SANDY BROWN

Consultants in Acoustics, Noise & Vibration

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Centre Point R05 office (Class E) fit-out, 12 and 12a St. Giles Square

Plant noise egress assessment

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A	10 Sep 20	-	Martyn Ludlow	Bob Albon
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Summary

Sandy Brown has been commissioned to provide a plant noise assessment in relation to the use of Centre Point Unit R05 as Class E (Business, Commercial and Services) and associated physical works. This report provides an assessment of the new ventilation plant to be installed to serve the office as part of this.

An environmental noise survey was undertaken as part of the original planning application for the redevelopment of Centre Point and conditions were imposed by London Borough of Camden as part of the original planning permission for the whole scheme.

Overall plant noise limits for the redevelopment of the wider site were conditioned as part of the original permission ref: 2017/09941P (Condition 19). These limits were apportioned between the different areas of the redevelopment. These included specific limits for unit R05. Details of the landlord installed plant to partially discharge condition 17 of planning permission 2017/0994/P was approved via application ref: 2017/6980/P, dated 7 March 2018.

The plant proposed as part of this planning application has been assessed with regard to the unit R05 limits. Mitigation measures have been recommended to ensure that the plant complies with these limits.

To meet the limits attenuators are required to be provided to the air handling plant, the specification of which is detailed in this report.

Contents

1 Introduction

Sandy Brown has been commissioned to provide acoustic advice in relation to the use of the site as Class E (Business, Commercial and Services) and associated physical works. This report provides an assessment of the new ventilation plant proposed to serve the office.

Overall plant noise limits for the redevelopment of the wider site were conditioned as part of the original permission ref: 2017/09941P. These limits were apportioned between the different areas of the development. The required mitigation measures have been determined to achieve the plant noise limits determined for unit R05.

This report presents the relevant plant noise limits, an assessment of the proposed plant and recommended mitigation measures to achieve the plant noise limits.

2 Site description

The existing retail unit R05 is located on part ground floor (for main entrance) and part Level 1 and Level 1 mezzanine of Centre Point House overlooking Earnshaw Street to the east and the new public square to the west.

2.1 The site and its surrounding

The site location is shown in Figure 1. Existing residential premises are located on the upper floors of Centre Point House and at Mathilda Apartments to the south east on Earnshaw Street.

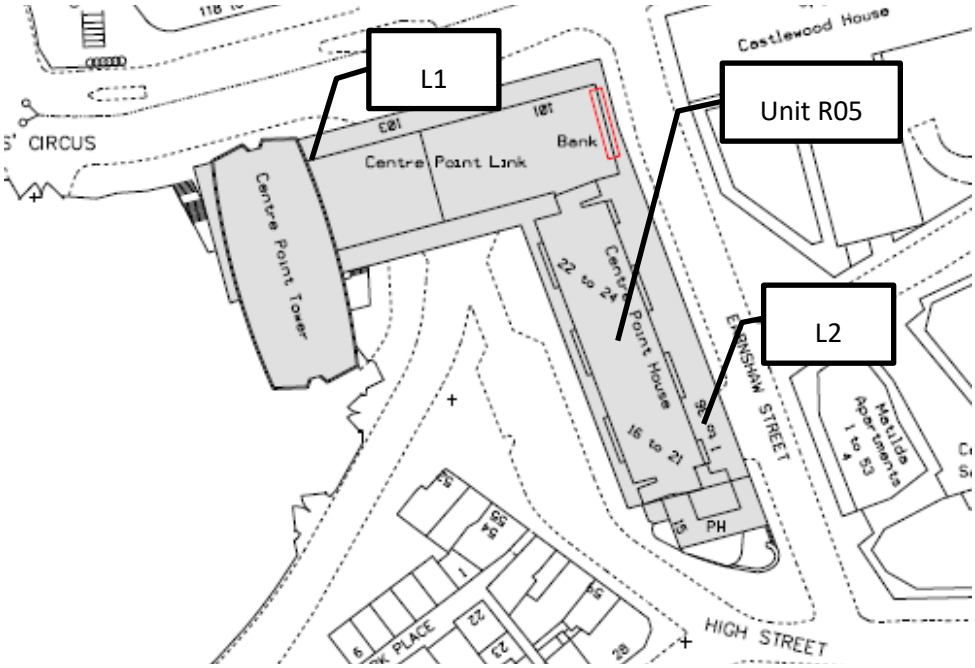

Figure 1 Site plan extract

3 Development proposals

The project proposal consists of the fit-out of unit R05 for office use. As part of the proposals, new items of building services plant will be installed in the plant room at the north east end of the unit on the Level 1 mezzanine. An existing air handling unit (AHU), previously part of the landlord provision for original retail use, is to be replaced as part of the proposals. The AHU is located in a Level 2 plant room to the south east end of the unit. To accommodate the new unit, a louvre is to be installed in the facade overlooking Earnshaw Street to provide an air intake for the unit.

4 Environmental noise survey

An environmental noise survey was undertaken at the site as part of the original planning application and is described in Sandy Brown's report '*Centre Point Planning noise and vibration report 11301-R01-F'.* The report was submitted as part of the original planning application for the development.

The noise survey was performed between Thursday 19 January 2012 and Wednesday 25 January 2012. Unattended measurements were performed at measurement positions L1 and L2 as indicated on Figure 1.

The results of the survey are summarized in the following section.

5 Measurement results

5.1 Unattended measurement results

The results of the unattended noise measurements are summarised in the following tables. A more detailed description of the survey results is provided in Sandy Brown's report '*Centre Point Planning noise and vibration report 11301-R01-F'*.

The day, evening and night time ambient noise levels measured during the unattended survey are presented in Table 1 for logger position L1, 1 m from the facade of Centre Point Tower.

Table 1 Ambient noise levels measured during the survey at logger position L1

Date	Daytime (07:00 – 19:00) $L_{Aeq,12h}$ (dB)	Evening (19:00 – 23:00) $L_{Aeq,4h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
Thursday 19/01/2012	-	70	69
Friday 20/01/2012	73	72	71
Saturday 21/01/2012	71	70	70
Sunday 22/01/2012	69	69	67
Monday 23/01/2012	71	71	68
Tuesday 24/01/2012	73	71	68

The minimum background noise levels measured during the unattended survey are given in Table 2 for logger position L1, 1 m from the facade of Centre Point Tower.

Table 2 Minimum background noise levels measured during the survey at logger position L1

Date	Daytime (07:00 – 19:00) $L_{A90,15min}$ (dB)	Evening (19:00 – 23:00) $L_{A90,15min}$ (dB)	Night (23:00 – 07:00) $L_{A90,15min}$ (dB)
Thursday 19/01/2012	66 *	64	61
Friday 20/01/2012	65	64	60
Saturday 21/01/2012	62	64	59
Sunday 22/01/2012	59	61	60
Monday 23/01/2012	65	63	60
Tuesday 24/01/2012	65	64	61
Wednesday 25/01/2012	66 *	-	-

* Measurement not made over full period due to logger start and end time.

The lowest background noise levels measured at logger position L1 during the survey were $L_{A90,15min}$ 59 dB during the day, $L_{A90,15min}$ 61 dB during the evening and $L_{A90,15min}$ 59 dB at night.

The day, evening and night time average noise levels measured during the unattended survey are presented in Table 3 for logger position L2, adjacent to Centre Point House overlooking Earnshaw Street.

Table 3 Ambient noise levels measured during the survey at logger position L2

Date	Daytime (07:00 – 19:00) $L_{Aeq,12h}$ (dB)	Evening (19:00 – 23:00) $L_{Aeq,4h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
Thursday 19/01/2012	-	65	64
Friday 20/01/2012	65	64	63
Saturday 21/01/2012	62	62	62
Sunday 22/01/2012	62	61	62
Monday 23/01/2012	64	61	60
Tuesday 24/01/2012	65	62	61

The minimum background noise levels measured during the unattended survey are given in Table 4 for logger position L2.

Table 4 Minimum background noise levels measured during the survey at logger position L2

Date	Daytime (07:00 – 19:00) $L_{A90,15min}$ (dB)	Evening (19:00 – 23:00) $L_{A90,15min}$ (dB)	Night (23:00 – 07:00) $L_{A90,15min}$ (dB)
Thursday 19/01/2012	60 *	58	54
Friday 20/01/2012	59	57	54
Saturday 21/01/2012	56	56	54
Sunday 22/01/2012	54	54	54
Monday 23/01/2012	57	54	54
Tuesday 24/01/2012	59	55	53
Wednesday 25/01/2012	58 *	-	-

* Measurement not made over full period due to logger start and end time.

The lowest background noise levels measured at logger position L2 during the survey were $L_{A90,15min}$ 54 dB during the day, $L_{A90,15min}$ 54 dB during the evening and $L_{A90,15min}$ 53 dB at night.

6 Building services noise egress limits

6.1 Planning condition

Planning condition 19 for the wider Centre Point development ref: 2017/09941P, relates to the noise from plant and states:

> *Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (LA90), 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 10dB(A) below the LA90, expressed in dB(A).*

6.2 Overall plant noise limits

Based on the previous noise survey undertaken at the site and the condition requirement for all plant not to exceed a level 5 dB below the background noise level 1 m from the facade of the nearest noise sensitive receiver the maximum plant noise levels are given in Table 5. The plant noise limit applies to the total noise from all plant associated with the development. The levels are given as free-field sound pressure levels.

Table 5 Maximum cumulative noise egress levels from new plant at 1m from nearest receiver windows

Time	Maximum cumulative noise egress level from plant
Daytime (07:00 to 23:00)	$L_{Aeq,15min}$ 49 dB
Night-time (23:00 to 07:00)	$L_{Aeq,15min}$ 48 dB

6.3 Unit R05 plant noise limits

Specific plant noise limits for unit R05 were determined at Centre Point House and Mathilda Apartments at the time of the original development to ensure that their contribution is compatible with the overall plant noise limits for the Centre Point development (set out in condition 19 above). These account for the contribution of noise from the landlord plant and allowances for contribution from the other tenanted units at the location of the receivers that will be worst affected by the proposed plant. These limits are set out in Table 6 and Table 7, respectively and are given as free-field sound pressure levels. Details of the landlord installed plant to partially discharge condition 17 of planning permission 2017/0994/P was approved via application ref: 2017/6980/P, dated 7 March 2018.

Table 6 Maximum cumulative noise egress levels from R05 tenant plant at 1m from Centre Point House (free field)

Time	Maximum cumulative noise egress level from plant
Daytime (07:00 to 23:00)	$L_{Aeq,15min}$ 38 dB
Night-time (23:00 to 07:00)	$L_{Aeq,15min}$ 37 dB

Table 7 Maximum cumulative noise egress levels from R05 tenant plant at 1m from Mathilda Apartments (free field)

Time	Maximum cumulative noise egress level from plant
Daytime (07:00 to 23:00)	$L_{Aeq,15min}$ 35 dB
Night-time (23:00 to 07:00)	$L_{Aeq,15min}$ 34 dB

7 Plant noise assessment

7.1 Proposed items of building services

The locations of all new proposed mechanical building services have been taken from the drawings provided by Sweco, the building services consultant, titled *'709-MICA-CH-1M-DR-A-SK005'* for the Level 1 mezzanine plant room and *'F301-50-CPH-02-103'* for the Level 2 plant room.

The following plant items are proposed to be installed within the internal plant rooms:

- Air handling unit
- Toilet extract fan

The AHUs are highlighted in red, and the toilet extract is highlighted blue in Figure 2 and Figure 3.

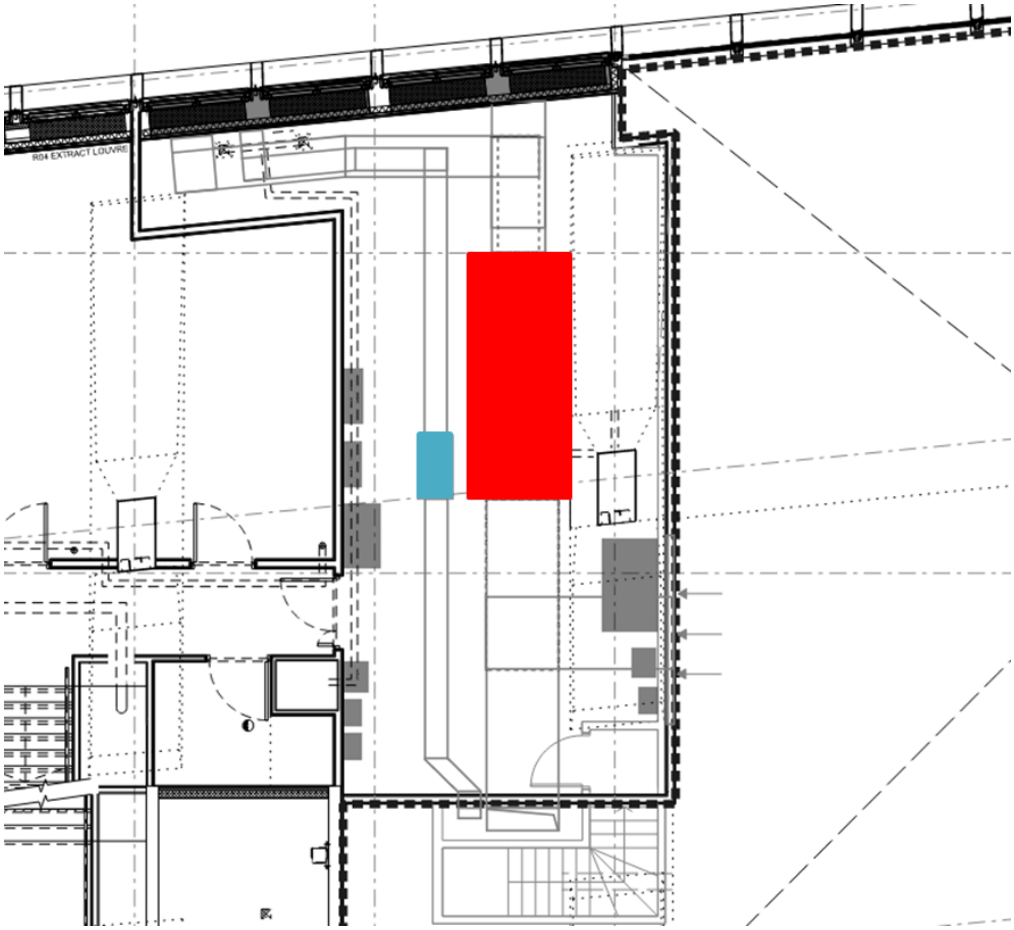

Figure 2 Indicative plant arrangement – Level 1 mezzanine

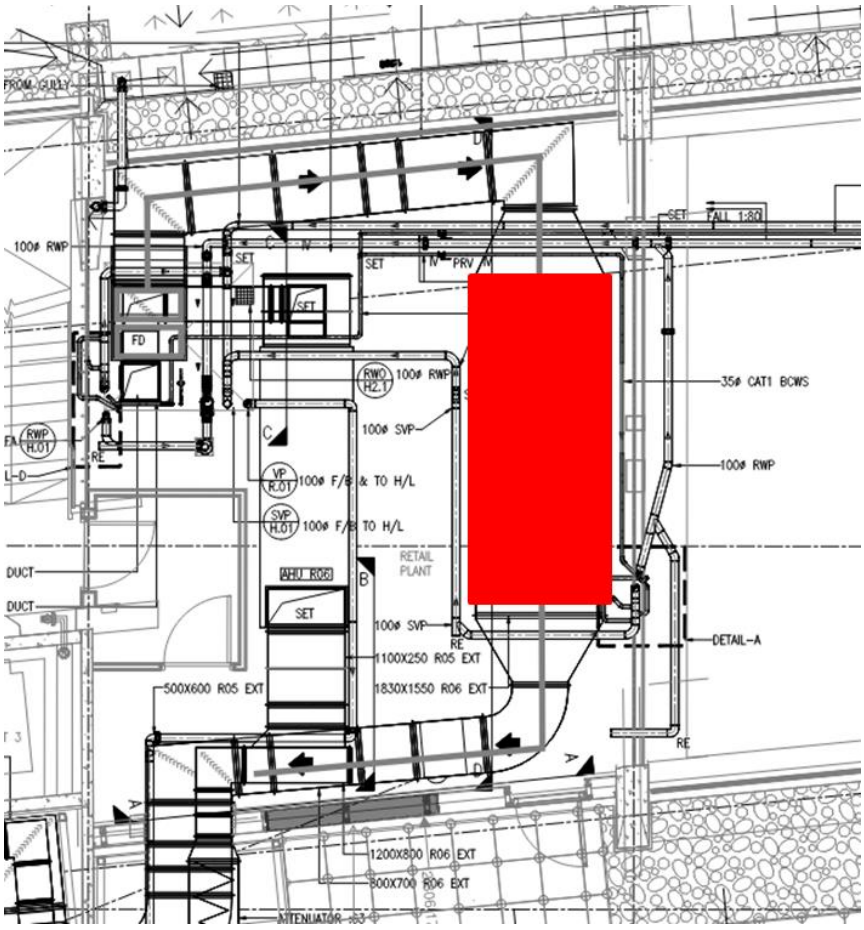

Figure 3 Indicative plant arrangement – Level 2 plant room

Manufacturers octave band noise data for the proposed AHUs has been provided by the building services consultant and is provided in Table 8. Manufacturers noise data has not been provided for the toilet extracts, therefore octave band noise data has been taken from Sandy Brown's library database and is provided in Table 9.

Table 8 Proposed mechanical building services - Manufacturers octave band noise data (dB)

Item	Octave band centre frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
AHU 1 (Level 1 mezzanine)									
Inlet (Max sound power level) dB	60	70	69	61	53	45	38	33	63
Outlet (Max sound power level) dB	71	77	73	76	73	70	67	62	78
AHU 2 (Level 2 plant room)									
Inlet (Max sound power level) dB	-	66	70	76	82	83	78	72	87
Outlet (Max sound power level) dB	-	71	77	87	88	88	81	75	93

Table 9 Indicative mechanical building services – Toilet extracts octave band noise data (dB)

Item	Octave band centre frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
Toilet extract									
Total (Max sound power level) dB	79	74	68	69	65	62	58	56	71

7.2 Assessment

The noise levels generated as a result of the operation of the above plant have been determined 1 m from the facade of the worst affected residential receivers, as identified above.

For the purposes of the assessment, it is considered that all normal operating plant has the potential to operate during the night-time.

Calculations have been undertaken to predict noise levels at the worst affected noise sensitive receptors resulting from the cumulative operation of all new proposed building services plant.

Distance attenuation has been based on the geometric spreading of sound power. Barrier attenuation has been determined using Maekawa's method.

Based on the proposed plant arrangement, to achieve the plant noise limits identified in Section 6.3, in-duct attenuators are required to be provided to the AHU supply and extract ductwork for AHU 1 and supply ductwork for AHU 2. The minimum required performances for the attenuators are set out in Table 10.

No specific attenuation measures are required for the toilet extract fan.

Table 10 Minimum attenuator insertion losses

	Octave-band centre frequency (Hz)								Typical length (mm)
	63	125	250	500	1k	2k	4k	8k	
AHU 1 (Level 1 mezzanine)									
Inlet minimum insertion loss (dB)	3	5	10	17	19	12	8	6	900
Maximum inlet regenerated noise levels (dB)	46	54	48	26	36	36	25	14	900
Outlet minimum insertion loss (dB)	2	5	10	17	17	13	10	8	900
Maximum outlet regenerated noise levels (dB)	54	57	48	44	41	42	42	39	900
AHU 2 (Level 2 plant room)									
Inlet minimum insertion loss (dB)	8	11	18	32	42	33	22	11	1200
Maximum inlet regenerated noise levels (dB)	40	36	40	36	37	45	40	21	1200

With the mitigation measures provided, the noise levels resulting from the operation of the plant will achieve the plant noise limits at all locations.

8 Conclusion

Sandy Brown has been commissioned to provide a plant noise assessment in relation to use of the site as Class E (Business, Commercial and Services) and associated physical works. This report provides an assessment of the introduction of new ventilation plant to be installed to serve the office as part of this.

Overall plant noise limits for the redevelopment of the wider site were conditioned as part of the original permission ref: 2017/09941P. These limits were apportioned between the different areas of the redevelopment and determined based on the results of the noise survey for the Centre Point redevelopment and the planning condition imposed on the development. The required mitigation measures have been determined to achieve the plant noise limits for unit R05.

Based on the proposed plant selection and arrangement, to ensure that these plant noise limits are achieved, in-duct attenuators are required for the AHUs. The required performances have been determined and are presented in this report. Proprietary in-duct attenuators that achieve the minimum insertion losses detailed in this report will be installed to ensure that the plant limits are achieved