Project

26-28 Rochester Place
Noise Assessment

Prepared for

Tasou Associates
4 Amwell Street
London
EC1R 1UQ

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Telephone +44(0)1787 247595
Website www.srltsl.com
London, Birmingham, Manchester, Sudbury

Quality Assurance	
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Report Title:	Noise Assessment
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Client:	Tasou Associates
Client Address:	4 Amwell Street London EC1R 1UQ
Author:	Matt Coll BSc (Hons) AMIOA
Additional information:	-

Version History

Version	Date	Comments	Approved by
P1	07/11/22	First issue	Joe Bear BEng MIOA

Matt Coll
For and on behalf of
SRL Technical Services Limited
Tel: 01787 247595
Email: mcoll@srltsl.com

Summary

You propose to add two additional storeys of residential dwellings (flats) to an existing building. This will increase the height of the building from four storeys to six storeys.

Part of this development comprises moving existing rooftop plant up to the new roof level. You also propose to add additional plant to the roof at the new higher level.

Our assessment shows that:

1) In accordance with BS4142, there is a low impact of relocating the existing rooftop plant to the new higher level.
2) We have set plant noise limits for all new external plant at the nearest noise-sensitive receptor. These are cumulative limits for all plant associated with the development, not for individual items of plant, and include acoustic character corrections:

    Day (07:00-23:00) 46dB $L_{Ar, Tr}$

    Night (23:00-07:00) 45dB $L_{Ar, Tr}$

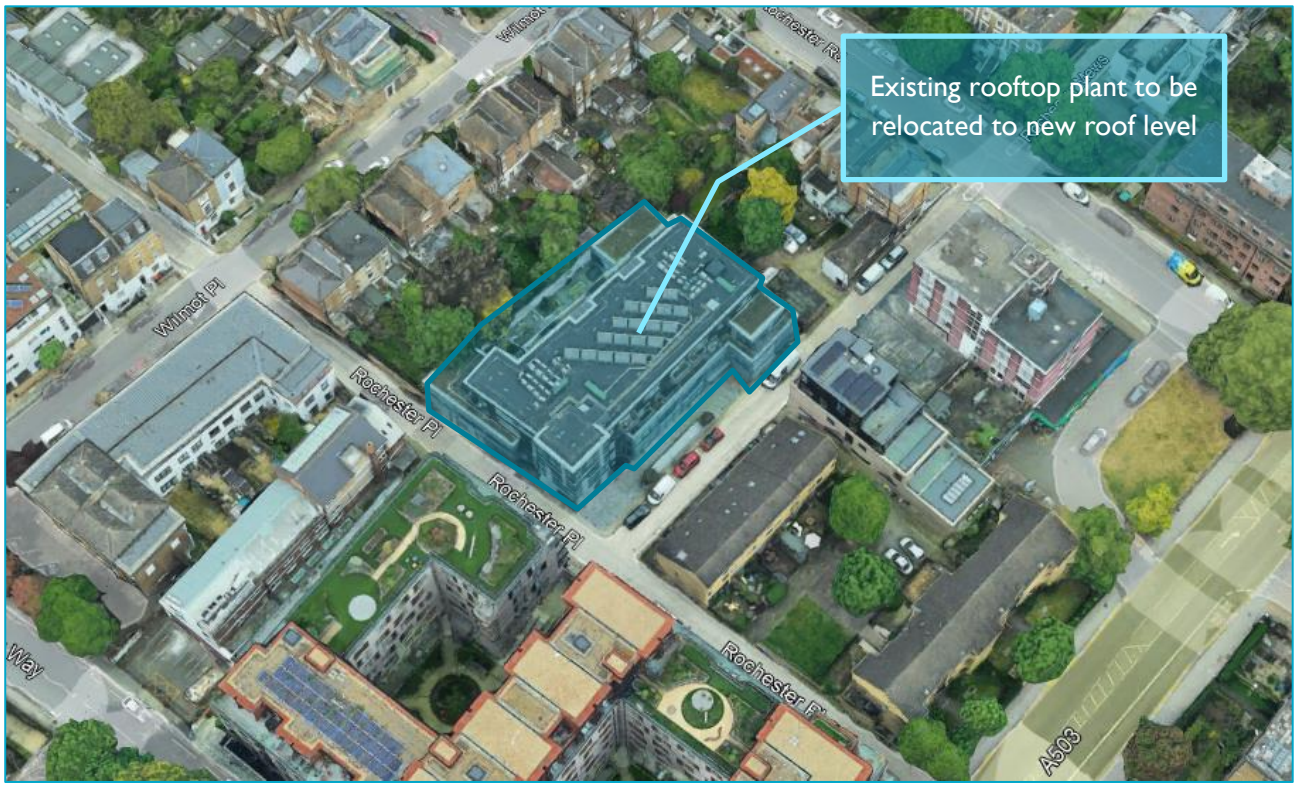
3) Guideline internal noise levels in accordance with BS8233 can be achieved in all rooms in the proposed dwellings with 'standard' double glazing (indicatively 6mm glass / 12mm cavity / 6mm glass) and non-acoustic trickle ventilators.

Contents

1.0 Introduction

You propose to add two storeys to an existing building at 26-28 Rochester Place in Camden, London, which will create an additional 10No. residential flats. The site is shown below in Figure 1.

Figure 1 - 26-28 Rochester Place



Existing rooftop plant will be relocated to the new rooftop level, and there will also be additional plant installed to service the new dwellings (assumed to be 10No. ASHPs, but the details and specifications are not yet known).

SRL Technical Services Ltd. has been appointed by Tasou Associates to:

1) Assess the impact of noise from the proposed changes to the rooftop plant on the nearest noise-sensitive receptors.
2) Propose noise limits for any additional mechanical services plant.
3) Outline acoustic specifications for the glazing and ventilation strategy for the new dwellings to achieve suitable indoor ambient noise levels in line with BS8233:2014.

2.0 Guidance Used in This Assessment

2.1 BS4142:2014+A1:2019 "Methods for rating and assessing industrial and commercial sound"

BS4142 provides a method to assess whether "sound of an industrial and/or commercial nature" is likely to have an adverse impact at noise sensitive receptors.

When comparing such sound (the "specific" noise) against existing background noise levels, BS4142 highlights that certain acoustic features (tonality, impulsivity, intermittency, and so on) can increase any significance of impact and penalties should be applied to the specific noise level, in accordance with the guidance set out in BS4142, to provide the "Rating Level" of the noise source.

Comparison of the Rating Level to the background noise level indicates the significance of the new noise source at the receptor under assessment. If the Rating Level is higher than the background noise level, then there may be an impact:

- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the Rating Level is relative to the measured background noise level, the less likely it is that the specific sound source will have an adverse impact. 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 on the context.

2.2 BS8233:2014 "Guidance on sound insulation and noise reduction for buildings"

The proposed development will need to achieve the internal noise level limits given in BS8233:2014 *Guidance on sound insulation and noise reduction for buildings*. The criteria are detailed in in Figure 2.

Figure 2 - Guidelines indoor noise levels for dwellings from BS8233:2014

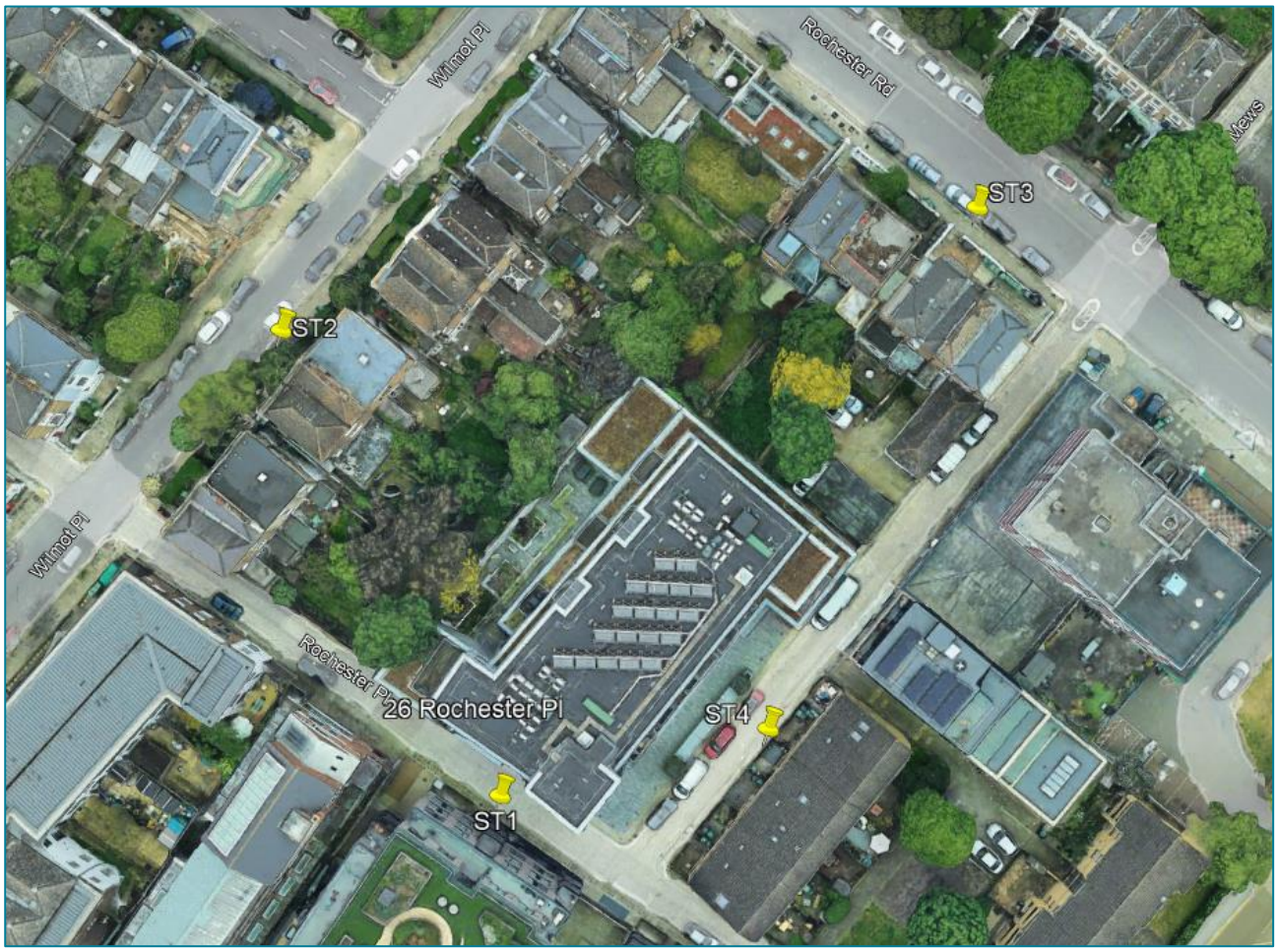
Location	Daytime 07:00-23:00	Night time 23:00-07:00
Living Room	35dB $L_{Aeq,\ 16hours}$	-
Bedroom	35dB $L_{Aeq,\ 8hours}$	30dB $L_{Aeq,\ 8hours}$

3.0 Noise Survey

3.1 Environmental Noise

SRL measured noise at the site on 18 and 19 October 2022 to determine the existing noise levels. Short-term attended measurement positions are shown in Figure 3, denoted by ST1 to ST4. Measurements were also taken on the rooftop to gather noise data for the existing plant.

Figure 3 - Noise measurement positions



Noise levels at site were dominated by road traffic noise on the surrounding local roads, and from distant urban sources. I have summarised the measured noise levels at ST1 to ST4 in Table 1.

Table 1 - Summary of noise levels

Measurement Position	Day 07:00-23:00		Night 23:00-07:00	
	$L_{Aeq,\ 10min}$	$L_{A90,\ typical}$	$L_{Aeq,\ 5min}$	$L_{A90,\ typical}$
ST1	56	46	49	45
ST2	48	48	47	38
ST3	57	48	55	46
ST4	53	44	48	44

3.2 Rooftop Plant Noise

The existing plant on the rooftop consists of condensers, and air source heat pumps which service the existing dwellings. During our survey, the site manager confirmed that the plant was operating at normal duty.

We measured noise levels of between 46 and 53 dB $L_{Aeq,T}$ on the roof. Continuous noise from plant and services was just audible but measured L_{AeqT} levels were dominated by noise from road traffic and other distant urban sources below. The measured L_{Af90} in the centre of roof and close to the plant areas (to minimise the effect noise from traffic and other transient ambient sources on the streets below, as far is practical) was around 45 dB L_{Af90}.

4.0 Plant Noise Assessment

4.1 Proposed Plant and Services

You propose to move all existing rooftop plant which services the current dwellings to the new rooftop level, and to add what we understand to be approximately 10No. new air source heat pumps which will service the new dwellings.

4.2 Existing Plant at New Higher Rooftop Level

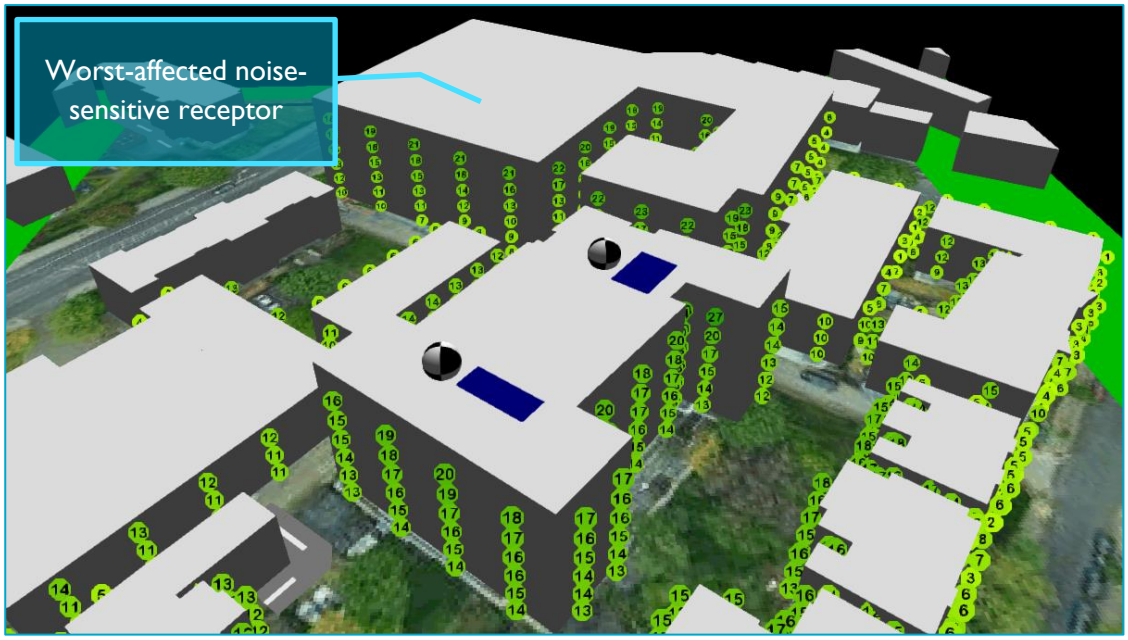
Noise from existing plant on the rooftop was just audible above noise from other ambient noise sources and was not audible at all at ground level. Relocating existing plant to the new rooftop level two storeys higher will decrease the noise levels at ground level. The only potential increases in noise levels are on the receptors at the upper storeys of the taller buildings surrounding the development. We could not take measurements at these locations. Therefore, I created a 3D noise model of the site in proprietary software CadnaA by DataKustik to predict the likely range of noise levels at receptors on the upper storeys of the surrounding buildings.

The noise sources on the rooftop in the model were calibrated to measured L_{AF90} roof top levels to exclude, as far as practical, the effect of noise from unrelated sources. This level is likely to be an overestimate of the levels of noise generated by the plant at the time of our visit but allows for a margin in the variation of the levels of noise generated by the plant. I therefore consider this to be a robust worst-case scenario assessment for the levels of plant noise generated by the existing plant.

Figure 4 shows the noise levels at the facades of the nearest noise-sensitive receptors with the existing plant moved to the new higher rooftop level.

Figure 4 - Noise levels at the nearest noise-sensitive receptors (view from south)

Figure 5 - Noise levels at the nearest noise-sensitive receptors (view from north)



The worst-affected noise-sensitive receptor, immediately to the south at approximately 9m from the site, has a worst-case specific noise level of 23dBA.

The noise levels generated by the rooftop plant was broadband, continuous, and free from any discernible features would attract an acoustic character penalty in accordance with BS4142.

It was not feasible to measure background noise levels at the heights of the surrounding receptors. The background noise levels measured on the ground were between 44 – 48 dB L_{A90} in the day, and 38 – 46 dB L_{A90} in the night.

There is a minimum difference of 15dBA between the highest predicted specific noise level (23dBA) and the lowest background noise level (38dBA).

This is a clear indication that the noise impact associated with the relocation of the existing plant will be well below the background noise levels, and there will be no impact.

There will also be no impact on the new dwellings created by the proposed roof top extension.

4.3 Plant Noise Limits

In line with the guidance set out in BS4142, I recommend that the cumulative rating level of all plant associated with the development (including existing plant) does not exceed the typical background noise level at the nearest noise-sensitive receptor. This limit includes acoustic character penalties such as tonality and intermittency and assumes that the plant being added is of a similar nature to that which already exists (air handling plant, or similar).

Noise measured at position ST1 is representative of the noise levels at the nearest noise-sensitive receptor.

Period	Measured background noise level, dB L_{A90}	Rating noise limit, dB $L_{Ar, Tr}$
Day (07:00-23:00)	46	46
Night (23:00-07:00)	45	45

5.0 Break-in Assessment

I have calculated internal noise levels in the proposed dwellings based on the road noise levels measured.

In the absence of proposed flat layouts/General Arrangement drawings, I have assumed that proposed rooms are of the dimensions:

- Living Rooms 4m x 5m x 2.7m (with 5m^2 of glazing)
- Bedrooms 3m x 4m x 2.7m (with 3m^2 of glazing).

I have calculated that living rooms and bedrooms in proposed plots on any façade of the building can meet the guideline day and night-time internal noise levels as per BS8233 with 'standard' double glazing (indicatively 6mm glass / 12mm cavity / 6mm glass) and non-acoustic trickle ventilators.

Internal noise levels in the dwellings to the north of the building will be clearly lower where facades are screened from the roads by other buildings.

Appendix A - Survey Details

A1. Location of Survey

Camden, London

A2. Date & Time of Survey

18 October 2022 13:00 to 19 October 2022 07:00

A3. Personnel Present During Survey

Rob Torlasco AMInstNDT – SRL

A4. Weather Conditions during Survey

Clear, bright, 12˚C to 19˚C, 9mph to 16mph easterly breeze

A5. Instrumentation

HT2 - Blue

Description	SRL No.	Make	Type	S/N
Sound Level Analyzer (HT2, Blue)	850	Brüel & Kjær	2250	3007898
Preamplifier	852	Brüel & Kjær	ZC0032	19790
Microphone	951	Brüel & Kjær	4189	3130789
Calibrator	692	Brüel & Kjær	4231	2438805

A6. Calibration Procedure

Before and after the survey the measurement apparatus was check calibrated to an accuracy of ±0.3 dB using the type 4231 Sound Level Calibrator. The Calibrator produces a sound pressure level of 93.8 dB re 2 x 10^{-5} Pa at a frequency of 1 kHz.

Sudbury Consultancy
Holbrook House
Little Waldingfield
Sudbury
Suffolk
CO10 0TF
Tel: +44 (0)1787 247595

Manchester Consultancy
Suite 1.9, Canada House
Chepstow Street
Manchester
M1 5FW
Tel: +44 (0)161 929 5585

London Consultancy
07-106
8 Devonshire Square
London
EC2M 4PL
Tel: +44 (0)207 251 3585

Birmingham Consultancy
Cornwall Buildings
45 Newhall Street
Birmingham
B3 3QR
Tel: +44 (0)121 270 6680

South Africa Consultancy
102 Heritage House
20 Dreyer Street
Claremont
Cape Town
7708
South Africa
Tel: +27 (0)21 205 9201

Laboratory
Holbrook House
The Street
Sudbury
Suffolk
CO10 0TF
Tel: +44 (0)1787 247595

Website: www.srltsl.com
e-mail: srl@srltsl.com

SRL offers services in:
Acoustics
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Registered Name and Address:
SRL Technical Services Limited
Holbrook House
Little Waldingfield
Sudbury
Suffolk
CO10 0TF

Registered Number: 907694 England