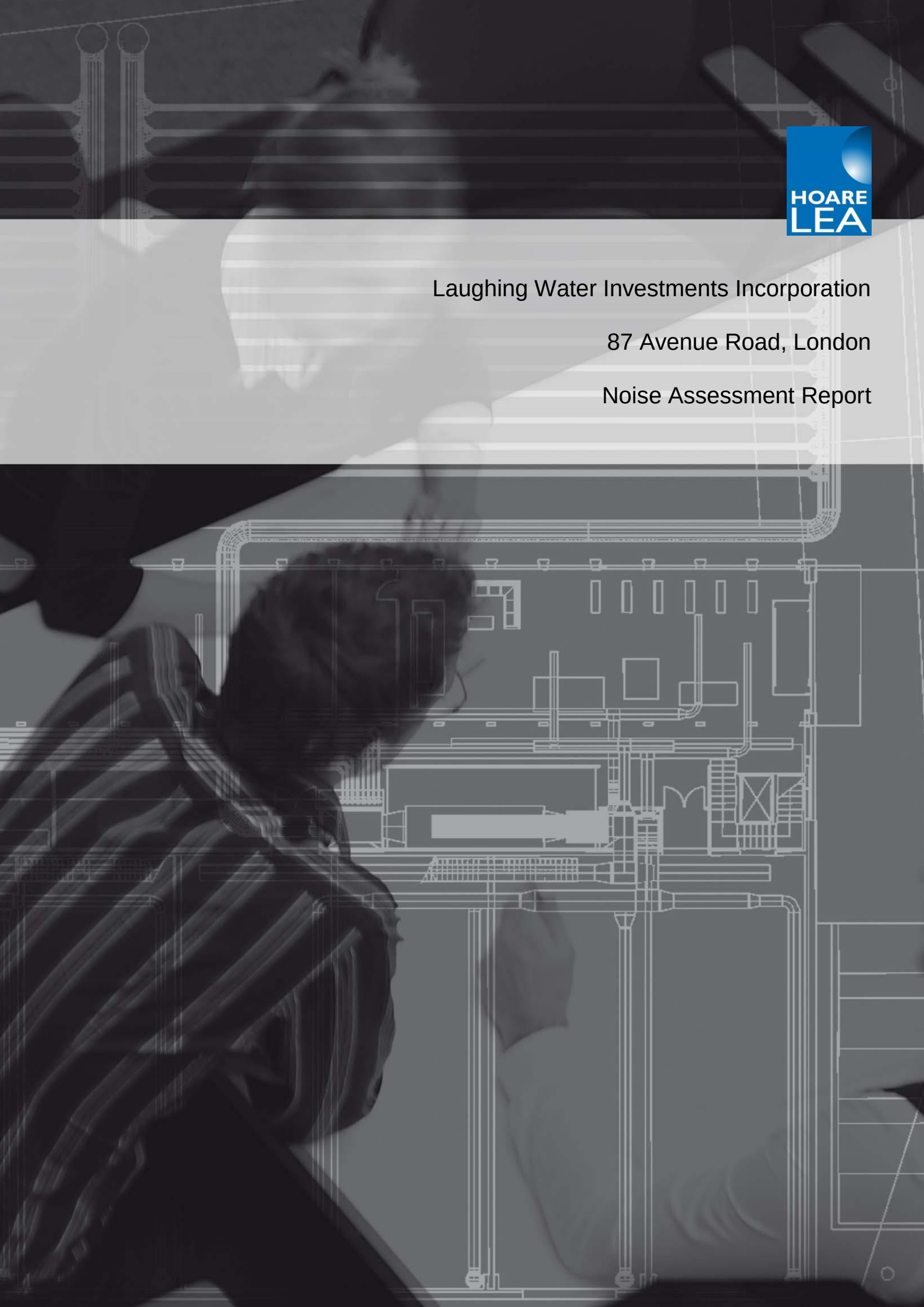

Laughing Water Investments Incorporation

87 Avenue Road, London

Noise Assessment Report

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Audit Sheet

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0	For Review	20/05/2016	SG	JB
1	For Issue	23/05/2016	SG	JB

Laughing Water Investments Incorporation

87 Avenue Road, London

Noise Assessment Report

Contents

1.0 Introduction

Hoare Lea LLP have been appointed by Laughing Water Investments Incorporation to prepare a noise assessment of the proposed development at 87 Avenue Road, London NW8 6JD. The proposed development includes a plant installation comprising three heat pump units in the rear garden.

A background noise survey has been conducted by KP acoustics to characterise the prevailing noise climate, and the subsequent report is referenced in this assessment (Report 9217.NIA.01).

An assessment of plant noise emissions has been made on the basis of local planning guidance. Using the plant selected an attenuation requirement has been calculated.

2.0 Planning Conditions

2.1 London Borough of Camden

The London Borough of Camden have granted planning permission for the development subject to several planning conditions. Condition 13 relates to the noise from the proposed plant installation. This makes reference to the *Noise Impact Assessment Report Revision A by KP acoustics dated 7 August 2012.*

Planning Condition 13:
Noise levels at a point 1 metre external to sensitive façades shall be at least 5 dB(A) less than the existing background measurement (L_{A90}), expressed in dB(A) when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10 dB(A) below the L_{A90}, expressed in dB(A).

Reason: to safeguard the amenities of the adjoining premises and the area generally in accordance with the requirements of policy CS5 of the London Borough of Camden Local Development Framework Core Strategy and policies DP26 and DP28 of the London Borough of Camden Development Framework Development Policies.

3.0 Site description

3.1 Existing Site

The existing site consists of a previously demolished residential property in the Saint John's Wood district of the London Borough of Camden, located on Avenue Road.

The garden of the property is surrounded by residential dwellings on all sides, which are the closest noise sensitive receptors.

The proposed development site (indicative only) is identified in Figure 1 below. It should be noted that the properties highlighted in yellow within Figure 1 are the nearest residential properties and represent the closest noise sensitive receptors. A noise sensitive receptor is defined as a landscape or building where the occupiers are likely to be sensitive to noise created by new plant installed in the proposed development, including residential areas.

Figure 1: Site Location, showing the approximate site location (red) and the nearby residential receptors (yellow). This is indicative only.

3.2 Local Noise Environment

The noise climate is that of a typical inner city area. This is predominantly formed of both nearby and distant road traffic noise, with Avenue Road itself being the dominant source.

A noise survey was undertaken at a position representative of the nearest residential properties to the proposed plant location in order to capture the typical background noise levels in this area.

4.0 Environmental Noise Survey

An acoustic survey has been carried out at the proposed site by KP Acoustics to establish the prevailing environmental noise conditions local to the site, so as to determine building services plant noise emission limits. The survey methodology is presented in KP Acoustic report 9217.NIA.01. The results of this survey are presented below in Table 1 for convenience.

Period	Minimum $L_{A90,5min}$, dB
Daytime (0700-2300)	40
Night-time (2300-0700)	35

Table 1: Summary of KP Acoustics unattended noise survey (reference 9217.NIA.01).

5.0 Plant Noise Limits

The heat pumps within the rear garden are the noise sources being assessed. These are approximately 21 metres from the closest noise sensitive receptor to the north, 27 metres from the receptors to the east, and 30 metres from the receptors to the west. These receptors along with the measurement position used for this assessment in a representative location are shown in Figure 2 below.

Figure 2: Plant and measurement locations (Indicative Only)

The background noise level at the position representative of the closest receptor window is 40 dB(A) during the day and 35 dB(A) at night. The Local Authority requires a 5 dB below background noise limit as shown in Section 2. The distance shown is representative of the mid enclosure location.

These results are summarised in Table 2 below.

Source	Time	Background Level, dB L_{A90}	Limit Criteria, dB $L_{Ar,Tr}$
Heat Pumps	Day	40	35
	Night	35	30

Table 2: Summary of plant noise limits.

5.1 Proposed Plant Selection

The manufacturer's noise data for the proposed plant selection is shown in Table 3 below.

Sound Pressure Level, dB	Frequency, Hz							
	63	125	250	500	1k	2k	4k	8k
PURY-EP300YLM-A1(-BS)	61	60	49	45	42	39	40	37
PURY-EP500YLM-A1(-BS)	73	70	66	62	56	52	47	40
Note: This data is for the heat pumps in low noise mode.								

Table 3: Manufacturer's Noise Data.

The plant is sited in the western corner of the rear garden at ground floor level. The installation comprises two of the PURY-EP500YLM-A1(-BS) units and one of the PURY-EP300YLM-A1(-BS) units.

The units are provided with the Ambient Acoustics noise control package comprising acoustic louvres to the inlet and a discharge attenuator. The derived insertion loss is as below:

Sound Power Level, dB	Frequency, Hz							
	63	125	250	500	1k	2k	4k	8k
Dynamic Insertion Loss	2	4	5	6	10	10	8	7

Table 4: Insertion loss with Ambient Acoustic noise control package.

The units are housed in a timber enclosure with louvered inlets and a finned structure to the roof. An insertion loss of 2 dB has been applied for the enclosure.

Using the principles of ISO 9613-2:1996 *Acoustics - Attenuation of sound during propagation outdoors* the resultant noise levels have been calculated at adjacent receptors as below. This assumes the two size 500 units are operating at daytime only and a single size 300 unit operates during the night-time period.

Distance	Daytime (0700-2300)	Night-time (2300-0700)
21 m	34 dB $L_{Aeq,T}$	26 dB $L_{Aeq,T}$
27 m	33 dB $L_{Aeq,T}$	25 dB $L_{Aeq,T}$
30 m	31 dB $L_{Aeq,T}$	23 dB $L_{Aeq,T}$

Table 5: Predicted noise levels at closest residential receptor.

Based on the manufacturer's data, a correction has not been applied for the character of the noise as the units are attenuated.

6.0 Summary

The planning conditions have been reviewed in relation to plant noise emissions. A noise survey has been conducted by KP Acoustics to characterise the noise climate at a position representative of the closest noise sensitive receptor.

Noise limits have been set at the nearest noise sensitive receptors.

Manufacturer's noise data has been used to calculate the noise level at the closest noise sensitive receptors.

The predicted noise levels at the closest receptor are within the noise limits, and therefore it is predicted that Planning Condition 13 is satisfied.