

Project

Dob Brook Close, Manchester

Prepared for

Bowker Sadler Architecture
Hatherlow House, Hatherlow
Romley, Stockport SK6 3DY

By

Lewis Bullivant BEng (Hons) AMIOA

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Client Address	Hatherlow House, Hatherlow, Romley, Stockport, SK6 3DY
Author	Lewis Bullivant BEng (Hons) AMIOA
Checker	Jago Edwards BEng (Hons) AMIOA
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Summary

SRL has been commissioned by Bowker Sadler Architecture to provide a noise assessment for a proposal of 24 new-construction residential properties on land near Dob Brook Close, Manchester.

The main noise source affecting the proposed development is road traffic to north of the site, from Oldham Road. There is a scrap car yard to the immediate west of the proposed site, during our noise survey the site was operating but no noise sources from it were identified on the site.

We have used data from three attended noise measurement positions on the proposed site to determine the highest daytime and night time noise levels affecting the proposed residential properties.

With the building envelope acoustic performance specifications given in this report, the noise levels set by the local authority and set-out in BS 8233:2014 '*Guidance on sound insulation and noise reduction for buildings*' are capable of being achieved in external areas and in all habitable rooms during the day and night.

Lewis Bullivant

Lewis Bullivant

For and on behalf of

SRL Technical Services Limited

Tel: 0161 929 5585

Email: lbullivant@srtsl.com

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1.0 Introduction

SRL has been commissioned by Bowker Sadler Architecture to provide a noise assessment for a proposal of 24 residential properties over four blocks, on land near Dob Brook Close, Manchester.

The development site is currently empty grassland. The site is bounded to the north by Dob Brook Close, to the east by existing residential properties, to the west by a scrap car yard and to the south by the Rochdale Canal.

Figure I below shows the site plan of the proposed development.

Figure I Proposed site plan



2.0 Noise Criteria

Section 3.6.1.1 of Manchester City Council's Planning & Noise Technical Guidance documents provided for this development are summarised below:

"Manchester City Council has adopted the following internal noise limits for residential properties:

- *Bedrooms (night time - 23.00 - 07.00) 30 dB L_{Aeq} (individual noise events should not normally exceed 45 dB $L_{Amax,F}$ by more than 15 times)*
- *Living Rooms (daytime - 07.00 - 23.00) 35 dB L_{Aeq}*
- *Gardens and terraces (daytime) 55 dB L_{Aeq} "*

The internal noise limits specified in the local authority criteria are in line with the guidance for internal noise limits given in BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings', which are summarised in section 2.3 of this report.

2.1 Professional Practice Guidance on Planning and Noise

Professional Practice Guidance on Planning and Noise (ProPG) was published in June 2017. It provides guidance on a recommended approach for managing noise appropriately within the planning system for new housing. It is not an official government code of practice, nor does it replace or provide an authoritative interpretation of the law or government policy, but it does help to draw together existing policies, such as the National Planning Policy Framework (NPPF) and provides additional guidance which helps fill in some of the current gaps.

This document has been jointly created by three bodies: The Institute of Acoustics, the Association of Noise Consultants and the Chartered Institute of Environmental Health. The key message is the drive to adopt Good Acoustic Design for every new housing scheme to protect people from the harmful effects of noise.

ProPG: Planning and Noise aims to establish a framework for assessing proposed developments by looking at the potential 'risks' from noise affecting the site and establishing suitable noise criteria. The fundamental approach is to do an initial Risk Assessment of the site in terms of noise and unless the risk is deemed to be negligible, you are expected to do a full noise assessment. This involves establishing suitable noise criteria and developing a Good Acoustic Design to achieve them, wherever possible.

However, the foreword of ProPG also points out that:

'Good acoustic design does not mean "gold plating" or significantly increasing costs. This guidance seeks to encourage and promote design outcomes that are proportionate and reasonable in the particular circumstances of each development site.'

Hence, while the aim of a noise assessment like this is to provide acceptable amenity, it is recognised that the scheme sits within an existing community already exposed to similar road traffic along the routes around the site itself.

2.2 BS 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'

2.2.1 Internal noise levels

The proposed development will achieve the internal noise levels given in BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' (BS 8233). The relevant criteria are detailed in Table 1:

Table 1 BS 8233 internal noise limits

Activity	Location	Day (07:00-23:00)	Night (23:00-07:00)
Resting	Living rooms	$L_{Aeq,16hr}$ 35dB	-
Dining	Dining room	$L_{Aeq,16hr}$ 40dB	-
Sleeping (daytime resting)	Bedrooms	$L_{Aeq,16hr}$ 35dB	$L_{Aeq,16hr}$ 30dB

BS8233:2014 does not give a specific limit for maximum noise levels in bedrooms at night. In this instance, we have referred to the guidance given in BS8233:1999 and the guidance provided by the local authority where in bedrooms at night, individual noise events should not normally exceed L_{AFmax} 45dB.

2.2.2 External noise levels

For outdoor areas, such as gardens, BS 8233:2014 states the following design guidance:

"it is desirable that the external noise level does not exceed 50 $L_{Aeq,T}$ dB, with an upper guideline value of 55 $L_{Aeq,T}$ dB which would be acceptable in noisier environments. However, it is also recognised 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."

3.0 Noise Assessment

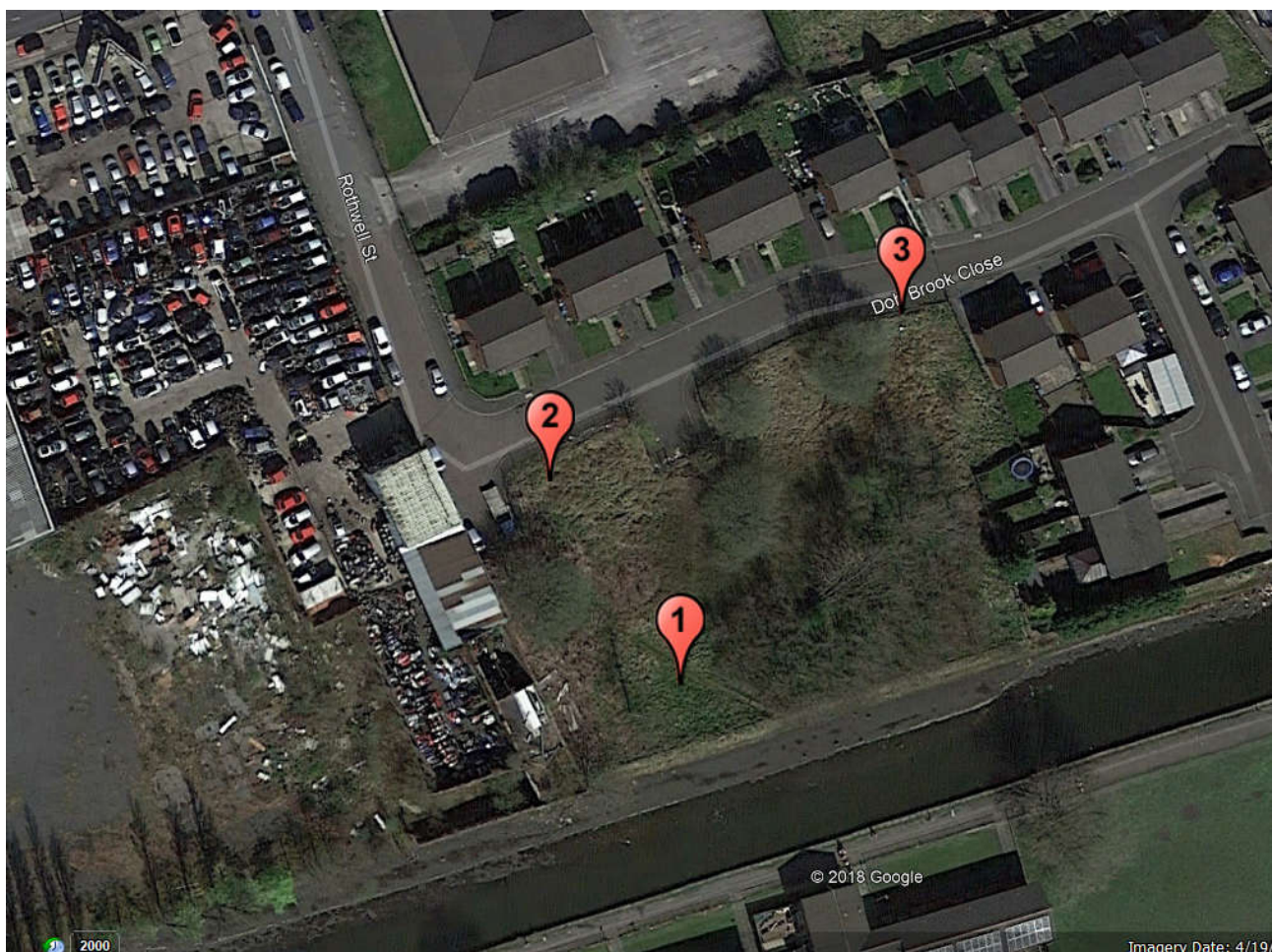
3.1 Noise Survey

SRL conducted a daytime noise survey at the site on 30 September 2019, which consisted of 3 rounds of 10 minute measurements at 3 positions. We returned to the site on the night of 01 October 2019 and early morning of 02 October 2019 to capture the night time noise environment at the same measurement positions. For all measurements, the microphone was fixed to a tripod at least 1.5m above the ground and 3m from any reflective surfaces.

The main noise source affecting the site during our noise survey was road traffic on Oldham Road and the occasional passing car on Dob Brook Close.

Figure 2 shows the measurement locations used for the noise survey.

Figure 2 Noise measurement locations



3.2 Survey Results

Table 2 gives a summary of the measured daytime noise levels across the site. Ambient noise levels presented for the positions are the average of the three 10 minute measurements taken over 3 consecutive hours. The typical maximum is the highest maximum measured at the position during each 10 minute period.

Table 2 Daytime (07:00-23:00) noise levels

Position	Daytime ambient noise levels ($L_{Aeq,T}$), dB	Typical maximum noise level (L_{AFmax}), dB
1	48	65
2	47	69
3	51	72

Table 3 presents a summary of the measured night time noise levels. Ambient noise levels presented for the positions are the average of the two 10 minute measurements taken from 23:00-00:00 and 06:00-07:00 as these are assumed to be the loudest hours of the night. The typical maximum is the highest maximum measured at the position during each 10 minute period.

Table 3 Night time (23:00-07:00) noise levels

Position	Night time ambient noise levels ($L_{Aeq,T}$), dB	Typical maximum noise level (L_{AFmax}), dB
1	47	59
2	52	69
3	47	73

3.3 Façade specification

Based on the measured noise levels, we have determined example façade specifications which are capable of achieving L_{AFmax} 45 dB or less for typical night time events (by more than 15 times a night) and L_{Aeq} 30 dB in bedrooms at night as well as L_{Aeq} 35 dB during the day.

It is assumed that external façades will be a masonry or cladding outer leaf with internal plasterboard linings. This construction is likely to be sufficient acoustically, and it will be the windows and any ventilator which will be the weakest elements acoustically.

The internal ambient noise level guidance in Table 1 are capable of being met with standard thermal double glazing installed across the site. North-facing bedrooms of plots 1 and 2 will require trickle vents with a minimum acoustic performance of $D_{n,ew+Ctr}$ 35dB. Bedrooms of plot 24 will require trickle vents with a minimum acoustic performance of $D_{n,ew+Ctr}$ 37dB. All other habitable rooms across the development site are capable of achieving the internal noise limits set out in BS 8233 with standard non-acoustic trickle vents. This is shown in the mark-up in figure 3 below.

Figure 3 Ventilator performance mark-up



The window performance must be achieved by the combination of the glazing and the frame with any opening lights. The internal noise levels in Table I are capable of being met with the above provision when windows are closed. When windows are opened for purge ventilation, internal noise levels will be higher.

I have assumed that there will be one ventilator in each room. The number of ventilators required will depend on your ventilation strategy/design. The performance criterion might be met by one ventilator (in open position), however if more ventilators are required, the minimum level difference required for each ventilator will be higher.

3.4 External noise assessment

Each proposed residential property has an external garden area. Noise levels in gardens are predicted to be lower than L_{Aeq} 55 dB across all of the site, demonstrated by noise levels measured on site. Therefore, noise levels in external areas are expected to be within MCC guidance levels.

Appendix A - Survey Details

A1. Location of Survey

Land off Dob Brook Close, Manchester

A2. Date & Time of Survey

11:00 30/09/19 - 14:00 30/09/19

23:00 01/10/19 - 07:00 02/10/19

A3. Personnel Present During Survey

Lewis Bullivant (SRL)

Jonathan Riley (SRL)

Luke Pickering (SRL)

A4. Weather Conditions during Survey

Still, dry

A5. Instrumentation

Bruel & Kjaer - Noise Meter AEI

Description	Location	SRL No.	Make	Model	Serial
Sound Level Meter (AEI, Orange)	Manchester	516	B&K	2250	2506736
Pre-amp	Manchester	516	B&K	ZC0032	14463
Microphone	Manchester	516	B&K	4189	2643199
Calibrator (ATI White)	Manchester	597	B&K	4231	2431840

A6. Calibration Procedure

Before and after the survey the measurement apparatus was check calibrated to an accuracy of ± 0.3 dB using the type 4231 Sound Level Calibrator. The Calibrator produces a sound pressure level of 93.8 dB re 2×10^{-5} Pa at a frequency of 1 kHz.

A7. Survey Procedure

Ambient noise levels were monitored at various positions around the site as shown on Figure 1. The measurements are tabulated in Appendix B, and explanations of the parameters used are listed in Appendix C.

Appendix B - Measured Noise Levels

LAeq Octave Band Levels

Pos	Time	63	125	250	500	1k	2k	4k	dB(A)
1	30/09/2019 11:00	62	56	49	41	42	41	41	49
1	30/09/2019 12:10	57	50	41	38	39	35	44	47
1	30/09/2019 13:00	58	54	49	41	41	39	37	47
1	01/10/2019 23:00	54	49	40	41	44	36	25	46
1	02/10/2019 06:00	56	50	42	43	45	37	24	47
2	30/09/2019 11:20	59	52	48	42	42	40	40	48
2	30/09/2019 12:20	58	50	44	41	41	37	34	45
2	30/09/2019 13:10	58	55	44	42	42	37	42	48
2	01/10/2019 23:11	57	51	44	45	47	40	31	49
2	02/10/2019 06:11	60	53	48	49	50	42	43	53
3	30/09/2019 11:31	59	55	47	43	43	38	44	49
3	30/09/2019 12:31	62	61	54	48	48	47	44	54
3	30/09/2019 13:21	60	51	46	41	40	37	35	46
3	01/10/2019 23:22	52	46	39	41	42	36	28	45
3	02/10/2019 06:22	59	51	44	43	45	39	37	48

LAmaz Octave Band Levels

Pos	Time	63	125	250	500	1k	2k	4k	dB(A)
1	30/09/2019 11:00	81	76	68	63	59	57	61	65
1	30/09/2019 12:10	69	68	55	52	59	55	62	63
1	30/09/2019 13:00	75	67	65	57	57	57	58	62
1	01/10/2019 23:00	62	57	54	53	55	54	41	59
1	02/10/2019 06:00	69	61	58	49	50	47	40	52
2	30/09/2019 11:20	70	70	66	63	63	65	61	69
2	30/09/2019 12:20	73	64	59	55	58	53	50	60
2	30/09/2019 13:10	71	70	59	60	58	55	59	61
2	01/10/2019 23:11	72	64	60	60	59	53	51	62
2	02/10/2019 06:11	81	67	60	64	59	57	68	69
3	30/09/2019 11:31	71	67	60	61	63	58	66	67
3	30/09/2019 12:31	77	83	77	64	64	67	67	72
3	30/09/2019 13:21	74	69	61	54	52	54	53	58
3	01/10/2019 23:22	61	62	51	53	51	56	52	59
3	02/10/2019 06:22	80	68	61	62	69	68	63	73

Appendix C - Noise Measurement Parameter Definitions

L_{Aeq} - The "A" weighted equivalent continuous sound pressure level. A representation of a continuous sound level containing the same amount of sound energy as the measured varying noise, over the measurement period. It can be considered as the "average" noise level.

L_{Amax} - The "A" weighted maximum sound pressure level of the measurement period.

$D_{ne,w}$ - The weighted sound insulation value of small building elements

C_{tr} - A low frequency correction that is applied to the sound reduction performance of a building element, that accounts for the characteristic sound spectrum of road traffic noise.

Sudbury Consultancy

Holbrook House
Little Waldingfield
Sudbury
Suffolk
CO10 0TF
Tel: +44 (0)1787 247595

Manchester Consultancy

Suite 1.9, Canada House
Chepstow Street
Manchester
M1 5FW
Tel: +44 (0)161 929 5585

London Consultancy

07-106
8 Devonshire Square
London
EC2M 4PL
Tel: +44 (0)207 251 3585

Birmingham Consultancy

Cornwall Buildings
45 Newhall Street
Birmingham
B3 3QR
Tel: +44 (0)121 270 6680

South Africa Consultancy

102 Heritage House
20 Dreyer Street
Claremont
Cape Town
7708
South Africa
Tel: +27 (0)21 205 9201

Laboratory

Holbrook House
The Street
Sudbury
Suffolk
CO10 0TF
Tel: +44 (0)1787 247595

Website: www.srltsl.com
e-mail: srl@srltsl.com

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Registered Name and Address:

SRL Technical Services Limited
Holbrook House
Little Waldingfield
Sudbury
Suffolk
CO10 0TF

Registered Number: 907694 England

