Acoustics Document Control Sheet
Project Title: 169C West End Lane, West Hampstead, London – Noise Impact Assessment
Portal Planning Reference: PP-11767742
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	NAME		ROLE
PREPARED BY	Alex Russel	MPhys (Hons) AMIOA	Assistant Consultant
APPROVED BY	Reuben Peckham	BEng MPhil MIOA CEng	Principal Consultant

DISCLAIMER

1.0 INTRODUCTION

1.1 We have been instructed by GEO to undertake a plant noise impact assessment at 169C west end lane, west hampstead, London.

1.2 This report presents the results of the assessment, following site visits and a background noise survey undertaken between 06th March and 08th March 2023.

1.3 All noise levels in this report are presented in dB relative to 20μPa.

2.0 SITE DESCRIPTION

2.1 169 West End Lane, West Hampstead, London is located in a mixed residential and commercial area with ambient noise levels controlled by local road traffic, aircraft and general residential activity.

2.2 As part of proposed works it is proposed to fit air conditioning plant for the purpose of heating and cooling, repositioning it on the flat roof on the second floor. The plant will be operational at all times, controlled by a thermostat.

2.3 The plant will be installed to the flat roof of the property 169a. The nearest residential property is located above the roof and the comunal stairs area beside wall. In addition to the air conditioning unit an white air dute is to be installed also to connect the air conditioning condenser to the builing.

2.4 Attached drawnings shows the site layout, proposed location of the air conditioning plant, proposed location of the extraction unit and nearby residential properties.

3.0 CRITERIA

PPG 24 (Planning and Noise)

3.1 Planning Policy Guidance (PPG) 24 provides guidance on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the administrative burdens of business.

3.2 The PPG gives guidance to local authorities in England on the use of their planning powers to minimise the adverse impact of noise. It outlines the considerations to be taken into account in determining planning applications; both for noise-sensitive developments and for those developments which will generate noise.

BS 4142 (Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas).

For noise from industrial developments, PPG 24 recommends the use of British Standard 4142

3.4 BS 4142 provides a method for rating the effects of industrial noise on mixed residential and industrial areas. The standard advocates a comparison between the typical measured LA90 background noise level and LAeq 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 of +5 dB is applied. The standard states that a difference between the rating level and the background level of +10 dB indicates that 'complaints are likely', a difference of +5 dB is of 'marginal significance' and a difference of −10 dB is a 'positive indication that complaints are unlikely'.

Local Authority Requirements

3.5 For noise from plant which does not have a distinctive tonal or impulsive nature the local authority's requirement is to set a level 5 dB below the minimum external LA90, 15 min background noise level 1 metre from the nearest sensitive facade. The daytime period is assessed between 08h00-19h00 hours, evening period between 19h00-23h00 hours and night time period between 23h00-07h00 hours.

4.0 NOISE MEASUREMENTS AND RESULTS

4.1 Background noise measurements were undertaken between 06th March and 08th March 2023 at first floor level at the 169 West End Lane. The location of the meter was representative of the closest residential property 169a. The meter was positioned 1m from the façade at a height of 1.2m in line with the closest sensitive façade.

4.2 The sound level meter was set up to monitor noise levels continuously and store data in five minute samples (using fast time weighting) in terms of the overall A-weighted Leq and L90 sound pressure levels. These levels have been subsequently combined to obtain 15 minute values.

4.3 The following instrumentation was used during the survey:

- Rion NL31 (Type 1) precision grade sound level meter;
- Brüel and Kjær Type 4231 acoustic calibrator.

4.4 Calibration was checked before and on completion of the measurements and no drift was recorded. The weather throughout the survey was mostly dry with wind speeds below 5 m/s. Noise measurements were made in accordance with BS 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use'.

Results

4.5 The results of the environmental survey are presented Table 1 below showing the lowest LAeq, 15 min and background LA90, 15 min values and in graphical format in Figure B1.

DATE	**DAY TIME**		**EVENING**		**NIGHT TIME**	
	LAeq, 15min	LA90, 15min	LAeq, 15min	LA90, 15min	LAeq, 15min	LA90, 15min
06/03/2023	47	46	45	44	44	41
07/03/2023	49	48	48	46	44	41
08/03/2023	52	59	--	--	--	--
AVERAGE	**50**	**48**	**47**	**45**	**44**	**41**

Table 1: Summary of Environmental Noise Survey Results

Assessment

4.7 Based upon the requirements of the Local Planning Authority, noise from the plant should not exceed the following level as measured at 1m from the nearest noise sensitive window:
07:00 – 19:00 hours 42 dB LAeq, 15 min
19:00 – 23:00 hours 40 dB LAeq, 15 min
23:00 – 07:00 hours 36 dB LAeq, 15 min

5.0 PLANT NOISE ASSESSMENT

5.1 The proposed plant will one Mitsubishi outdoor units (model: FDClOOVNP-W) installed in the flat roof area to the 2nd floor 169 west end lane.
5.2 The manufacturer's stated plant noise levels are detailed below:

MITSUBISHI HEAVY INDUSTRIES
AIR CONDITIONING EUROPE

SRK100ZR-W / FDC100VNP-W

9.6 (2.1~9.6)

Indoor Unit : SRK100ZR-W

Outdoor Unit : FDC100VNP-W

R32

Specifications

Indoor unit				SRK100ZR-W
Outdoor unit				FDC100VNP-W
Power source				1Phase, 220 - 240, 50Hz
Nominal cooling capacity (Min~Max)			kW	9.6 (2.1~9.6)
Nominal heating capacity (Min~Max)			kW	10.0 (1.7~10.4)
Power consumption		Cooling/Heating	kW	3.10 / 2.80
EER/COP		Cooling/Heating		3.10 / 3.57
Max. running current			A	19
Sound power level	Indoor	Cooling/Heating	dB(A)	59 / 62
	Outdoor	Cooling/Heating		68 / 67
Sound pressure level	Indoor	Cooling (Hi/Me/Lo/Ulo)		48 / 45 / 40 / 27
		Heating (Hi/Me/Lo/Ulo)		48 / 43 / 38 / 30
	Outdoor	Cooling/Heating		56 / 54
Air flow	Indoor	Cooling (Hi/Me/Lo/Ulo)	m3/min	24.5 / 21.3 / 17.6 / 10.4
		Heating (Hi/Me/Lo/Ulo)		27.5 / 23.2 / 19.1 / 13.6
	Outdoor	Cooling/Heating		63 / 55
Exterior Dimensions	Indoor	Height x Width x Depth	mm	339 x 1197 x 262
	Outdoor			750 x 880(+88) x 340
Net weight	Indoor / Outdoor		kg	16.5 / 57.0
Refrigerant		Type/GWP		R32/675
Refrigerant		Charge	kg/TCO2Eq	1.7 / 1.148
Refrigerant piping size		Liquid/Gas	ø mm	6.35(1/4") / 15.88(5/8")
Refrigerant line (one way) length			m	Max. 30
Vertical height differences		Outdoor is higher/lower	m	Max. 20 / Max. 20
Outdoor operating temperature range		Cooling	°C	-15~46
		Heating		-15~24
Clean filter				Allergen Clear Filter x 1, Photocatalytic Washable Deodorizing Filter x 1
Energy Class (Cooling/Heating)				A++/A+
SEER				6.11
SCOP (Average climate)				4.14
Pdesign (cooling/heating(@-10°C))			kW	9.6/6.0
Annual Electricity Consumption (cooling/heating)			kWh/a	551/2028
Designated Heating Season				Average

• The data is measured under the following conditions(ISO-T1, H1). Cooling: Indoor temp. of 27°CDB, 19°CWB, and outdoor temp. of 35°CDB. Heating: Indoor temp. of 20°CDB, and outdoor temp. of 7°CDB, 6°CWB.
• Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
• 'tonne(s) of CO2 equivalent' means a quantity of greenhouse gases- expressed as the product of the weight of the greenhouse gases in metric tonnes and of their global warming potential.
*SEER/SCOP are based on EN14825:2016 and Commission regulation (EU) No.2016/2281

Sound pressure level	Cooling/ Heating dB(A)	56/54 not more than 60 During daytime hours in residential area

5.3 Calculations have been undertaken to determine the noise levels 1m from the window of the nearest noise sensitive receptor. The proposed plant unit operates in two modes, heating and cooling, the heating mode presents the highest level and has therefore been used in the calculations to provide a worst case scenario prediction. There are solid structures between the nearest residential property and the proposed unit providing significant screening effects from the proposed plant. A summary of the calculation is presented below.

Unit: Mitsubishi SRKlOOZR-W / FDClOOVNP-W (SPL at 1m) – Heating 52.0 dBA
Unit: Distance loss to 1m from nearest residential windows -30.9 dB
Unit: Directivity and screening effects 0.0 dB

5.4 Calculations indicate that, with the proposed air conditioning unit, the noise level at the nearest receptor would be 34.0 dB LAeq which is below the established limits, as described in Section 4.7, for day time, evening and nighttime periods.

6.0 CONCLUSIONS

6.1 An assessment of background noise levels has been carried out at 169 West End Lane, West Hampstead, London under the requirements of the Local Planning Authority, Camden Borough Council.

6.2 Based upon the survey results and calculations have been undertaken which demonstrate that noise from the proposed plant and extraction system will not exceed the established noise limits.

APPENDIX: MEASURED NOISE LEVEL