

# **344-346 Bury Road Rochdale**

Acoustic Planning Report  
1367/APR1

11 March 2025

For:

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# Acoustic Planning Report

## 1367/APR1

| Contents                         | Page |
|----------------------------------|------|
| 1.0 Introduction                 | 1    |
| 2.0 Objectives                   | 1    |
| 3.0 Site Description             | 1    |
| 4.0 Local Authority Requirements | 2    |
| 5.0 Environmental Sound Survey   | 2    |
| 6.0 Detailed Sound Assessment    | 6    |
| 7.0 Conclusions                  | 9    |

## Appendices

Time History Graph 1367/THG1

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## **1.0 Introduction**

Lighthouse Acoustics has been appointed by Mercury Investments LTD to undertake an environmental sound survey at 344-346 Bury Road, Rochdale and to undertake a detailed sound assessment for the proposed development.

The proposed development comprises 7No. rooms for residential purposes.

The survey methodology, results and assessment for the proposed development are presented in this report.

## **2.0 Objectives**

To establish the Local Authority's acoustic requirements for the proposed residential development.

To visit site to undertake a detailed environmental sound survey in order to establish existing environmental sound levels at the proposed residential development.

To undertake a detailed environmental sound assessment to establish the acoustic specification for glazing/ventilation elements required across the proposed residential development in order to achieve the acoustic requirements of the Local Authority.

## **3.0 Site Description**

The proposed development is at 344-346 Bury Road, Rochdale and comprises a 2 storey mid-terrace building containing 2No. rooms for residential purposes, living room and kitchen/dining at ground floor and 5No. rooms for residential purposes at 1<sup>st</sup> floor.

The site is bound by Chadwick Street to the north, adjoining residential property to the east, Bury Road (B6222) to the south and adjoining residential property/Leopold Street to the west.

The site plan below indicates the extent of the site and the surrounding environment.



Site plan indicating the extent of the site and the surrounding environment

## 4.0 Local Authority Requirements

It is understood that Rochdale Borough Council require that environmental sound should achieve the levels for internal areas as specified in BS 8233: 2014, "Guidance on sound insulation and noise reduction for buildings". These levels are presented in the table below.

| Location    | 07:00 to 23:00   | 23:00 to 07:00  |
|-------------|------------------|-----------------|
| Living room | 35dB LAeq,16hour | -               |
| Dining room | 40dB LAeq,16hour | -               |
| Bedroom     | 35dB LAeq,16hour | 30dB LAeq,8hour |

## 5.0 Environmental Sound Survey

### 5.1 Measurements

Automated environmental sound measurements were undertaken from 11:00 hours on Thursday 28 November 2024 to 11:00 hours on Friday 29 November 2024. During this period the  $L_{Amax}$ ,  $L_{Aeq}$  and  $L_{A90}$  sound pressure levels were measured continuously over 15 minute periods along with the corresponding octave band sound pressure levels.

## 5.2 Weather Conditions

At the start of the survey period there was a light north westerly breeze (<3m/s) and the sky was scattered cloud. There was no rainfall and road surfaces were dry. The temperature was approximately 8°C. At the end of the survey period the wind conditions were calm (<1m/s) and the sky was overcast. There was no rainfall and road surfaces were dry. The temperature was approximately 6°C.

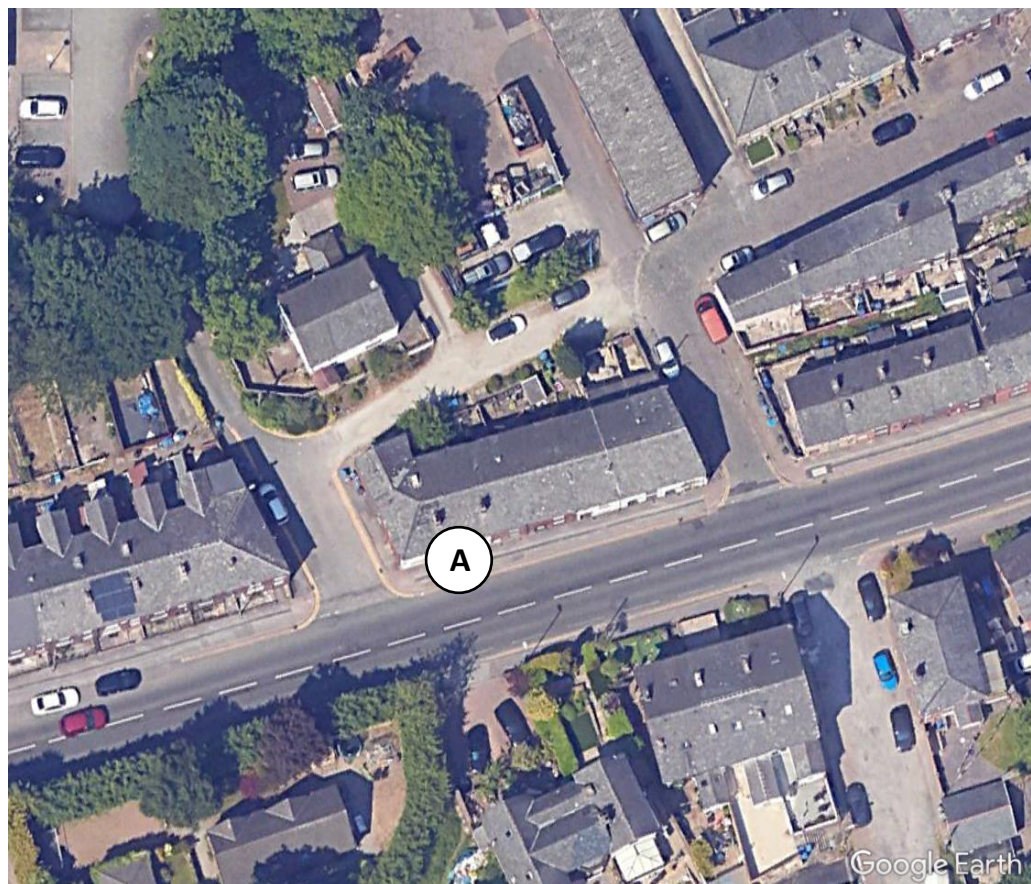
Based on publicly available weather data for the survey period we understand that weather conditions remained similar for the duration of the survey with no significant periods of rainfall or strong breezes. The weather conditions during the survey period are therefore considered to be suitable for undertaking measurements of sound levels.

## 5.3 Measurement Position

Environmental sound levels were measured at a single position on-site as described in the table below.

| Position | Description                                                                                              |
|----------|----------------------------------------------------------------------------------------------------------|
| A        | Microphone situated at 1 <sup>st</sup> floor level at 1m from the southern façade overlooking Bury Road. |

The measurement position is shown on the site plan below.



Site plan showing measurement position

The measurement position was selected in order to assess typical environmental sound levels incident upon the front facade of the proposed development. Environmental sound levels incident upon the rear facade of the building will be calculated based on those measured at the front of the building with allowances for distance loss from Bury Road and screening from the building itself and surrounding buildings.

## 5.4 Equipment

The following equipment was used to undertake the environmental sound survey.

| Equipment                  | Manufacturer | Model   | Serial No. | Calibration Date |
|----------------------------|--------------|---------|------------|------------------|
| Class 1 Sound Level Meter  | Casella      | 633C    | 2811231    | 25/07/2023       |
| Preamplifier               | Casella      | 495     | 001239     | 25/07/2023       |
| Microphone                 | Casella      | 251     | 1841       | 25/07/2023       |
| Class 1 Sound Calibrator   | Casella      | 120/1   | 3864878    | 31/10/2024       |
| Environmental Noise Kit    | Casella      | 6847    | -          | -                |
| Microphone Extension Cable | Casella      | C6717/5 | -          | -                |
| Weather Protection System  | Casella      | 6737    | -          | -                |

Field calibration checks were performed on the sound level meter prior to and on completion of the survey and were found to be within acceptable tolerance limits.

## 5.5 Results

### 5.5.1 Time History Graph

The results of the environmental sound survey are presented on Time History Graph 1367/THG1 enclosed at the rear of the report. The presented results for Position A have been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

### 5.5.2 $L_{Aeq,T}$ Ambient Sound Levels

In order to compare the results of the environmental sound survey with the internal BS 8233: 2014 levels it is necessary to convert the  $L_{Aeq,15min}$  sound levels into single figure daytime  $L_{Aeq,16hour}$  and night-time  $L_{Aeq,8hour}$  sound levels. This has been calculated using the following formula:

$$L_{Aeq,T} = 10 \log_{10} \left( \frac{1}{N} \sum_i^N 10^{L_{Aeq,15min}i/10} \right)$$

The calculated daytime  $L_{Aeq,16hour}$  and night-time  $L_{Aeq,8hour}$  sound levels at each measurement position are presented in the table below.

| Position | Daytime $L_{Aeq,16hour}$ (dB) | Night-time $L_{Aeq,8hour}$ (dB) |
|----------|-------------------------------|---------------------------------|
| A        | 71                            | 63                              |

The presented results for Position A have been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

The corresponding daytime  $L_{Aeq,16hour}$  and night-time  $L_{Aeq,8hour}$  sound levels at each measurement position are presented in the table below.

| Position | Period                 | Leq Sound Pressure Level (dB)<br>at Octave Band Centre Frequency (Hz) |     |     |     |    |    |    |    | dBA |
|----------|------------------------|-----------------------------------------------------------------------|-----|-----|-----|----|----|----|----|-----|
|          |                        | 63                                                                    | 125 | 250 | 500 | 1k | 2k | 4k | 8k |     |
| A        | Daytime<br>(16 hour)   | 69                                                                    | 66  | 65  | 62  | 69 | 63 | 52 | 43 | 71  |
|          | Night-time<br>(8 hour) | 62                                                                    | 58  | 57  | 55  | 61 | 56 | 45 | 35 | 63  |

The presented results for Position A have been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

## 5.6 Discussion of Sound Climate

At the start and end of the survey period the dominant sound sources at Position A were noted to be road traffic along Bury Road. During lulls of passing road traffic, road traffic from the surrounding road network contributed towards the measured sound climate.

Whilst we are unable to comment on dominant sound sources or individual sound events during the survey period, based on the surrounding environment it is likely that road traffic remained the dominant sound source.

## 5.7 Rear Façade Environmental Sound Levels

A reduction of 10dB has been applied to the environmental sound levels measured at the front façade of the building in order to determine likely environmental sound levels incident upon the rear facade of the building. This is considered to be a conservative reduction when considering allowances for distance loss from Bury Road and screening from the building itself and surrounding buildings.

## 6.0 Detailed Sound Assessment

### 6.1 Assessment Method

In order to establish the acoustic specification for glazing/ventilation elements required to achieve the internal daytime  $L_{Aeq,16hour}$ , night-time  $L_{Aeq,8hour}$  and night-time  $L_{Amax,F}$  requirements an assessment has been undertaken in accordance with the more rigorous calculation method detailed in BS 8233:2014, "Guidance on sound insulation and noise reduction for buildings".

This calculation method takes into account the external sound pressure level, the sound reduction indices of the façade elements, the area of the facade and the absorption within the room at octave band centre frequencies.

Detailed calculation sheets for living rooms, dining rooms and bedrooms are enclosed at the rear of the report.

### 6.2 Proposed Development

The assessment has been based on the following drawing.

| Author                    | Drawing No. | Revision | Date     |
|---------------------------|-------------|----------|----------|
| A M Architectural Studios | AM-219-A101 | -        | 14.08.24 |

The proposals include 2No. rooms for residential purposes, living room and kitchen/dining at ground floor and 5No. rooms for residential purposes at 1<sup>st</sup> floor.

### 6.3 Acoustic Requirements

The proposed residential development comprises living room, kitchen/dining and bedroom spaces. Based on the requirements of the Local Authority detailed in Section 4.0, the following internal and external sound limits have been assessed to.

| Space          | 07:00 to 23:00        | 23:00 to 07:00       |
|----------------|-----------------------|----------------------|
| Living room    | 35dB $L_{Aeq,16hour}$ | -                    |
| Kitchen/Dining | 40dB $L_{Aeq,16hour}$ | -                    |
| Bedroom        | 35dB $L_{Aeq,16hour}$ | 30dB $L_{Aeq,8hour}$ |

### 6.4 Room Assumptions

The following typical dimensions and finishes/furnishings have been assumed for the purpose of the assessment.

| Room Type      | Typical Room Dimensions | Typical Window Area | Typical Room Finishes / Furnishings |
|----------------|-------------------------|---------------------|-------------------------------------|
| Living Room    | 4m x 4m x 2.4m          | 4m <sup>2</sup>     | Carpet & underlay, curtains, sofa   |
| Kitchen/Dining | 5m x 4m x 2.4m          | 2m <sup>2</sup>     | Wood/vinyl floor, table, chairs     |
| Bedroom        | 3m x 3m x 2.4m          | 3m <sup>2</sup>     | Carpet & underlay, curtains, bed    |

Should the proposed dimensions/finishes/furnishings differ from those detailed above a re-assessment may be required.

## 6.5 Construction Proposals

It is understood that the external walls and roof that will form the proposed residential development comprise the following constructions.

| Element       | Typical Construction                                                                |
|---------------|-------------------------------------------------------------------------------------|
| Masonry Walls | Brickwork with cavity, insulation and internal plasterboard lining                  |
| Roof          | Insulated roof with insulation in void and 2No. layers internal plasterboard lining |

The following typical Sound Reduction Indices have been assumed for the various elements.

| Element       | Sound Reduction Index (dB)<br>at Octave Band Centre Frequency (Hz) |     |     |     |    |    |    |    |
|---------------|--------------------------------------------------------------------|-----|-----|-----|----|----|----|----|
|               | 63                                                                 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| Masonry Walls | 32                                                                 | 40  | 44  | 45  | 51 | 56 | 56 | 56 |
| Roof          | 20                                                                 | 35  | 50  | 50  | 50 | 50 | 50 | 50 |

## 6.6 Glazing Specifications

In order to achieve the internal daytime and night-time requirements the glazing system as a whole including glass, frame, seals and openings shall provide the following minimum sound insulation performance when tested in accordance with BS EN ISO 10140-2: 2010.

| Facade                    | Room Type      | Sound Reduction Index (dB)<br>at Octave Band Centre Frequency (Hz) |     |     |     |    |    |    |    |
|---------------------------|----------------|--------------------------------------------------------------------|-----|-----|-----|----|----|----|----|
|                           |                | 63                                                                 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| Front/Side<br>(Bury Road) | Living Room    | 23                                                                 | 27  | 29  | 36  | 41 | 42 | 52 | 56 |
|                           | Bedroom        | 24                                                                 | 28  | 32  | 43  | 46 | 48 | 55 | 59 |
| Rear                      | Kitchen/Dining | 20                                                                 | 24  | 20  | 25  | 34 | 37 | 35 | 39 |
|                           | Bedroom        | 20                                                                 | 24  | 20  | 25  | 34 | 37 | 35 | 39 |

The table below presents typical configurations and  $R_w$  sound insulation values which may be expected to achieve the sound insulation performance specified above.

| Facade                    | Room Type      | Typical $R_w$ Sound Insulation Value (dB) | Typical Configuration |
|---------------------------|----------------|-------------------------------------------|-----------------------|
| Front/Side<br>(Bury Road) | Living Room    | 40                                        | 10mm/16mm/6.4mm*      |
|                           | Bedroom        | 45                                        | 10mm/16mm/16.8mm*     |
| Rear                      | Kitchen/Dining | 30                                        | 6mm/16mm/4mm          |
|                           | Bedroom        | 30                                        | 6mm/16mm/4mm          |

\* Alternatively, 4mm secondary glazing with a 150mm cavity would be suitable.

Acoustic test data for the proposed glazing systems should be forwarded for review.

## 6.7 Ventilation Provision

### 6.7.1 Background Ventilation

In order to achieve the internal daytime and night-time requirements openable windows must remain closed. Background ventilation shall therefore be provided by ventilators in the building façade and shall provide the following minimum element normalised level differences in the open position when tested in accordance with BS EN ISO 10140-2: 2010.

| Facade                    | Room Type      | Element Normalised Level Difference, $D_{n,e}$ (dB)<br>in Open Position at Octave Band Centre<br>Frequency (Hz) |     |     |     |    |    |    |    |
|---------------------------|----------------|-----------------------------------------------------------------------------------------------------------------|-----|-----|-----|----|----|----|----|
|                           |                | 63                                                                                                              | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| Front/Side<br>(Bury Road) | Living Room    | 42                                                                                                              | 48  | 46  | 49  | 54 | 65 | 65 | 65 |
|                           | Bedroom        | 42                                                                                                              | 48  | 46  | 49  | 54 | 65 | 65 | 65 |
| Rear                      | Kitchen/Dining | 27                                                                                                              | 33  | 39  | 39  | 43 | 50 | 50 | 50 |
|                           | Bedroom        | 27                                                                                                              | 33  | 39  | 39  | 43 | 50 | 50 | 50 |

Should more than one ventilator be required per room the above element normalised level differences shall be increased by the following values:

| Number of Ventilators Required Per Room | Additional Performance Required Per Ventilator (dB) |
|-----------------------------------------|-----------------------------------------------------|
| 1                                       | 0                                                   |
| 2                                       | +3                                                  |
| 3                                       | +5                                                  |
| 4                                       | +6                                                  |

The table below presents typical configurations and  $D_{n,e,w}$  sound insulation values which may be expected to achieve the sound insulation performance specified above.

| Facade                    | Room Type      | Typical Open $D_{n,e,w}$ Sound Insulation Value (dB) | Typical Configuration                                 |
|---------------------------|----------------|------------------------------------------------------|-------------------------------------------------------|
| Front/Side<br>(Bury Road) | Living Room    | 50                                                   | Acoustic Wall Ventilator<br>(e.g. Greenwood MA3051)   |
|                           | Bedroom        | 50                                                   |                                                       |
| Rear                      | Kitchen/Dining | 40                                                   | Acoustic Window Ventilator<br>(e.g. Greenwood EAR42W) |
|                           | Bedroom        | 40                                                   |                                                       |

Acoustic test data for the proposed ventilators (or other means) should be forwarded for review acoustically should they differ from those detailed in the above table.

### 6.7.2 Purge Ventilation

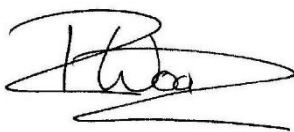
Purge ventilation (to aid removal of high concentrations of pollutants and water vapour released from occasional activities such as painting and decorating or accidental releases such as smoke from burnt food or spillage of water) may be provided via openable windows at the occupants discretion. As such, the internal daytime and night-time requirements may potentially be exceeded during purge ventilation conditions.

## 7.0 Conclusions

The Local Authority's acoustic requirements for the proposed residential development have been established.

A detailed environmental sound survey has been undertaken in order to establish existing environmental sound levels at the proposed residential development.

A detailed environmental sound assessment for the proposed residential development has been undertaken and acoustic specifications for glazing/ventilation elements have been provided in order to achieve the requirements of the Local Authority.



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**LIGHTHOUSE ACOUSTICS**

**344 Bury Road, Rochdale**  
**Time History Graph - Thursday 27 February 2025 to Friday 28 February 2025**  
 **$L_{Amax,15min}$ ,  $L_{Aeq,15min}$  &  $L_{A90,15min}$  Noise Levels at Position A**

