



**COMPARISON OF ACCOUSTIC PERFORMANCE
OF
EXISTING AND NEW CONDENSING UNITS
AT
107 GRAYS INN ROAD**



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Consulting Engineers

**Dunwoody LLP
Dunwoody House
396 Kenton Road
Harrow
Middlesex
HA3 9DH**



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1.0 INTRODUCTION

This report details a comparison of the acoustic performance between the existing and new equipment resulting from the proposed refurbishment.

The existing air conditioning to the building is provided by a series of split cooling and heat pump units. The condensing units forming part of the air conditioning system are generally mounted on the rear wall facing the backyard and adjacent residential properties.

The new design has been undertaken with a view to re-utilise the existing equipment but to also reduce the noise emitted from the systems.



2.0 ASSESSMENT

For the purposes of comparison it has been assumed that the receiver will be 10m from the plant at a point that is central to the new and existing plant.

The plant has been grouped prior to distance factors being applied.

For the existing plant

- Group 1 consists the most northerly (left hand side looking at the rear elevation) double fan unit.
- Group 2 consists the next seven units running north to south
- Group 3 consists the next three units including the 2 double fan condensers.
- Group 4 consists the most southerly units

For the new plant

- Group 1 consists the units on top of the existing plant room located behind the new screen.
- Group 2 consists those units relocated on the rear wall.

The resultant noise level has been calculated as a resultant level from each of the groups.

No allowance has been made for the screening of the new plant on the boiler room roof.

The calculations are contained within Appendix A.



3.0 RESULTS

The resultant Sound Power level at the closest adjacent property from the existing plant installation has been calculated as 54.0dB(A)

The resultant Sound Power level at the closest adjacent property from the new plant installation has been calculated as 51.7dB(A)

The analysis shows that there has been reduction of 2.3dB(A) from the plant noise as a result of the new proposal.



APPENDIX A
ASSESSMENT OF NOISE GENERATED BY EXISTING AND NEW CONDENSING UNITS



ASSESSMENT OF NOISE GENERATED BY EXISTING CONDENSING UNITS

Group 1 Sources										
	1	2	3	4	5	6	7	8		
dB(A)	63	0	0	0	0	0	0	0	63.0	dB(A)
Noise reduction with distance										
SPL (R1)	63.0 dB of source at distance R1									
R1	1 distance to receiver for SPL									
R2	15 distance to new receiver									
SPL (R2)	39 dB									
Group 2 Sources										
	1	2	3	4	5	6	7	8		
dB(A)	63	63	63	63	63	63	56	0	70.9	dB(A)
Noise reduction with distance										
SPL (R1)	70.9 dB of source at distance R1									
R1	1 distance to receiver for SPL									
R2	10 distance to new receiver									
SPL (R2)	51 dB									
Group 3 Sources										
	1	2	3	4	5	6	7	8		
dB(A)	66	66	63	0	0	0	0	0	70.0	dB(A)
Noise reduction with distance										
SPL (R1)	70.0 dB of source at distance R1									
R1	1 distance to receiver for SPL									
R2	10 distance to new receiver									
SPL (R2)	50 dB									
Group 4 Sources										
	1	2	3	4	5	6	7	8		
dB(A)	63	63	63	56	56	0	0	0	68.3	dB(A)
Noise reduction with distance										
SPL (R1)	68.3 dB of source at distance R1									
R1	1 distance to receiver for SPL									
R2	18 distance to new receiver									
SPL (R2)	43 dB									
Total at receiver										
Total										
	1	2	3	4	5	6	7	8		
dB(A)	39	51	50	43	0	0	0	0	54.0	dB(A)



ASSESSMENT OF NOISE GENERATED BY NEW CONDENSING UNITS

Addition of Noise Sources										
Group 1 Sources										
	1	2	3	4	5	6	7	8		
dB(A)	64	64	56	56	0	0	0	0	67.6	dB(A)
Noise reduction with distance										
SPL (R1)	67.6 dB of source at distance R1									
R1	1 distance to receiver for SPL									
R2	15 distance to new receiver									
SPL (R2)	44 dB									
Group 2 Sources										
	1	2	3	4	5	6	7	8		
dB(A)	66	66	63	63	56	0	0	0	70.9	dB(A)
Noise reduction with distance										
SPL (R1)	70.9 dB of source at distance R1									
R1	1 distance to receiver for SPL									
R2	10 distance to new receiver									
SPL (R2)	51 dB									
Total at receiver										
Total										
	1	2	3	4	5	6	7	8		
dB(A)	44	51	0	0	0	0	0	0	51.7	dB(A)