



ROYLE ROAD,
ROCHDALE

External Building Fabric Assessment

Reference: 14351.RP01.EBF.2

Prepared: 16 April 2026

Revision Number: 2

BMC Rochdale Ltd.

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Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	03 September 2025	James Gill	Helen Sheldon
1	Minor non-technical edits following client review	08 September 2025	James Gill	Helen Sheldon
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The recommendations within this report relate to acoustics performance only and will need to be integrated within the overall design by the lead designer to incorporate all other design disciplines such as fire, structural integrity, setting-out, etc. Similarly, any sketches appended to this report illustrate acoustic principles only and will need to be developed into full working drawings by the lead designer to incorporate all other design disciplines.



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1. INTRODUCTION

A new residential development is proposed at Royle Road in Rochdale. The proposals are for the construction of 75 self-contained apartments (Use Class C3), comprising 38 No.1-bedroom apartments and 37 No.2-bedroom apartments, with extra care light facilities, residents' facilities, associated landscaping, parking, a new access and internal access road.

An assessment has been carried out in relation to the noise levels likely to be incident on the proposed building façades and to provide acoustic performance specifications such that acceptable internal noise criteria can be achieved.

A summary of acoustic terminology is included in Appendix A.

2. SITE DESCRIPTION

The proposed development site is located off Royle Road in Rochdale. The site is located to the southwest of Rochdale town centre, bordering Edinburgh Way, the Rochdale Bypass, to the north. Closely located to the south is a parcel of land, currently under development for residential purposes. Approximately 100m to the east is the Transpennine railway line. To the west is a Tesco superstore and petrol station. Surrounding the site are further residential dwellings and commercial premises.

The proposed residential block is situated approximately 47m south of the northern boundary and 68m from the centre of Edinburgh Way to the north. There will be direct line of sight between the apartment block and Edinburgh Way which is the dominant and consistent noise source in the area. The vehicle access to the apartment block travels from the west off Royle Road and passes the north elevation and leads to the main car park, where there are 66 spaces (including 5 disabled spaces) and a further 8 spaces in an overspill car park. The communal gardens are south of the block and are shielded from Edinburgh Way.

The Transpennine rail line is approximately 100m to the east and will mostly be screened from view by the under construction residential dwellings on the adjacent site. Furthermore, currently, there are no proposed windows to habitable rooms on the east and west elevations.

The site is shown in relation to its surroundings in the site plan in Figure 1 (Appendix F).

3. EXTERNAL BUILDING FABRIC CRITERIA

This section outlines typical assessment criteria in terms of the relevant standards.

3.1 British Standard 8233:2014

British Standards Institution (2014) *BS 8233:2014: Guidance on Sound Insulation and Noise Reduction for Buildings* draws on the results of research and experience to provide information on achieving internal acoustic environments appropriate to their functions.

The noise level values given are in terms of an average (L_{Aeq}) level.

The standard advises internal ambient noise levels for achieving suitable resting and sleeping conditions within residential properties as set out in Table 1.

Table 1 – BS 8233:2014 Residential Criteria

Room	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)
Living Rooms	35 dB $L_{Aeq,16hour}$	--
Dining Room/area	40 dB $L_{Aeq,16hour}$	--
Bedrooms	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

A summary of acoustic terminology is included in Appendix A.

3.2 World Health Organisation (WHO) Guidelines

WHO (2018) *Environmental Noise Guidelines for the European Region* sets out to define “recommended exposure levels for environmental noise in order to protect population health”. The guidance document relates specifically to external noise levels, and recommends that “all CNG [WHO (1999) *Guidelines for Community Noise*] indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) should remain valid”. RBA therefore make reference to Guidelines for Community Noise for recommendations on internal noise levels.

Guidelines for Community Noise describes guideline levels that are “essentially values for the onset of health effects from noise exposure”. A table of guideline values is included, relating to adverse health effects, defined as any temporary or long-term deterioration in physical, psychological, or social functioning that is associated with noise exposure. The following is an extract from Table 4.1: Guideline values for community noise in specific environments, as stated in the WHO document.

Table 2 – Guideline Values for Community Noise

Specific Environment	Critical Health Effect(s)	L_{Aeq} (dB)	Time Base (hours)	L_{Amax} (dB)
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedrooms	Sleep disturbance, night-times	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

With reference to maximum noise levels the following guidance is provided within the WHO guidance:

“For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dB L_{Amax} more than 10-15 times per night (Vallet & Vernet 1991) and most studies show an increase in the percentage of awakenings at SEL values of 55-60 dBA (Passchier-Vermeer 1993; Finegold et al. 1994; Pearsons et al. 1995). For intermittent events that approximate aircraft noise, with an effective duration of 10-30s, SEL values of 55-60 corresponds to a L_{Amax} value of 45dB. Ten to 15 of these events during an 8 hour night-time implies a $L_{Aeq, 8h}$ of 20-25dB. This is 10-15dB below the $L_{Aeq, 8h}$ or 30dB for continuous night-time noise exposure, and shows that intermittent character of noise must be taken into account when setting night-time noise limits for noise exposure. For example, this can be achieved by considering the number of noise events and the difference between the maximum sound pressure level and the background of these events.”

Therefore, the frequency of occurrence of maximum noise events should not typically exceed 10-15 times in any night.

3.3 Summary of Internal Noise Level Criteria

The adopted project criteria are given below for habitable rooms used during the daytime (e.g.: living rooms and bedroom) and during the night-time (e.g.: bedrooms):

Table 3 – Summary of Internal Noise Level Criteria

Measurement Period	Period-Averaged Noise Level, $L_{Aeq,T}$ (dB)	Maximum Noise Level, $L_{AFmax,5min}$ (dB)
Daytime (07:00 – 23:00)	≤ 35	-
Night-time (23:00 – 07:00)	≤ 30	≤ 45*

*The level which is ‘not normally exceeded’, more than around 10-15 times a night.

4. ENVIRONMENTAL NOISE SURVEY

4.1 Survey Methodology

Monitoring of the prevailing background noise was undertaken (for a minimum of 24 hrs) over the following period:

- 11:15 Friday 29th August to 10:30 Monday 1st September 2025.

As the survey was unattended it is not possible to comment with certainty regarding meteorological conditions throughout the entire survey period. However, based on observations during the site visits and weather reports for the area, conditions were generally considered suitable for obtaining representative noise measurements, being predominantly dry with little wind.

Measurements were made of the L_{A90} , L_{Amax} and L_{Aeq} noise levels over sample periods of 15 minutes.

4.2 Measurement Location

To determine the existing noise climate around the site measurements were undertaken at the following location:

Measurement Position 1 – Facing Edinburgh Way

The sound level meter was set up on an extendable pole, approximately 1.5m from ground level and was in a free field position. The sound level meter had direct line of sight to Edinburgh Way, the main road that is the dominant and constant noise source closest to the proposed site. Edinburgh Way is a dual carriageway that was in constant flow and clearly audible across site. There were no other noise sources off site that were audible across the site. Albeit the Transpennine way to the east is approximately 100m away, furthermore, there is an existing brick structure, assumed to be a substation to the northwest of the proposed development. However, no noise was noted being emitted from this building, nor were there any obvious and audible rail line movements noted whilst the surveyor was on site. The sound level meter was approximately 26m back from the centre of Edinburgh way and located approximately 8m into site from the site boundary.

The measurement position is also illustrated on the site plan attached in Figure 1 and photos in Figure 4 (Appendix F).

4.3 Instrumentation

For information regarding the equipment used for the measurements please refer to Appendix D.

The sound level meter was calibrated both prior to and on completion of the survey with no significant calibration drift observed.

4.4 Results

The noise levels measured are shown as time-histories on the attached Graphs 1-3 (Appendix F).

The measured period-averaged L_{Aeq} and typical night-time L_{AFmax} noise levels are summarised in Table 4 below:

Table 4 – Baseline Survey Measured Noise Levels

Measurement Period	Period-Averaged Noise Level, L_{Aeq} (dB)	Typical Maximum Noise Level, $L_{AFmax,5min}$ (dB)
Daytime (07:00 – 23:00)	63	N/A
Night-time (23:00 – 07:00)	59	74

5. EXTERNAL BUILDING FABRIC ASSESSMENT

5.1 Background

Analyses of the external building fabric have been undertaken in order to ascertain the required acoustic performance of the glazing and other external fabric elements to achieve the project criteria.

5.2 Vehicle Access

We have also factored the access road to the north into our assessment. The impact of this is minimal when compared to the impact of noise from vehicles on Edinburgh Way. The access road is proposed to have speed bumps, in turn, slowing movements such that noise will likely be lower than what would normally be expected on a typical B-road. There are parking bays for up to 64 vehicles, but these are spread between 4 locations, resulting in not all traffic passing the northern façade closely. Traffic on this access road will be intermittent with likely frequent movements being in and around the morning and evening rush periods, at which time, Edinburgh Way will be the far busier and constant noise source, which we have measured and assessed.

5.3 Assumptions

Our external building fabric analyses have assumed the following:

5.3.1 Drawings

The assessment has been based on the information provided in the following drawings:

Drawing Number	Drawing Name	Date
RR-BTP-00-LP-DR-A-4524_100	Location Plan	02/05/2024
RR-BTP-00-SP-DR-A-4524_102	Existing Site Plan	23/01/2025
RR-BTP-00-SP-DR-A-4524_105	Proposed Site Plan	02/05/2024
RR-BTP-00-SP-DR-A-4524_107	Proposed Boundary Plan	16/12/2024
RR-BTP-01-GF-DR-A-4524_120	Proposed Ground Floor	20/02/2025
RR-BTP-01-1F-DR-A-4524_121	Proposed First Floor	09/08/2023
RR-BTP-01-2F-DR-A-4524_122	Proposed Second Floor	09/08/2023
RR-BTP-01-3F-DR-A-4524_123	Proposed Third Floor	09/08/2023
RR-BTP-01-4F-DR-A-4524_124	Proposed Fourth Floor	09/08/2023
RR-BTP-01-E-DR-A-4524_128	Proposed Elevations 1.	09/08/2023
RR-BTP-01-E-DR-A-4524_129	Proposed Elevations 2.	09/08/2023

5.3.2 Noise Levels

The assessment has been based on the measured noise levels as detailed in 0.

5.3.3 Room Absorption

The calculations assume that bedrooms are acoustically 'soft' with carpets, curtains and other soft furnishings. The living rooms are assumed to be less acoustically absorptive (with a hard floor finish, although with furnishings).

Details of the absorption coefficients assumed in the calculations are provided in Appendix B.

5.3.4 External Wall

External non-glazed areas are to comprise the following:

We have based our calculations on a masonry façade construction consisting of outer facing brickwork, inner leaf of blockwork with a 100mm minimum cavity, filled with insulation and Wall Type A ties.

Currently, it is proposed to change the 4th floor façade construction from masonry to a cladded façade.

As such, RBA have assumed the following sound reduction indices (equating to an overall R_w of 52 dB) for all non-glazed façade areas:

Table 5 – Assumed Sound Reduction Indices of Non-Glazed Elements

Assumed Minimum Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
36	41	45	45	54	58	58	58

Should the proposals for non-glazed areas change, it is critical RBA are informed at the earliest opportunity as this could have a significant impact on the sound insulation performance requirements of the glazing systems.

5.3.5 Ventilation

It is understood the current chosen strategy is mechanical ventilation heat recovery (MVHR).

It should be noted the MVHR typically provide background ventilation only.

We understand windows are to be openable to provide purge ventilation and cooling during overheating. During those periods where windows are opened for purge/rapid ventilation, noise levels will naturally be increased internally.

Generally, with full MVHR systems, trickle ventilators are not normally included. However, should the design change to incorporate such ventilators, specifications are provided below.

5.4 Specification & Guidance Constructions

Appendix C details the sound reduction performance specification for the ventilators and glazed elements of the external building fabric.

The glazing performance specifications apply to the glazing package as a whole - inclusive of glazing, louvres, spandrel panels, framing, opening lights, doors, seals, etc. The performance of the glazing system will depend on many factors such as the glazing configuration, size of window panels, quality of framing, quality of sealing, etc.

Please note – The glazing configurations described in Table 6 and ventilator types described in Table 7 are given for costing purposes only. All window systems should be capable of meeting the performance specifications shown in Appendix C, with laboratory test certificates being made available in support of the quoted performance. Glazing proposals which simply reflect the guidance constructions indicated in this report will not, in isolation, be sufficient evidence that a window configuration will meet the performance specification.

For guidance purposes RBA would typically expect the following glazing configurations to prove commensurate with achieving the sound insulation performance specifications detailed within Appendix C.

Table 6 – Guidance on Glazing Constructions

Glazing Type	Example Glazing Configuration
G1	4mm glass / 12mm cavity / 6mm glass

For guidance purposes RBA would typically expect the following trickle ventilator types to prove commensurate with achieving the sound insulation performance specifications detailed within Appendix C, if they are required. Where MVHR systems are proposed, there are no specific acoustic measures required to control noise ingress to the development.

Table 7 – Guidance on Trickle Ventilators

Ventilator Type	Example Ventilator Type
V1	Standard 8000mm ² Trickle Ventilator

6. CONCLUSION

RBA Acoustics have undertaken noise monitoring at the proposed development site at Royle Road in Rochdale. The measured noise levels are presented within this report. The resultant noise levels have been used in the assessment of the glazing requirements to ensure suitable internal noise levels are achieved at the proposed development with reference to BS 8233:2014 and WHO Guidelines.

Target specifications for glazing is included in Appendix C to this report.

Our assessment shows that all internal noise criteria can be achieved with standard thermal double glazing to all habitable rooms on the northern and southern facades.

Should the design change from a MVHR system and trickle ventilators are proposed, a standard 8000mm² ventilator, 1 per habitable room, will be sufficient in achieving the internal noise level criteria, specifications for which are also presented in Appendix C.

Appendix A - Acoustic Terminology

A-weighting (e.g. dB(A))	A correction applied across the frequency bands to take into account the response of the human ear, and therefore considered to be more representative of the sound levels people hear.
DeciBel (dB)	Unit used for many different acoustic parameters. It is the logarithmic ratio of the level being assessed to a standard reference level.
$D_{n,e,w}$	A single number weighted quantity which characterises the airborne sound insulation through a specified small element. A higher numerical quantity represents a better performance.
$D_{n,f,w}$	A single number weighted quantity which characterises the airborne sound insulation between rooms via a specified flanking path. A higher numerical quantity represents a better performance.
$L_{eq,T}$	The level of a notional steady sound which, over a stated period of time, T , would have the same acoustic energy as the fluctuating noise measured over that period. Typically used to represent the average or ambient noise level.
$L_{Aeq,T}$	The A-weighted level of a notional steady sound which, over a stated period of time, T , would have the same acoustic energy as the fluctuating noise measured over that period. Typically used to represent the average or ambient noise level.
L_{An} (e.g. L_{A10} , L_{A90})	The sound level exceeded for n% of the time. E.g. L_{A10} is the A-weighted level exceeded for 10% of the time and as such can be used to represent a typical maximum level. Similarly, L_{A90} is the level exceeded for 90% of the measurement period, and is often used to describe the underlying background noise.
$L_{Amax,T}$	The instantaneous maximum A-weighted sound pressure level which occurred during the measurement period, T . It is commonly used to measure the effect of very short duration bursts of noise, e.g. sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the ambient level.
Octave band	A frequency band in which the upper limit of the band is twice the frequency of the lower limit.
1/3 Octave band	A frequency band which is one-third of an octave band.
R_w	A single number quantity which characterises the airborne sound insulation of a material or building element in a laboratory test.

Appendix B – Room Absorption Coefficients

For the purpose of the analyses RBA Acoustics have assumed the absorption coefficients detailed in Table B1 for Bedrooms and Table B2 for living rooms.

Table B1 – Bedroom Absorption Coefficients

Absorption Coefficient (α) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
0.15	0.18	0.25	0.27	0.31	0.32	0.32	0.32

Table B2 – Living Room Absorption Coefficients

Absorption Coefficient (α) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
0.15	0.18	0.20	0.22	0.22	0.22	0.23	0.27

Appendix C – External Building Fabric Acoustic Specification

External facade constructions and components, such as brise soleil, grilles, ventilators, curtain walling systems or other architectural features, are not to give rise to intrusive whistling, creaking, rattling or other noises as a result of wind or other climatic effects.

The Contractor shall take reasonable precautions to avoid unwanted noise including creaking, rattling and whistling being generated by the Contractors works when subject to environmental conditions (including wind) and thermal expansion over the life of the façade.

1.0 Window Sound Insulation Performance

Glazed units (inclusive of glazing, louvres, timber panels, spandrel panels, infill panels, framing, opening lights, balcony/terrace doors, seals, etc. as appropriate) should achieve the following minimum sound reduction indices as tested in general accordance with BS EN ISO 10140-2:2021:

Table C1 – Window Sound Insulation Performance Specification

Type	Minimum Recommended Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)								R_w (dB)
	63	125	250	500	1k	2k	4k	8k	
G1	19	23	22	27	38	40	41	41	33

Note: R_w is the “overall weighted sound reduction index” tested in a laboratory.

N.B. as the internal noise criteria is expressed in overall terms, other frequency-specific performance levels may ultimately prove acoustically acceptable. Test data for representative samples of all glazing systems shall be submitted to RBA Acoustics for approval to demonstrate compliance with the above performance specifications.

2.0 Ventilator Sound Insulation Performance

Trickle ventilators (in their open state) should achieve the following minimum element-normalised level differences as tested in accordance with BS EN 20140-10:2021:

Table C2 – Ventilator Sound Insulation Performance Specification

Type	Minimum Recommended $D_{n,e}$ (dB) at Octave Band Centre Frequency (Hz)								$D_{n,e,w}$ (dB)
	63	125	250	500	1k	2k	4k	8k	
V1	27.0	31.0	36.0	31.0	38.0	28.0	28.0	28.0	32

Note: $D_{n,e,w}$ is the “overall weighted element normalised level difference” tested in a laboratory.

Please note the above specification assumes one trickle ventilator will be installed per room, i.e. a continuous mechanical extract system (ADF System 3) will be utilised. The specification should be increased by a factor of $10\log(N)$ should N ventilators be required per room, i.e. increase by +3dB or +5dB respectively should two or three ventilators be required per room.

N.B. as the internal noise criteria are expressed in overall terms, other frequency specific performance levels may ultimately prove acoustically acceptable. Test data for the trickle vents in their open state shall be submitted to RBA Acoustics for approval.

Appendix D – Instrumentation

The following equipment was used for the measurements.

Table D1 – Equipment Calibration Details

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Valid Until
Norsonic Type 1 Sound Level Meter	Nor140	1406007	UCRT24/2211	12 September 2026
Norsonic Pre Amplifier	1209	20043		
Norsonic ½" Microphone	1225	208146		
Norsonic Sound Calibrator	1251	34127	UCRT24/2209	12 September 2026

Appendix E - CDM Considerations

The Likelihood (**L**) the harm will occur can be assessed by applying an indicative score (from 1 to 5) as follows:

- 1 – Remote (almost never)
- 2 – Unlikely (occurs rarely)
- 3 – Possible (could occur, but uncommon)
- 4 – Likely (recurrent but not frequent)
- 5 – Very likely (occurs frequently)

The Severity of harm (**S**) can be assessed by applying an indicative score (from 1 to 5) as follows:

- 1 – Trivial (e.g. discomfort, slight bruising, self-help recovery)
- 2 – Minor (e.g. small cut, abrasion, basic first aid need)
- 3 – Moderate (e.g. strain, sprain, incapacitation for more than 3 days)
- 4 – Serious (e.g. fracture, hospitalisation for more than 24 hours, incapacitation for more than 4 weeks)
- 5 – Fatal (single or multiple)

The rating value is obtained by multiplying the two scores and is then used to determine the course of action.

Table D2- Risk Ratings

Rating Bands (Likelihood x Severity)		
Low Risk (1 – 8)	Medium Risk (9 -12)	High Risk (15 – 25)
May be ignored but ensure controls remain effective	Continue, but implement additional reasonable practicable controls where possible	Avoidance action is required; therefore alternative design solutions must be examined. Activity must not proceed until risks are reduced to a low or medium level

The following hazards pertinent to our design input have been identified and control measures suggested:

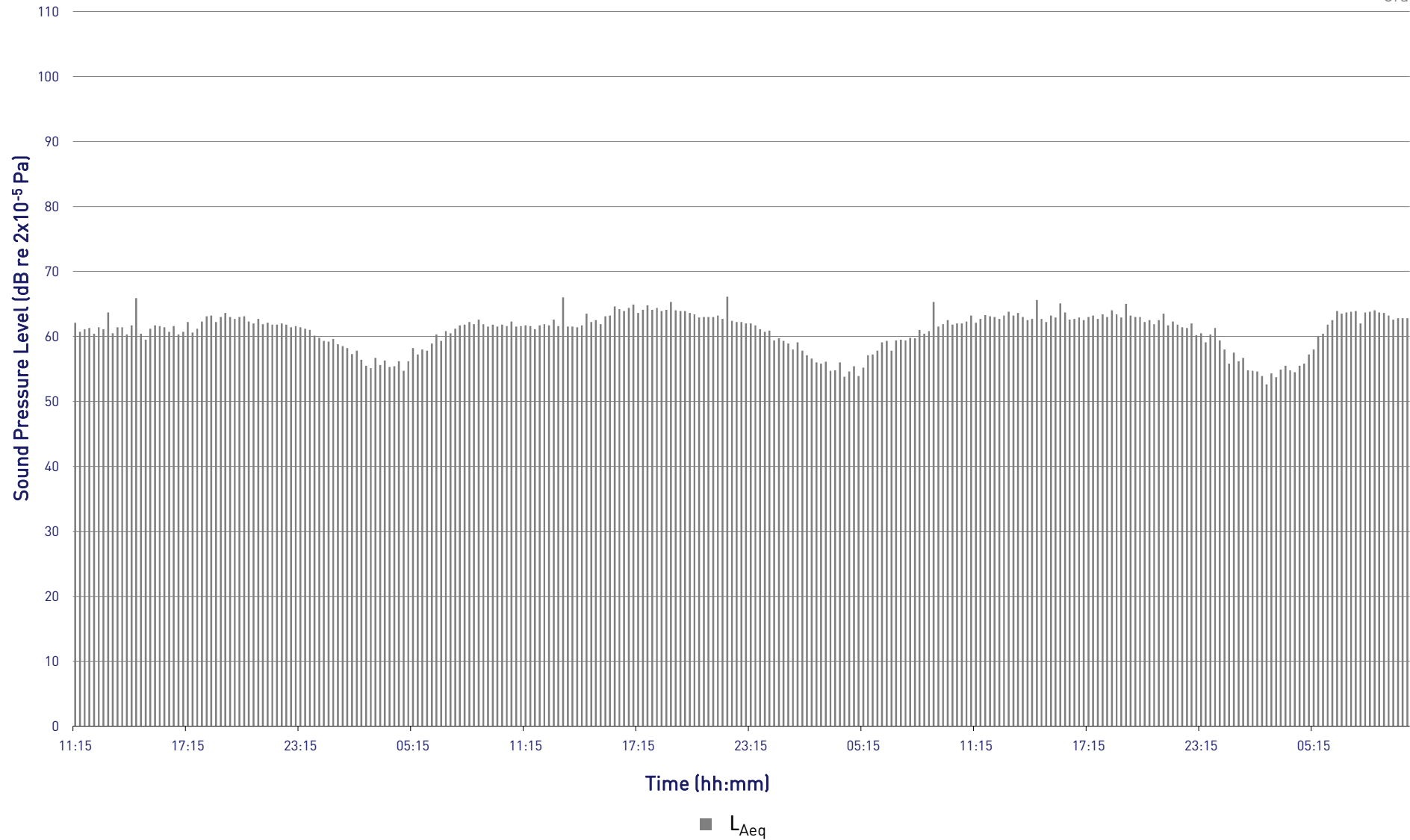
Table D3 – Risk Assessment

Hazard	Risk Of	At Risk	Rating			Control Measures	Controlled		
			L	S	R		L	S	R
Mineral wool within drywalls and linings	Skin and respiratory irritation	Contractors	4	3	12	Wear gloves and mask	1	3	3
Acoustic glazing - weight	Strain of neck, limbs or back. Fall from height.	Contractors	3	5	15	Provide sufficient manpower, lifting gear and structural support	1	5	5

L: Likelihood S: Severity R: Rating

Appendix F - Graphs and Site Plans

MP1. Friday 29th August - 1st September 2025



Royle Road, Rochdale

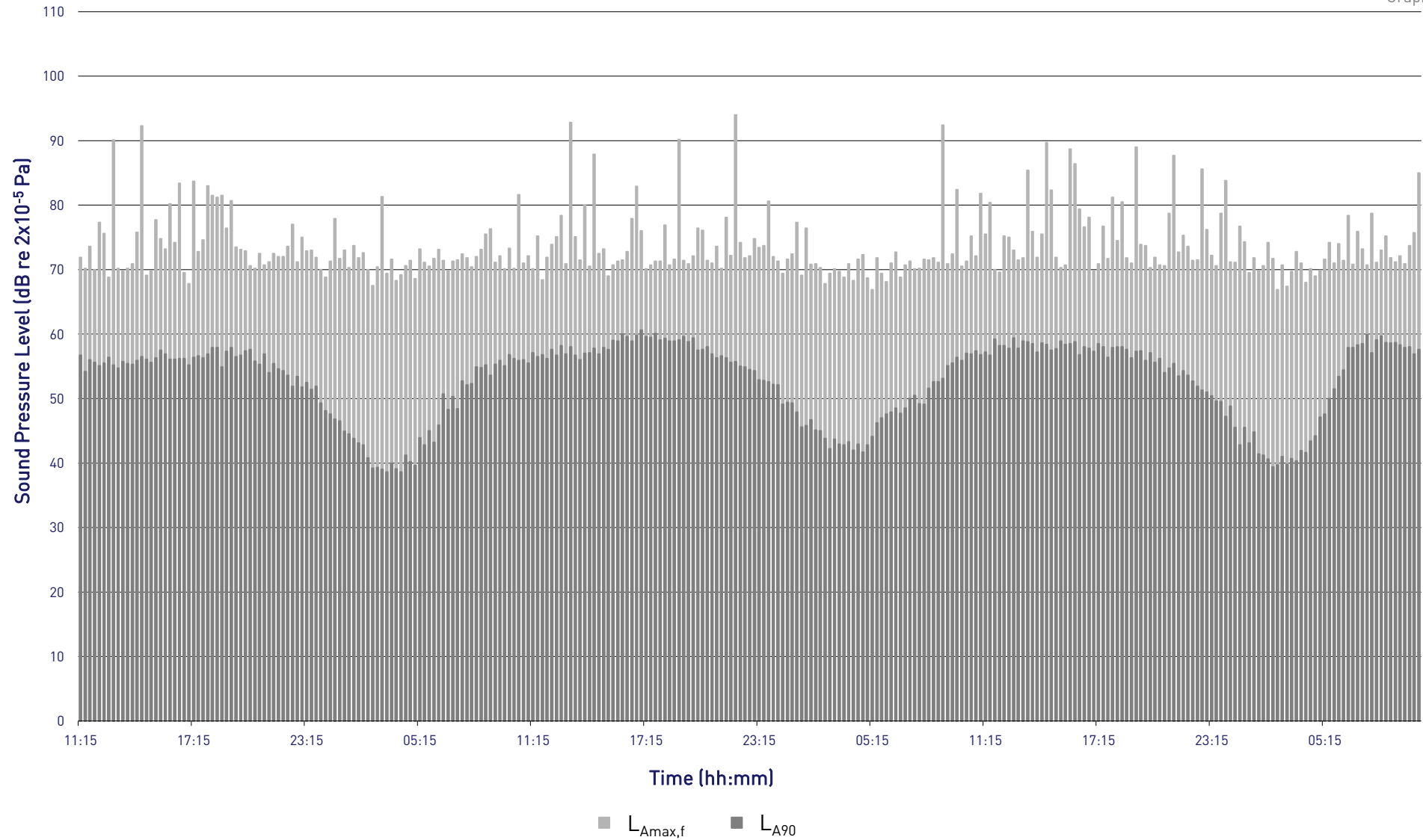
$L_{Amax,f}$ and L_{A90} Time History

MP1. Friday 29th August - 1st September 2025



Project: 14351

Graph 2



Royle Road, Rochdale

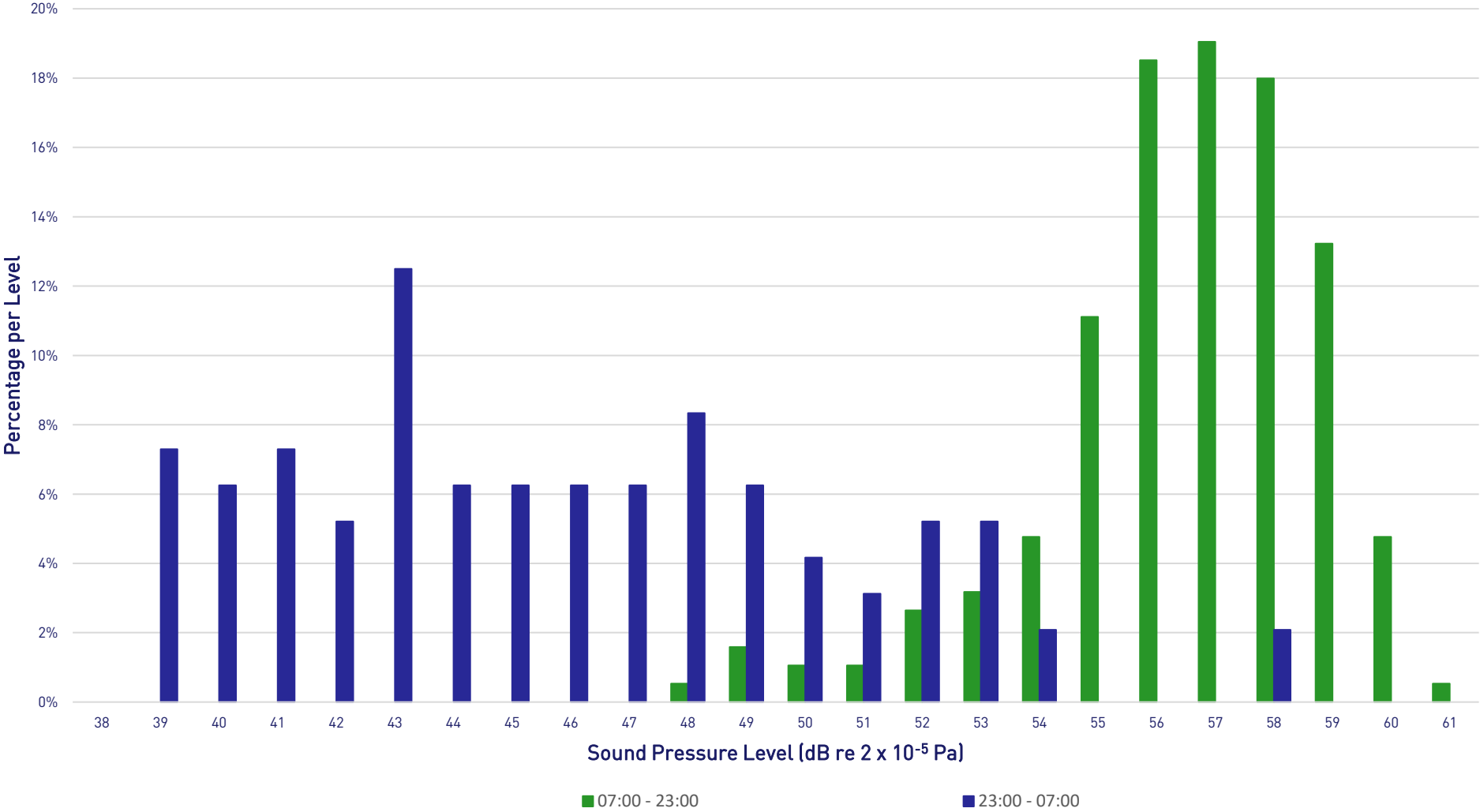
L_{A90,15 minutes} Histogram

MP1. Friday 29th August - 1st September 2025



Project: 14351

Graph 3





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Figure 1 – Approx. Red Line Boundary and Measurement Position

Royle Road, Rochdale

Project 14351

16 April 2026

Not to Scale



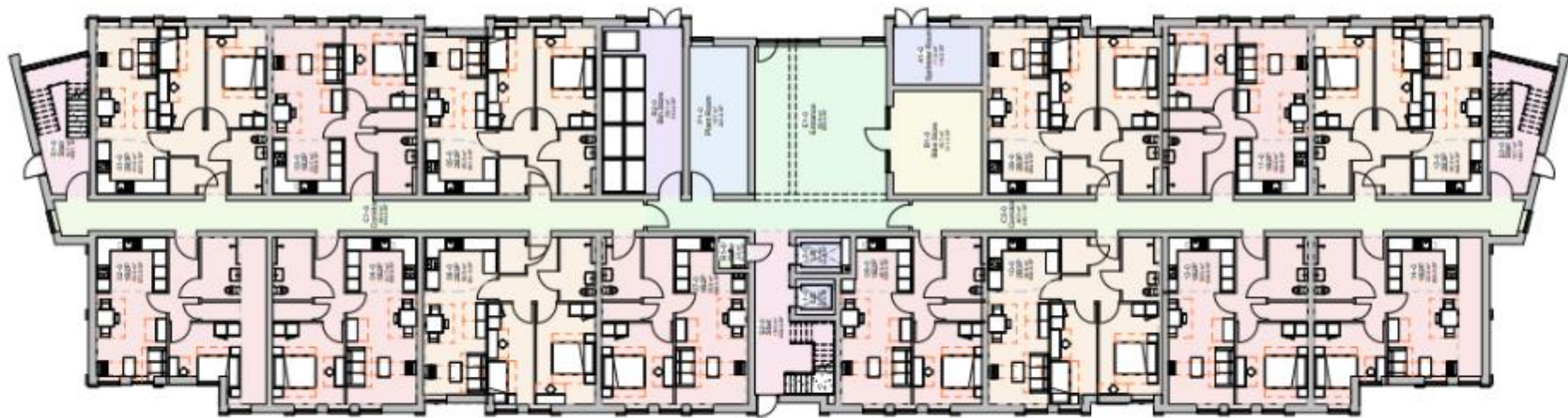


Figure 3 – Proposed Internal Layout

Royle Road, Rochdale

Project 14351

16 April 2026

Not to Scale



Figure 4 – Measurement Position looking towards Edinburgh Way and into site

Royle Road, Rochdale

Project 14351

16 April 2026

Not to Scale



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