Azymuth Acoustics UK

Professional Acoustic Services

RIBA Stage 4

Plant Noise Assessment Report

Ref: Z58999

Land West of Barnhill Street

Manchester,
M14 4TE

On behalf of

Caddick Construction

Chepstow House,
Trident Business Park,
Warrington,
WA3 6BX





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 – Draft

Ref: AA0634	Signature:	Name:	Date:
Produced by:	[redacted]	**James Gibson** BEng (Hons), SITMA Tester	04/08/26
Checked by:	[redacted]	**Dominic McCann,** BEng (Hons), MIOA, Director	05/08/26
Approved by:	[redacted]	**Matthew Gibson,** BEng (Hons), CEng, CEnv, Director	05/08/26

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
2.0 Assessment Criteria 5
2.1 British Standard 4142:2014+A1:2019 5
2.2 Manchester City Council Planning and Noise 6
2.3 Recommended Noise Assessment Criteria 6
3.0 Noise Limits 7
4.0 Mitigation 8
4.1 Uprating of generator room ceiling, plot A11 above 8
4.2 Uprating of fire escape wall from generator room 8
5.0 Summary 9
Appendix A – Glossary of Acoustic Terms 10
Appendix B – Calculation of Noise inside generator room from data sheet 11

1.0 Introduction

Azymuth Acoustics UK (henceforth Azymuth) has been contracted by Caddick to undertake an assessment and review of proposed M&E scheme, potential internal and external M&E noise issues with recommendations on noise mitigation measures incl. noise break-through from plant room, kitchen ducting, lift noise etc. More detailed review of noise levels from the internal / external plant / atmosphere connections (data by others).

The Background noise levels for blocks A and B have been taken from measurement positions 1,3 and 7 in the NIA report ref Z58999.2 dated 25/10/2025. The lowest background noise level at these positions was found to be 46dB L_{A90}.

Azymuth understands that the following internal M&E plant servicing these buildings will consist of:

Block A:

- Generator room on Block A (emergency use only)
- Plant room including sprinker equipment/ pumps and domestic water pumps.
- Lifts

Block B:

- Plant room including sprinker equipment/ pumps and domestic water pumps.
- Lifts

No externally mounted M&E plant has been identified that would be considered a noise source on either building. Eg no external condensers, air handling units etc. All M&E plant (detailed above) is located internally within each building. However, plant rooms and the generator room will likely have louvered doors and/or atmosphere connections. Hence noise limits externally to the plants rooms have been recommended in this report.

Lift shaft walls have been covered under the separate Azymuth Acoustics UK RIBA stage 4. Design Report dated 03/07/2026

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 Acoustics UK has reviewed various guidance documents and standards, these include:

- British Standard 4142:2014+A1:2019
- Manchester City Council Planning and Noise

2.1 British Standard 4142:2014+A1:2019

"Methods for assessing and rating industrial sound" describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

- Typically, the greater the difference between background sound and industrial / commercial noise, the greater the magnitude of the impact.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. 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 on the context.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

BS 4142 notes that: "Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."

2.2 Manchester City Council Planning and Noise

'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'

Planning condition 23 of application number 143777/FO/2025 states:

> 23) a. Notwithstanding the Noise report submitted with the application. 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.
> c. Any instances of nonconformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.
>
> Reason - To minimise the impact of the development and to prevent a general increase in pre-existing background noise levels around the site having regard to policies SP1 and DM1 of the Core Strategy and saved policy DC26 of the Unitary Development Plan.

2.3 Recommended Noise Assessment Criteria

Based on the guidance above it is recommended that the following noise criteria would be reasonable with the aim of minimising the impact of noise on the surrounding environment.

Noise levels originating from the proposed premises shall be at least 5dB below the background sound level at the nearest noise sensitive locations on site and off site.

The nearest noise sensitive locations on and off site are as follows:

Block A:

- Generator room on Block A (emergency use only) –
    - Plot A11 which is located directly above the generator location
    - Externally the Heiniken brewery is adjacent
- Plant room including sprinker equipment/ pumps and domestic water pumps.
    - Plot A11 which is located directly above the generator location

Block B:

- Plant room including sprinker equipment/ pumps and domestic water pumps.
    - Plot B4 abutting the plantroom wall and Plot B6 located above the plant room

3.0 Noise Limits

Azymuth would recommend the following noise limit for the plant rooms

Plant Rooms:

- 65dBA cumulative level inside plant room (or at 1m from individual items of plant).
- 50dBA cumulative level outside plant room.
- 41dBA at the nearest noise sensitive receiver (plot A11 and B6), ie 5dB below background which is 47dB L_{A90}.

Any exceedance of this noise limit may result in noise impacts at nearby receptors.

Azymuth would recommend the following noise limit for the generator room

Generator Room:

- 75-80dBA cumulative level inside plant room (or at 1m from individual items of plant). With attenuation package.
- 60dBA cumulative level outside plant room this also includes the noise rating level on the generator exhaust to outside.
- 55dBA at the nearest noise sensitive receiver (plot A11)

Any exceedance of this noise limit may result in noise impacts at nearby receptors.

4.0 Mitigation

4.1 Uprating of generator room ceiling, plot A11 above

Azymuth has been provided with the generator data sheet by CWC consulting, which is confirmed to be a HIMOINSA HSF-195 T5**.** The data sheet provides a sound pressure level of 71dB at 7m, this works out to be 95dB inside the plant room (calculation found in Appendix B). A party floor of 65DnTw+Ctr is a 20dB uplift on building regs ADE standards and would be required to ensure that plot A11 is not affected by the generator when in use. This standard is extremely high, and we understand that such a floor might not be practically possible to fit with floor heights etc. We therefore recommend that attenuation is added to the generator as a mitigation measure. The package of attenuation should be rated at 15dB reduction (minimum) or higher.

4.2 Uprating of fire escape wall from generator room

The wall that connects the fire escape to the generator room should be built to meet building regulations ADE party wall standards, such that the transmission from the generator does not drown out the fire alarm. We recommend that attenuation is added to the generator as a mitigation measure. The package of attenuation should be rated at 15dB reduction (minimum) or higher.

5.0 Summary

Azymuth has undertaken an M&E proposed plant noise assessment report in relation to Land West of Barnhill Street development. The purpose of the assessment is to provide noise limits for internal plant and identify mitigations measures that should be undertaken for this site.

No externally mounted M&E plant has been identified that would be considered a noise source on either building. Eg no external condensers, air handling units etc. All M&E plant is located internally within each building.

Azymuth would recommend the following noise limit for the plant rooms
Plant Rooms:

- 65dBA cumulative level inside plant room (or at 1m from individual items of plant).
- 50dBA cumulative level outside plant room.
- 41dBA at the nearest noise sensitive receiver (plot A11 and B6/B4), ie 5dB below background which is 41dB L_{A90}.

Any exceedance of this noise limit may result in noise impacts at nearby receptors.

Azymuth would recommend the following noise limit for the Generator room in Block A
Generator Room:

- 75-80dBA cumulative level inside plant room (or at 1m from individual items of plant). With attenuation package.
- 60dBA cumulative level outside plant room this also includes the noise rating level on the generator exhaust to outside.
- 55dBA at the nearest noise sensitive receiver (plot A11)

Acoustic Mitigation Recommendations:

Generator Attenuation: The generator assembly shall be fitted with an acoustic attenuation package providing a minimum noise reduction of 15 dB.

Plot A11 Party Floor Construction: Sound insulation performance requirements for the upgraded floor assembly above Plot A11 will be finalized following acoustic verification and specification of the selected generator attenuation kit.

Plot B4 and B6: No further mitigation needed

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 – Calculation of Noise inside generator room from data sheet

HIMOINSA HSF-195 T							
			Noise level from CWC data sheet			71	SPL@7m
				mm	m		
			Length (L)mr	3550	3.55		
			Height (H) m	1870	1.87		
			Width (W) mı	1150	1.15		
			Distance		7	m	
		Sides	13.3	m2			
		Top	4.1	m2			
		Ends	4.3	m2			
					surface area of unit	21.66	m2
		hemisphere	307.88	m2			
		corners	41.12	m2			
		sides	39.03	m2			
		ends	12.64	m2			
				Area of sound propagation @7m		400.68	m2
			Total conformal area @7m (=21.66+400.68)			422.34	m2
calculated sound power					=71+10Log10(422.3)	97.3	LWA
rev time				assumed reverb of generator room		1.5	seconds
volume of generator room				measured volume of generator room		48	m3
Reverberant sound pressure level				=97.3+6 +10log10(1.5/(0.161*48))		96.1	dBA