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Environmental Noise Survey Report

Flats 35 & 38, Imperial Court

55 – 56 Prince Albert Road

London NW8 7PT

Client:

Stern Thom Fehler Architects

40 Ossultan way

London N2 0DS

On Behalf:

Mr Geoffrey Klass

35 Imperial Court

55-56 Prince Albert Road

London NM8 7PT

Date:

16th March 2020

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1.0 Description

Imperial House fronts on to Prince Albert Road, and is flanked by Townsend Road to the South and Avenue Road to the North. Flat 38 is immediately above flat 35, on the 3rd / 4th floors, North/West corner, overlooking Avenue Road.

Permission is being sought to install comfort cooling/heating, air conditioning. This will entail the installation of small condensers or heat pumps, one on each balcony, serving the internal air conditioning units.

The nearest possible point with direct line of site, is a similar size block of apartments on the opposite side of Avenue Road, approximately 50 meters distant. To the rear of Imperial Gardens a block of apartments is similarly approximately 50 meters distant.

The flats adjacent in Imperial Court, (flats 34 on the 3rd floor and flat 37 on the 4th floor) are probably the nearest windows and point of concern. In either case they are windows to living rooms. Bedrooms of the adjacent flats are to the front fascia of Imperial Court, overlooking Prince Albert Road. The nearest openable windows, are the sliding door to the balcony of each flat.

2.0

Brief

To carry out a 24 hour sound level survey to establish the existing ambient noise levels.

To carry out calculations to assess the possible effect of noise, due to the proposed condensers, in accordance with local authority requirements.

To present a report for planning purposes, showing results of the survey, calculations and any attenuation measures if deemed necessary.

3.0 Survey

3.1 Time and Date

Tuesday 3rd March 2020 through to Wednesday 4th March 2020

3.2 Weather

Fine, mostly dry with little wind interference. Possible light rain during night.

3.3 Instrumentation

Rion NL32 Sound Pressure Level and Data Logging meter

Rion NC74 Acoustic Calibrator

Rion weatherproof casing and microphone extension pole.

The meter holds present calibration certificates. Hand calibration was carried out both prior to and following the survey. No slippage was recorded.

3.4 Method

The sound level meter is situated in a purpose made weatherproof casing, with a 1.5 meter extension 'pole' for the microphone. The whole case was positioned on the balcony of flat 35, adjacent to the position proposed for the new condensers.

The meter was programmed to run continuously, logging percentile dBA readings in LAeq, LAm_{ax}, LA_{min}, LA10 & LA90 dB, averaged every 15 minutes throughout the survey period.

4.0 Results

The results are shown tabulated on the attached addendum 'A'.

Lowest day time reading: 57.6 LA90 (15 mins) at 21.36 hours

Lowest night time reading: 36.7 LA90 (15 mins) at 2.51 hours.

Day Time 67.3 LAeq (16 hours)

Night Time 60.4 LAeq (8 hours)

WHO Recommended External Level 40 LAeq (8 hours)

5.0

Plant Description

The proposed condenser/heat pump is a Fujitsu model AYO30LAT4. These have a noise rating 51 dBA when measured at 1 meter from the unit and central to the fan outlet.

The unit is inverter driven, meaning a soft start and obviating any likely problems associated with intermittency.

Tonal noise would not be anticipated, and is not associated with this unit.

Both the fan and compressor will be mounted on purpose made anti vibration mountings to eliminate structure borne noise.

6.0 World Health Organisation (WHO) BS8233:2014 & BS4142:2019

The local authority has recommended reference to BS8233:2014 for “guidance for commercial design criteria”. BS8233 generally refers to guidelines compiled by the World Health Organisation.

BS8233 is predominantly intended for the design and build of new buildings, and mainly centres on the creation of internal living conditions, making sure the building envelope is built to attenuate external noise. The revised version is described as ‘for guidance only, similar to WHO recommendations.

To this end, the ambient noise level requirement in bedrooms is set at 35 dB LAeq (16 hours) day time and 30 dB LAeq (8 hour) night time

As far as we are aware, no recommendations for external design criteria are shown. However, paragraph 6.5.2 ‘Assessment of industrial noise’ refers to BS4142 for the determination of a rating level at the outside of the building.

We have also been asked to demonstrate predicted noise levels due to the condensers will comply with their standard limits, and that these are normally 10dB below the lowest background LA90 (15 mins). This is conversant with BS4142.

7.0 Calculation

For the purposes of our calculation, we have assumed the proposed location for the condensers will be adopted. No bedroom windows are involved, and we have used a point, 1 meter from the sliding doors of the living room, as the nearest point of concern.

Being on the same fascia as the units, there will be an attenuation effect due to directivity

The units have a published sound pressure level 52 dBA at full power, when measured at 1 meter, in a non reverberant field. We have converted this to a Power Level PWL re 10^{-12} watts ($PWL = SPL + 20\log r + 8$) in a hemispherical condition. This equates to 60 dB.

Level due to condenser (PWL re 10^{-12} watts)		60 *
Distance 9 meters	-	29 ¹
Addition of two units	+	3
Rating Level		34
Lowest Measured Background Level		40.3 LA90 (15 mins)
WHO Recommended Level Within Living Room		35 LAeq (8 hours)

If WHO levels adopted, the internal level, due to the condensers, will be subject to a 15 dB reduction due to directivity, when sliding doors are open. The resultant level within the living room will be 19 dB.

- = specific noise level

$$1 \quad SPL = PWL - 20\log r - 8$$

Levels due to the condenser will be 6.3 dB below the measured LA90.

The levels will also be 15 dB below the recommended WHO guidelines for internal living areas.

8.0

Observations

We have not considered other buildings in the vicinity, due to their distance away.

This is a noisy area due to traffic, with busy roads almost surrounding the building. The background noise levels are typically high for all bar approximately 30 minutes during the night. The condensers will not be above background, even on the balconies, which we are sure will be utilised mainly during the day and early evening.

There are no bedrooms which will be affected due to noise from the condensers.

It should also be noted that levels due to the condensers are when they are operating on high, a state that is rarely met in this country.

9.0

Recommendations

Our calculations indicate that levels due to both condensers operating simultaneously, will be 6 dB below the guidelines external to a bedroom window. As the bedrooms in this instance are shielded (acoustically) from noise due to the condensers, our only point of concern is the living areas in adjacent flats, where there would normally be a slightly higher design requirement. This is also suggested in ENV 7 of the Unitary Development Plan, where 5 dB below may be acceptable where low noise levels are concerned.

Equally, we have referred to BS 8233 where internal levels are covered and WHO recommendations are utilised for guidance. The levels due to the condensers will be considerably below the recommendations.

We recommend the proposals are accepted in this instance.

Should the proposals be considered unacceptable, then attenuation will require to be applied. This would need to be no more than a screen in front of the units on each balcony, between the units and the adjacent flats. This has no need to be particularly acoustic, but would be a decorative screen or dense plants. Dimensions should be at least 300 mm higher and 300 mm wider than the condenser, in that plane.

10.0 Uncertainty

There is uncertainty in any survey. However, we had no reason to believe this particular period of time would differ in any way, save perhaps the weather. On this particular day and night, the weather was benign, having very little if any, effect to the measurements.

The meter is a class 1 meter, properly calibrated, with no reason to mistrust the results.

11.0 Conclusion

In conclusion, we reiterate it is our opinion the condensers, once installed, will give no cause for complaint. We recommend the proposal is accepted.

Report Ends

John Lesser
John Lesser and Partners

Addendum 'A'

Environmental Noise Survey

Flat 35 & 38 Imperial Court, Prince Albert Road, NW8 7PT

Ref: 20902

Day Time Readings

Addresses	Time	LAeq	LAmAx	LAmi n	LA10	LA90
1	3/3/2020 10:36	66.9	85.2	57.3	69.2	63.1
2	3/3/2020 10:51	68	82.9	60.4	70.5	63.9
3	3/3/2020 11:06	66.8	78.3	57.2	69.2	62.3
4	3/3/2020 11:21	68.9	86.7	56.2	69.2	62.2
5	3/3/2020 11:36	66.8	77.5	56.3	69.3	62.4
6	3/3/2020 11:51	66.9	78	57	69.6	62.4
7	3/3/2020 12:06	69.3	88.5	56.9	69.9	62.1
8	3/3/2020 12:21	67.3	78.2	60.2	69.7	63.8
9	3/3/2020 12:36	73.8	91.9	58.4	70.3	63.5
10	3/3/2020 12:51	67.8	81.2	59.4	70.1	63.9
11	3/3/2020 13:06	66.9	79.9	56.4	69.6	62.4
12	3/3/2020 13:21	67.8	83.2	58.5	70.5	63.1
13	3/3/2020 13:36	67.6	86.7	58.4	70	62.9
14	3/3/2020 13:51	68.9	89	57.3	70.4	62.2
15	3/3/2020 14:06	69.8	90.7	56.9	71.2	62.9
16	3/3/2020 14:21	66.8	82.8	58.3	69.3	62.6
17	3/3/2020 14:36	67.4	79	56	70	61.9
18	3/3/2020 14:51	69.3	88.4	56.7	70.1	61.7
19	3/3/2020 15:06	67	78.6	56.2	69.4	61.6
20	3/3/2020 15:21	72.2	92.6	58.4	70.6	62.4
21	3/3/2020 15:36	67	82.5	56.5	69.4	63
22	3/3/2020 15:51	67.2	81.3	57.1	69.6	62.9
23	3/3/2020 16:06	69.4	90.6	57	70.6	62.8
24	3/3/2020 16:21	67	84.2	57.7	69.2	62.6
25	3/3/2020 16:36	67	82.1	55.3	69.4	61.8
26	3/3/2020 16:51	66.6	80.2	56.4	69	62.4
27	3/3/2020 17:06	67.4	80.9	58	70	62.1
28	3/3/2020 17:21	68.2	89.1	56.4	69.4	61.8
29	3/3/2020 17:36	66.9	82.1	57.3	69.1	62.4
30	3/3/2020 17:51	67.4	87	58.1	69.2	61.7
31	3/3/2020 18:06	66.8	81.4	57.4	69.3	61.9
32	3/3/2020 18:21	66.2	78.6	54.4	68.6	61.8
33	3/3/2020 18:36	67.8	89.1	58.2	69.2	62.5
34	3/3/2020 18:51	67.3	86.5	58.5	69.5	61.8
35	3/3/2020 19:06	66	80.5	57.4	68.8	61.8
36	3/3/2020 19:21	65.6	84.2	55.8	68.4	61.1
37	3/3/2020 19:36	66.3	83.6	56.2	68.8	60.8
38	3/3/2020 19:51	66	79.5	53.2	68.9	60.7

39	3/3/2020 20:06	69.3	90.8	55.7	69.5	61.1
40	3/3/2020 20:21	66.2	87.1	55.4	68.2	60.2
41	3/3/2020 20:36	65.8	79.8	52.7	68.8	59.3
42	3/3/2020 20:51	65.4	75.6	54.5	68.4	59.8
43	3/3/2020 21:06	65.1	78.8	53.1	68.4	58.9
44	3/3/2020 21:21	69.7	91.4	52.5	68	58.9
45	3/3/2020 21:36	64.5	82.7	52.4	67.7	57.6
46	3/3/2020 21:51	65.5	81.1	53.4	68.4	58.6
47	3/3/2020 22:06	65.4	73.9	52.1	68.8	58.3
48	3/3/2020 22:21	65.4	76	53.4	68.8	58.2
49	3/3/2020 22:36	65.3	83.2	50.9	68.1	58.4
50	3/3/2020 22:51	64.1	72.5	52.4	67.8	56.8

Night Time Readings

		Laeq	Lamax	Lamin	LA1 0	LA9 0
51	3/3/2020 23:06	63.7	78.9	50.7	67.2	55.5
52	3/3/2020 23:21	64.6	83.5	50.8	67.5	54.4
53	3/3/2020 23:36	63.2	71.8	48.2	67.2	54.4
54	3/3/2020 23:51	62.5	72.2	44.5	66.5	54.2
55	3/4/2020 0:06	61.7	76.3	44.1	65.7	49.6
56	3/4/2020 0:21	60.6	75.2	46.6	64.8	51.8
57	3/4/2020 0:36	60.2	72.2	41.2	64.5	49.9
58	3/4/2020 0:51	60	71	42.7	64.4	49.3
59	3/4/2020 1:06	61.9	87.4	43.9	64.4	49.1
60	3/4/2020 1:21	58	72.1	39	62.8	45.9
61	3/4/2020 1:36	57.4	71.5	39.8	61.8	44
62	3/4/2020 1:51	57.8	75.8	36.7	62.1	41
63	3/4/2020 2:06	57.1	77.4	37.2	60.6	43
64	3/4/2020 2:21	56.9	72.5	36.9	61.1	40.3
65	3/4/2020 2:36	57.2	72.2	35.2	61.2	40.4
66	3/4/2020 2:51	56.3	75.4	34.4	60.8	41
67	3/4/2020 3:06	56.7	68.5	35.1	61.9	40.3
68	3/4/2020 3:21	56.8	69.6	36.1	61.2	41.8
69	3/4/2020 3:36	54.9	69.6	35.1	59.1	41.1
70	3/4/2020 3:51	58	74.1	35.8	61.2	43.4
71	3/4/2020 4:06	57.1	73.9	35.8	60.9	41.9
72	3/4/2020 4:21	57.1	70.4	37.4	61.5	45.7
73	3/4/2020 4:36	59.7	76.7	37.4	63.4	46.7
74	3/4/2020 4:51	58.8	74.2	37.8	62.4	47.1
75	3/4/2020 5:06	59.7	74.3	44.4	63.4	49.8
76	3/4/2020 5:21	60.3	73.7	45.1	64.1	51.8
77	3/4/2020 5:36	62.4	75.4	46.5	66.4	53.6
78	3/4/2020 5:51	62.2	71.4	47.5	66	53.9
79	3/4/2020 6:06	63.6	77	50	66.6	57.1
80	3/4/2020 6:21	64.7	84.2	51.5	66.9	59.4

81	3/4/2020 6:36	66.1	80.8	54.3	68.3	60.6
82	3/4/2020 6:51	66.7	79.7	58.5	69	62.6
83	3/4/2020 7:06	67	81.7	57.1	68.8	62.4
84	3/4/2020 7:21	67.4	82	58.2	69.8	62.9

Day Time Readings

		Laeq	Lamax	Lamin	LA1 0	LA9 0
85	3/4/2020 7:36	67.7	82.2	60	69.7	63.2
86	3/4/2020 7:51	67.3	81.5	57.2	70	62.7
87	3/4/2020 8:06	68.4	85.1	59.6	70.4	63.1
88	3/4/2020 8:21	68.4	83.1	58.1	70.4	63.9
89	3/4/2020 8:36	67.9	79.6	59	70.4	63.8
90	3/4/2020 8:51	68.8	83.2	55.5	71.4	63
91	3/4/2020 9:06	67.9	80.8	56.9	70.7	62.6