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3 HARGRAVE PLACE, LONDON
PLANT NOISE IMPACT ASSESSMENT

Technical Report: R6701-2 Rev 0

Date: 6th September 2017

For: Hargrave Developments Ltd
c/o KR Planning
183 Seafield Road
Bournemouth
BH6 5LJ

24 Acoustics Document Control Sheet

Project Title: 3 Hargrave Place, London - Plant Noise Impact Assessment

Report Ref: R6701-2 Rev 0

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For and on behalf of 24 Acoustics Ltd				

Document Status and Approval Schedule

Revision	Description	Prepared By	Approved By
0	Approved for Issue	Jonathan Munns	Stephen Gosling

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1.0 INTRODUCTION

1.1 24 Acoustics Ltd has been retained by Hargrave Developments Ltd to undertake an assessment of the potential noise impact from plant at 3 Hargrave Place, London. New condensers serving the ground floor commercial premises have been installed at the rear of the property at ground floor level.

1.2 The assessment has been undertaken following background noise surveys at the site undertaken between 10th and 15th November 2016.

1.3 All sound pressure levels quoted in this report are in dB relative to 20 µPa. All sound power levels are quoted in dB relative to 10^{-12} Watts. A glossary of the acoustic terminology used in this report is provided in Appendix A.

2.0 SITE DESCRIPTION

2.1 The property is located in a residential area in Camden, close to Brecknock Road, which is a mixture of commercial and residential. The north side of the property is bounded by Hargrave Place which provides access to neighbouring residential properties and the commercial unit located to the west of the property, as well as service yards associated with retail properties from the A5200 York Way / Brecknock Road. To the rear of the property is pre-existing residential terraced housing. Adjacent to the property to the west is 9 Hargrave Place, with commercial ground floor premises, and first and second floor residential.

2.2 Two external condensers have been installed for the commercial office property on the ground floor of 3 Hargrave Place. A noise impact assessment has been undertaken to determine the impact of noise from these units on the residential properties on upper floors.

2.3 The nearest habitable window is located on the first floor directly above the plant location at a distance of approximately 2 m and 3m from each condenser unit.

2.4 Sources of environmental noise in the vicinity include road traffic, aircraft noise and commercial noise from nearby properties.

2.5 Figure 1 shows the existing site layout and location of the plant.

3.0 STANDARDS AND GUIDANCE

NPPF

3.1 The National Planning Policy Framework (NPPF) [Reference 1] was published by the Department for Communities and Local Government in 2012. For noise, the NPPF policy states that planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions, while recognising that many developments will create some noise.

3.2 The NPPF refers to the Noise Policy Statement for England (NPSE) [Reference 2] which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term vision to 'promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development' which is supported by the following aims.

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life.

British Standard 4142:2014

3.3 BS 4142:2014 [Reference 3] provides a method for rating the effects of industrial and commercial sound on residential areas. The standard advocates a comparison between the typical measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction is applied.

3.4 The standard states that a difference between the rating level and the background level of around +10 dBA is an indication of a significant adverse impact, depending on the context and a difference of around +5 dBA is likely to be an indication of an adverse impact again depending on the context. Where the rating level does not exceed the background noise

level, this is an indication of the specific sound source having a low impact (depending upon the context).

Local Authority Guidance

3.5 The London Borough of Camden planning guidance Appendix 3 of the 2017 adopted plan provides guideline criteria – though this guidance assumes that the equipment would operate between 07:00 – 23:00 which is not the case for this application.

Summary

3.6 Following BS 4142:2014 and London Borough of Camden guidance for assessing noise from plant.

4.0 ASSESSMENT METHODOLOGY

4.1 The following assessment methodology has been used:

i. A background noise survey has been undertaken to determine existing levels of background noise at the nearest residential property;
ii. Calculations of the noise level from plant at the nearest proposed residential properties from manufacturer's data;
iii. An assessment of the likely noise impact has been undertaken in accordance with the guidance of BS 4142. A target difference of -5 dB or lower between the rating noise level and background noise level has been used in this assessment.

5.0 ENVIRONMENTAL NOISE SURVEYS

Background Survey

5.1 A background noise survey was undertaken between 10th and 17th November 2016 to determine the existing background noise levels representative of the closest residential property. Noise monitoring equipment was located at the northern and western façades of 9 Hargrave Place. This location is considered representative of background noise levels at the nearest residential windows to the proposed plant. The survey location is shown in Figure 1.

5.2 Measurements were undertaken in samples of 5 minutes in terms of the overall free-field A-weighted L_{eq}, L_{90} and $L_{max,f}$ noise levels.

5.3 The survey was undertaken with the following instrumentation:

- Rion NL32 Class 1 accuracy sound level meter;
- Bruel and Kjaer Type 4231 Class 1 accuracy acoustic calibrator.

5.4 The instrumentation calibration was checked before and after the surveys in accordance with the manufacturer's instructions. No significant drift in calibration was recorded. All instruments were fitted with environmental weather shields during the surveys.

5.5 Weather conditions during the survey were dry throughout, and wind speeds were lower than 5 m/s.

5.6 The results of the background noise survey are shown graphically in Appendix B and summarised in Table 1. BS 4142 requires a representative background noise level to be used for the assessment period under consideration.

	Background Noise Level, L_{A90} dB (08:00 - 18:00)
Western Façade	47

Table 1: Measured Background Noise Levels.

6.0 CALCULATIONS AND NOISE IMPACT ASSESSMENT

6.1 The proposed plant will comprise two Fujitsu units (models; AJY054LCLAH and AOYG18LAC2).

6.2 It is understood that the proposed units will be in operation for period 08:00 – 18:00 only. The following assessment has assumed these operating times.

6.3 The manufacturer's stated plant noise levels are detailed in Tables 2 and 3 below.

Model	**Sound Pressure Level (dB) per Octave Band Frequency, Hz**								**dBA**
	63	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	
Fujitsu AJY054LCLAH	65	62	59	54	50	46	43	34	57

Table 2: Plant Sound Pressure Level at 1 m

Model	**Sound Power Level (dB) per Octave Band Frequency, Hz**								**dB(A)**
	63	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	
Fujitsu AOYG18LAC2	69	69	60	59	57	52	47	40	62

Table 3: Plant Sound Power Level

6.4 Calculations have been undertaken to determine the noise level at the nearest habitable window from the proposed plant. Calculations have been completed using single octave data.

6.5 This assessment does not consider structure borne noise and assumes suitable isolation is provided between the condenser units and plant footings.

6.6 The condenser units may not be in simultaneous operation, however, to provide a worse case assessment, calculations have been based on the cumulative noise level from both plant units.

6.7 Calculations have included losses due to distance and directivity, see Appendix C. The proposed plant is not expected to contain distinctive tones or other characteristics when assessed at the nearest habitable window. Hence, it is not considered necessary to apply a rating correction for tonality or impulsivity.

6.8 Calculations indicate that, with the proposed plant installed the cumulative noise level at the closest residential property will be 48 dB L_{Aeq} during operation. Although this exceeds Camden's suggested design target, this assessment assumes that both plant items would be running at 100% duty simultaneously which will not occur frequently. When assessed over 1 hour, the typical running level is likely to be in the order of 40 dB $L_{Aeq\ 1\ hour}$ and on this basis is considered likely to be acceptable.

6.9 Furthermore, the units are only intended for use during office hours (08:00 – 18:00 and on this basis are less likely to cause disturbance. It is recommended that a timer be installed to minimise the risk of units running overnight.

6.10 It is further recommended that an absorptive material (minimum absorption class B) of minimum area 2.5m^2 be located on the brick wall opposite the units to minimise the risk of reflected noise upwards.

6.11 On this basis, it is considered that noise from the plant will not harm the amenity of nearby residents and therefore be acceptable.

7.0 CONCLUSIONS

7.1 24 Acoustics Ltd has been instructed by Hargrave Developments Ltd to undertake an assessment of the noise impact from plant associated with 3 Hargrave Place, London.

7.2 An assessment has been undertaken following background noise measurements at the property undertaken between 10th and 17th November 2016.

7.3 Subject to recommendations, the assessment has found that noise from the proposed plant at the nearest habitable window is unlikely to cause disturbance and therefore be acceptable.

REFERENCES

1. National Planning Policy Framework, Department for Communities and Local Government, 2012.

2. Noise Policy Statement for England, Defra, 2010.

3. British Standards Institution. British Standard 4142: 'Method for Rating and Assessing Industrial and Commercial Sound', 2014.

4. London Borough of Camden Development Policies 2017

Project: Hargrave Place	**Description:** Site layout and plant location Plan	
DWG No: Figure 1	**Scale:** N.T.S.	**Rev:** A
Date: August 2017	**Drawn By:** JM	**Job No:** 6701-2

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APPENDIX A – ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dBA corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time internal, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

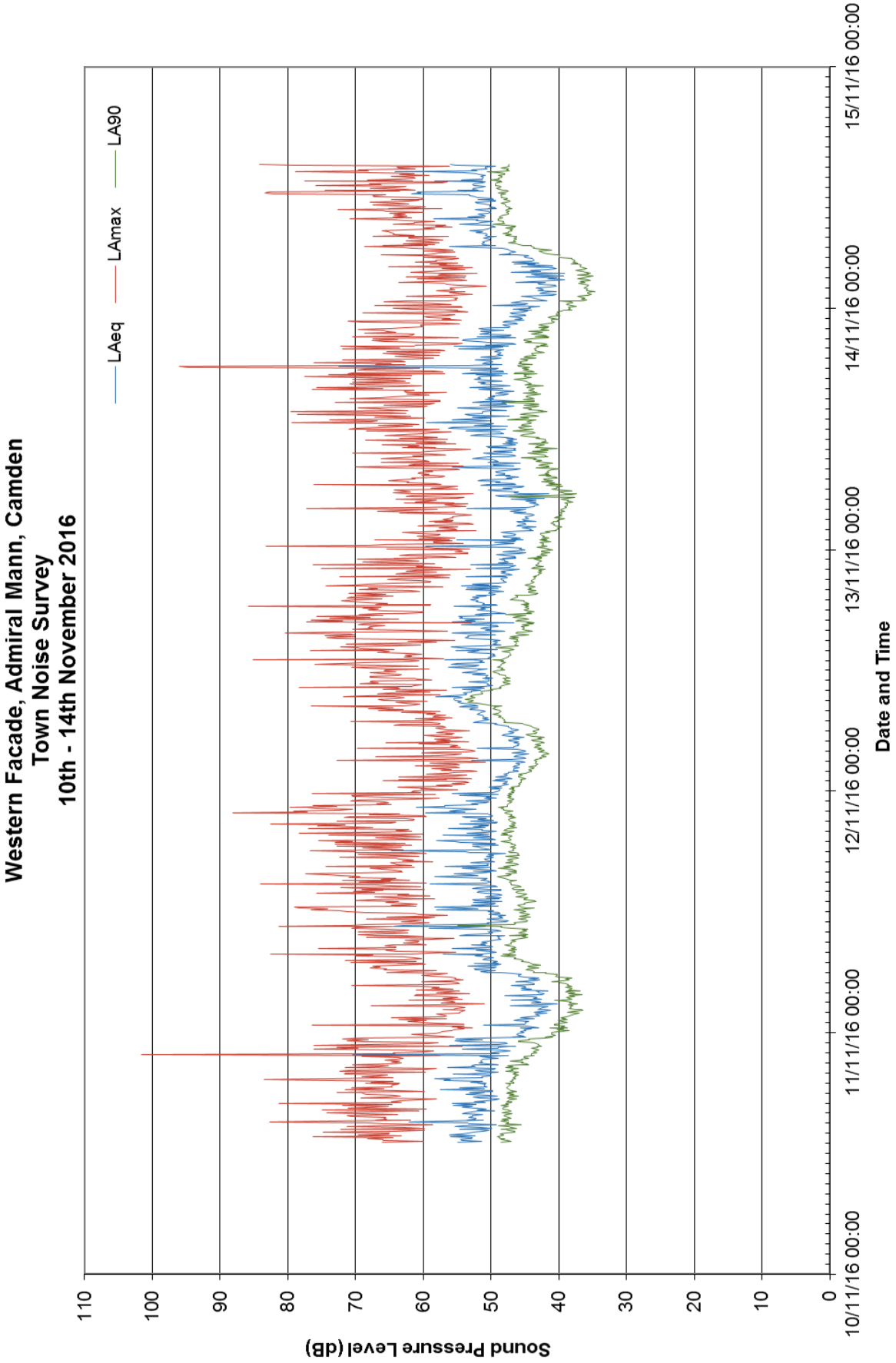
iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B – AMBIENT NOISE SURVEY RESULTS


Western Facade, Admiral Mann, Camden
Town Noise Survey
10th - 14th November 2016
LAeq
LAmax
LA90
Sound Pressure Level (dB)
110
100
90
80
70
60
50
40
30
20
10
0
10/11/16 00:00
11/11/16 00:00
12/11/16 00:00
13/11/16 00:00
14/11/16 00:00
15/11/16 00:00
Date and Time

APPENDIX C – CALCULATIONS

Unit	63	125	250	500	1000	2000	4000	8000	dB(A)	Comments
Unit										
1) Fujitsu AJY054LCLAH	65	62	59	54	50	46	43	34	**57**	Manuf Lp
2) Fujitsu AOYG18LAC2	69	69	60	59	57	52	47	40	**62**	Manuf Lw
Geometric Loss										
1) Fujitsu AJY054LCLAH	-7	-7	-7	-7	-7	-7	-7	-7		Distance to nearest window = 3 m
2) Fujitsu AOYG18LAC2	-11	-11	-11	-11	-11	-11	-11	-11		Distance to nearest window = 2 m
Directivity										
1) Fujitsu AJY054LCLAH	-2	-2	-4	-6	-9	-11	-12	-12		Condenser unit facing away from façade
2) Fujitsu AOYG18LAC2	-2	-2	-4	-6	-9	-11	-12	-12		Condenser unit facing away from façade
Levels at nearest sensitive window										
1) Fujitsu AJY054LCLAH	56	53	48	41	34	28	24	15	**44**	Noise level from condenser unit
2) Fujitsu AOYG18LAC2	56	56	45	42	37	30	24	17	**45**	Noise level from condenser unit
Total									**48**	Sound level from plant at nearest residential window