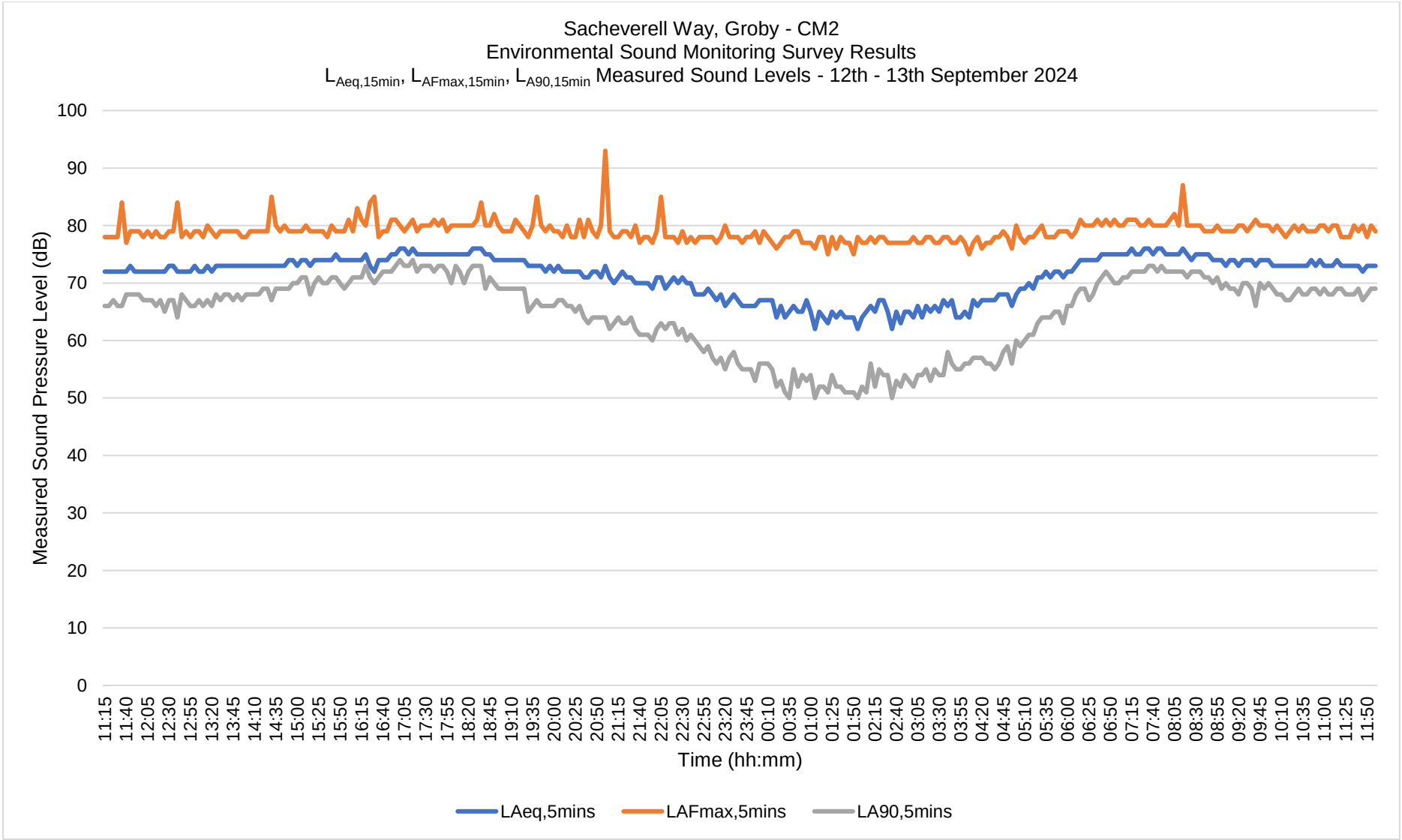
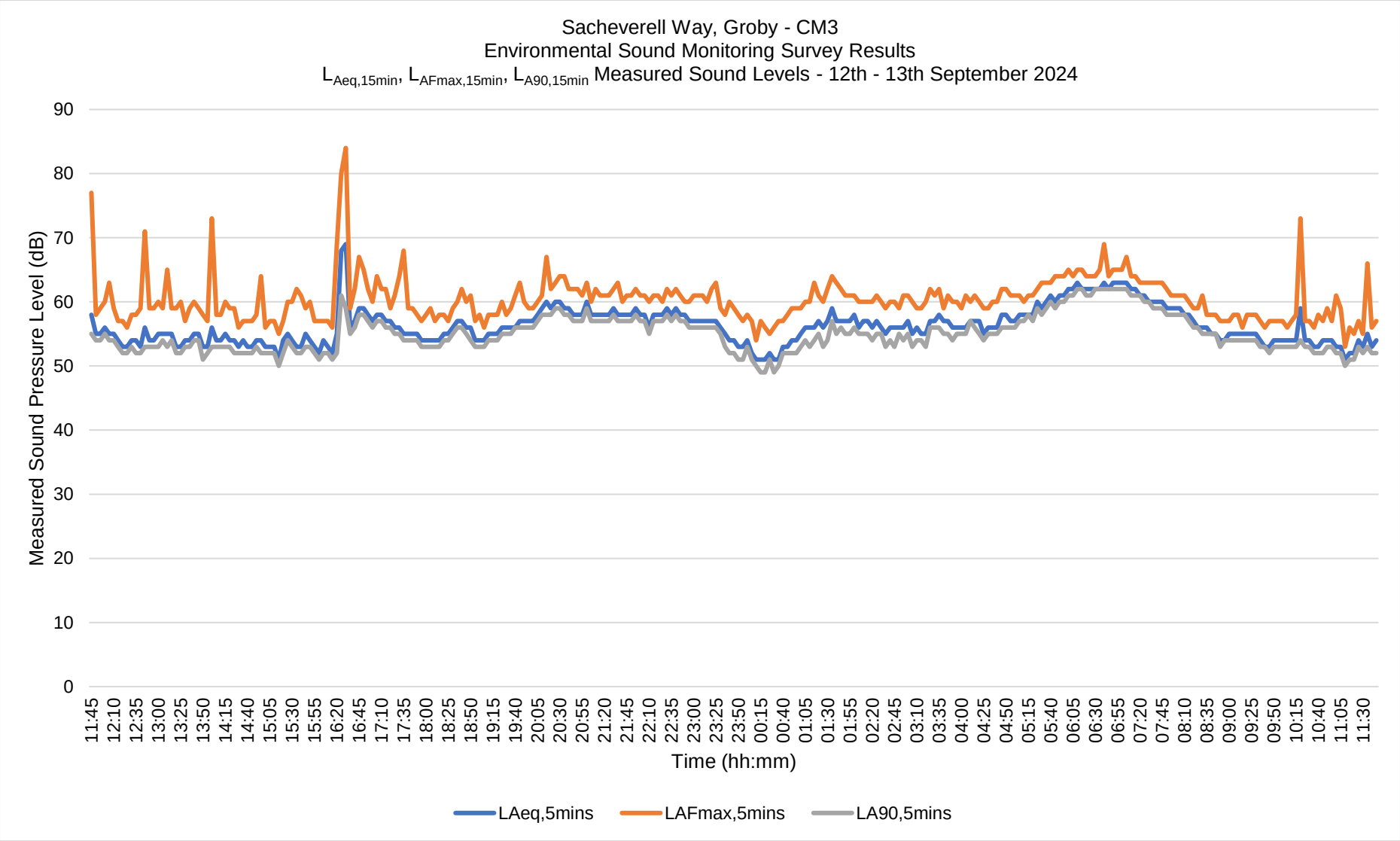
APPENDICES

APPENDIX C


Sacheverell Way, Groby - CM1
Environmental Sound Monitoring Survey Results
$L_{Aeq,15min}$, $L_{AFmax,15min}$, $L_{A90,15min}$ Measured Sound Levels - 12th - 13th September 2024
Measured Sound Pressure Level (dB)
100
90
80
70
60
50
40
30
20
10
0
11:00
11:25
11:50
12:15
12:40
13:05
13:30
13:55
14:20
14:45
15:10
15:35
16:00
16:25
16:50
17:15
17:40
18:05
18:30
18:55
19:20
19:45
20:10
20:35
21:00
21:25
21:50
22:15
22:40
23:05
23:30
23:55
00:20
00:45
01:10
01:35
02:00
02:25
02:50
03:15
03:40
04:05
04:30
04:55
05:20
05:45
06:10
06:35
07:00
07:25
07:50
08:15
08:40
09:05
09:30
09:55
10:20
10:45
11:10
11:35
Time (hh:mm)
LAeq,5mins
LAFmax,5mins
LA90,5mins

Sacheverell Way, Groby - CM2
Environmental Sound Monitoring Survey Results
$L_{Aeq,15min}$, $L_{AFmax,15min}$, $L_{A90,15min}$ Measured Sound Levels - 12th - 13th September 2024




Sacheverell Way, Groby - CM3
Environmental Sound Monitoring Survey Results
$L_{Aeq,15min}$, $L_{AFmax,15min}$, $L_{A90,15min}$ Measured Sound Levels - 12th - 13th September 2024
Measured Sound Pressure Level (dB)
90
80
70
60
50
40
30
20
10
0
11:45
12:10
12:35
13:00
13:25
13:50
14:15
14:40
15:05
15:30
15:55
16:20
16:45
17:10
17:35
18:00
18:25
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00:15
00:40
01:05
01:30
01:55
02:20
02:45
03:10
03:35
04:00
04:25
04:50
05:15
05:40
06:05
06:30
06:55
07:20
07:45
08:10
08:35
09:00
09:25
09:50
10:15
10:40
11:05
11:30
Time (hh:mm)
LAeq,5mins
LAFmax,5mins
LA90,5mins

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APPENDICES

APPENDIX D

NOTES:

1. DO NOT SCALE THIS DRAWING.

KEY

- 0–50dB(A)
- 50–55dB(A)
- 55–60dB(A)
- 60–65dB(A)
- 65–70dB(A)
- 70–75dB(A)
- 75–80dB(A)
- >80dB(A)
- 2.5m Garden Fencing

REV:	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
-		EW	NF	AB	15.05.25

PROJECT: LAND SOUTH OF SACHEVERELL WAY, GROBY

DRAWING TITLE: DAYTIME AMBIENT SOUND LEVELS, LAeq,16hour

CLIENT: J S BLOOR

DRAWING NUMBER: 28953_04_120_01

REVISION:	SHEET SIZE:	SCALE:
-	A3	NFS

STATUS: FOR INFORMATION / APPROVAL

MEC Consulting Group
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Telephone: 01530 264 753
Email: group@m-ec.co.uk
Website: www.m-ec.co.uk

NOTES:

1. DO NOT SCALE THIS DRAWING.

KEY

- 0–50dB(A)
- 50–55dB(A)
- 55–60dB(A)
- 60–65dB(A)
- 65–70dB(A)
- 70–75dB(A)
- 75–80dB(A)
- >80dB(A)

REV.	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
-		EW	NF	AB	15.05.25

PROJECT:
LAND SOUTH OF SACHEVERELL WAY, GROBY

DRAWING TITLE:
NIGHT-TIME AMBIENT SOUND LEVELS, LAeq,8hour

CLIENT:
J S BLOOR

DRAWING NUMBER:
28953_04_120_02

REVISION:	SHEET SIZE:	SCALE:
-	A3	NFS

STATUS:
FOR INFORMATION / APPROVAL

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