

NOISE ASSESSMENT

on behalf of

CARITAS DIOCESE OF SALFORD

for the site at

**CARITAS HOUSE, NOBBY STILES DRIVE,
MANCHESTER, M4 4FA**

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**Miller Goodall Ltd
Ground Floor
Ashworth House
Deakins Business Park
Blackburn Road
Egerton
Bolton
Lancashire
BL7 9RP**

Tel: 01204 596166

www.millergoodall.co.uk



Summary

Noise monitoring has been undertaken to measure the impact of environmental noise on rooms within the supported housing development at Caritas House, Nobby Stiles Drive, Manchester, M4 4FA. The purpose of the assessment was to verify that the internal noise criteria targeted for the development have been met.

Noise monitoring was undertaken in one completed room within the development. The results from that monitoring are provided in this report. The assessment shows that guideline internal noise limits have been achieved.

Prepared By:	Lesley Goodall MIOA	Reviewed By:	William Wright MIOA
Signed:		Signed:	
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Contents

Summary

Contents.....

1 Introduction.....

2 Site Description.....

3 Target Criteria.....

4 Mitigation.....

5 Noise Survey – Measurements of Internal Noise Levels.....

5.1 Monitoring location.....

5.2 Equipment.....

5.3 Calibration

5.4 Noise Sources

5.5 Monitoring times and Weather conditions

6 Monitoring Results

7 Conclusions.....

APPENDICES

Appendix 1: Floor Plan, Monitoring Location and Mitigation Markup.....

Appendix 2: Noise Monitoring Data

Glossary of Terms

1

3

4

5

6

6

6

7

7

7

8

9

11

12

14

15

16

1 Introduction

1.1 Miller Goodall Ltd has, on behalf of Caritas Diocese of Salford, undertaken noise monitoring concerning the impact of noise on a residential development at Caritas House, Nobby Stiles Drive, Manchester, M4 4FA. The development has been granted planning permission subject to several planning conditions relating to noise.

1.2 Condition 4 states;

4) (a) Prior to the first occupation of the development, details of any externally mounted ancillary plant, equipment and servicing shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt, externally mounted plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 db (L_{aeq}) below the typical background (L_{a90}) level at the nearest noise sensitive location.

(b) Prior to the first occupation of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition. Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority. Any measures shall thereafter retained and maintained in situ.

1.3 There is no new externally mounted plant/equipment, nor is there any intention to install any. There is an existing air conditioning unit in situ, but this is not used. Condition 4 has not, therefore, been addressed and can be discharged.

1.4 Condition 5 states;

"5) a) The development shall proceed in accordance with the measures included within the submitted Noise Assessment (Prepared by Miller Goodall; Received 27/12/2023).

b) Prior to first occupation of the residential units, a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that the internal noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the internal noise criteria."

- 1.5 The noise assessment report referred to in condition 5 (our reference 103074 dated 15th November 2023) included predictions of noise levels within the development. These were used to inform a mitigation scheme comprising three mitigation "options" for different areas of the development.
- **Option 1** – Glazing with minimum weighted sound reduction index of 27 dB $R_w + C_{tr}$ (e.g. 4/12/4); ventilators with a minimum element normalised sound level difference of 34 dB $D_{ne,W} + C_{tr}$.
 - **Option 2** – Glazing with minimum weighted sound reduction index of 27 dB $R_w + C_{tr}$ (e.g. 4/12/4); ventilators with a minimum element normalised sound level difference of 29 dB $D_{ne,W} + C_{tr}$.
 - **Option 3** – Any standard thermal double glazing and trickle ventilator.
- 1.6 Option 1 mitigation has now been completed in three rooms which were identified as requiring this level of mitigation and noise monitoring was undertaken to verify its efficacy.

2 Site Description

- 2.1 Caritas House is a two storey building located approximately 1 km northeast of Manchester city centre which is currently undergoing renovation work. A car park is located to the north of the site which is shared with the church, and beyond that is a train line. The site is located between two primary schools, and St Patrick's Church borders the site to the south-east. Rochdale Road to the northwest of the development is the closest main road.
- 2.2 The renovated building will provide accommodation for 19 homeless people. It will include ancillary facilities, external amenity space and storage areas. The property will provide 15 one-bed bedrooms with en-suite facilities, 4 one-bed bedrooms, WCs, and communal areas for cooking, laundry, break out and meeting space. The site layout is shown in **Appendix 1**.

3 Target Criteria

- 3.1 The criteria within BS 8233:2014 *Guidance on Sound Insulation and Noise Reduction for Buildings* was adopted for the development within report 103074 and are assumed to be those targeted within Condition 5 of the planning approval. These are set out in Table 1 below.

Table 1: BS 8233: 2014 guideline indoor ambient noise levels for dwellings

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

4 Mitigation

- 4.1 Double glazing fitted with the following has been installed within the completed rooms;
- TA5221/020 SFSA Xtra 2500EA Sound Attenuator Vent 25mm / RAL9010 Semigloss White
 - TA5202/020 SFSA 2500EA Sound Attenuator Canopy 25mm / RAL9010 Semigloss White

5 Noise Survey - Measurements of Internal Noise Levels

5.1 Monitoring location

- 5.1.1 Unattended noise measurements were undertaken over approximately 72 hours within ground floor flat 8, one of the newly completed rooms within the development, in accordance with BS 7445-1: 2003¹ by Miller Goodall Ltd. This particular room has two windows and was chosen from the three completed ones as representing the worst case in terms of acoustic performance due to its double aspect façade.

¹ BS 7445-1: 2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures

5.1.2 The monitor was placed in the centre of the room and the trickle vents on both windows were opened. The measurement location is shown in **Appendix 1**.

5.2 **Equipment**

5.2.1 Details of the equipment used are shown in **Table 2**.

Table 2: Noise monitoring equipment

Equipment Description	Type Number	Manufacturer	Serial No.	Date Calibrated	Calibration Certification Number
Class 1 ^{2,3} Integrating Real Time 1/3 Octave Sound Analyser	NTi XL2-TA	NTi Audio	A2A-11111-E0	16/10/2023	05451/1
Pre-amplifier	Nti MA220	NTi Audio	6908	16/10/2023	05451/1
Microphone	NTi MC230A	NTi Audio	A14423	16/10/2023	05451/1
Class 1 Calibrator ⁴	CAL 200	Larson Davies	14154	22/08/2024	06881/2

5.3 **Calibration**

5.3.1 The calibration of the sound level meter was checked before and after measurements with negligible deviation (<0.1 dB).

5.4 **Noise Sources**

5.4.1 The noises heard within the room during installation and collection of the noise monitoring equipment are summarised in Table 3, below:

Table 3: Description of noise sources affecting the site

Measurement Location	Noise Sources
Flat 8	On installation – distant road traffic noise was noted on arrival.

² IEC 61672-1 (2002) Electroacoustics – Sound level meters Part 1: Specifications

³ IEC 61260 (1995) Electroacoustics – Octave-band and fractional-octave-band filters

⁴ IEC 60942 (2003) Electroacoustics – Sound calibrators

Measurement Location	Noise Sources
	On collection – work at the school to the north west of the suite was noted. A grinding tool was being used. The only noise within the room being monitored was from occupants of the building itself.

5.5 **Monitoring times and Weather conditions**

- 5.5.1 Noise monitoring was undertaken at the times specified in Table 4.
- 5.5.2 Measurements were taken at times considered to be representative of the periods during which the proposed residential accommodation would be subject to the highest levels of ambient noise ie over a weekday period.
- 5.5.3 Each measurement period consisted of sequential 100 ms samples which allowed the variation in noise level over time to be assessed. 2-minute L_{AFmax} data was also analysed in order to determine the number of measured $L_{AFmax,2minute}$ values over 45 dB.
- 5.5.4 Weather conditions were observed both at the start and on completion of the survey and are also shown in Table 4. It is considered that meteorological conditions were appropriate for environmental noise measurements.

Table 4: Monitoring Parameters

	Date/Time	Weather conditions		
		Description	At Start of Survey	On Completion
P1	21/10/24, 11:30 to 24/10/24, 12:45	Temperature:	13 °C	15 °C
Cloud Cover Symbol Scale in oktas (eighths) 0 Sky completely clear 1 2 3 4 Sky half cloudy 5 6 7 8 Sky completely cloudy (9) Sky obstructed from view		Precipitation:	None -Dry	None - Dry
		Cloud cover (oktas – see opposite):	6	4
		Any fog/snow/ice?	No	No
		Any damp roads/wet ground?	No	Slight
		Wind speed:	< 5 m/s	<5 m/s
		Wind direction:	N/A	N/A
		Any conditions that may cause temp. inversion (e.g. calm nights with no cloud):	No	No

6 Monitoring Results

- 6.1 **Appendix 2** provides a summary of the broadband measurement data collected. All data are sound pressure levels in dB re 20 µPa.
- 6.2 Table 5 provides a summary of the applicable criteria, measurements undertaken and compliance with the criteria.

Table 5: Measured Sound Levels Compliance with Criteria

Day time noise levels				
Date and Monitoring Period	Day	Criteria	Monitored L_{Aeq} (dB)	Comments
11:15 21/10/2024 to 23:00 21/10/24	Monday	35 dB $L_{Aeq,16hr}$	34.7	Criteria Met despite incomplete monitoring period
7:00 22/10/2024 to 23:00 22/10/24	Tuesday		27.1	Criteria met
7:00 23/10/2024 To 23:00 23/10/24	Wednesday		33.2	Criteria met
7:00 24/10/2024 To 12:45 24/10/24	Thursday		41.7 -	Criteria not met but the data refers to an incomplete daytime period - elapsed time = 5:45
Night time noise levels				
Date and Monitoring Period	Day	Criteria	L_{Aeq} (dB)	Comments
23:00 21/10/2024 to 07:00 22/10/24	Monday	30 dB $L_{Aeq,16hr}$	22.7	Criteria met
23:00 22/10/2024 to 7:00 23/10/24	Tuesday		24.4	Criteria met
23:00 23/10/2024 To 7:00 24/10/24	Wednesday		23.3	Criteria met
Date and Monitoring Period	Day	Criteria	No. of L_{Amax} over 45 dB	Comments
23:00 21/10/2024 to 07:00 22/10/24	Monday	Not more than 45 dB L_{AFmax} 10	0	Criteria met

23:00 22/10/2024 to 7:00 23/10/24	Tuesday	– 15 times per night	1	Criteria met
23:00 23/10/2024 To 7:00 24/10/24	Wednesday		0	Criteria met

6.2.1 **Table 5** shows that the criteria are met for the full-day and night-time periods measured.

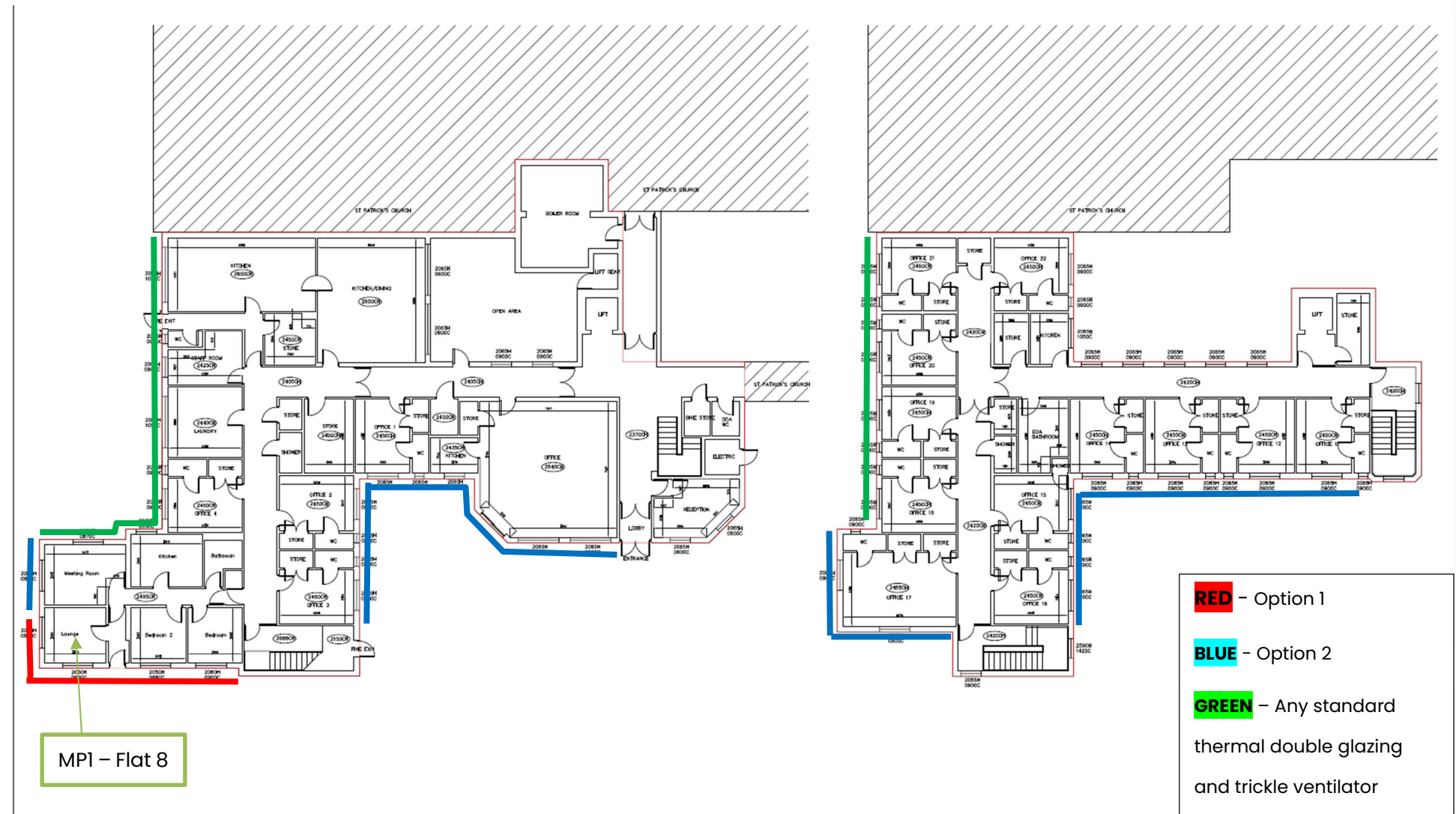
7 Conclusions

- 7.1 A noise survey has been undertaken within a room where Option 1 mitigation has been installed as per the noise assessment report referred to in condition 5 (our reference 103074 dated 15th November 2023).
- 7.2 When comparing measured sound levels against the criteria it has been found that all full day and night-time measured sound levels comply with the internal criteria. As the room that was surveyed has been determined to represent a worst-case due to the total area of glazing, we can state with confidence that all rooms with Mitigation Option 1 installed will comply with the criteria.
- 7.3 There are no completed rooms with Mitigation Option 2 at the time of this report and so a further validation survey will be required once this becomes available to fully discharge Condition 5.

APPENDICES

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Appendix 1: Floor Plan, Monitoring Location and Mitigation Markup



Appendix 2: Noise Monitoring Data

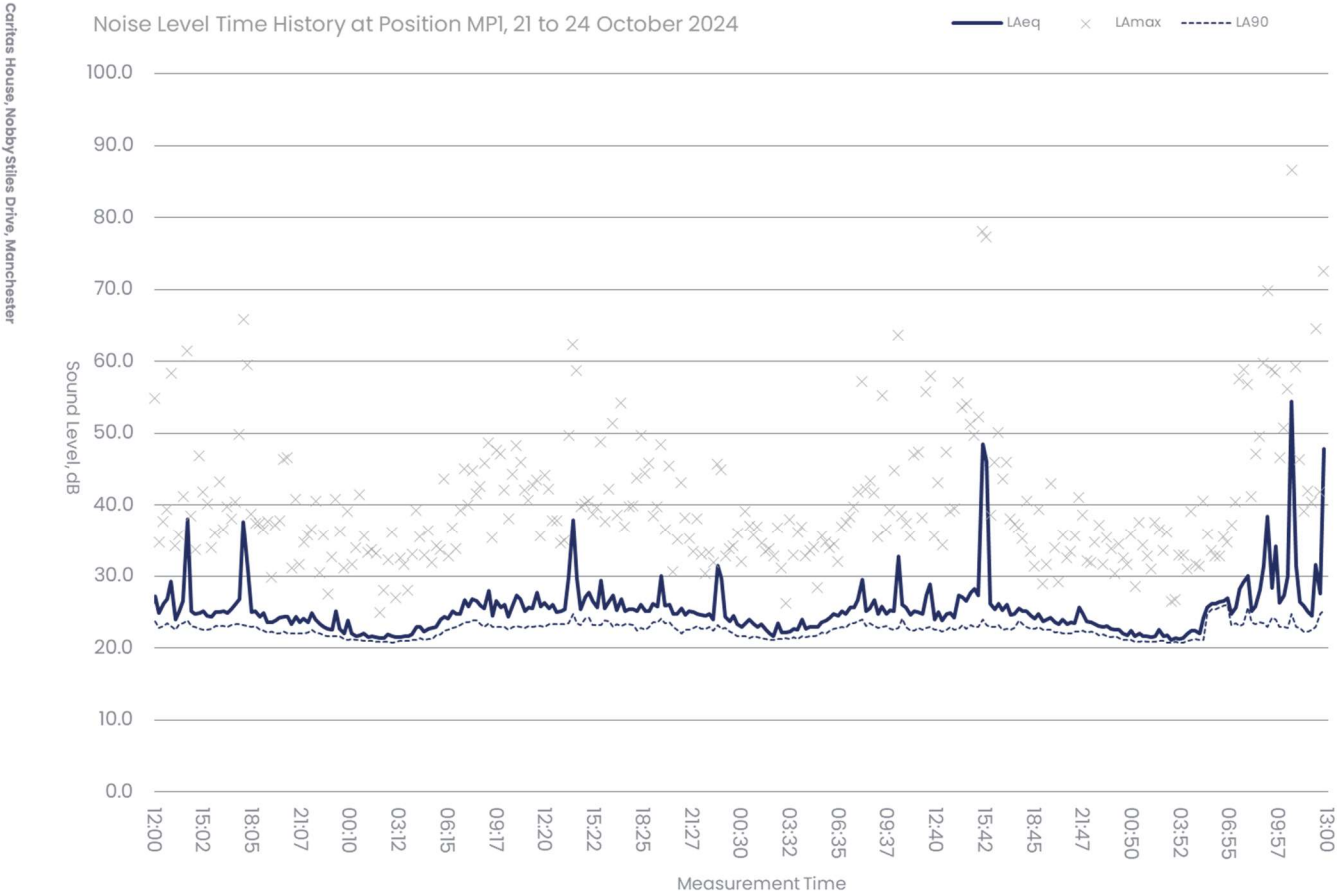


Figure 103074/TH01

Glossary of Terms

Decibel (dB) The unit used to quantify sound pressure levels; it is derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20 μPa , the threshold of normal hearing is in the region of 0 dB, and 140 dB is the threshold of pain. A change of 1 dB is usually only perceptible under controlled conditions.

dB L_A Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB L_A broadly agree with an individual's assessment of loudness. A change of 3 dB L_A is the minimum perceptible under normal conditions, and a change of 10 dB L_A corresponds roughly to halving or doubling the loudness of a sound. The background noise level in a living room may be about 30 dB L_A ; normal conversation about 60 dB L_A at 1 meter; heavy road traffic about 80 dB L_A at 10 meters; the level near a pneumatic drill about 100 dB L_A .

$L_{A90,T}$ The A weighted noise level exceeded for 90% of the specified measurement period (T). In BS 4142: 2014+A1:2019 it is used to define background noise level.

$L_{Aeq,T}$ The equivalent continuous sound level. The sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T). $L_{Aeq,T}$ is used to describe many types of noise and can be measured directly with an integrating sound level meter.

L_{Amax} The highest A weighted noise level recorded during the time period. It is usually used to describe the highest noise level that occurred during the event.

$L_{A10(18\text{ hour})}$ Often referred to as the UK road traffic noise index, this is the arithmetic average of the values of L_{A10} hourly for each of the 18 one hour periods between 06:00 and 00:00.

R_w Single number rating used to describe the sound insulation of building elements and is defined in BS EN ISO 10140-2: 2010 (formerly BSEN ISO 140-3:1995). It is derived by measurement under laboratory conditions and does not take into account the effects of flanking transmissions.

- $D_{ne,w}$** The weighted element-normalized level difference is a single figure rating used to describe the sound insulation of small elements within a larger construction and is defined in BS EN ISO 10140-2:2010 (BSEN ISO 140-10:1991). It is most often used to rate the sound insulation performance of ventilator units e.g. trickle vents.
- C_{tr}** A single-number spectrum adaptation term used to characterise the sound insulation rating with respect to urban traffic. It is defined in ISO 717-1:20-13.

