REDFANSOLUTIONS

ARDWICK GREEN

Discharge of Planning Conditions

Address
Cotter Street, Manchester
M12 6PQ

Office 8094, 321-323 High Road,
Chadwell Heath, Essex, RM6 6AX
www.redfansolutions.co.uk
info@redfansolutions.co.uk

Report Number 2526-938-5-17-10

Overview

Site Address:	Cotter Street, Manchester M12 6PQ
Report no:	2526-938-5-17-10
For:	AEDI Construction
Company Address:	Unity House, Westwood Park, Wigan WN3 4HE
Date of Report:	17/10/2025
Authors:	Andrew Hunt
Prepared by:	REDFAN Solutions
	www.redfansolutions.co.uk info@redfansolutions.co.uk

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V1	Planning	17/10/25	Comp

Andrew Hunt has taken the relevant Institute of Acoustics Measurement in Environmental and Building Acoustic Measurement courses and has 6 years' experience in the last 6 years as well as being a member of the Institute of Acoustics. His experience in acoustics has been in relation to construction and the built environment; including, acting in an advisory capacity to provide recommendations for suitable acoustic performance levels and mitigation measures.

This report has been prepared by REDFAN Solutions with all reasonable expertise, care and diligence. The survey and report have been undertaken in accordance with accepted acoustic consultancy principles, it takes account of the services and terms and conditions agreed verbally and in writing between REDFAN Solutions and our client. Any information provided by third parties and referenced is considered to have undergone suitably thorough third-party checks to ensure accuracy. We can accept no liability for errors with third- party data. This report is confidential to our client and therefore REDFAN Solutions accepts no responsibility whatsoever to third parties unless formally agreed in writing by REDFAN Solutions. Any such party relies upon the report at their own risk.

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1. Introduction

1.1 REDFAN Solutions have been instructed to assess compliance with the acoustic stipulations set out in Proposed Residential Development "Land Off Ardwick Green North & Cotter Street, Manchester, M12 6FZ - Noise Assessment Report J004076-5851-LK-01" (October 2022).

1.2 This report outlines those requirements and their completion.

2. Criteria

2.1 Condition 12 states that;

a) Externally mounted ancillary 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 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.

b) Prior to the operation of the scheme a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of nonconformity with the recommendations in the report shall be detailed along with any

BS 8233:2014

2.2 Local Authorities usually stipulate internal noise criteria for residential buildings use levels based on British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'.

2.3 BS 8233:2014 provides references and guideline values for desirable indoor ambient noise levels for dwellings as shown in Table 2.4 below.

2.4 BS 8233:2014 Desirable Internal Ambient Noise Levels for Dwellings

Table 4 **Indoor ambient noise levels for dwellings**

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

2.5 The table is noted to apply to external noise as it affects the internal acoustic environment from sources without a specific character.

2.6 The above internal ambient noise levels are therefore considered appropriate within this assessment.

2.7 BS 8233:2014 states that 'for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed an upper guideline value of 55dB LAeq, which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances…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'.

Changes in noise level

2.8 The Institute of Environmental Management and Assessment (IEMA) 'Guidelines for Environmental Noise Impact Assessment' provides guidance on the sensitivity of receptors to changes in noise levels. Changes in noise levels of less than 3dBA are not perceptible under normal conditions and changes of 10dB are equivalent to a doubling of loudness. This guidance has been accepted by Inspectors, at Inquiry, to encompass changes in noise levels in the index LAeq,T.

2.9 The following table summarises the response to changes in noise level (known as the Semantic Scale).

Table 2: Change in noise level – response and impact.

Change in noise level LAeqT dB	Response	Impact
<3	Imperceptible	None
3 - 5	Perceptible	Slight
6 - 10	Up to a doubling	Significant
11 – 15	More than a doubling	Substantial
> 15	-	Severe

2.10 BS 7445:2003 "Description and measurement of environmental noise"

Part 1 of BS 7445 establishes guidelines to quantities and procedures for environmental noise measurements. Guidance provided on instrumentation and

calibration, measurement positions, meteorological effects, and information to be recorded.

- All equipment shall be calibrated and the configuration for calibration shall be in accordance with the manufacturer's instructions.
- A comprehensive recalibration at certain time intervals may be prescribed by authorities responsible for the use of measurement results.
- A field check shall be made by the user at least before and after each series of measurements, preferably including an acoustic check of the microphone.
- "Outdoor measurements near buildings": these measurements shall be carried out at places where the noise to which a receiver is exposed is of interest. If not otherwise specified, the preferred measurement positions are 1m to 2m from the façade and 1.2m to 1.5m above the ground.

2.11 BS 4142: 2014+A1:2019 "Method for rating and assessing industrial and commercial sound"

This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature, which includes:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises;
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

The significance of sound impact is to be determined according to the following summary process:

- Determine the background sound levels, in terms of the index LA90, at the receptor locations of interest.
- Determine the specific sound level of the source being assessed, in terms of its LAeqT level (T = 1 hour for day or 15 minutes for night), at the receptor location of interest.
- Apply a rating level acoustic feature correction if the source sound has tonal, impulsive, intermittent, or other characteristics which attract attention.
- Compare the rating sound level with the background sound level; the greater the difference between the two, the higher the likelihood of adverse impact.
- A difference (rating – background) of around +10dB is an indication of significant adverse impact, depending on the context; a difference of +5 dB is an indication of an adverse impact, depending on the

context. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending upon context.

2.12 BS 4142 introduced the concept of 'context' to the process of identifying noise impact. Section 11 of BS 4142: 2014+A1:2019 explains "The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs" (our emphasis). An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context" (our emphasis).

There are many context points to consider when undertaking an assessment of sound impact including:

- The absolute level of sound;
- The character and level of the specific sound in the context of the existing noise climate; for example, is the sound to occur in a location already characterised by similar activities as those proposed?
- The sensitivity of the receptors;
- The time and duration that the specific sound is to occur;
- The conclusions of assessments undertaken using alternative assessment methods, for example, WHO guidelines noise values or change in noise level;

2.13 It is therefore entirely possible that whilst the numerical outcome of a BS 4142: 2014+A1:2019 assessment is indicative of adverse or significant adverse impact, when the proposal is considered in context the significance of the impact is reduced to an acceptable level.

2.14 WHO Guidelines for Community Noise

2.14.1 The WHO Guidelines (1999) recommends indoor night-time guidelines in order to avoid sleep disturbance, the document states these to be 30dB (LAeq) and 45 dB (LAfmax) for continuous and individual noise events respectively.

2.14.2 The document states that the number of noise events should also be considered and that individual noise events should not exceed 45dB (LAfmax) more than 10 – 15 times per night.

2.15 A site inspection and comprehensive visit was performed on 14/10/2025. No measurements were taken as the report is for the inspection purposes only.

3. Site Plan

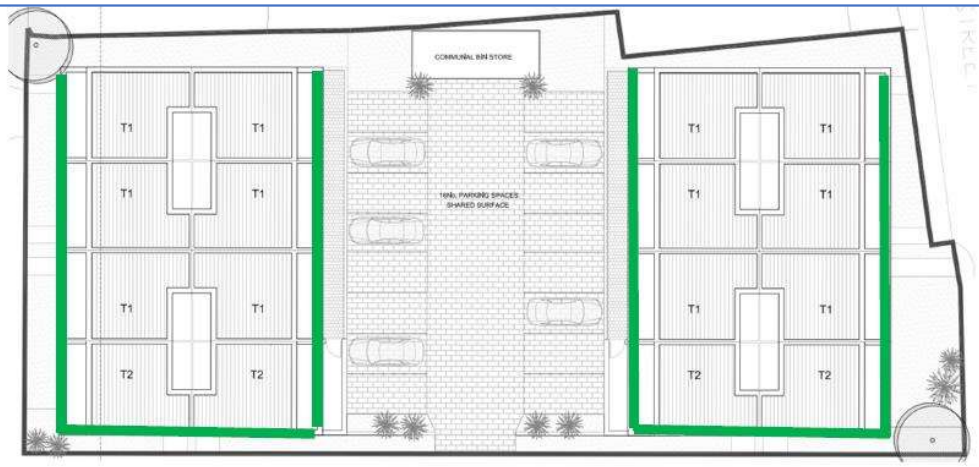
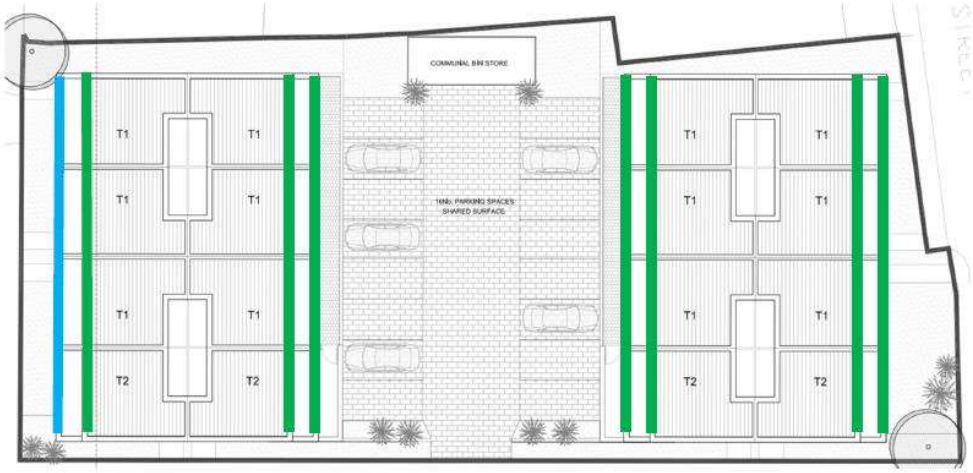


Figure 6. Glazing and ventilator requirements at First & Second Floor Level (Bedooms)



4. Conditions

4.1 Condition 12 A.

Externally mounted ancillary 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 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location.

4.2 Condition 12 B.

A verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met.

To summarise the recommended acoustic conditions from the previous reports: - "Land Off Ardwick Green North & Cotter Street, Manchester, M12 6FZ - Noise Assessment Report J004076-5851-LK-01" (October 2022).

- **The overheating mitigation strategy as required by ADO must provide an alternative method to removing heat other than relying on windows remaining open during the nighttime periods.**

- **Glazing to be of a specified level in specified houses. (this is shown in table 3)**

Table 3

Table 5. Glazing and Ventilator Schedule on Worst Case Rooms

Colour	Floor	Room	Minimum Glazing Rating R_w dB	Minimum combined Ventilator Rating $D_{n,e,w}$ dB	Internal Noise Level Target	Calculated Internal Noise Level
					$L_{Aeq,T}$ dB Day/Night	$L_{Aeq,T}$ dB Day/Night
Green	Ground	Type 1 Living	33	33	35/-	30/-
Green	Ground	Type 2 Living	33	33	35/-	34/-
Blue	First	Type 1 Bedroom 2	38	38	35/30	29/28
Green	First	Type 1 Bedroom 2	33	33	35/30	29/26
Green	Second	Type 1 & 2 Bedroom 3	33	33	35/30	31/28

5. Calculations and Site Visit

Externally mounted plant equipment.

5.1 All properties have an externally positioned Air Source Heat pump, these are positioned in a light well at second storey which is sited inside the properties themselves with no line of sight to the nearby NSR.

5.2 Position 2 of the survey "Land Off Ardwick Green North & Cotter Street, Manchester, M12 6FZ - Noise Assessment Report J004076-5851-LK-01" (October 2022) best represents the levels of noise at the NNSR's.

Table 5. Summary of environmental noise measurements – Position 2

Date	Time Period (hh:mm)	Duration (hh:mm)	$L_{Aeq,T}$ (dB)	Range of $L_{Amax,5mins}$ (dB)	Range of $L_{A90,5mins}$ (dB)
Wednesday 12th October	Day 07:20 – 10:00	02:40	57	70 – 82	52 – 54
Thursday 20th October	Day 07:00 – 09:20 Day 22:15 – 23:00	03:05	57	66 – 85	48 – 54
20th – 21st October	Night 06:40 – 07:00 Night 23:00 – 01:00	02:20	53	56 – 75	46 – 53

The minimum L90 level will be used for the calculation.

5.3 Sound Data of machines. 45db(A) will be used as this has already been propagated as an Leq.

SOUND DATA*3	Pressure Level at 1m (dBA)	45
	Power Level (dBA)*4	58

5.4 The units are positioned in clusters of four within the development giving a maximum sound pressure of the four units combined of 51dB(A) @1m.

5.5 The calculation to determine the specific noise level at the nearest noise sensitive receiver.

$$L_2 = L_1 - 20 \times \log\left(\frac{r_2}{r_1}\right)$$

5.6

r_1 = the distance the recording was taken from the noise source

r_2 = the distance to the nearest noise sensitive receptor

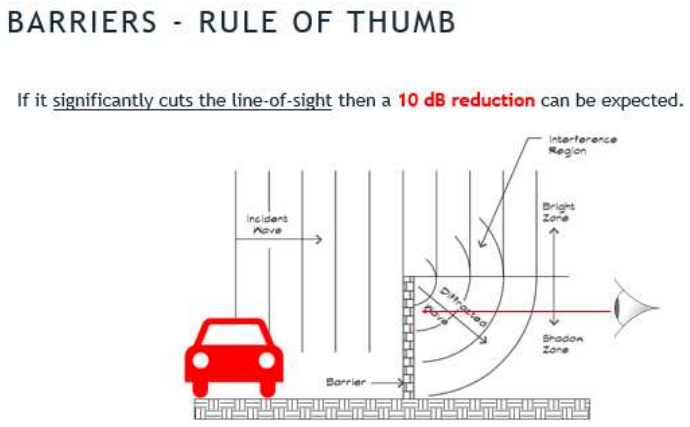
L_1 = the sound pressure recorded

L_2 = the sound level that caries to the noise sensitive receptor

5.7 Billing Avenue and Nivin Street are the NNSR and are both 25m form the positioned plant equipment.

5.8 The units are completely hidden from the NNSR and the Institute of Acoustics use a field based "Rule of Thumb" to determine the impact of barriers on the diffraction of sound waves as the diagram below shows. If a barrier significantly cuts the line of

sight from the point source a 10dB reduction can be calculated to the results. (building itself is shielding the NNSR).



5.9 Daytime sound pressure levels

$$L2 = 51dB - 20 \times \log\left(\frac{25}{1}\right) = 23dB\text{-}10dB \text{ (no line of site)} = 13dB(A)$$

5.10 The calculations have shown that the sound levels produced at the nearest noise sensitive receptors by the proposed air source heat pumps are below the 5dB background noise required for compliance therefore condition 12 A can be considered fulfilled.

5.11 Full house mechanical ventilation has been installed to all properties.

5.12 Installed Glazing.

Window Façade and house type	Proposed Window attenuation Rw+Ctr	Fitted Window Rw
Green highlighted	33dB Rw	34dB Rw (4-24-4) 4 Pilkington clear energy glass
Blue highlighted	38dB Rw	39dB Rw(4-20-4-18-6.38) 4 Optitherm S3 T / 20 Argon filled spacer / 4 Specimen Installed By: Optifloat glass / 18 Argon filled spacer / 3/0,38/3 Optilam Therm S3

6. Summary

6.1 This report has calculated the noise levels at the NNSR's from external plant equipment and compared to the noise level surveys performed and determined that the levels are compliant with being more than 5dB below background noise.

6.2 Details the specifications for APO ventilation strategies have been inspected in line with recommendations. A full house MVHR system is installed in all properties.

6.3 A full inspection of site and documents relating to glazing attenuation has been performed.

6.4 All requirements set out in - "Land Off Ardwick Green North & Cotter Street, Manchester, M12 6FZ - Noise Assessment Report J004076-5851-LK-01" (October 2022) have been fulfilled.

6.5 With the completion of this report, Condition 12 of approved planning consent has been fulfilled.

Appendices

1. These are the main noise indices in use in the UK.

- dB(A): The human ear does not hear all frequencies with the same intensity. It is most sensitive to sounds in the 500Hz-8kHz range. Above and below this range the ear becomes progressively less sensitive. To compensate for this, sound level meters incorporate electronic filtering to correspond with the varying sensitivity of the ear. This filtering is called A-weighting and Sound Pressure Levels obtained with this weighting are referred to as A-weighted and signified as dB(A).

- LA90: The sound level (in dBA) exceeded for 90% of the time. This unit gives an indication of the sound level during the quieter periods of time in any given sample. It is used to describe the "background noise level" of an area.

- LAeq,T: The equivalent continuous sound pressure level over a period of time, T; (in dBA) This unit may be described as "the notional steady noise level that would provide, over a period, the same energy as the varying noise in question". In other words, the energy average level. This unit is now used to measure a wide variety of different types of noise of an industrial or commercial nature, as well as road traffic, aircraft and trains.

- LA1: The sound pressure level (in dBA) exceeded for 1% of the time. This unit can give an indication of a regular maximum noise level from such activities as dance music.

- LAe: The sound exposure level, (previously denoted SEL) is the noise level of an event, such as a train or aircraft event, normally expressed in a 1 second time period.

- LAmin: The minimum sound pressure level (in dBA) measured over the time period.

- LAmax: The maximum level of sound (in dBA), i.e. the peak level of sound measured in any given period. This unit is used to measure and assess transient noises, i.e. gun shots, individual vehicles, etc.

- LArT : sound rating level, the a-weighted, leq sound level of an industrial noise during a specified time period, adjusted for tonal character and impulsiveness