Cole Jarman

79 Holmes Road, Kentish Town

Plant Noise Assessment

Report 17/0372/R1

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Report 17/0372/R1

London Borough of Camden

Unit 11H
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Revision	Description	Date	Prepared	Approved
0	1st Issue	11th July 2017	Ben Harper	Tim Fox

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Plant Noise Assessment

1 Introduction

1.1 As part of a refurbishment scheme at 79 Holmes Road, Kentish Town, London, a number of plant items are to be installed externally at roof level.

1.2 Cole Jarman have been instructed to undertake a noise survey at the site to quantify the existing background noise levels representative of those at the nearest residential receivers and an assessment of the noise levels at these receivers due to the proposed plant items.

1.3 The report details the methodology and results of the survey and the subsequent evaluations of noise emission from the proposed plant package to the nearest noise sensitive areas.

2 Site Description

2.1 The site, located at 79 Holmes Road, Kentish Town, occupies a largely two storey unit, fronting onto Holmes Road. The site wraps around a central service yard housing a number of vehicles including vans and flatbeds.

2.2 The area is a mixture of industrial, retail and residential; to the south of the site is a language college and a public house with external seating. Furthermore, there is a school and playgrounds neighbouring this.

2.3 Traffic around site is typically slow moving and low density; Spring Place runs along the western boundary with Holmes Road running along the southern boundary. The entrance to the site is accessed via Holmes Road.

2.4 The nearest noise sensitive premises are flats to the west beyond some industrial units, a neighbouring block of flats to the east, overlooking the site, and further flats to the north west.

2.5 The residences above the building, to the south, does not have any habitable spaces facing the proposed installation. Therefore, this has not been deemed necessary to assess.

2.6 The site and surrounding area are shown on attached site plan 17/0372/F1.

3 Background Noise Survey

3.1 **Methodology**

3.1.1 An unattended noise survey was undertaken at the site commencing at 1230h on Monday 19th June and ending at 1215h on Tuesday 20th June 2017.

3.1.2 Measurements of the background noise levels were taken from the site's front flat roof and rear service yard. This has been illustrated in attached site plan 17/0372/F1

3.1.3 These positions were selected to quantify background noise levels representative of those at the nearest noise sensitive receptors to the proposed mechanical services plant as described as follows:

- MP1 –West of the representative of the residences opposite, over the rail line
- MP2 – North west of the site representative of the residences opposite, over the rail line
- MP3 – South East of the site representative of the neighbouring flats

3.1.4 Measurements of the L_{Aeq}, L_{Amax} and L_{A90} indices were recorded over consecutive 15 minute periods for the duration of the survey using the equipment listed within table T1 below (see attached Glossary of Acoustic Terms for an explanation of the noise units used).

Item	Manufacturer	Type
Sound Level Analyser	Norsonic	118
Acoustic Calibrator	Norsonic	1251
Weatherproof windshield	Norsonic	1212
Sound Level Analyser (x2)	Rion	NL-52
Acoustic Calibrator (x2)	Rion	NC-74
Weatherproof windshield (x2)	Rion	WS-15

T1 Equipment used during unattended noise survey.

3.1.5 The microphones were fitted within weatherproof enclosures, and the sound level meters were calibrated before and after the survey in order to confirm an acceptable level of accuracy. No significant drift was noted to have occurred.

3.1.6 The weather conditions when setting up and collecting the noise monitoring equipment were warm, bright and dry with no significant breeze.

3.2 Results

3.2.1 The results of the noise measurements are presented in attached time history 17/0372/TH1-3.

3.2.2 The noise climate onsite is comprised mostly of noise from existing plant installed on the roof, and traffic noise. Noise levels throughout the site are fairly consistent, this is due to the amount of existing plant on site. Measurement positions were selected so to be as representative of the nearby noise sensitive receivers as was practicably possible.

3.2.3 The representative background noise levels recorded during the day and night time measurement hours during the survey duration are set out in table T2 below:

Location	Representative Background Noise Level, dB(A)	
	Daytime (0700-2300 only)	Night time (24-hour)
MP1 – North West representative of the residences opposite, over the rail line	48	48
MP2 – West of the site representative of the residences above	46	45
MP2 – South East of the site representative of the neighbouring flats	47	46

T2 Lowest measured background noise levels, L_{A90}.

4 Plant Noise Limits

4.1 The site falls within the jurisdiction of the London Borough of Camden. As part of the Camden Local Plan 2016, Proposed submission, the following noise limits are proposed:

'A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 '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 (15 dB if tonal components are present) should be considered as the design criterion).'

4.2 Based on the above, the following plant noise limits are to apply here:

Location	Noise Emission Limit, dB(A)	
	Daytime (0700-2300 only)	Night time (24-hour)
MP1 – North West representative of the residences opposite, over the rail line	38	38
MP2 – West of the site representative of the residences above	36	35
MP2 – South East of the site representative of the neighbouring flats	37	36

T3 Plant noise emission limits at the nearest residential properties.

4.1.1 The noise limits are to apply at 1m from the outside of nearby residential windows. Any plant with a tonal component out of character with the existing environment would be subject to a further penalty.

5 Plant Noise Assessment

5.1 Proposed Installation

5.1.1 The proposed Mitsubishi Heavy Industries units are as follows:

- FDC 100 VNX (x4)
- FDC 615 KXRE 6
- FDC 560 KXRE 6
- SRK 50 ZS-S
- SRK 71 ZR-S

5.1.2 The condensers are proposed to be located across the flat roof of the building. The position of these units can be seen in Appendix A.

5.1.3 It is proposed that all plant items run 24 hours a day.

5.2 Methodology

5.2.1 Our assessment is based on manufacturer's noise data for each plant item as shown in the attached schedule 17/0372/PNS1. The noise data suggests that tonality is not present in the plant items noise profile and therefore no tonality correction need be applied.

5.2.2 The assessment has considered the closest and most exposed receptor to the proposed plant, labelled on attached site plan 17/0372/F1 and described as follows:

- AP1 – Residence to the west over the viaduct
- AP2 – Residence to north west over the viaduct
- AP3 – Residential flats to the south east of the site

5.2.3 The specific noise levels generated by the equipment at the assessment positions have been calculated by correcting the plant noise levels for distance and radiation losses, façade reflections and screening where appropriate.

5.3 Results

5.3.1 The results of our assessment indicate that mitigation of noise emissions from each plant item will be required in order to meet the limits set out by London Borough of Camden.

5.3.2 Controlling the noise levels generated by a number of the condensing units will require the installation of an acoustic enclosure of varying performance. The enclosures should meet the performance requirements set out in tableT4 below.

	Octave Band Centred Frequency (Hz)							
	63	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
FDC100 VNX (4 units)	4	5	8	9	12	10	8	6
FDC615 KXRE6	12	13	20	29	36	37	39	39
SRK50 ZS-S	4	5	8	9	12	10	8	6
FDC560 KZRE6	5	7	10	12	14	16	13	12

T4 Required insertion losses

5.3.3 All condensing units should be installed on anti-vibration mounts controlling structural sound transmission.

5.3.4 The rating noise levels calculated with the mitigation measures specified above installed on site are shown in table T5 below. It can be seen that the plant noise limits are met at all locations.

Location	Rating Noise Level, dB(A) *(Limit)*	
	Daytime (0700-2330 only)	**Night Time (24 Hours)**
AP1 – Residence to the north west over the viaduct	36 *(38)*	36 *(38)*
AP2 – Residence to the west above the unit	34 *(36)*	34 *(35)*
AP3 – Residential flats to the south east of the site	34 *(37)*	34 *(36)*

T5 Plant noise emission levels at the nearest residential properties

6 Conclusion

6.1 As part of a refurbishment scheme at 79 Holmes Road, Kentish Town, London, a number of plant items are to be installed externally at roof level.

6.2 Cole Jarman have undertaken a noise survey to quantify existing background noise levels at nearby noise sensitive premises and set limits for plant noise emissions according to local planning authority.

6.3 Acoustic enclosures have been recommended on the basis of a subsequent assessment of the proposed units and it has been shown that with the proposed mitigation measures in place noise levels agreed with the London Borough of Camden would be met.

End of Section

Glossary of Acoustic Terms

L_{Aeq}:

The notional steady sound level (in dB) which over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measurement over that period. Values are sometimes written using the alternative expression dB(A) L_{eq}.

L_{Amax}:

The maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise when occasional loud noises occur, which may have little effect on the L_{Aeq} noise level. Unless described otherwise, L_{Amax} is measured using the "fast" sound level meter response.

L_{A10} & L_{A90}:

If non-steady noise is to be described, it is necessary to know both its level and degree of fluctuation. The L_{An} indices are used for this purpose. The term refers to the A-weighted level (in dB) exceeded for n% of the time specified. L_{A10} is the level exceeded for 10% of the time and as such gives an indication of the upper limit of fluctuating noise. Similarly, L_{A90} gives an indication of the lower levels of fluctuating noise. It is often used to define the background noise.

L_{A10} is commonly used to describe traffic noise. Values of dB L_{An} are sometimes written using the alternative expression dB(A) L_{n}.

L_{AX}, L_{AE} or SEL

The single event noise exposure level which, when maintained for 1 second, contains the same quantity of sound energy as the actual time varying level of one noise event. L_{AX} values for contributing noise sources can be considered as individual building blocks in the construction of a calculated value of L_{Aeq} for the total noise. The L_{AX} term can sometimes be referred to as Exposure Level (L_{AE}) or Single Event Level (SEL).

End of Section

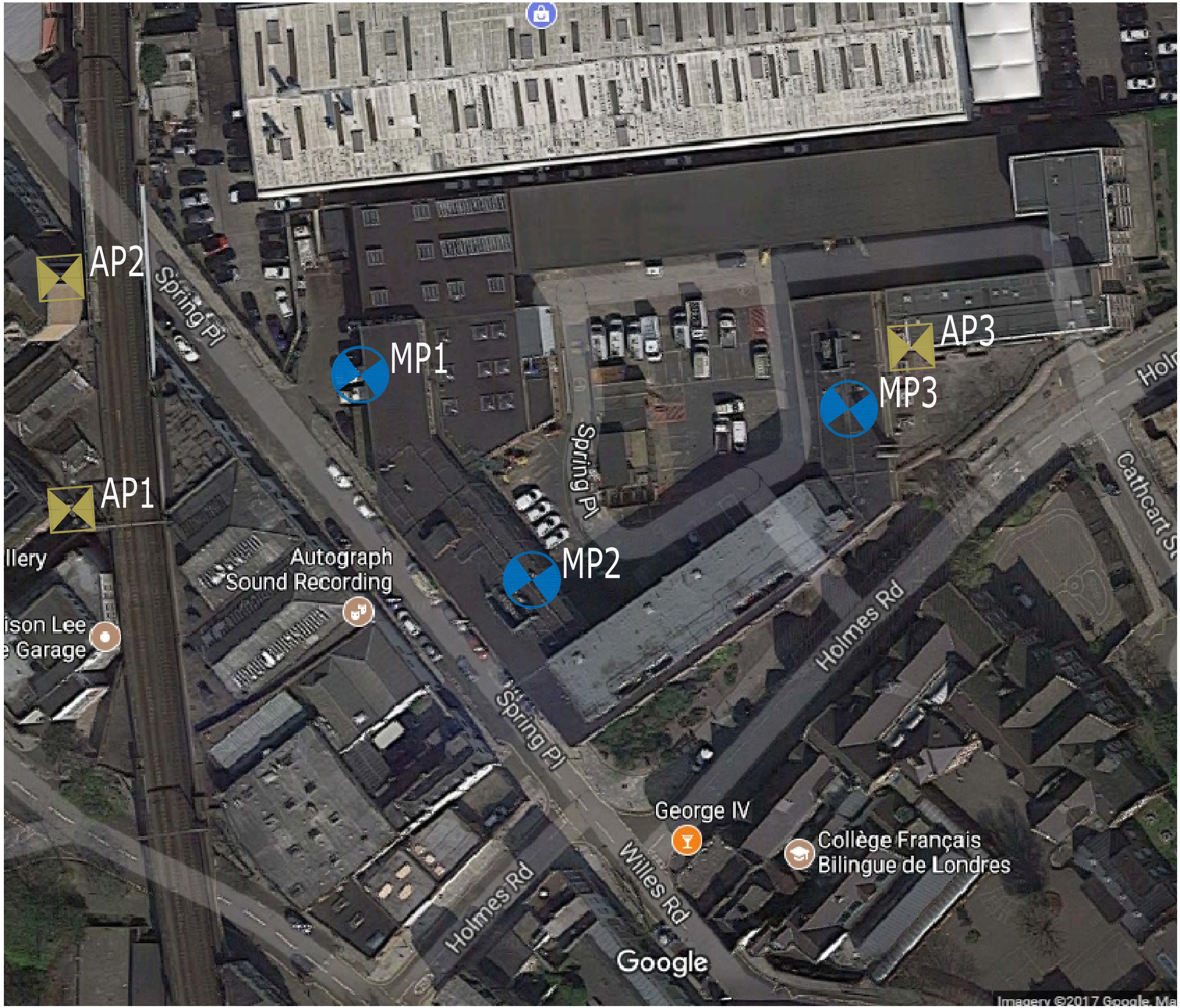

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Figure 17/0372/F1

Title:

Site plan illustrating the measurement and assessment positions on site

Measurement Position

Assessment Position

North

Project:

79 Holmes Road, Kentish Town

Date: July 2017

Revision: -

Scale: Not to scale

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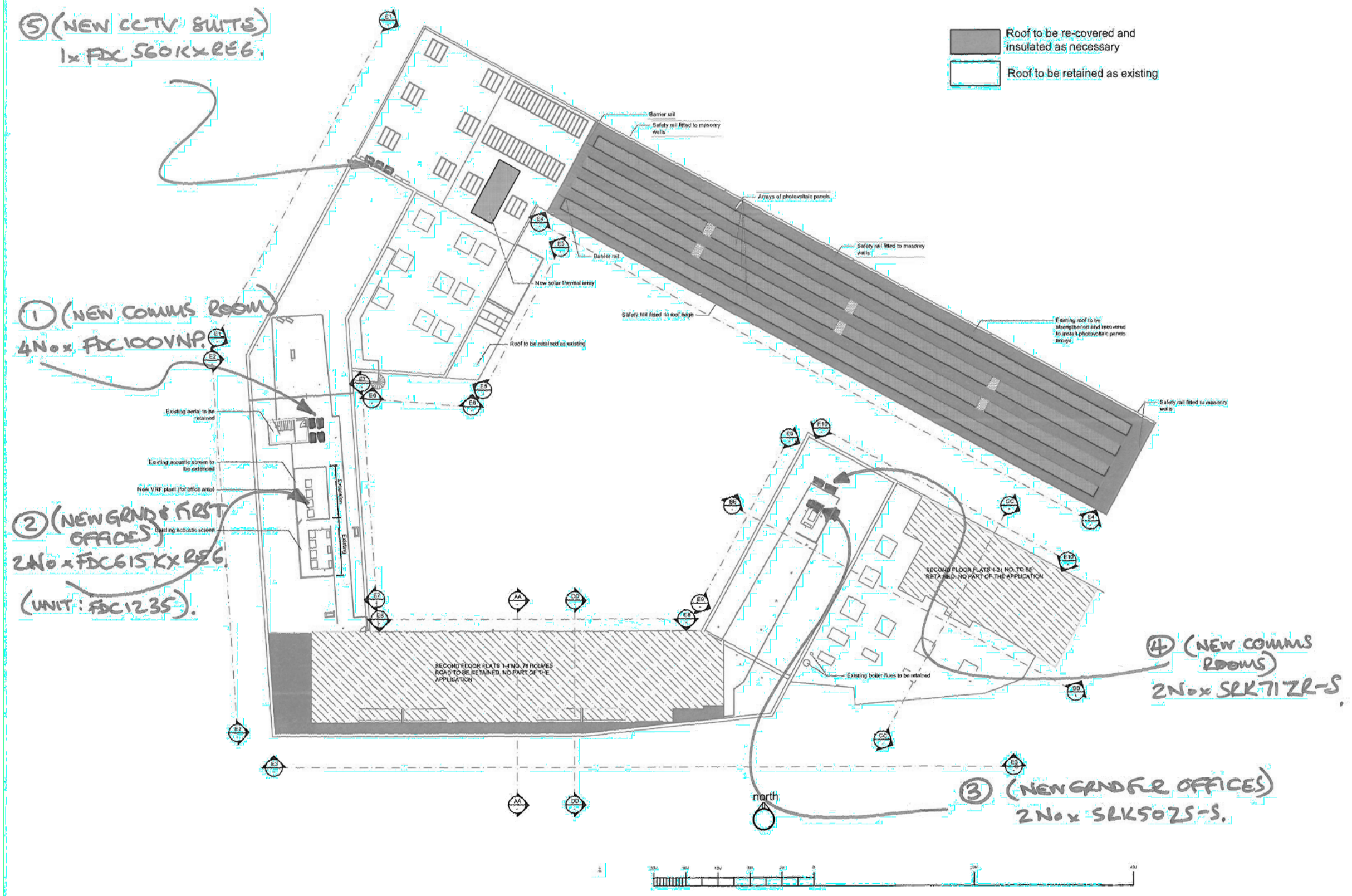

Figure 17/0372/F2

Title:

Plant position sketch provided

Project:

79 Holmes Road, Kentish Town

Date:

July 2017

Revision:

-

Scale:

Not to scale

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Noise Level Time History at Position MP1, 19 to 20 June 2017

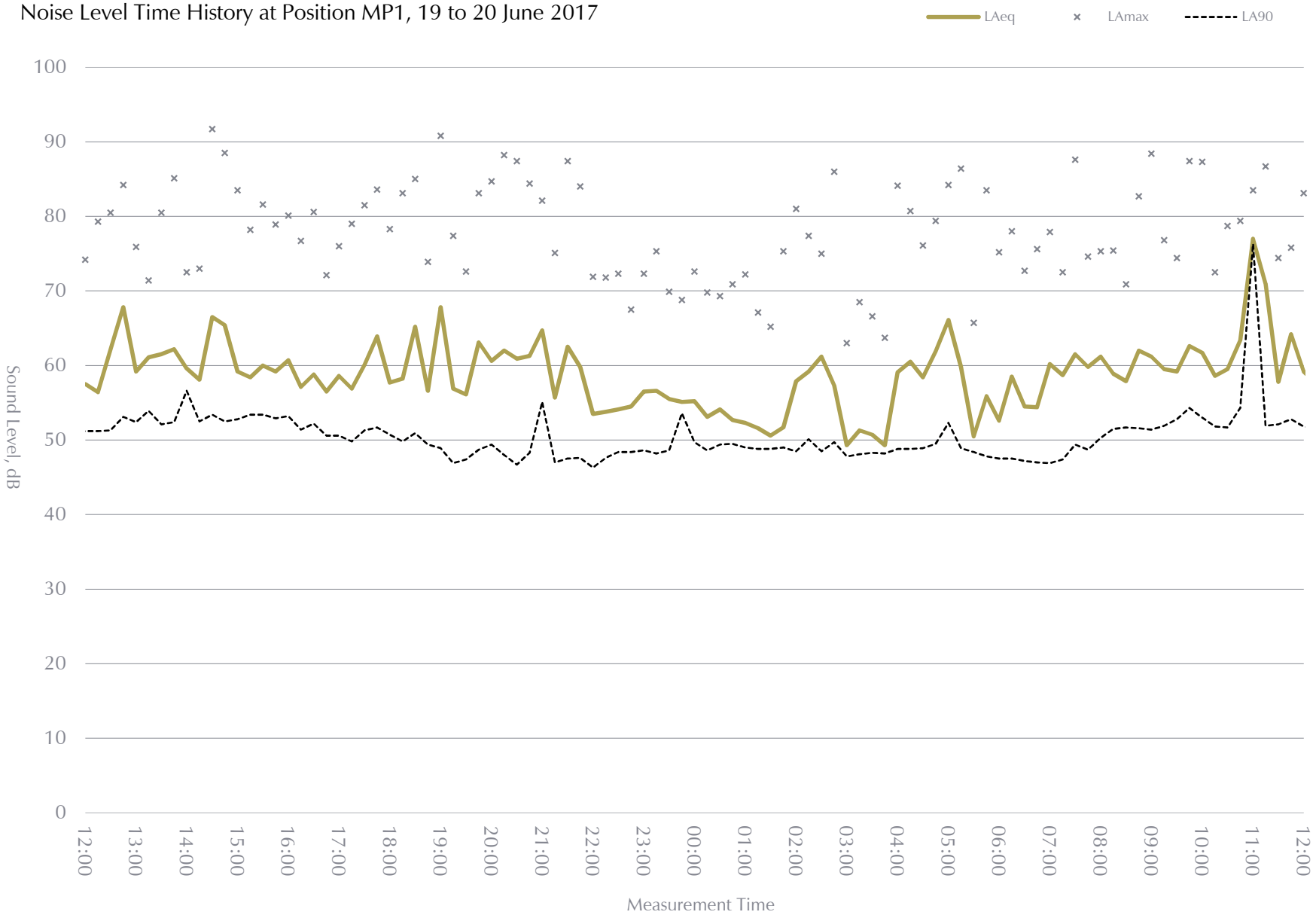


Figure 07/4770/TH01

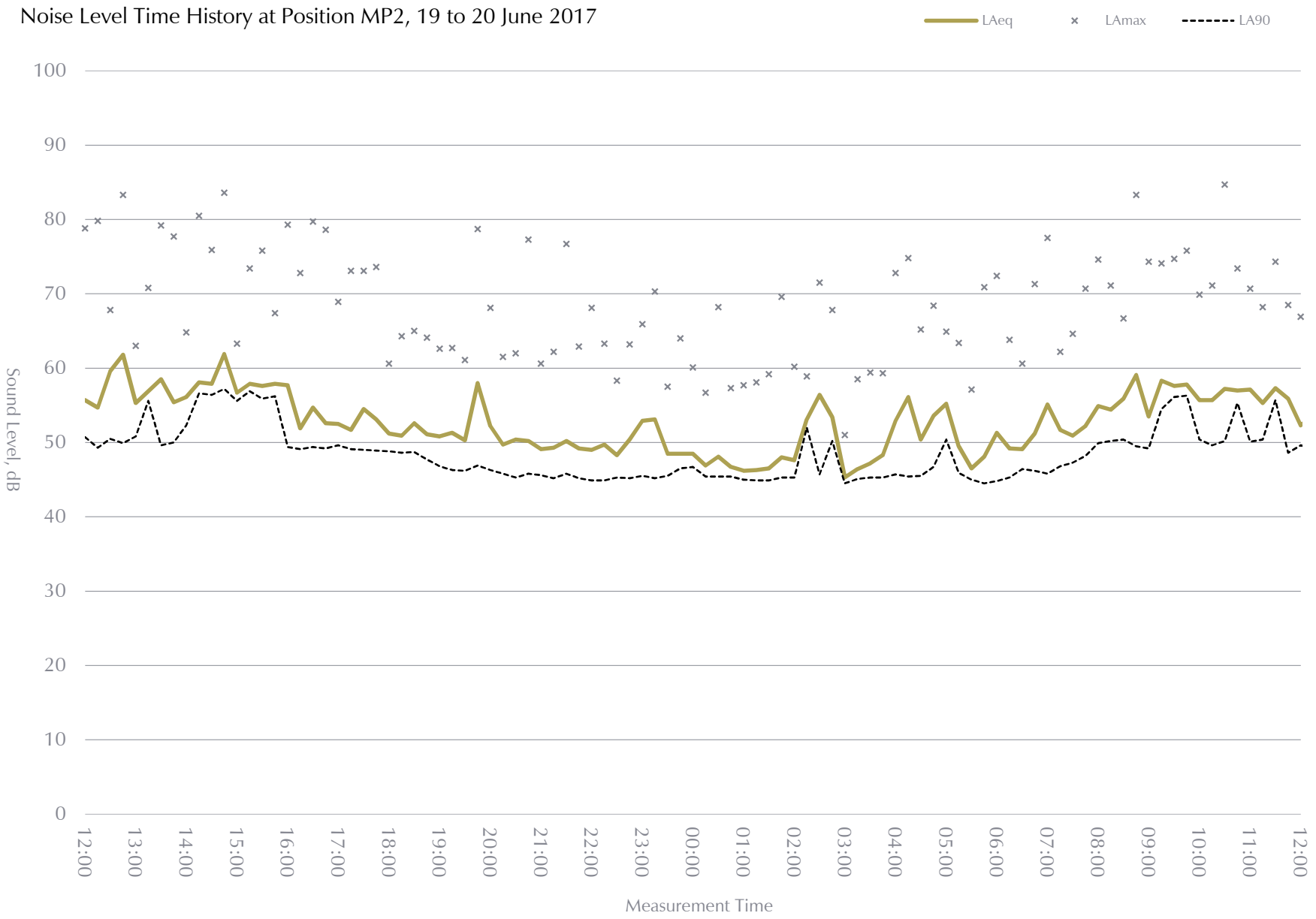


Figure 07/4770/TH02

Noise Level Time History at Position MP3, 19 to 20 June 2017

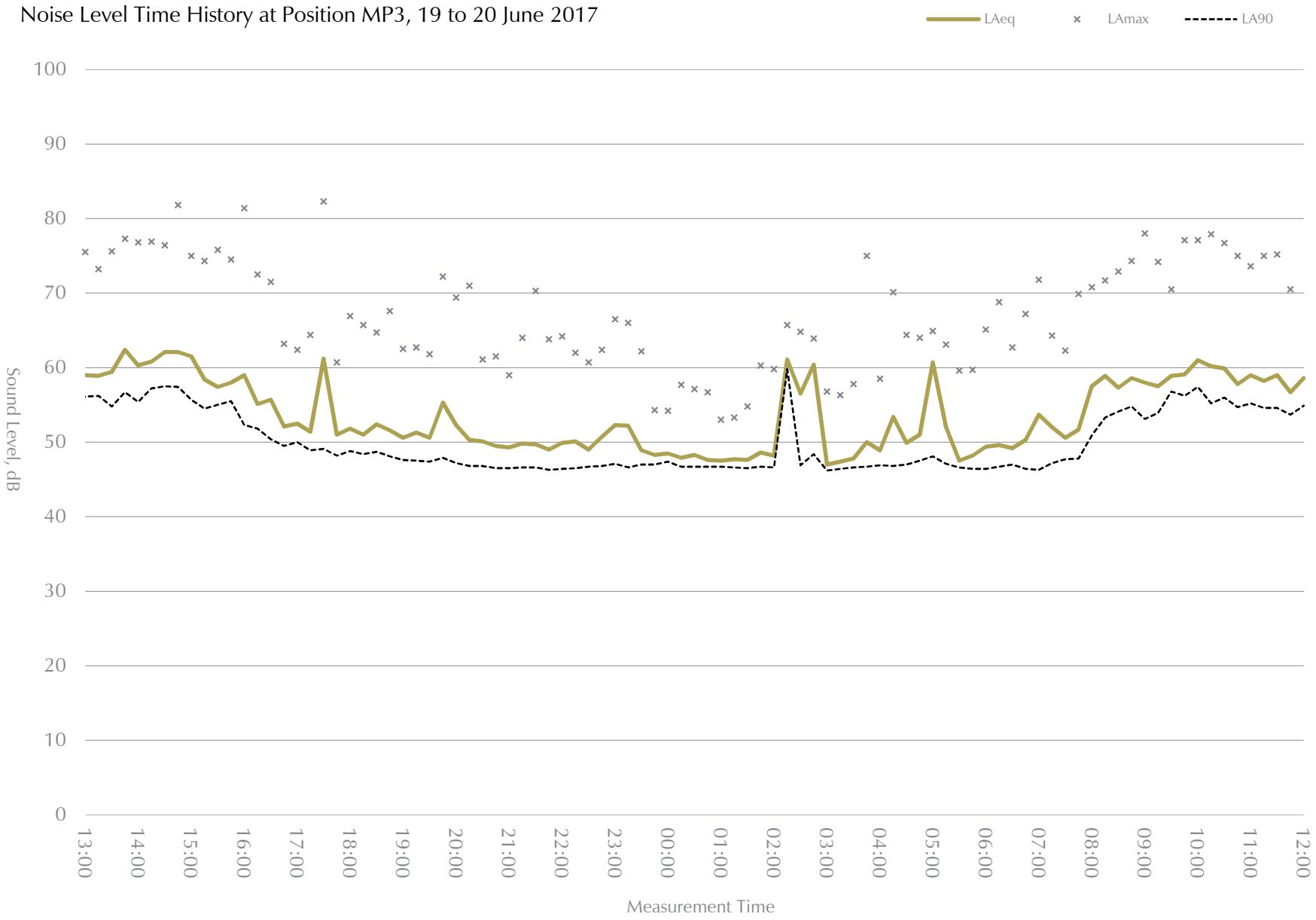


Figure 07/4770/TH03

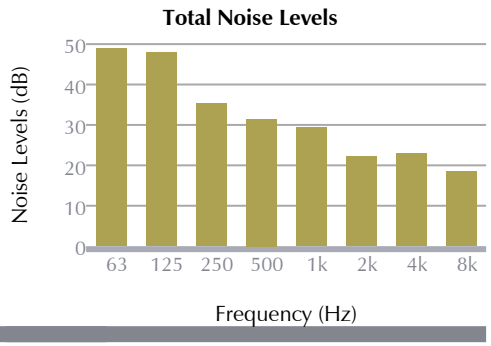
Schedule of Plant and Air Handling Equipment Sound Levels, dB

Reference	Description	Data Source [1]	Noise Level Type	Noise Levels (dB)							
				63	125	250	500	1k	2k	4k	8k
FDC 100 (1)	Mitsubishi FDC100VNX	Man	Sound Power, Lw	83	78	74	72	73	68	63	58
FDC 100 (2)	Mitsubishi FDC100VNX	Man	Sound Power, Lw	83	78	74	72	73	68	63	58
FDC 100 (3)	Mitsubishi FDC100VNX	Man	Sound Power, Lw	83	78	74	72	73	68	63	58
FDC 100 (4)	Mitsubishi FDC100VNX	Man	Sound Power, Lw	83	78	74	72	73	68	63	58
FDC 615 (1)	Mitsubishi FDC615 KXRE6	Man	Sound Power, Lw	90	92	77	79	77	71	70	65
FDC 615 (2)	Mitsubishi FDC615 KXRE6	Man	Sound Power, Lw	90	92	77	79	77	71	70	65
SRK 50 (1)	Mitsubishi SRK50ZS-S	Man	Sound Power, Lw	78	67	80	66	62	58	54	51
SRK 50 (2)	Mitsubishi SRK50ZS-S	Man	Sound Power, Lw	78	67	80	66	62	58	54	51
SRK 71 (1)	Mitsubishi SRK71ZR-S	Man	Sound Power, Lw	52	53	60	57	56	53	44	34
SRK 71 (2)	Mitsubishi SRK71ZR-S	Man	Sound Power, Lw	52	53	60	57	56	53	44	34
FDC 560 (1)	Mitsubishi FDC560 KXRE6	Man	Sound Power, Lw	85	90	76	77	75	69	71	65

Notes

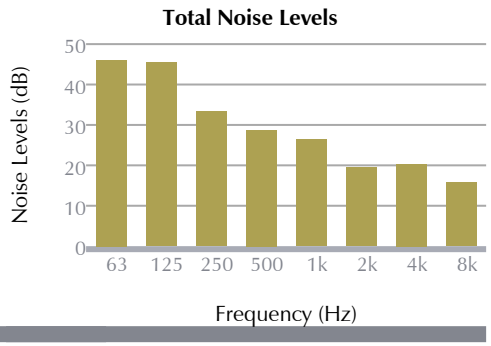
1 - Man refers to data supplied by the equipment manufacturer or supplier, Emp refers to data calculated using empirical formulae, and Meas refers to data measured by Cole Jarman

Project Name	79 Holmes Road, Kentish Town
Project Reference	17/0372
Receiver Reference	AP1
Description	Residence to the west
Noise Limit	38
dBA	36.2



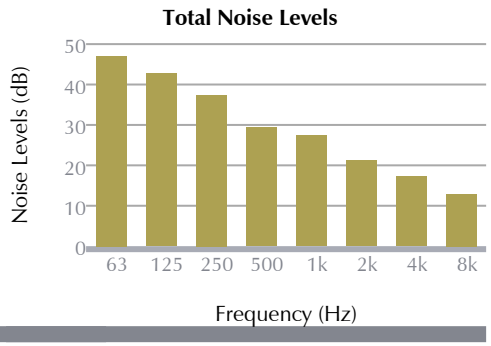
Reference	Noise Levels (dB)							
	63	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
FDC 560 (1)	42.9	45.9	28.9	27.9	23.9	15.9	20.9	15.9
SRK 71 (2)	5.4	6.4	13.4	10.4	9.4	6.4	-2.6	-12.6
SRK 71 (1)	5.4	6.4	13.4	10.4	9.4	6.4	-2.6	-12.6
SRK 50 (2)	27.4	15.4	25.4	10.4	3.4	1.4	-0.6	-1.6
SRK 50 (1)	27.4	15.4	25.4	10.4	3.4	1.4	-0.6	-1.6
FDC 615 (2)	37	38	16	9	0	-7	-10	-15
FDC 615 (1)	37	38	16	9	0	-7	-10	-15
FDC 100 (4)	40.6	33.6	26.6	22.6	21.6	14.6	12.6	8.6
FDC 100 (3)	40.6	33.6	26.6	22.6	21.6	14.6	12.6	8.6
FDC 100 (2)	40.6	33.6	26.6	22.6	21.6	14.6	12.6	8.6
FDC 100 (1)	40.6	33.6	26.6	22.6	21.6	14.6	12.6	8.6

Project Name	79 Holmes Road, Kentish Town
Project Reference	17/0372
Receiver Reference	AP2
Description	Residence to the north west
Noise Limit	35
dBA	33.7



Reference	Noise Levels (dB)							
	63	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
FDC 100 (1)	39	32	25	21	20	13	11	7
FDC 100 (2)	39	32	25	21	20	13	11	7
FDC 100 (3)	34.2	27.2	20.2	16.2	15.2	8.2	6.2	2.1
FDC 100 (4)	34.2	27.2	20.2	16.2	15.2	8.2	6.2	2.1
FDC 615 (1)	35.4	36.4	14.4	7.4	-1.6	-8.6	-11.6	-16.6
FDC 615 (2)	35.4	36.4	14.4	7.4	-1.6	-8.6	-11.6	-16.6
SRK 50 (1)	27.8	15.8	25.8	10.8	3.8	1.8	-0.2	-1.2
SRK 50 (2)	27.8	15.8	25.8	10.8	3.8	1.8	-0.2	-1.2
SRK 71 (1)	5.8	6.8	13.8	10.8	9.8	6.8	-2.2	-12.2
SRK 71 (2)	5.8	6.8	13.8	10.8	9.8	6.8	-2.2	-12.2
FDC 560 (1)	40.5	43.5	26.5	25.5	21.5	13.5	18.5	13.5

Project Name	79 Holmes Road, Kentish Town
Project Reference	17/0372
Receiver Reference	AP3
Description	Residence to the east
Noise Limit	36
dBA	34.1



Reference	Noise Levels (dB)							
	63	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
FDC 560 (1)	31.9	34.7	17.5	16.1	11.4	2.3	5.6	-1.5
SRK 71 (2)	18.4	19.1	25.6	21.7	19.4	14.5	3.2	-9.4
SRK 71 (1)	18.4	19.1	25.6	21.7	19.4	14.5	3.2	-9.4
SRK 50 (2)	39.7	26	33.8	16.2	6.5	1.6	-0.6	-1.6
FDC 615 (2)	35.8	36.8	14.8	7.8	-1.2	-8.2	-11.2	-16.2
FDC 615 (1)	35.8	36.8	14.8	7.8	-1.2	-8.2	-11.2	-16.2
FDC 100 (4)	38.4	31.4	24.4	20.4	19.4	12.4	10.4	6.4
FDC 100 (3)	38.4	31.4	24.4	20.4	19.4	12.4	10.4	6.4
FDC 100 (2)	38.4	31.4	24.4	20.4	19.4	12.4	10.4	6.4
FDC 100 (1)	38.4	31.4	24.4	20.4	19.4	12.4	10.4	6.4
SRK 50 (1)	36.7	23	30.8	13.2	3.5	-1.4	-3.6	-4.6

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