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REPORT No. 2409055-8_v1

87 Leather Lane Camden London EC1N 7TS

ENVIRONMENTAL NOISE SURVEY & NOISE IMPACT ASSESSMENT REPORT

REPORT v1 PREPARED: 01 November 2024

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1.0 Introduction

- 1.1 E+M Tecnica Ltd has commissioned Noico Ltd to conduct an environmental noise survey at 87 Leather Lane, Camden, London EC1N 7TS with respect to the new external mechanical plant installation proposal.
- 1.2 The purpose of the survey is to obtain statistical noise data and to determine the background noise levels at the site. Based on the noise survey data, noise criteria are to be established for limiting noise emissions from the proposed mechanical plant installations which will serve the premises. The noise criteria are to be set in accordance with the requirements of the local planning authority (London Borough of Camden council).
- 1.3 The development site comprises one of two apartments within a four-storey, terraced property of mixed use. There are commercial units at ground and basement level and residential apartments above. As part of the development plans, an air conditioning unit will be installed externally to provide comfort cooling in some rooms.
- 1.4 From our observations, the site is surrounded by properties of similar mixed use many with retail units or restaurants at ground floor level, and residential flats above. This is true for 85 and 89 Leather Lane, to the south and north respectively. There are also nearby apartments within the Scrope and Redman Buildings within Bourne Estate to the west.

2.0 Instrumentation

- 2.1 A precision grade Norsonic 140 'Type 1' integrating sound level meter (SLM) was used for the survey. It was equipped with a Norsonic omnidirectional measurement microphone and outdoor weather protection kit (Nor-1212) via a LEMO audio cable. The instrument was powered by an external battery and stored in a weatherproof case.
- 2.2 Microphone sensitivity was checked prior and subsequent to use, with no calibration drift recorded.
- 2.3 Equipment serial numbers and calibration certification can be found in the table below.

Equipment Combination Code	Equipment type	Serial number	Calibration Certificate	Calibration date	
	Norsonic Type 140 Sound Level Meter	1404895	47722		
140 Green	Norsonic Type 1225 Microphone	151323	47721	Tested: 03/05/2024	
	Norsonic Type 1209A Preamplifier	14369	47722		
Field calibrator	Norsonic Type 1251 Calibrator	28311	46756	Tested: 13/02/2024	

Table-1: Equipment list including calibration certification

3.0 Survey details

- 3.1 <u>Measurement location:</u> The external air-conditioning condenser is proposed to be installed at roof level of the building, which is overlooked by sixth-floor windows on the north side of Redman Buildings, Bourne Estate to the west. Kitchen extract fan ductwork, serving neighbouring premises, exhausted at high level near the proposed plant location, so it was deemed unsuitable for background noise measurement. Therefore, it was appropriate to locate the noise monitoring microphone on the rear first-floor terrace of the apartment, further away from the existing plant.
 - 3.1.1 The SLM was located externally, along the western boundary of the site at first-floor level. The microphone was attached to a tripod, raised 1.5 metres above floor level and braced to a metal handrail running along the edge of the terrace. The background noise in this location is representative of the level at the nearest noise sensitive receptor.



Sound level meter microphone

Figure-1: Photograph of the development site annotated with noise monitoring equipment position.

- 3.2 <u>Period:</u> Noise monitoring was carried out continuously from approximately 10:45 hours on 2nd October 2024 through to 09:45 hours on 4th October 2024. The instrument was set up to monitor noise levels continuously, with a 'fast' time weighting, and store data in fifteen-minute intervals.
- 3.3 <u>Weather</u>: The prevailing weather condition throughout the majority of the entire survey period was satisfactory for noise monitoring, being dry, cool and with little to moderate breeze. Windspeed, although not recorded, was considered to be less than 5 m/s throughout the survey period.
- 3.4 <u>Site Noise Characteristics:</u> The ambient noise level was characterised by mechanical plant serving adjacent properties, occasionally light construction work in the vicinity, and distant road traffic noise. It is thought that no other unusual events occurred during the survey period. The data is considered a true representation of the area's background noise level.

4.0 Survey Results

- 4.1 The results of the environmental survey are presented in graphical and numerical format in the attached appendices, showing the recorded values of L_{Aeq} and L_{A90} . See appendix-1 for a glossary of terminology.
- 4.2 With reference to the measured data, the minimum background noise level, 'typical' background noise level and equivalent noise level for each measurement period are detailed in table-2. Statistical analysis of the *L*_{A90,15min} values, shown in figure-2, is used to determine the typical background noise level referred to in BS 4142:2014 +A1:2019 *Methods for Rating and Assessing Industrial and Commercial Sound*.

Monitoring period	Minimum background level	Typical background level	Equivalent level	
Daytime (07:00–19:00)	42.1 dB <i>L</i> _{A90,15min}	51 dB <i>L</i> _{A90,15min}	69.2 dB <i>L</i> _{Aeq,12hr}	
Evening (19:00–23:00)	46.3 dB <i>L</i> _{A90,15min}	47 dB <i>L</i> _{A90,15min}	52.7 dB <i>L</i> _{Aeq,4hr}	
Night time (23:00–07:00)	39.0 dB <i>L</i> _{A90,15min}	40 dB <i>L</i> _{A90,15min}	48.9 dB <i>L</i> _{Aeq,8hr}	
	CO. CO CO LA90,15min		-O.O GD LAeq,8hr	

Table-2: Survey results summary for environmental noise monitoring.



Day Evening Night

Figure-2: Statistical analysis of $L_{A90,15min}$ values to determine a representative 'typical' background sound level in accordance with BS4142 methodology.

5.0 Design noise level criteria

- 5.1 Criteria for mechanical services noise emission are normally based upon the prevailing level of background noise in the period of concern and may be set against this to a level as normally defined by the local planning authority.
- 5.2 London Borough of Camden council has advised the following—published in appendix 3 of the Camden Local Plan, adopted July 2017—with regard to noise emissions from fixed plant installations.

"Where appropriate and within the scope of the document, it is expected that British Standard 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS 4142) will be used. For such cases, a 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion."

5.3 To conform to the above criteria, and in accordance with the typical background noise levels measured during the survey (summarised in table-2), noise from the plant installations should not exceed the following values. Note these figures should be achieved in any residential outdoor amenity area (garden) and at a position 1 metre from any noise sensitive window.

Plant operation period	Design Noise Criteria
Daytime plant operation (07:00 to 19:00hrs)	41 L _{Aeq,Tr}
Evening plant operation (19:00 to 23:00hrs)	37 L _{Aeq,Tr}
Night time plant operation (23:00 to 07:00hrs)	30 L _{Aeq,Tr}

Table-3: Westminster planning legislation plant noise level criteria.

6.0 Plant Noise Assessment

- 6.1 <u>Plant details and location:</u> It is proposed that 1 no. PUMY-SP112VK2 air-conditioning (AC) condenser is installed externally between two ridges of the property's roof. The equipment in question is detailed below, together with the manufacturers certified noise data. There is no evidence of tonal features from the data published by the manufacturer, reproduces in table-4. In addition, the units utilise a 'soft-start' motor reducing any perception of intermittency.
- 6.2 It should be noted the plant will have the capacity to operate 24 hours a day, in line with the comfort heating/cooling requirements of the property. However, during nighttime hours (23:00–07:00) the AC unit will be limited to 'low noise mode' capacity.

Model	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
PUMY-SP112VK2	58	55	52	50	47	43	36	28	52
PUMY-SP112VK2	55	52	49	47	44	40	33	25	40
(low noise mode)									49

Table-4: Manufacturer's noise data. Sound pressure level (SPL) values correct at 1 metre from the equipment in free-field conditions, re. 20 µPa.

6.3 From our observations made on site, the nearest noise affected premises to the plant installation are the top-floor apartments within Redmen buildings to the south of the site, henceforth referred to as noise sensitive receptor 1 (NSR1). North-facing windows on the fifth and sixth floor are approximately 13 metres away from the condenser and will have an unobstructed view of the plant. Other neighbouring properties are further away and/or screened by existing architecture from the proposed installation, so they will be less affected by the plant noise emissions.

6.4 <u>Noise impact assessment calculations:</u> Our calculations, predicting the resultant sound pressure level at 1 metre from the nearest noise sensitive windows of the locations identified above, are detailed as follows for the most stringent plant operation periods.

NSR1 (daytime)	Noise impact assessment calculation
PUMY-SP112VK2	52 dB <i>L</i> _{pA}
Hard surface reflections	+3 dB
Distance loss (12 metres)	-22 dB
Rating level at receptor	33 dB L _{Aeq,Tr}
Design noise criteria	37 dB L _{Aeq,Tr}
Level exceeding noise criteria	-4 dBA

Table-5: Noise impact assessment calculation for residential receptor 1.

6.4.2

NSR1 (nighttime)	Noise impact assessment calculation
PUMY-SP112VK2	49 dB <i>L</i> _{pA}
Hard surface reflections	+3 dB
Distance loss (12 metres)	-22 dB
Rating level at receptor	30 dB L _{Aeq,Tr}
Design noise criteria	30 dB L _{Aeq,Tr}
Level exceeding noise criteria	0 dBA

Table-5: Noise impact assessment calculation for residential receptor 1.

6.5 The results of the assessments indicate that the plant noise rating level at a position 1 metre from the nearest noise sensitive location, will not exceed the design noise criteria at any time during operation. Therefore, no further noise mitigation measures are necessary to satisfy the requirements of the local planning authority.

7.0 Conclusion

- 7.1 A background noise level monitoring survey has been carried out at 87 Leather Lane, Camden, London EC1N 7TS.
- 7.2 Based upon the survey results, knowledge of the local authority's planning policies and relevant environmental design standards, criteria applicable to noise from the mechanical services plant have been established.
- 7.3 A noise assessment has been carried out on the proposed mechanical plant installations and it has been determined that the design noise criteria will not be exceeded at any time during 24-hour operation. Hence, no further noise mitigation measures are required in order to satisfy the requirements of the local planning authority.

Appendix 1 - Glossary of Terms

Decibel, dB A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (Lp) the reference quantity is 2x10⁻⁵ N/m². The sound pressure level existing when microphone measured pressure is 2x10⁵ N/m² is 0 dB, the threshold of hearing. L Instantaneous value of Sound Pressure Level (Lp). Frequency Is related to sound pitch; frequency equals the ratio between velocity of sound and wavelength. Arithmetic corrections applied to values of Lp according to frequency. When logarithmically summed for all A-weighting frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source. Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of L_{eq,T} the measurement, would possess the same energy as the constantly varying values of Lp actually measured. Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time LAea.T period, T, of the measurement would possess the same energy as the constantly varying values of Lp actually measured. Lp which was exceeded for n% of time, T. L_{n,T} L_{An,T} Level in dBA which was exceeded for n% of time, T. Lmax,T The instantaneous maximum sound pressure level which occurred during time, T. The instantaneous maximum A weighted sound pressure level which occurred during time, T. L_{Amax.T} Background Noise Level The value of LA90, T, ref. BS4142:2014. Traffic Noise Level The value of LA10.T. Specific Noise Level The value of LAeq,T at the assessment position produced by the specific noise source, ref. BS4142:2014. Rating Level The specific noise level, corrected to account for any characteristic features of the noise, by adding a 5 dBA penalty for any tonal, impulsive or irregular gualities, ref. BS4142:2014. Specific Noise Source The noise source under consideration when assessing the likelihood of complaint. Assessment Position Unless otherwise noted, is a point at 1 m from the façade of the nearest affected sensitive property.

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Appendix 2 - Environmental noise monitoring Data

Date	L _{Aeq,15min}	L A90,15min
(2024/10/02 10:45:02.00)	53	51.3
(2024/10/02 11:00:02.00)	55.3	51.9
(2024/10/02 11:15:02.00)	53.8	52
(2024/10/02 11:30:02.00)	56.2	52.7
(2024/10/02 11:45:02.00)	68.5	53.5
(2024/10/02 12:00:02.00)	63.2	53.5
(2024/10/02 12:15:02.00)	70.7	53.5
(2024/10/02 12:30:02.00)	79.8	54.8
(2024/10/02 12:45:02.00)	81.7	54.5
(2024/10/02 13:00:02.00)	53.8	53
(2024/10/02 13:15:02.00)	58.8	53.1
(2024/10/02 13:30:02.00)	55.8	53.3
(2024/10/02 13:45:02.00)	73.5	53.5
(2024/10/02 14:00:02.00)	57.2	54.3
(2024/10/02 14:15:02.00)	59.8	53.9
(2024/10/02 14:30:02.00)	54.8	53.6
(2024/10/02 14:45:02.00)	82.7	54.1
(2024/10/02 15:00:02.00)	56.3	53.6
(2024/10/02 15:15:02.00)	57.2	53.5
(2024/10/02 15:30:02.00)	59.2	53.7
(2024/10/02 15:45:02.00)	66.2	54.1
(2024/10/02 16:00:02.00)	56.2	53.7
(2024/10/02 16:15:02.00)	54.9	53.6
(2024/10/02 16:30:02.00)	54.3	51.6
(2024/10/02 16:45:02.00)	54.4	51.4
(2024/10/02 17:00:02.00)	52.6	51
(2024/10/02 17:15:02.00)	53.1	51.6
(2024/10/02 17:30:02.00)	52.8	50.9
(2024/10/02 17:45:02.00)	54.4	50.9
(2024/10/02 18:00:02.00)	52.7	51.1
(2024/10/02 18:15:02.00)	54.2	51.5
(2024/10/02 18:30:02.00)	53.5	51
(2024/10/02 18:45:02.00)	58	50.8
(2024/10/02 19:00:02.00)	51.7	50.8
(2024/10/02 19:15:02.00)	52.2	51.1
(2024/10/02 19:30:02.00)	51.9	50.9
(2024/10/02 19:45:02.00)	51.9	50.8
(2024/10/02 20:00:02.00)	55.4	50.9
(2024/10/02 20:15:02.00)	52	50.7
(2024/10/02 20:30:02.00)	51.8	50.5
(2024/10/02 20:45:02.00)	52.2	50.4
(2024/10/02 21:00:02.00)	51.5	50.5
(2024/10/02 21:15:02.00)	51.7	50.5
(2024/10/02 21:30:02.00)	54.2	50.4
(2024/10/02 21:45:02.00)	54	47.6
(2024/10/02 22:00:02.00)	58.2	47.3

(2024/10/02 22:15:02.00)	49.6	47.1
(2024/10/02 22:30:02.00)	49.8	47.4
(2024/10/02 22:45:02.00)	52.1	47.1
(2024/10/02 23:00:02.00)	48.4	44.6
(2024/10/02 23:15:02.00)	53.8	43.8
(2024/10/02 23:30:02.00)	49.2	43.3
(2024/10/02 23:45:03.00)	47.2	42.5
(2024/10/03 00:00:03.00)	45	41.6
(2024/10/03 00:15:02.00)	43.7	40.5
(2024/10/03 00:30:02.00)	44.3	41.2
(2024/10/03 00:45:02.00)	57.9	41.6
(2024/10/03 01:00:03.00)	61.5	41.7
(2024/10/03 01:15:02.00)	45.4	41.2
(2024/10/03 01:30:02.00)	43.4	40.6
(2024/10/03 01:45:02.00)	42.8	39.7
(2024/10/03 02:00:02.00)	42.6	39.3
(2024/10/03 02:15:02.00)	42.5	39.6
(2024/10/03 02:30:02.00)	43	39.4
(2024/10/03 02:45:02.00)	43.3	39.1
(2024/10/03 03:00:02.00)	43.4	39.4
(2024/10/03 03:15:02.00)	42.7	39.6
(2024/10/03 03:30:02.00)	42.7	40.1
(2024/10/03 03:45:02.00)	43.1	39.8
(2024/10/03 04:00:02.00)	43	39.6
(2024/10/03 04:15:02.00)	42.5	39.2
(2024/10/03 04:30:02.00)	42.8	40.3
(2024/10/03 04:45:02.00)	43.1	40.6
(2024/10/03 05:00:02.00)	45.6	40.1
(2024/10/03 05:15:03.00)	45.6	40.6
(2024/10/03 05:30:02.00)	45.5	40.9
(2024/10/03 05:45:02.00)	44.1	40.6
(2024/10/03 06:00:02.00)	45.8	41.6
(2024/10/03 06:15:02.00)	52.6	42
(2024/10/03 06:30:02.00)	50.4	42.2
(2024/10/03 06:45:02.00)	52.3	42.7
(2024/10/03 07:00:02.00)	52.5	43.5
(2024/10/03 07:15:02.00)	57	43.6
(2024/10/03 07:30:02.00)	61.4	46.3
(2024/10/03 07:45:02.00)	47.7	44
(2024/10/03 08:00:02.00)	48.8	44
(2024/10/03 08:15:02.00)	51.9	46
(2024/10/03 08:30:02.00)	53.3	51.3
(2024/10/03 08:45:02.00)	54.6	51.5
(2024/10/03 09:00:02.00)	53.3	51.6
(2024/10/03 09:15:02.00)	54.9	51.9
(2024/10/03 09:30:02.00)	54.5	51.6
(2024/10/03 09:45:03.00)	53.5	51.5
(2024/10/03 10:00:03.00)	55.6	51.6

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(2024/10/03 10:15:03.00)	55.3	52.6
(2024/10/03 10:30:02.00)	57.8	52.5
(2024/10/03 10:45:03.00)	56.5	53
(2024/10/03 11:00:02.00)	56.1	53.5
(2024/10/03 11:15:02.00)	56.8	54
(2024/10/03 11:30:02.00)	55.6	53.5
(2024/10/03 11:45:02.00)	54.8	53.3
(2024/10/03 12:00:02.00)	56.3	53.8
(2024/10/03 12:15:02.00)	58.2	54
(2024/10/03 12:30:03.00)	56.6	53.4
(2024/10/03 12:45:03.00)	55.3	53.4
(2024/10/03 13:00:02.00)	54.5	53.5
(2024/10/03 13:15:02.00)	54.4	53.2
(2024/10/03 13:30:02.00)	54	53.1
(2024/10/03 13:45:03.00)	53.9	53.1
(2024/10/03 14:00:03.00)	54.5	53.2
(2024/10/03 14:15:02.00)	54	53.2
(2024/10/03 14:30:03.00)	56.3	53.5
(2024/10/03 14:45:02.00)	56.5	53.6
(2024/10/03 15:00:02.00)	55.8	53.9
(2024/10/03 15:15:02.00)	59.5	54
(2024/10/03 15:30:02.00)	56.4	53.5
(2024/10/03 15:45:02.00)	54.9	53.3
(2024/10/03 16:00:03.00)	55.4	53.5
(2024/10/03 16:15:03.00)	55	52.1
(2024/10/03 16:30:03.00)	52.3	50.5
(2024/10/03 16:45:03.00)	52.2	50.7
(2024/10/03 17:00:03.00)	54.3	50.5
(2024/10/03 17:15:03.00)	52.4	50.9
(2024/10/03 17:30:02.00)	52.6	51.4
(2024/10/03 17:45:02.00)	52.2	51
(2024/10/03 18:00:02.00)	54	51.3
(2024/10/03 18:15:02.00)	53.9	51.4
(2024/10/03 18:30:02.00)	52.6	51.4
(2024/10/03 18:45:02.00)	52.5	51.1
(2024/10/03 19:00:02.00)	52.3	51.3
(2024/10/03 19:15:02.00)	52.4	50.7
(2024/10/03 19:30:02.00)	52.7	50.9
(2024/10/03 19:45:02.00)	52.1	50.7
(2024/10/03 20:00:02.00)	53.5	51
(2024/10/03 20:15:02.00)	52	50.8
(2024/10/03 20:30:03.00)	54.9	51.1
(2024/10/03 20:45:03.00)	53.1	50.6
(2024/10/03 21:00:03.00)	51.4	50.4
(2024/10/03 21:15:03.00)	51.5	50.4
(2024/10/03 21:30:03.00)	51.4	50.4
(2024/10/03 21:45:03.00)	55.7	50
(2024/10/03 22:00:03.00)	52.6	48

(2024/10/03 22:15:03.00)	48.5	47.1
(2024/10/03 22:30:03.00)	48.7	46.6
(2024/10/03 22:45:02.00)	48.1	46.3
(2024/10/03 23:00:02.00)	44.9	42.1
(2024/10/03 23:15:02.00)	44.4	41.9
(2024/10/03 23:30:02.00)	46	42
(2024/10/03 23:45:03.00)	44.3	41.7
(2024/10/04 00:00:03.00)	44.2	41.7
(2024/10/04 00:15:02.00)	43.8	40.9
(2024/10/04 00:30:02.00)	44.4	41.4
(2024/10/04 00:45:02.00)	44.1	40.6
(2024/10/04 01:00:02.00)	45.2	40.7
(2024/10/04 01:15:02.00)	49.8	40.1
(2024/10/04 01:30:02.00)	43.4	39.3
(2024/10/04 01:45:02.00)	42.6	39.6
(2024/10/04 02:00:02.00)	45.8	40
(2024/10/04 02:15:02.00)	42.6	39.1
(2024/10/04 02:30:02.00)	51.1	40.5
(2024/10/04 02:45:02.00)	50.1	40.4
(2024/10/04 03:00:02.00)	51.8	40.3
(2024/10/04 03:15:02.00)	43.1	39.5
(2024/10/04 03:30:02.00)	42.3	39.3
(2024/10/04 03:45:02.00)	42	39.2
(2024/10/04 04:00:02.00)	49.5	39.5
(2024/10/04 04:15:02.00)	43	39
(2024/10/04 04:30:02.00)	43.1	39.6
(2024/10/04 04:45:02.00)	43.5	39.4
(2024/10/04 05:00:02.00)	43.5	39.6
(2024/10/04 05:15:02.00)	44.2	40.5
(2024/10/04 05:30:02.00)	43.4	40.1
(2024/10/04 05:45:02.00)	43.9	39.9
(2024/10/04 06:00:02.00)	50.5	41.1
(2024/10/04 06:15:02.00)	48.8	42.1
(2024/10/04 06:30:02.00)	48.4	41.4
(2024/10/04 06:45:02.00)	49.4	41.3
(2024/10/04 07:00:02.00)	47.2	42.4
(2024/10/04 07:15:02.00)	47.6	42.3
(2024/10/04 07:30:02.00)	49.9	42.3
(2024/10/04 07:45:02.00)	46.3	42.1
(2024/10/04 08:00:02.00)	50.6	43.3
(2024/10/04 08:15:02.00)	49.7	44.5
(2024/10/04 08:30:02.00)	52.4	45.2
(2024/10/04 08:45:02.00)	53.4	51.4
(2024/10/04 09:00:02.00)	52.5	51.5
(2024/10/04 09:15:02.00)	60.1	51.5
(2024/10/04 09:30:02.00)	/8	51.4
(2024/10/04 09:45:02.00)	83	51.3

Table-A1: Tabulated results of environmental sound monitoring.

Figure A1

Environmental noise monitoring - 87 Leather Lane, London





Figure A3

