



NOISE IMPACT STUDY
FOR
PLANNING
AT
MANCHESTER METROPOLITAN UNIVERSITY -
00412 ROBOTICS LIVING LABORATORY
(PHASE 2)

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1.0 INTRODUCTION

This report has been prepared by the Pettit Singleton Associates Ltd on behalf of Bennett Associates to accompany the planning application for the proposed development at Manchester Metropolitan University, Cavendish Building, Robotics Living Lab Phase 2.

The proposal comprises of alterations to an existing landscape in an external courtyard and new timber frame pavilion building for exhibition and teaching spaces.

This report reviews the acoustic impact of an additional air source heat pump adjacent existing equipment in the courtyard area.

2.0 EXISTING INSTALLATION

The existing equipment in the courtyard consists of the following equipment: -

2 No. Mitsubishi Electric MUZ-SF25VE	Peak SPL 48dBA
Airedale ECL080*A*****	Peak SPL 38dBA
Mitsubishi Electric PUHZ-ZRP100VKA	Peak SPL 51dBA
Mitsubishi Electric PURY-P250YNW-A2	Peak SPL 61dBA

SPL - Sound Pressure Level

To calculate the total sound pressure level, I have used an online calculator on the following link <https://www.wkcgroup.com/tools-room/logarithmic-addition-sound-pressure-levels/>

We have an existing total sound pressure level of **61.81dBA** (see screen shot following)

Logarithmic Addition of Sound Levels

In order to determine the resultant sound pressure level (SPL) of multiple sources the SPLs must be added logarithmically. This calculation assumes that the SPL of each source running in isolation is known at a given measurement point.

The total sound pressure level can be calculated using the following formula:

$$SPL_{Total} = 10 \cdot \log_{10} [10^{SPL1/10} + 10^{SPL2/10} + 10^{SPL3/10} \dots + 10^{SPLN/10}] \text{ (dB)}$$

Where SPL1 to SPLN are the separate sound pressure levels, and N is the total number of separate noise levels.

Select Number of Sources:

5 Sources

Sound Pressure Level 1 (dB)

48

Sound Pressure Level 2 (dB)

51

Sound Pressure Level 3 (dB)

61

Sound Pressure Level 4 (dB)

48

Sound Pressure Level 5 (dB)

38

Resultant Sound Level dB(A)

61.81

3.0 PROPOSED INSTALLATION

We are proposing to add a new reverse cycle air source heat pump as manufactured by Samsung or Systemair. The Samsung unit AE080RXYDEG has a peak sound pressure level of 48dBA

Adding this to the existing SPL we had previously equates to a new slightly higher SPL of **61.92** (See screenshot following).

Please note, this unit is oversized for the actual output required, it is unlikely to ever reach this noise level.

Logarithmic Addition of Sound Levels

In order to determine the resultant sound pressure level (SPL) of multiple sources the SPLs must be added logarithmically. This calculation assumes that the SPL of each source running in isolation is known at a given measurement point.

The total sound pressure level can be calculated using the following formula:

$$SPL_{Total} = 10 \cdot \log_{10} [10^{SPL1/10} + 10^{SPL2/10} + 10^{SPL3/10} \dots + 10^{SPLN/10}] \text{ (dB)}$$

Where SPL1 to SPLN are the separate sound pressure levels, and N is the total number of separate noise levels.

Select Number of Sources:

6 Sources ▼

Sound Pressure Level 1 (dB)

48

Sound Pressure Level 2 (dB)

50

Sound Pressure Level 3 (dB)

61

Sound Pressure Level 4 (dB)

48

Sound Pressure Level 5 (dB)

38

Sound Pressure Level 6 (dB)

48

Resultant Sound Level dB(A)

61.92