

Martec Environmental Consultants Ltd.

Waterbrow Wood, Gressingham, LANCASTER LA2 8LX

Tel: 01524 222000

Email: info@martecenviro.co.uk

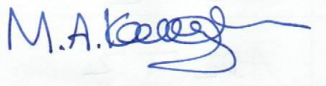
Website: www.martecenviro.co.uk

ROAD TRAFFIC NOISE ASSESSMENT

**5 – 7 Wilbraham Road
Fallowfield, Manchester M14 6JZ**

Report Date: 2nd March 2022
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Site Visit by: N/A
Site Visit: N/A

Prepared by: M A Kenyon MSc BSc MIOA



Checked by: D A B Kenyon BSc CIEH MIOA



Staffordshire / Cheshire Office:

2, Betley Hall Gardens, Betley, Crewe CW39BB

Ormskirk Office:

131 New Court Way, Ormskirk, Lancs L39 2YT

Loughborough Office:

8 Bayliss Close, Quorn
Loughborough LE12 8PF



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1.0 INTRODUCTION

Ahmed Zahir instructed Martec Environmental Consultants Ltd. to undertake a noise assessment at a development site at 5- 7 Wilbraham Road, Manchester M14 6JZ. The instructions arose in connection with a proposal to extend and convert the upper floors of the building to form 8 apartments at first and second floor level.

This report considers the requirements of the local authority and makes recommendations for noise mitigation as necessary. Acoustic terminology is explained at Appendix 1; consultants' qualifications at Appendix 2 and References at Appendix 3.

2.0 PROJECT BACKGROUND

The site is shown in Figure 1 below with the development site at Nos.5-7 marked along with a number of other nearby sites. It can be seen that Wilbraham Road runs immediately adjacent to the site.

There are three nearby sites where development has recently taken place [References 6, 7 and 8]; the noise reports are part of the planning applications and hence the information within them is in the public domain. The location of these sites has also been marked on Figure 1.

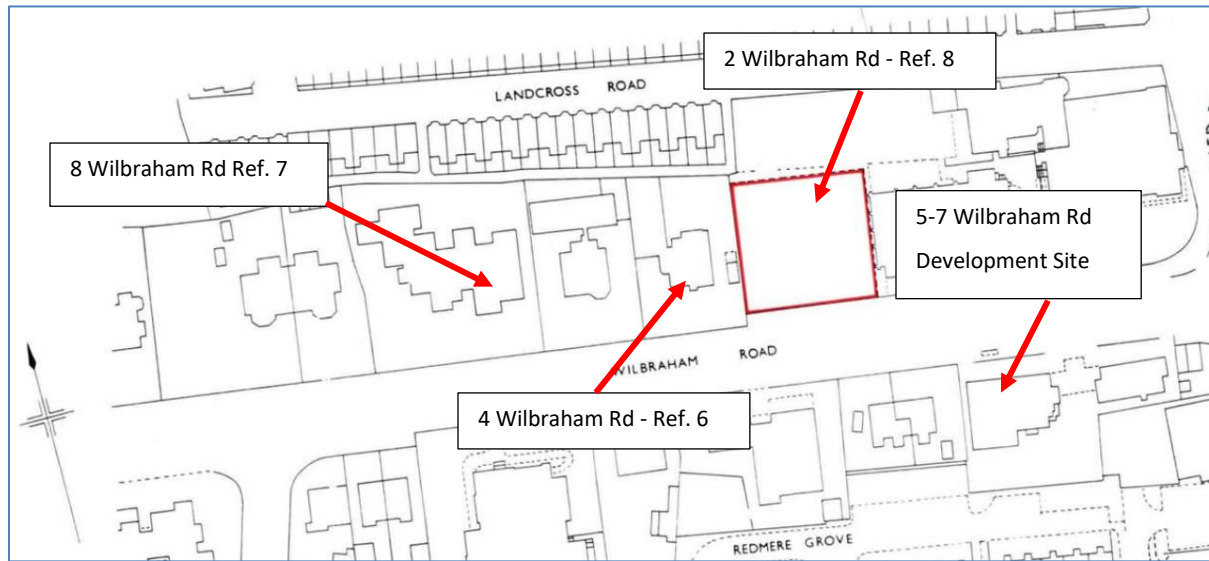


Figure 1: Site Location Plan – Former Plot Layouts

Martec used the same data set for the site opposite, at No.2 Wilbraham Road, which was granted planning consent last year [Ref.8].

It can be seen that the 'residential façade' of No. 5-7 would be some 10m from the carriageway edge of Wilbraham Road, whereas the front façade at No.8 is some 12m from the carriageway edge; however, the nearest residential windows at No.8 are at ground floor level, whereas at Nos.5-7 they are at first floor level, so that the overall separation distance from the traffic is similar for both sites.

3.0 NOISE CRITERIA

Manchester City Council, in its document “Planning and Noise – Technical Guidance Dec 2015”, has adopted the following internal noise limits for residential properties:

- Bedrooms (night time - 23.00 - 07.00) 30 dB LAeq (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 LAeq
- Gardens and terraces (daytime - 07.00 - 23.00) 55 dB LAeq

4.0 ASSESSMENT OF MEASURED LEVELS

4.1 Predictions

As discussed, noise measurements and assessments have been undertaken at both No.4 and No.8 Wilbraham Road, and the information is within the public domain. The author has visited site and is not aware of any changes in local traffic conditions that would have resulted in significant changes in the measured levels. The noise levels used in the assessments can be summarized as follows in Table 1:

Location	Ref.	Position	Day LAeq,16hr	Night LAeq,8hr	Night LAmax,F
No.4 Wilbraham	6	Front Façade	63	60	--
No.8 Wilbraham	7	Front Façade	58	58	78

Table 1: Noise Levels on Nearby Sites [dBA free-field]

A 3D model of the site and surrounding area has been created using SoundPLAN, based on Ordnance Survey ground height data, the architect's drawings and observations from Google Earth. The predictions have been calibrated using the measurements made at Nos. 4 & 8 Wilbraham Road [References 6 & 7]. The predictions for the most affected façades on the building have been presented in Figure 2 towards the end of the report, along with the predicted levels for the adjacent sites.

4.2 Noise Control

Based on the predictions, the levels at the front façade of the development site are as shown in Figure 2, with the nighttime LAmax,F levels taken to be 78 dBA [as for No.8 Wilbraham Road].

4.2.1 Bedroom Noise Levels [Front Façade]

Carrying out predictions as per Annex G of Reference 2, the following

assumptions have been made for bedrooms (**Please inform Martec if any of the assumptions are incorrect**):

- External levels as shown in Figure 2 [towards end of report]
- Wall construction standard masonry type
- Roof – Tile/Slate with 2x12.5mm Plasterboard ceiling and mineral wool above
- Traffic noise spectrum from Ref.6 report
- Reverberation time for bedrooms is 0.3s
- Room and Window dimensions as shown in Holborow + Ormesher drawings 2226/21/03 & 04

BS EN 12354-Calcs		Use	Volume	Volume	12.0				
Version	4.4	length					Building Atten dBA (62.0 - 20.4)		42
© 2018 Martec Environmental Consultants Ltd & Acute Acoustics Ltd			width	RT	0.3				
			height	Octave Band Centre Frequency [Hz]					dBA
				125	250	500	1k	2k	
External Spectrum Leq (Free Field & Lin)				60.7	54.1	52.6	57.1	51.2	59.3
Adjustment to Given Level if required									62.0
External Spectrum Adjusted for Level				63.4	56.8	55.3	59.9	54.0	62.0
Wall		Area m2	Element Sound Reduction Index [SRI]					Contrib	
None			0	0	0	0	0	0.0	
Drs/Wndws									
6/100/4 double glazing		1.7	26	34	44	56	53	19.6	
Roof Lights									
None		0.0	0	0	0	0	0	0.0	
Door									
None		0.0	0	0	0	0	0	0.0	
Roof									
30mm slate, 1400mmx47mm studs @ 600mm centres, 240mm cavity, 100mm plasterboard		3.6	49	54	46	50	55	12.4	
Vent Dn,e		# Vents							
None		0.0	0	0	0	0	0	0.0	
								dBA	
Internal SPL/dBLin			34.7	20.1	12.2	10.8	1.8	20	

Table 2: Predicted Internal Nighttime Noise Levels – Room-in-Roof [2F] Bedroom [LAeq,8hr]

From Table 2 above it can be seen that the predicted internal nighttime

time noise level of **20dB LAeq,8hr**, using secondary acoustic glazing [6/100/4] and no vents [see later] would meet the Local authority's target criteria of 30dB LAeq,8hr for bedrooms. The overall sound reduction of the building [labelled "Building Atten"] is shown in the top right hand corner of Table 2, and is 42 dBA; if nighttime event levels are 78 LAmax,F externally, then the corresponding internal level would be 36 LAmax,F which meets the local authority's criterion.

If daytime period noise levels are approximately the same numerical value, then it can be seen that the proposed package of measures would also be suitable for meeting the daytime criteria of 35 LAeq,16hr.

Some form of powered ventilation will be required to ensure that windows can remain largely closed.

4.2.2 Living Room Noise Levels

The most affected living room would again be located on the second floor; it would have high external noise levels and a large window area. Predictions are shown in Table 3 below.

BS EN 12354-Calcs		Use	Volume	Volume	30.0				
Version	4.4	length					Building Atten dBA (62.0 - 27.5)		35
© 2018 Martec Environmental Consultants Ltd		width		RT	0.5				
& Acute Acoustics Ltd		height		Octave Band Centre Frequency [Hz]					dBA
				125	250	500	1k	2k	
External Spectrum Leq (Free Field & Lin)				60.7	54.1	52.6	57.1	51.2	59.3
Adjustment to Given Level if required									62.0
External Spectrum Adjusted for Level				63.4	56.8	55.3	59.9	54.0	62.0
Wall		Area m2	Element Sound Reduction Index [SRI]					Contrib	
None			0	0	0	0	0	0.0	
Drs/Wndws									
10/12/6_double_glazing		5.1	26	27	34	40	38	27.1	
Roof Lights									
None		0.0	0	0	0	0	0	0.0	
Door									
None		0.0	0	0	0	0	0	0.0	
Roof									
30mm slate, 1400mmx47mm studs @ 600mm centres, 240mm cavity, 10		15.5	49	54	46	50	55	17.1	
Vent Dn,e		# Vents							
None		0.0	0	0	0	0	0	0.0	
								dBA	
		Internal SPL/dBLin	37.7	30.1	22.3	21.3	16.4	27	

**Table 3: Predicted Internal Daytime Noise Levels – Room-in-Roof [2F]
Living Room [LAeq,16hr]**

From Table 3 above it can be seen that the predicted internal daytime time noise level of **27 dB LAeq,16 hr**, using upgraded thermal glazing [10/12/6] and no vents [see later] would meet the local authority's target criteria of 35dB LAeq,16hr for living rooms.

Again, some form of powered ventilation will be required to ensure that windows can remain largely closed.

5.0 CONCLUSIONS

Apartments with habitable room windows on the north, west and east facades of the building should be fitted with building elements having a performance equal to, or better than, that shown in Table 4 below:

Element	Unit	Octave Band Centre Frequency [Hz]				
		125	250	500	1k	2k
Bedroom Windows	SRI	26	34	44	56	53
Living Room Windows	SRI	26	27	34	40	38
Roof	SRI	49	54	46	50	55

Table 4: Sound Insulation Performance of Building Elements

So that windows can remain largely closed, all properties with habitable room windows on the south and east facades, should be provided with powered ventilation systems. It is understood that both of the following systems conform to the ANC 'Acoustics Ventilation and Overheating residential Design Guide – January 2020':

- A. An EnviroVent Positive Input Ventilation (PIV) system. We understand that with the proposed ventilation system there is no requirement for ventilation grilles in the facades of living rooms, dining rooms or bedrooms.
- B. A Nuaire MEV Ecosmart Continuous Mechanical Extract Ventilation Unit system. We understand that with the proposed ventilation system, whilst the ductwork is ducted directly to grilles in the

building façade, there is no requirement for ventilation grilles in the facades of living rooms, dining rooms or bedrooms.

Rapid or purge ventilation will be provided via openable windows at the occupants' discretion. As such, the internal daytime and night-time noise criteria may potentially be exceeded during rapid/purge ventilation conditions.

Accordingly, it is not considered that the traffic noise impact should bar the grant of planning consent for this development.

Road Traffic Noise Assessment



APPENDIX 1

EXPLANATION OF ACOUSTIC TERMS

The dB or the decibel, is the unit of noise. The number of decibels or the level, is measured using a sound level meter. It is common for the sound level meter to filter or 'weight' the incoming sound so as to mimic the frequency response of the human ear. Such measurements are designated **dB(A)**.

A doubling of the sound is perceived, by most people, when the level has increased by 10 dB(A). The least discernible difference is 2 dB(A). Thus most people cannot distinguish between, say 30 and 31 dB(A).

The Background level of noise is most commonly represented by the level which is exceeded for 90% of the time i.e. the LA90.

If a noise varies over time then the **equivalent continuous level, or LAeq**, is the notional constant level of noise which would contain the same amount of acoustic energy as the time varying noise.

The following table gives an approximate indication of the comparative loudness of various noises expressed in terms of the A weighted scale:

Source of noise	dB(A)	Nature of Noise
Inside Quiet bedroom at night	25-30	Very Quiet
Quiet office	40-45	
Rural background noise	35-45	
Normal conversational level	55-65	
Busy restaurant	65-75	
Inside suburban electric train	70-80	
Hand clap @ 1m	75-85	
HGV accelerating @ 5m away	85-90	Very Loud

APPENDIX 2

QUALIFICATIONS AND EXPERIENCE OF M. A. KENYON

My full name is Melville Alexander Kenyon. I am the principal of the firm of Martec Environmental Consultants Ltd, a consultancy company that specialises in environmental noise assessment and control. I graduated in 1982 with a Bachelor's degree in Engineering and subsequently a Master's degree in Environmental Acoustics. I have been a corporate member of the professional body for noise and vibration specialists, the Institute of Acoustics, since 1988, and have sat on the British Standards Committee dealing with noise in buildings [BS.8233:1999].

I have lectured at Liverpool John Moores University on the Diploma of Acoustics course and at Manchester Metropolitan University on their Environmental Health degree course.

The firm of Martec Environmental Engineering was formed in the 1970's and joined The Association of Noise Consultants in 1996. It is now known as Martec Environmental Consultants Ltd.

Since its formation, Martec has advised many groups of both residents and developers about the problems of noise and vibration in the environment.

APPENDIX 3

REFERENCES

- 1 ProPG: Planning and Noise. – June 2017 – IoA, ANC & CIEH
- 2 BS.8233:2014 “Guidance on Sound Insulation and noise reduction for Buildings.”
- 3 Calculation of Road Traffic Noise (CRTN) – Department of Transport and the Welsh Office, HMSO, 1988, ISBN 0-11-550847-3
- 4 Method for Converting the UK Road Traffic Noise Index $L_{A10,18h}$ to the EU Noise Indices for Road Noise Mapping – TRL/Casella Stanger

www.defra.gov.uk/environment/quality/noise/research/crtn/documents/noise-crtn-update2006.pdf
- 5 BS EN 12354-3:2000 *Building Acoustics-Estimation of Acoustic Performance in buildings from the performance of elements. Part 3 Airborne sound Insulation against outdoor sound.*
- 6 “No.4 Wilbraham Road, Fallowfield, Manchester P1074-REP01-PC” Sol acoustics – June 2007. [079257/FO/2006/S1 | Erection of a 5 storey building comprising 16 self contained flats with parking beneath the rear garden | 4 Wilbraham Road Fallowfield Manchester M14 6JZ]

- 7 “Acoustic Survey for Planning Report 10312 – Oaklands House, Wilbraham Road, Fallowfield” Braiden Acoustics – 14th Nov 2014 [107413/FO/2014/S1 | Erection of a four-storey building to provide 36 self-contained retirement flats, with associated parking and landscaping | Vacant Land At 8 Wilbraham Road Fallowfield Manchester M14 6JW]
- 8 2 Wilbraham Road, Manchester, M14 6GF - Planning App [MCC Ref.126743/FO/2020] *“Erection of a four-storey building to provide 10 number self contained apartments, together with car parking, associated landscaping and boundary treatments”*