RBA ACOUSTICS

78 ADELAIDE ROAD, LONDON, NW3

Plant Noise Assessment

REPORT 5107/PNA
Prepared: 4 October 2012
Revision Number: 1

Vision Homes Ltd
The Thames Suite
133 Creek Road
Greenwich
London
SE8 3BU

Plant Noise Assessment

78 ADELAIDE ROAD,
LONDON, NW3

REPORT 5107/PNA
Prepared: 4 October 2012

Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	29 August 2012	Jamie Docwra	Robert Barlow
1	New plant locations	4 October 2012	Jamie Docwra	Andrew Heath

Terms of contract:

RBA Acoustics Ltd has prepared this report in accordance with our Scope of Work 5107/TMA dated 1 August 2012. RBA Acoustics Ltd shall not be responsible for any use of the report or its contents for any purpose other than that for which it was provided. Should the Client require the distribution of the report to other parties for information, the full report should be copied. No professional liability or warranty shall be extended to other parties by RBA Acoustics Ltd without written agreement from RBA Acoustics Ltd.

In line with our Environmental Policy, up to two hard copies of the report will be provided upon request. Additional copies of the report, or further hard copies of revised reports, would be subject to an administrative cost of £20.00 (+VAT) per copy.

RBA ACOUSTICS

RBA ACOUSTICS
44 Borough Road
London SE1 0AJ
T. +44 (0) 20 7620 1950
W. www.rba-acoustics.co.uk

Contents

1.0 INTRODUCTION 1

2.0 ENVIRONMENTAL NOISE SURVEY 1

3.0 RESULTS 2

4.0 CRITERIA 3

5.0 ASSESSMENT 4

6.0 CONCLUSION 5

1.0 INTRODUCTION

In order to complete the planning application for the location of new mechanical services units at 78 Adelaide Road, London NW3, Camden Council requires consideration be given to atmospheric noise emissions from the proposed equipment at the nearest noise sensitive property.

RBA Acoustics have been commissioned to undertake measurements of the prevailing noise conditions at the site and to determine the atmospheric noise emissions in accordance with Camden Council's requirements. This report presents the results of the noise measurements, associated criteria and provides the required assessment.

2.0 ENVIRONMENTAL NOISE SURVEY

2.1 General

In accordance with the requirements of the Local Authority, monitoring of the prevailing background noise was undertaken over the following period:

Wednesday 8 August to Thursday 9 August 2012

During the survey period the weather conditions were generally appropriate for the noise measurement exercise, it being dry with light winds.

Measurements were made of the L_{A90}, L_{AMax} and L_{Aeq} noise levels over sample periods of 15 minutes duration.

2.2 Measurement Locations

Measurements were undertaken with the microphone positioned on the roof of a store container to the rear of the site at 78 Adelaide Road, London, NW3. This measurement position was considered as being representative of the noise climate as experienced at the closest residential receptor to the proposed plant to the rear of the property. The prevailing noise climate was noted to be quiet as the rear of the property was screened from local traffic.

2.3 Instrumentation

The following equipment was used for the measurements.

Table 5107/T1 – Equipment Details

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Expiry Date
Larson Davis Type 1 Sound Level Meter	SLM824	3153	U11517	27 June 2013
Larson Davis Pre Amplifier	PRM902	4467		
Larson Davis ½" Microphone	2541	8177		
Larson Davis Calibrator	Cal 21	3321	U11516	27 June 2013

The sound level meter was calibrated both prior to and on completion of the survey with no calibration drift observed.

3.0 RESULTS

The noise levels at the measurement position are shown as time-histories on the attached charts 5107/G1 to G2

In order to ensure a worst case assessment the lowest background L_{A90} noise level measured has been used in our analyses. The lowest L_{A90} and the period averaged L_{Aeq} dB noise levels measured are summarised below.

Table 5107/T2 – Measured Levels

Measurement Period	L_{90} (dBA)	L_{eq} (dBA)
Daytime (07:00 – 19:00)	45.5	66.0
Evening (19:00 – 23:00)	42.4	54.4
Night-time (23:00 – 07:00)	33.6	52.7

4.0 CRITERIA

The requirements of Camden Council's Environmental Health Department regarding new building services plant are confirmed as follows.

The recently adopted Camden Development Policies 2010 – 2025 sets various noise and vibration thresholds (DP28). The noise thresholds for plant and machinery, as detailed in Table E of DP28, are confirmed as follows.

Table 5107/T3 - Camden Council Noise Thresholds

Noise description and Location of measurement	Period	Time	Noise level
Noise at 1 metre external to a sensitive facade	Day, evening and night	0000-2400	5dB(A) <LA90
Noise that has a distinguishable discrete continuous note (whine, hiss, screech, hum) at 1 metre external to a sensitive facade	Day, evening and night	0000-2400	10dB(A) <LA90
Noise that has distinct impulses (bangs, clicks, clatters, thumps) at 1 metre external to a sensitive facade	Day, evening and night	0000-2400	10dB(A) <LA90
Noise at 1 metre external to sensitive façade where LA90 >60dB	Day, evening and night	0000-2400	55dB LAeq

All related measurements should be carried out over a period of 15 minutes (that is, 15 minutes recorded measurements shall be presented over a 24 hour period).

In line with BS 4142: 1997, should the proposed plant be identified as having intermittent or tonal characteristics, a further 5dB should be subtracted from any of the above proposed noise emission limits.

The target levels for the new building services plant at 78 Adelaide Road, London, NW3, are confirmed as follows.

Table 5107/T4 – Target Levels

Measurement Period	Target Level (dBA)
Daytime (07:00 – 19:00)	40.5
Evening (19:00 – 23:00)	37.4
Night-time (23:00 – 07:00)	28.6

5.0 ASSESSMENT

Our assessment has been based upon the following information:

5.1 Proposed Units

1No. Mitsubishi PUHZ-W85VHA2
8No. Mitsubishi PUHZ-W50VHA

5.2 Position of Units

All 9 units are to be located in the gardens to the rear of the proposed development. 6No. Mitsubishi PUHZ-W50VHA units are to be located within an 1800mm Close Boarded Fence with 400mm Trellis above at the very rear of the garden, 1No. Mitsubishi PUHZ-W85VHA2 unit is to be located in the garden of Duplex 1, 1No. Mitsubishi PUHZ-W50VHA is to be located in the garden of Duplex 2 and 1No. Mitsubishi PUHZ-W50VHA is to be located in the garden of Duplex 3. The position of the units are indicated on the attached Site Plan 5107/SP1.

5.3 Noise Levels

Information regarding the noise levels of the proposed plant has been provided by the manufacturer of the units. The broadband sound pressure levels of the units (at 1m) are detailed as follows:

Table 5107/T5 – Manufacturer's Noise Levels

Unit	Parameter	Normal Mode - Broadband sound pressure level (dBA)	Night Mode - Broadband sound pressure level (dBA)
Mitsubishi PUHZ-W85VHA2	Lp at 1m	48	42
Mitsubishi PUHZ-W50VHA	Lp at 1m	45	40

* Octave band data was not available from the suppliers at the time of writing; however our experience of typical condenser noise spectra suggests that the noise is unlikely to be tonal.

It is understood that the units have the capability to operate 24 hours a day, though at night noise levels reduce to those given in the table above.

5.4 Location of Nearest Residential Window

The closest residential window to the plant is located to the rear of the proposed development, as indicated on Site Plan 5107/SP1.

5.5 Calculation of Noise Levels at Nearest Residential Window

Our calculation method for predicting noise levels from the proposed units at the nearest residential window, based on the information stated above, is summarised below.

- Source Term SPL
- 20LogR Distance Attenuation
- Screening

Calculation sheets are attached for further information.

The results of the calculations indicate the following noise levels at the nearest affected residential window:

Table 5107/T6 – Overall Noise Level for 9 Units

Operating Period	Prediction	Criterion
Daytime (07:00 – 19:00)	27.4dBA	40.5dBA
Evening (19:00 - 23:00)	27.4dBA	37.4dBA
Night-time (23:00 – 07:00)	21.9dBA	28.6dBA

Noise from the proposed units to the nearest noise sensitive window is below the target criteria required by Camden Council. Noise at adjacent premises will be less than those predicted above.

6.0 CONCLUSION

Measurements of the existing background noise levels at 78 Adelaide Road, London, NW3 have been undertaken. The results of the measurements have been used in order to determine the required criteria for atmospheric noise emissions from the future plant installations.

The results of the assessment indicate atmospheric noise emissions from the plant are within the criteria required by Camden Council. As such, the proposed plant installations should be considered acceptable.

Appendix A - Acoustic Terminology

dB	Decibel - Used as a measurement of sound pressure level. It is the logarithmic ratio of the noise being assessed to a standard reference level.
dB(A)	The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dB(A) level. Because of being a logarithmic scale noise levels in dB(A) do not have a linear relationship to each other. For similar noises, a change in noise level of 10dB(A) represents a doubling or halving of subjective loudness. A change of 3dB(A) is just perceptible.
L_{eq}	L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (1 hour).
L_{Aeq}	The level of notional steady sound which, over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measured over that period.
L_{An} (e.g L_{A10}, L_{A90})	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the average minimum level and is often used to describe the background noise.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during the measurement period, T. It is commonly used to measure the effect of very short duration bursts of noise, such as for example sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the general level of, say, traffic noise, but because of their very short duration, maybe only a very small fraction of a second, may not have any effect on the L_{eq} value.

Calculation Sheet

6 units located to rear of garden:

	Night Mode - Sound Pressure Level (dBA)	Normal Mode – Sound Pressure Level (dBA)
Combined noise level (6No. units)	47.8	52.8
Distance attenuation (20 log 18.3m)	-25.2	-25.2
Screening	-11.5	-11.5
Lp Total at rear of garden	**11.1**	**16.1**

1 unit located in Duplex 1 garden:

	Night Mode - Sound Pressure Level (dBA)	Normal Mode – Sound Pressure Level (dBA)
Noise level (1 Unit)	42.0	48.0
Distance attenuation (20 log 15.2m)	-23.6	-23.6
Lp Total at Duplex 1 garden	**18.4**	**24.4**

1 unit located in Duplex 2 garden:

	Night Mode - Sound Pressure Level (dBA)	Normal Mode – Sound Pressure Level (dBA)
Noise Level (1 Unit)	40.0	45.0
Distance attenuation (20 log 16.1m)	-24.1	-24.1
Lp Total at Duplex 2 garden	**15.9**	**20.9**

1 unit located in Duplex 3 garden:

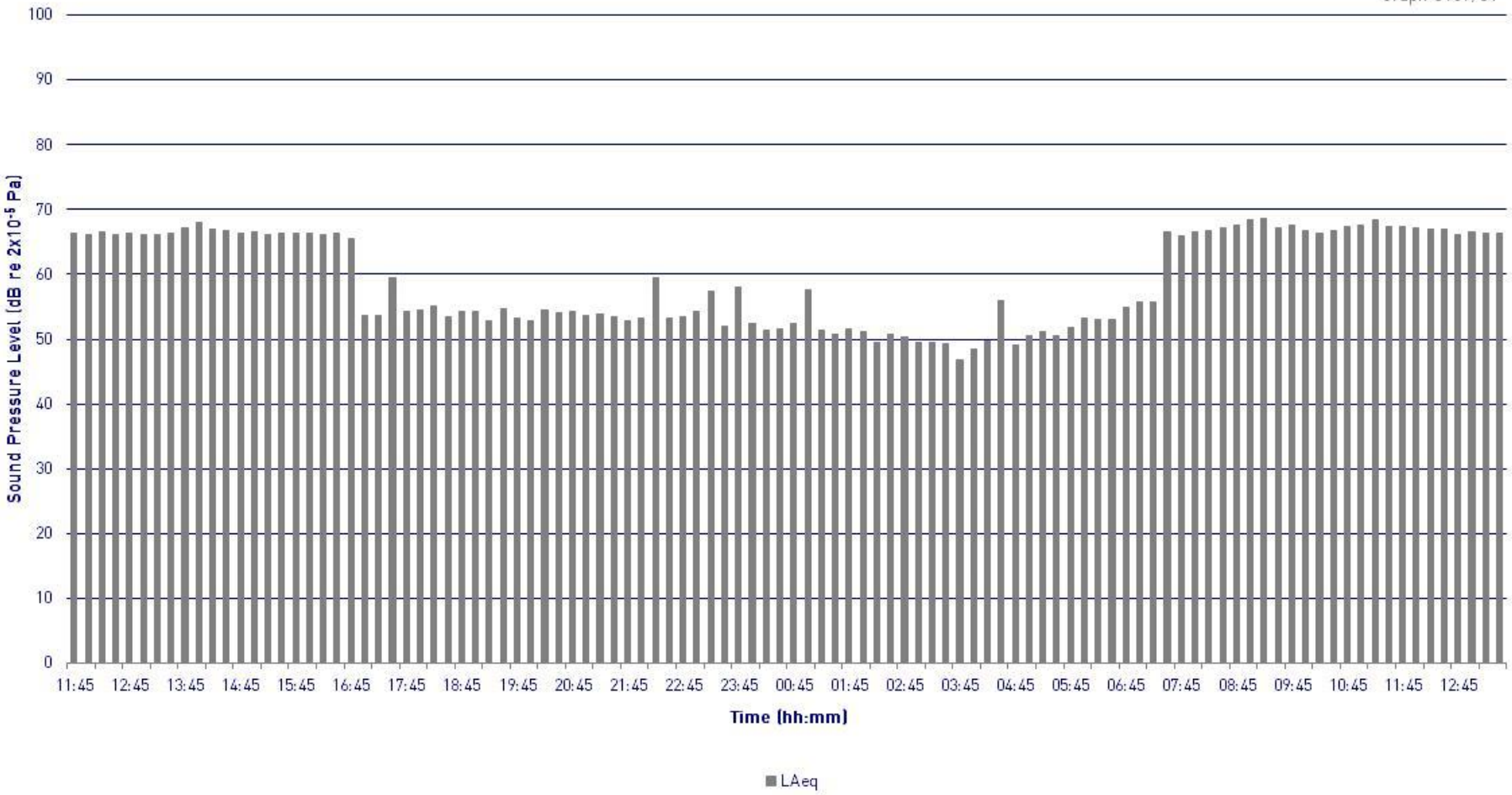
	Night Mode - Sound Pressure Level (dBA)	Normal Mode – Sound Pressure Level (dBA)
Noise Level (1 Unit)	40.0	45.0
Distance attenuation (20 log 17m)	-24.6	-24.6
Lp Total at Duplex 3 garden	**15.4**	**20.4**

Lp Total for 9 units	**21.9**	**27.4**

78 Adelaide Road, London, NW3
L_{Aeq} Time History
Wednesday 8 August to Thursday 9 August 2012

RBA ACOUSTICS

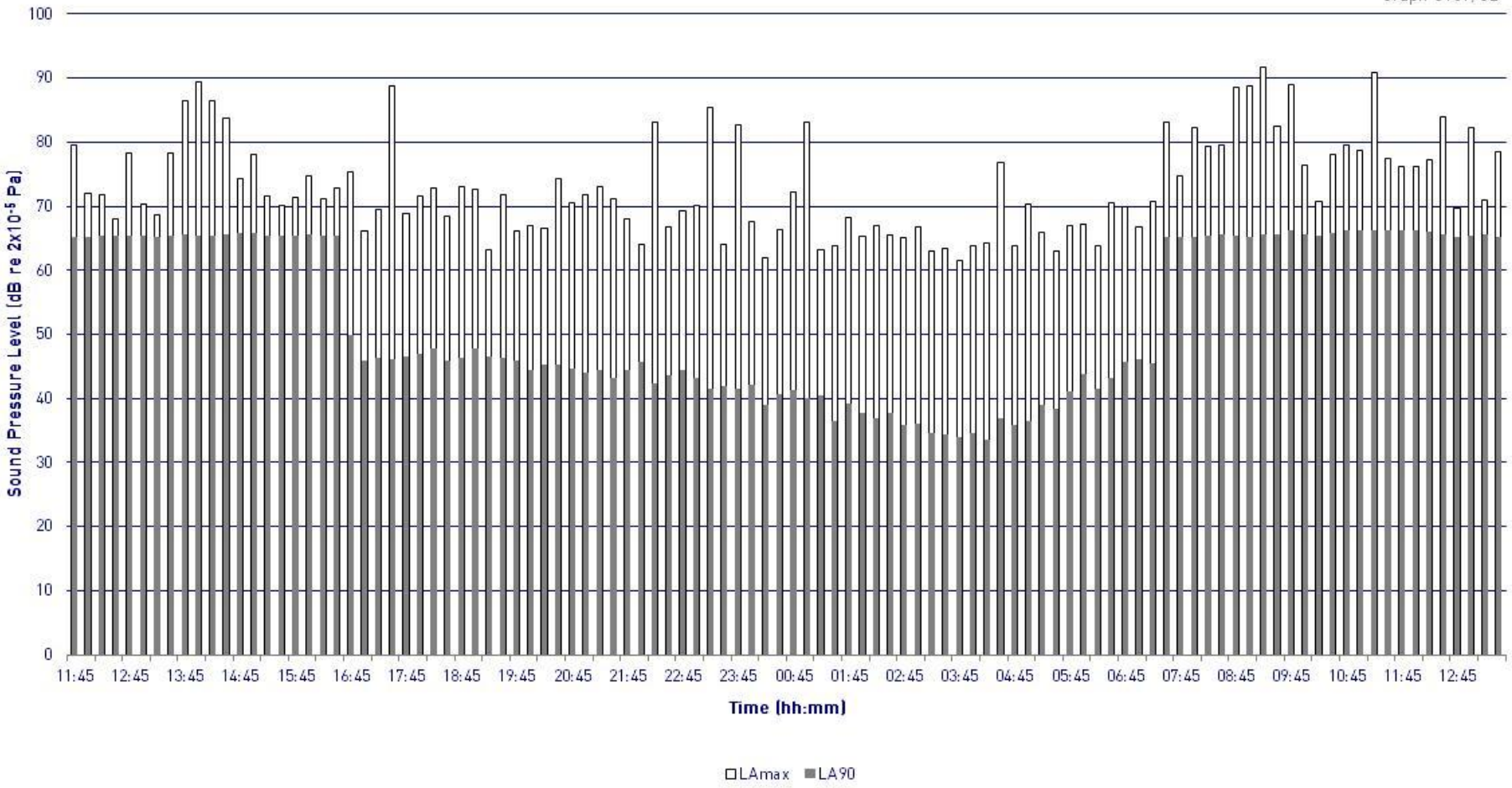
Graph 5107/G1



78 Adelaide Road, London, NW3
L_{A90} and L_{Amax} Time History
Wednesday 8 August to Thursday 9 August 2012

RBA ACOUSTICS

Graph 5107/G2



78 Adelaide Road, London, NW3

Site plan showing measurement location and proposed plant location in garden

Site Plan 5107/SP1

RBA ACOUSTICS

RBA ACOUSTICS
44 Borough Road
London SE1 0AJ

T. +44 (0) 20 7620 1950
W. www.rba-acoustics.co.uk