Azymuth Acoustics UK

Professional Acoustic Services

Lift Noise Monitoring to Support Discharge of Planning Condition 17b Ref: Z60104

14no. Apartments,

Former Royal British Legion site
Woodhouse Lane
Wythenshawe
Manchester

On behalf of

Rowlinson Constructions

Gardale House
118b Gatley Road
Cheadle
SK8 4AU





Azymuth Acoustics UK
Viridor House
No.3 Bolholt Terrace
Bury/Gtr Manchester
BL8 1PP

Tel: +44 (0)161-762 1055
Fax: +44 (0)161-761 1094
Matthew@acousticsuk.com
www.acousticsuk.com

Document Status – Final

Ref: Z60104	Signature:	Name:	Date:
Produced by:	[redacted]	**Jo Tsai,** MSc Audio Music Tech	19/05/26
Checked by:		**Dominic McCann,** BEng (Hons), MIOA, Director	19/05/26
Approved by:		**Matthew Gibson,** BEng (Hons), CEng, CEnv, Director	19/05/26

Disclaimer

This report has been prepared by Azymuth Acoustics UK with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our Standard Terms and Conditions of Business and taking into account the resources devoted to it by agreement with the Client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own discretion and risk.

Contents

1.0 Introduction 4
1.1 Measurement Procedure 4
2.0 Assessment Criteria 6
2.1 British Standard 8233: 2014 6
2.2 World Health Organisation Environmental Noise Guidelines 2018 6
2.3 Manchester City Council Planning Application 138185/FO/2023 7
3.0 Assessment of Results 8
3.1 Summary of Measurement Results 8
3.2 Assessment with Respect to Planning Conditions 8
4.0 Summary 10
Appendix A – Glossary of Acoustic Terms 11
Appendix B – Noise Survey Data 12

1.0 Introduction

Azymuth Acoustics UK (henceforth Azymuth) has been appointed by Rowlinson Constructions Ltd to undertake lift noise monitoring at a new build development site consisting of 14 no. apartments located at Woodhouse Lane, Wythenshawe, Manchester.

Lift noise monitoring has been instructed in order to assist with the discharge of Planning Condition 17b in relation to internal noise levels, as per the Planning Decision Notice for Application 138185/FO/2023. Condition 17 below:

17) 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 non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.

Review of Planning Criteria: NB the lift is fully internal to the building (it is also a motor-room-less design) and as such is not externally mounted plant. Also, any noise break-out from the lift will be fully attenuated by the building fabric. Nevertheless, AAUK have endeavoured to assess the noise from the lift both in terms of sound levels within the building itself (which would not covered normally be by the Condition) and in terms of external noise.

1.1 Measurement Procedure

The instrumentation used for the acoustic testing consisted of 2no. SvanTek 971, 1no. SvanTek 977 type 1 precision sound level meters. The equipment was calibrated before and after measurements. The sound level meters measured A-weighted (fast response) noise levels as well as octave bands noise levels for all measurement record.

Measurements were taken in Plot 8 bedroom, which is adjacent to the lift shaft. This location was chosen as it would be deemed to be the dwelling room most affected by the lift noise. The instrumentation measured the internal noise levels to be experienced by the apartments over 3 minutes and 20 seconds period using 10 second measurement interval with 8no. (representative) lift movements being recorded during this measurement period.

Noise measurements were undertaken using the sound level meter at the position shown in Figure 1 below:

- Position 1: Plot 8 Bedroom.

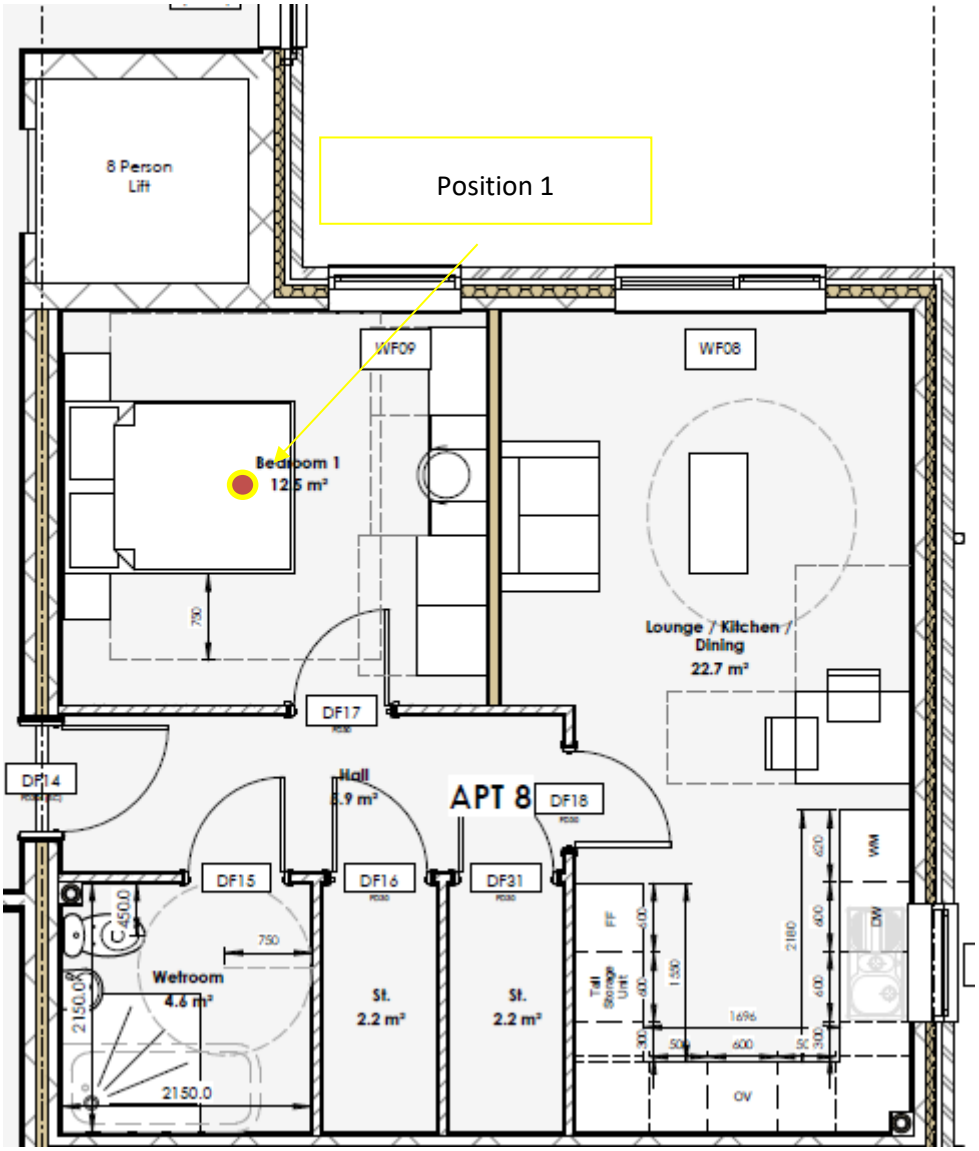


Figure1 – noise measurement position

Measurements were undertaken over the below periods:

Plot	Room	Start Date – Time	End Date – Time
Former Royal British Legion site, Woodhouse Lane			
8	Bedroom	18/05/26 – 09:16:10	18/05/26 – 09:19:30

Table 1 – Measurement durations

Full results of the noise levels recorded during the course of the survey are included in Appendix B of this report.

2.0 Assessment Criteria

In order to assess the extent of any measures required in order to comply with suitable conditions relating to potential noise sources, Azymuth has reviewed various guidance documents and standards, these include:

- British Standard 8233: 2014
- World Health Organisation Environmental Noise Guidelines 2018
- Manchester City Council Planning Application 136203/FO/2023 Condition 17b

2.1 British Standard 8233: 2014

"Guidance on sound insulation and noise reduction for buildings" (BS 8233) provides a code of practice for the sound insulation of a variety of building types affected by general environmental noise. It provides recommendations for control of noise in and around buildings and suggests appropriate internal ambient noise level criteria / limits for a variety of different situations including residential properties.

The following table summarises the noise limits suggested by BS 8233 applying to residential properties:

Activity	Room	Good Design Range $L_{Aeq,T}$ dB	
		07:00-23:00hrs	23:00-07:00hrs
Resting	Living Room	35	-
Dining	Dining Room / Area	40	-
Sleeping (daytime resting)	Bedroom (at night)	35	30

Table 2 – Noise Limits for Residential Properties Suggested in BS 8233

2.2 World Health Organisation Environmental Noise Guidelines 2018

The main purpose of the 2018 WHO guidelines is to provide recommendations for protecting human health from exposure to environmental noise originating from the following sources: transportation (road traffic, railway and aircraft), wind turbines and leisure activities.

The guidelines set out to define recommended exposure levels for environmental noise in order to protect population health. Exposure limits are average levels defined over a period of one year, measured outdoors in free field at the most exposed façade. It should be noted that the document does not provide guideline limit values for multiple noise sources in combination.

The Environmental Noise Guidelines (ENG) 2018 guidelines supersede the Community Noise Guidelines (CNG) from 1999. Nevertheless, the document recommends that all CNG indoor guideline values and any values not covered by the current guidelines should remain valid. As such, the following guidance would remain appropriate:

For protection against sleep disturbance inside dwellings, night-time noise levels should not exceed 30dB L_{Aeq} for continuous noise and 45dB L_{Amax} for typical single sound events (which are exceeded 15 times or more per night – see ProPG Appendix A.12 for more details).

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise (interpreted as noise from all sources combined) should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas.

It should be noted that exposure levels defined in ENG and CNG are for guidance purposes as relates potential adverse health impacts and should not be interpreted as absolute limits or regulations.

2.3 Manchester City Council Planning Application 138185/FO/2023

2.3.1 Condition 17b

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 non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.

Reason: To ensure that noise from lift operation does not adversely affect the future occupants, pursuant to policies SP1 and DM1 of the Core Strategy for the City of Manchester'

3.0 Assessment of Results

3.1 Summary of Measurement Results

3.1.1 Plot 8 Woodhouse Lane Bedroom

The following table summarises the noise measurement data obtained within the bedroom of Plot 8 at Woodhouse Lane over a measurement period of 3 minutes and 20 seconds, using 10-second measurement intervals. During the survey period, the lift operated a total of eight times. The table below presents the average measured noise levels associated with the eight lift operational events, together with the measured noise levels during periods when the lift was not in operation.

Location	Lift condition	L_{Amax}	L_{Aeq}	L_{A10}	L_{A50}	L_{A90}
Plot 8 Bedroom	Running	40.5	34.9	39.6	25.9	19.5
	Stopped	32.6	21.8	23.8	19.3	18.8

Table 3 – Summary of lift operational Noise Level Plot in 8 Woodhouse Lane Bedroom

Full results of the noise levels recorded during the course of the survey are included in Appendix B of this report.

3.2 Assessment with Respect to Planning Conditions

The lift and its mechanism is fully enclosed by the building and as such is not considered an external item of plant. In addition, the background noise levels are not really relevant to the assessment of noise from a lift. As such the following table details the target indoor ambient and the measured noise levels within the bedroom of plot 8 during lift operation at the Woodhouse Lane site, with respect to the noise targets set out for Planning Condition 16b (ie suitable targets for internal noise levels within a bedroom).

3.2.1 Noise Levels from the Lift inside adjoining Bedroom (Plot 8)

The (night-time) lift operation noise level is based on the calculation of 2 lift pass-by events in (any given) 15 minutes. The calculation shows that the L_{Aeq} is 20.4dB and the 8th highest measured L_{Amax} is 40.5dB, both of which are compliant with the relevant criteria. NB the 15th highest L_{Amax} would by any normal interpretation of statistical distribution be lower than the measured 8th highest value.

NB There are no specific assessment criteria or statutory limits directly applicable to lift noise within residential dwellings. Therefore, reference has been made to the guideline internal ambient noise levels set out within the World Health Organization (WHO) Environmental Noise Guidelines (2018) and BS 8233:2014, which have been adopted as suitable guidance for the assessment of internal noise conditions associated with lift operation.

Plot.	Room	Target Indoor Ambient Noise Level	Lift Operation Noise Level (calculated for night)	Compliance
8	Bedroom	≤30dB $L_{Aeq, night}$ ≤45dB L_{Amax} 15th highest	20.4dB $L_{Aeq, night}$ 40.5dB $L_{Amax, night}$ 8th highest (as worst case)	**Passes**

Table 4 – Assessment of results for Lift noise inside adjacent bedroom

Comments / Room Finishes

At the time of testing all plots were finished in terms of walls, floors and windows etc. but were fully unfurnished.

3.2.2 Noise Levels from the Lift as estimated at nearest Off-site Receptor(s)

The (night-time) lift operation noise level is based on the calculated results. Noise breakout from the lift shaft at the nearest off-site receptor, located approximately 40m from the source, is predicted to be less than 8dBA.

Based on the Noise Impact assessment produced by Braiden Acoustics Ltd, the measured night-time background noise level (L_{A90}) was 41.6dB. As such, the predicted lift noise level is significantly below the existing background sound level and is therefore considered to have a negligible noise impact.

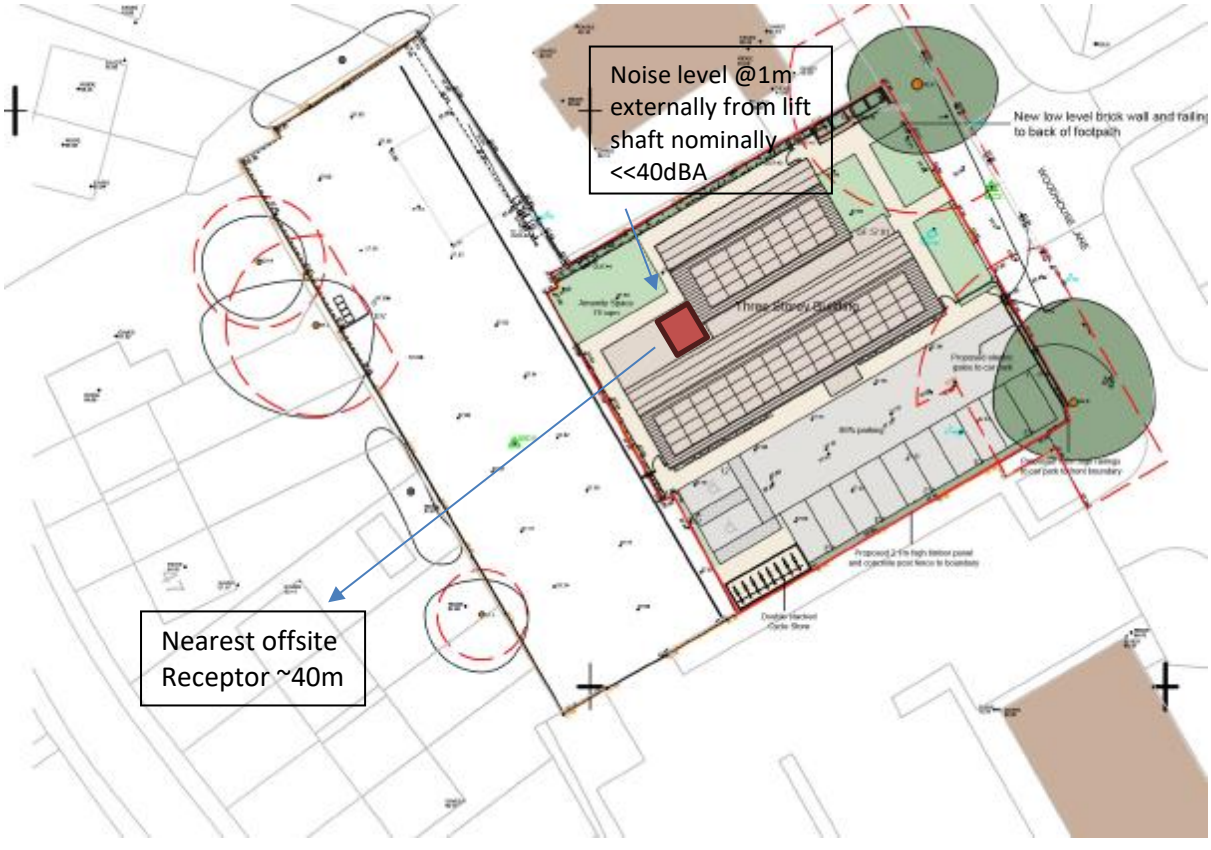


Figure 2 – Nearest Off-Site Receptor

4.0 Summary

Azymuth has been appointed by Rowlinson Constructions Ltd to undertake lift noise monitoring at a new build development consisting of 14no. apartments located at Woodhouse Lane, Wythenshawe, Manchester.

In the Planning Decision Notice for Application 138185/FO/2023 Planning Condition 17b was issued by Manchester City Council which stated a verification report shall be required to validate that the relevant internal noise level targets have been met.

The internal noise level targets (or lower) for bedrooms are as follows:

- Average bedroom noise level (night-time - 23.00 - 07.00) 30dB L_{Aeq}
- individual noise events shall not exceed 45dB $L_{Amax,F}$ by more than 15 times

NB There are no specific assessment criteria or statutory limits directly applicable to lift noise within residential dwellings. Therefore, reference has been made to the guideline internal ambient noise levels set out within the World Health Organization (WHO) Environmental Noise Guidelines (2018) and BS 8233:2014, which have been adopted as suitable guidance for the assessment of internal noise conditions associated with lift operation.

Plot 8 Woodhouse Lane bedroom lift noise

The lift operation noise level is based on the calculation of 2 lift pass-by in 15 minutes. The calculation shows that the L_{Aeq} is 20.4dB and the 8th highest L_{Amax} is 40.5dB, both of which are compliant with the relevant criteria.

Off-site Receptor

The (night-time) lift operation noise level is based on the calculated results. Noise breakout from the lift shaft at the nearest off-site receptor, located approximately 40m from the source, is predicted to be less than 8dBA.

Based on the Noise Impact assessment produced by Braiden Acoustics Ltd, the measured night-time background noise level (L_{A90}) was 41.6dB. As such, the predicted lift noise level is significantly below the existing background sound level and is therefore considered to have a negligible noise impact.

Appendix A – Glossary of Acoustic Terms

Decibel (dB)
This is the unit used to measure sound. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro Pascal to 100 Pascal).

dB (A)
This is a measure of the overall noise level of sound across the audible spectrum with a frequency weighting (i.e. A-weighting) to compensate for the sensitivity of the human ear to sound of different frequencies. The A-weighting curve is implemented in sound level meters using an electronic filter that approximately corresponds to the frequency response of the ear.

Octave Band Noise Level
The human ear is sensitive to sound over a range of frequencies between approximately 20Hz to 20kHz. The ear is also generally more sensitive to medium and high frequencies than to low frequencies. In order to define the frequency content of a noise, the spectrum can be divided into frequency bands. The most commonly used frequency bands are octave bands, in which the mid-frequency of each band is twice that of the band below it.

L_{Aeq}
This is the equivalent steady sound level in dB(A) containing the same acoustic energy as the actual fluctuating sound level over a given time period.

Reverberation Time (RT or sometimes T_{30} or T_{60})
This is the time taken for the reverberant sound energy in an enclosure to decay one millionth of its equilibrium value, i.e. by 60dB, after the source has been switched off. The reverberation time is frequency dependent and it is customary to measure its value in octave or one-third octave bands. Reverberation occurs when sound waves are repeatedly reflected from each surface of the room.

Sound Reduction Index (SRI)
Difference measured between the amount of energy flowing towards the wall in the source room and the total amount of energy entering the receiving room (usual range 100 - 3150Hz for one third octave band values). The SRI varies with frequency and is measured in a laboratory in either octave or one-third octave bands.

SRI = L1 - L2 + 10 log (S/A), where:
L1 = Noise level in the source room
L2 = Noise levels in the receiving room
S = Surface area of test specimen
A = Equivalent acoustic absorption area in the receiving room

Weighted Sound Reduction Index (R_w)
This is a weighted single figure descriptor of the sound insulation performance of a partition measured under laboratory conditions. The procedure used to quantify the R_w is to compare the sound reduction index (SRI) in each of the one-third octave bands from 100Hz to 3150Hz against a set of standard reference curves.

Appendix B – Noise Survey Data

Start	Position	Time	L_{Amax}	L_{Aeq}	L_{A10}	L_{A50}	L_{A90}
Monday 18st May 2026							
09:16:10	1	00:00:10	36	25	31.3	19	18.8
09:16:20	1	00:00:10	45.2	37.8	42.3	34.8	22
09:16:30	1	00:00:10	31.2	23.2	26.8	19.9	18.9
09:16:40	1	00:00:10	40.5	30.9	35.8	22.5	18.9
09:16:50	1	00:00:10	34.4	21.8	22.3	19.1	18.8
09:17:00	1	00:00:10	32.4	22.7	26.8	19.1	18.8
09:17:10	1	00:00:10	40.7	33.1	38.1	25.6	19.3
09:17:20	1	00:00:10	31.3	19.3	20.8	19	18.8
09:17:30	1	00:00:10	48.3	36.6	41.4	24.3	18.9
09:17:40	1	00:00:10	38.1	24.7	24.6	19.1	18.8
09:17:50	1	00:00:10	29.8	18.6	19.8	19	18.8
09:18:00	1	00:00:10	45.7	35.4	40.0	26.6	19.3
09:18:10	1	00:00:10	31.1	22.3	25.3	19.2	18.8
09:18:20	1	00:00:10	40	31.4	36.6	24.6	19.0
09:18:30	1	00:00:10	25.4	18.2	20.2	19.0	18.8
09:18:40	1	00:00:10	40.9	33.1	38.2	21.9	18.9
09:18:50	1	00:00:10	35	24.6	27.8	21.5	18.9
09:19:00	1	00:00:10	31.2	19.1	19.2	19	18.8
09:19:10	1	00:00:10	49	37.1	41.4	25.8	18.9
09:19:20	1	00:00:10	38.2	24.7	24.1	19.1	18.8
09:19:30	1	00:00:10	30	19.3	20.8	19.1	18.8

Table B1 – Woodhouse Lane Plot 8 Bedroom noise measurement result