

REPORT



49 Victoria Road, N22 7XA

Noise Impact Assessment

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1.0 Introduction

Clear Acoustic Design has been appointed to carry out a noise impact assessment in relation to the proposed mechanical plant installation at 49 Victoria Road, London, N22 7XA.

Proposals are for the installation of 1 external condenser unit which will be installed at the rear of the property at ground level.

A noise impact assessment has been requested in order to safeguard the amenity of the surrounding receptors. The noise impact assessment is in line with BS 4142: 2014 + A1: 2019 *Methods for Rating and Assessing Industrial and Commercial Sound*. These criteria are seen to be appropriate in assessing and mitigating noise impact from this source.

2.0 Performance Standards

2.1 Local Authority Requirements

There are no known requirements set by Haringey Council.

2.2 BS 4142: 2014 + A1: 2019

BS 4142: 2014 + A1: 2019 *Methods for Rating and Assessing Industrial and Commercial Sound* is a method of assessing the noise impact of sources of industrial / commercial noise on sensitive receptors. This is done by comparing the rating level of the industrial noise ($L_{A,rT}$) against the existing level of background noise (L_{A90}).

BS 4142: 2014 suggests that sources of noise (rating noise level) should not exceed the existing background noise level, depending on the context. If this is achieved, it is a positive indication that the noise impact will be low.

3.0 Environmental Noise Survey

In order to assess the noise impact of the proposed mechanical plant installation, an environmental noise survey has been undertaken by Clear Acoustic Design at a location representative of the nearest noise sensitive receptors.

The unit is to be installed by the south-facing façade of 49 Victoria Road, which is located to the rear of the property. The unit will be installed at ground floor level by the boundary fence shared with 47 Victoria Road. The installation location can be seen in Appendix B, Figure 1 and 2 in the site plans and elevations. The worst affected receptor location is seen to be the residential façade of the nearest first floor window at 47 Victoria Road. This receptor is seen to be approximately 4 metres away from the installation site.

Noise measurements were taken by the boundary fence using a sound level meter positioned on a tripod approximately 3 metres from ground level and at least 3 metres from the building façade. This location is seen to be representative of the nearest receptor. The survey location can be seen in Appendix B, Figure 3.

Due to distances and screening, compliance at the worst affected receptor location guarantees compliance at all other receptor locations.

The environmental noise survey has provided background noise levels representative of the receptor location, which will form the basis of the assessment in line with BS 4142. Ambient and background noise levels were measured over an approximate 4-day period between 12/01/24 and 15/01/24 using a single fixed noise monitor (referred to as F1).

3.1 Measurement Equipment and Environmental Conditions

The weather was witnessed to be overcast and dry for the duration of the survey with light wind speeds. The following measurement equipment was used for the survey.

Equipment	Serial Number	Calibration Date
Svantek SV 971A Type 1 Sound Level Meter	113218	15/09/23
Svantek SV 18A Preamplifier	113711	15/09/23
ACO 7152 Microphone	80617	15/09/23

Table 2.1 Measuring Equipment Used for Survey

3.2 Fixed Noise Monitoring Graph – F1

Figure 2.1 below provides a graph of the measured noise levels at Location F1. The ambient (L_{Aeq}) and background (L_{A90}) noise levels are shown.

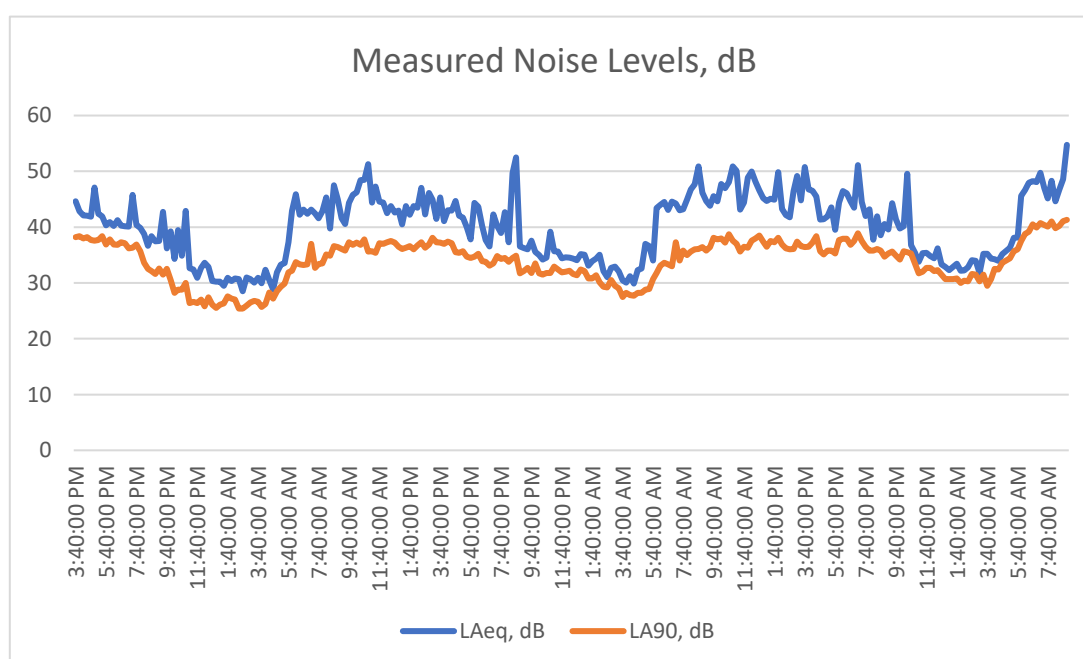


Figure 2.1 Long Term Measurement Graph – F1

3.3 Assessment Background Noise Level

To conduct an assessment in line with BS 4142: 2014, it is necessary to extrapolate the representative background noise levels from the long-term survey data. These background daytime and night-time noise levels are presented in Table 2.2 below.

The proposed unit will likely operate during the day and night, therefore the background noise level at night of 32dBA will be used in this assessment as it is the lower of these background noise levels.

Time period	Assessment Background Noise Level, L_{A90} dB,
Day	37 dBA
Night	32 dBA

Table 2.2: Assessment Background Noise Levels

4.0 Noise Impact Assessment

4.1 Noise Sources

The proposed installation is of one Daikin 2MXM50A2V1B. The sound pressure levels which form the basis of the assessment are presented in Table 3.1 below and are based on the manufacturer datasheet. The typical spectrum is assumed, based on similar units, as the spectrum has not been made available by Daikin.

The datasheet for the proposed unit can be seen in Appendix A, Figure 2.

The sound pressure level is assumed to be measured at 1 metre from the unit in free field, as is standard practice for measuring sound pressure levels of such units. The noise of proposed unit is not seen to be tonal or impulsive in nature.

Type	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	dBA @ 1m
Mitsubishi PUZ-M100VKA2	51	49	48	44	39	47	35	50

Table 3.1: Noise Source, Sound Pressure Levels, dB

4.2 Assessment Outcome

Due to the installation location, a noise barrier calculation has been undertaken to understand the attenuation provided by the boundary fence in relation to the unit and the nearest receptor. The likely screening loss from the boundary fence has been provided in Table 3.2 below.

Type	63 Hz	125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz
Barrier (timber fence)	8	8	10	11	13	14	14

Table 3.2: Barrier Attenuation, dB

With a sound pressure level of 50dBA radiating from the unit, the sound pressure level at the receptor will be 31.2dBA, providing the unit is installed out of direct line of sight, and at least 4 metres from the nearest receptor. The timber fence should be maintained (or replaced like for like if necessary), such to ensure acoustic screening to the receptor.

Calculations of the noise level at the façade of the receptor can be seen in Appendix A Figure 1. Note that a source directivity correction of 6dB has been added to this calculation due to the unit's proposed installation site against the ground and fence.

The resulting noise level at the façade of the receptor will be 0.8dB below the background noise level at night and 5.8dB below the background noise level during the day when the proposed unit is operating at full capacity.

As the rating level of the proposed mechanical plant is below that of the background noise level, this is seen to have a low impact on the nearest noise sensitive receptor, according to BS 4142: 2014. This is seen to be an acceptable outcome.

5.0 Conclusion

Clear Acoustic Design has been appointed to carry out a noise impact assessment in relation to the proposed mechanical plant installation at 49 Victoria Road, London, N22 7XA. Proposals are for the installation of 1 external condenser unit which will be installed at the rear of the property at ground level.

A noise impact assessment has been requested in order to safeguard the amenity of the surrounding receptors. The noise impact assessment is in line with BS 4142: 2014 + A1: 2019 *Methods for Rating and Assessing Industrial and Commercial Sound*. These criteria are seen to be appropriate in assessing and mitigating noise impact from this source.

The noise level at the façade of the nearest receptor will be 0.8dB below the background noise level at night and 5.8dB below the background noise level during the day providing the unit is installed out of direct line of sight, and at least 4 metres from the nearest receptor. The timber fence should be maintained (or replaced like for like if necessary), such to maintain acoustic screening to the receptor.

The rating level of the proposed mechanical plant is below that of the background noise level. The proposal is seen to have a low impact on the nearest noise sensitive receptor, according to BS 4142: 2014. This is seen to be a satisfactory outcome.

Supporting calculations are provided in Appendix A.

Appendix A – Specific Noise Level Calculations

	Octave Band Centre Frequencies, Hz							dB(A)
	63	125	250	500	1000	2000	4000	
SPL Radiating from condenser	51	49	48	44	39	47	35	50.0
Distance measured at source, m	1	1	1	1	1	1	1	
Source Directivity Correction, dB	6	6	6	6	6	6	6	
Louver / breakout losses	0	0	0	0	0	0	0	
Screening losses	8	8	10	11	13	14	14	
Distance to receptor, m	4	4	4	4	4	4	4	
SPL @ Residence	37	35	32	27	20	27	15	31.2

Figure A.1: Noise Levels at Receptor with Proposed Mechanical Plant Operational

Specifications Table for 2MXM-A

				2MXM40A2V1B		2MXM50A2V1B	
Sound pressure level	Heating		Nom.	dBA	48	50	
	Cooling		Nom.	dBA	46	48	
Standard Accessories	Installation manual				1	1	
	Screw bag				1	1	
	Drain plug				1	1	
Refrigerant	GWP				675	675	
	Charge			kg	0.88	1.15	
	Type				R-32	R-32	
Operation range	Cooling	Ambient	Max.	°CDB	46	46	
			Min.	°CDB	-10	-10	
Piping connections	Level difference	IU - IU	Max.	m	7.5	7.5	
		IU - OU	Max.	m	15	15	
	Additional refrigerant charge			kg/m	0.02 (for piping length exceeding 20m)	0.02 (for piping length exceeding 20m)	
	Total piping length	System	Actual	m	30	30	
Dimensions	Unit		Width	mm	852	852	
			Depth	mm	350	350	
			Height	mm	552	552	
Compressor	Type				Hermetically sealed swing compressor	Hermetically sealed swing compressor	
Weight	Unit			kg	36	41	
Power supply	Phase				1~	1~	
	Frequency			Hz	50	50	
	Voltage			V	220-240	220-240	
Notes					(1) - For one room	(1) - For one room	
					(2) - For combination with CVXM-A, FVXM-A - maximum piping length is 30m.	(2) - For combination with CVXM-A, FVXM-A - maximum piping length is 30m.	
					(3) - See separate drawing for operation range	(3) - See separate drawing for operation range	
					(4) - See separate drawing for electrical data	(4) - See separate drawing for electrical data	
					(5) - Contains fluorinated greenhouse gases	(5) - Contains fluorinated greenhouse gases	
Standard Accessories	Reducer assembly					1	
	Drain cap (1)						
	Drain cap (2)						

Figure A.2: Datasheet for Proposed Condenser Unit

Appendix B – Noise Survey Location

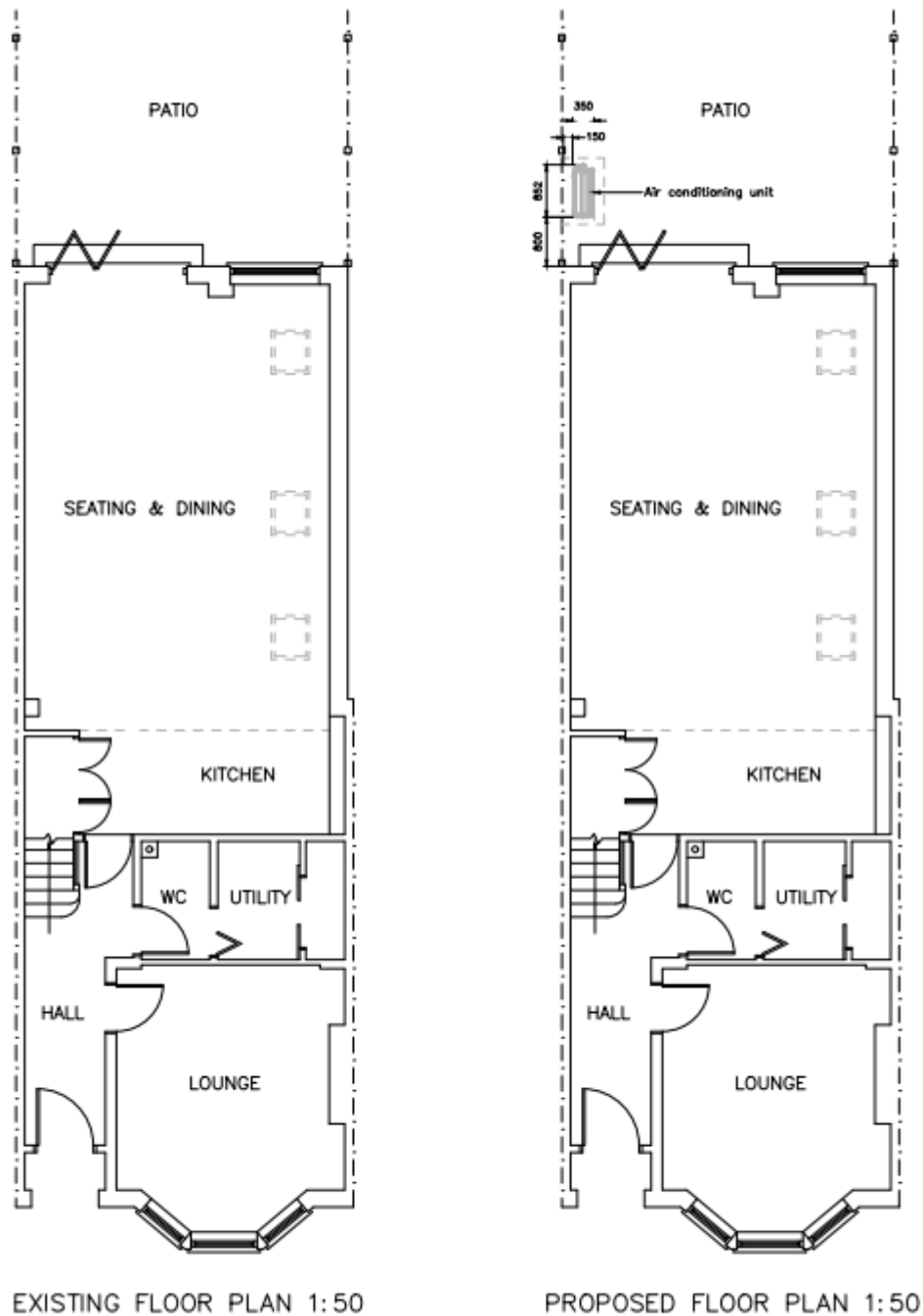


Figure B.1: Proposed Installation Site



Figure B.2: Proposed Installation Elevation



Figure B.3 Survey Location (Yellow)