
PREPARED: 16 August 2024

# TGG LONDON 115 FINCHLEY ROAD

# PLANT NOISE IMPACT ASSESSMENT

CONTENTS



LIST OF ATTACHMENTS



| | | | |
|---|---|---|---|
| **Project Ref:** | AS13377 | **Project Name:** | TGG London 115 Finchley Road |
| **Report Ref:** | AS13377.240809.R1 | **Report Title:** | Plant Noise Impact Assessment |
| **Client Name:** | The Gym Ltd | | |
| **Project Manager:** | Ben Dymock | | |
| **Report Author:** | Ravee Long | | |
| Clarke Saunders Acoustics<br>Winchester SO22 5BE | This report has been prepared in response to the instructions of our client. It is not intended for and should not be relied upon by any other party or for any other purpose. | | |

## 1.0 EXECUTIVE SUMMARY

1.1 Clarke Saunder Acoustics have been instructed to assess a proposed plant scheme in accordance with the London Borough of Camden requirements.

1.2 Environmental noise survey data and manufacturer confirmed plant noise levels have been used to determine the noise levels from the proposed plant at the most affected receptors.

1.3 The risk level for the proposed plant has been determined as “Green” following the London Borough of Camden assessment methodology.

## 2.0 INTRODUCTION

2.1 Clarke Saunders Acoustics (CSA) have been instructed by The Gym Ltd to conduct an assessment of the proposed plant scheme at 115 Finchley Road against the criteria set out by the London Borough of Camden (LBC).

2.2 The plant scheme is to serve a proposed gym at 115 Finchley Road, which has existing commercial units at ground floor level, with extended units to the rear which encompasses ground floor and lower ground floor level.

2.3 Residential receptors are located at first floor, above the commercial units and additional residential demises surround the proposed units. The most affected receptor to the proposed plant scheme is located to the south on Dobson Close.

## 3.0 LOCAL AUTHORITY REQUIREMENTS

3.1 The LBC *‘Local Plan 2017’* refers to the *‘National Planning Policy Framework’* and *‘Planning Practice Guidance’* on the matter of noise impact assessment., stating the following:

*A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 ‘Methods for rating and assessing industrial and commercial sound’ (BS 4142) will be used. For such cases a ‘Rating Level’ of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion).*

3.2 The document also provides targeted numerical values broadly corresponding to the LOAEL and SOAEL effect levels, as shown in Table 3.1.

| Noise Significance Risk | Green LOAEL | Amber LOAEL to SOAEL | Red SOAEL |
|---|---|---|---|
| Camden Local Plan | ‘Rating level’ 10dB below background | ‘Rating level’ between 9dB below and 5dB above background | ‘Rating level’ greater than 5dB above background |

**Table 3.1** - Excerpt from LBC Local Plan 2017

3.3 The following description is also provided with regard to acceptability of the green, amber and red designations:

- Green – where noise is considered to be at an acceptable level.
- Amber – where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development.
- Red – where noise is observed to have a significant adverse effect.

## 4.0 ENVIRONMENTAL NOISE SURVEY

4.1 A survey of existing noise levels was undertaken at the location presented in the attached indicative site plan AS13377/SP1. Measurements of consecutive 5-minute $L_{Aeq}$, $L_{Amax}$, $L_{A10}$ and $L_{A90}$ sound pressure levels were taken between Wednesday 10th and Friday 12th January 2024.

4.2 The following equipment was used during the course of the survey:

- 1 no. Svantek data logging sound level meter type 971; and
- 1 no. Rion sound level calibrator type NC74.

4.3 The calibration of the sound level meter was verified before and after use. No significant calibration drift was detected.

4.4 The weather during the survey was noted on site at installation and retrieval of the meter. Overall conditions were suitable to determine the background levels during the survey period, from which the external plant sound criteria are set.

4.5 Measurements were made following procedures in BS 7445-2:1991 (ISO1996-2:1987) Description and measurement of environmental noise – Part 2: Acquisition of data pertinent to land use and BS 4142:2014 + A.1:2019 *Methods for rating and assessing industrial and commercial sound.*

## 5.0 RESULTS

5.1 Figures AS13377/TH1-TH2 show the $L_{Aeq}$, $L_{Amax}$, $L_{A10}$ and $L_{A90}$ sound pressure levels as time histories at the measurement position.

5.2 Table 5.1 provides a summary of the measured average noise levels and the typical background noise levels (derived as the 10th percentile of the $L_{A90}$ dataset) at the monitoring location during the survey.

| Monitoring Period | Typical Background $L_{A90,5mins}$ | Average Ambient $L_{Aeq,T}$ |
|---|---|---|
| Daytime<br>07:00 to 23:00 hours | 49 dB | 56 dB |
| Night-time<br>23:00 to 07:00 hours | 39 dB | 52 dB |

**Table 5.1** - Summary of environmental noise survey results

# 6.0 DISCUSSION

## 6.1 PROPOSED PLANT

6.1.1 It is understood that several mechanical plant items will provide heating / cooling and ventilation to the premises after fitout. Specific details, including unit numbers and manufacturer / model selections, will be at the preference of the design contractor but TGG currently anticipates the following, or a similar scheme:

- 1 no. Swegon air handling unit type Gold RX
- 6 no. Mitsubishi heat pump units type PUZ-M250YKA
- 1 no. Mitsubishi hot water heat pump unit type QAHV-N560YA

6.1.2 The manufacturer of the heat pump units has published sound pressure levels, measured at one metre. These data are presented in Table 6.1. It has been confirmed that PUZ-M250YKA units will operate with a night-time setback setting, which reduces the overall sound pressure level to $L_{Aeq,T}$ 58 dB.

| Unit | Frequency (Hz) | | | | | | | | dB(A) |
|---|---|---|---|---|---|---|---|---|---|
| | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | |
| PUZ-M250YKA, Heating | 72 | 63 | 62 | 61 | 55 | 53 | 49 | 43 | 62 |
| QAHV-N560YA | 71 | 58 | 59 | 56 | 52 | 49 | 44 | 39 | 58 |

**Table 6.1** - Heating plant sound pressure levels at 1 metre [dB ref. 20μPa]

6.1.3 The manufacturers of the air handling unit (AHU) have confirmed the following sound power levels detailed in Table 6.2. AHU levels assume operation at maximum duty.

| Unit | Frequency (Hz) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| Gold RX Intake | 75 | 74 | 72 | 59 | 57 | 55 | 50 | 49 |
| Gold RX Exhaust | 81 | 77 | 85 | 82 | 82 | 77 | 72 | 69 |
| Gold RX Casing | 73 | 65 | 58 | 62 | 47 | 46 | 43 | 46 |

**Table 6.2** - Ventilation plant sound power levels [dB ref. 10-12w]

6.1.4 The QAHV-N560YA and AHU unit will be installed internally within a dedicated lower ground floor plantroom that will be louvred through the southern façade of the building envelope.

6.1.5 The PUZ-M250YKA units will be installed externally along the south façade, these will be enclosed within individual acoustic enclosures.

## 6.2 ASSESSMENT

6.2.1 The most affected receptors with regards to the proposed plant louvre are the residential windows, approximately 10m to the south of units 115-121 Finchley Road, along Dobson Close.

6.2.2 The plant room housing the QAHV-N560YA and AHU unit will have an intake on the south façade that will be attenuated. The intake of the AHU within the plant room will be attenuated. The exhaust of the QAHV-N560YA and AHU unit will be ducted to the south and west facades respectively with in-duct attenuation. The minimum insertion losses of the attenuation for the plant room are detailed in Table 6.3.

| Minimum Insertion Losses | Frequency (Hz) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| Plant Room Intake | 7 | 11 | 18 | 32 | 40 | 40 | 36 | 33 |
| QAHV-N560YA Discharge | 9 | 16 | 24 | 37 | 48 | 50 | 50 | 38 |
| Gold RX Intake | 7 | 12 | 20 | 33 | 39 | 40 | 35 | 28 |
| Gold RX Discharge | 9 | 18 | 30 | 48 | 50 | 50 | 50 | 40 |

**Table 6.3** - Minimum insertion losses for plant room attenuation

6.2.3 The minimum insertion losses for the acoustic enclosure housing the PUZ-M250YKA units is detailed in Table 6.4.

| Minimum Insertion Losses | Frequency (Hz) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| PUZ-M250YKA Acoustic Enclosure | 6 | 10 | 14 | 20 | 30 | 33 | 30 | 22 |

**Table 6.4** - Minimum insertion losses for external acoustic enclosures

6.2.4 Acoustic calculations of plant noise to the receptors on Dobson Close considering distance losses, attenuation and directivity (where appropriate) and a night-time setback have been conducted.

6.2.5 Once mitigated it is considered that plant noise will not contain any notable characteristics at the local receptors and, therefore, no character penalties have been applied. The sound from plant is also considered congruous with the local soundscape considering the surrounding commercial, retail and pre-existing building services plant installations. The specific sound would therefore, equal the rating level as considered within the LBC local plan.

6.2.6 A summary of the results is presented below in Table 6.5.

| Monitoring Period | Predicted Plant Noise Levels $L_{Aeq,T}$ | Compared to Background | LBC Risk Level |
|---|---|---|---|
| Daytime<br>07:00 to 23:00 hours | 32 dB | -17 dB | Green |
| Night-time<br>23:00 to 07:00 hours | 29 dB | -10 dB | Green |

**Table 6.5** - Summary of Results of Acoustic Calculations

6.2.7 Results show that the plant noise levels fall under the “Green” risk level as determined by LBC criteria shown in Section 3.0.

6.2.8 A full summary of plant sound calculations is shown in Appendix B.

## 7.0 CONCLUSIONS

7.1 Clarke Saunders Acoustics have been instructed by The Gym Ltd to conduct an assessment of the proposed plant scheme at 115 Finchley Road against the criteria set out by the London Borough of Camden.

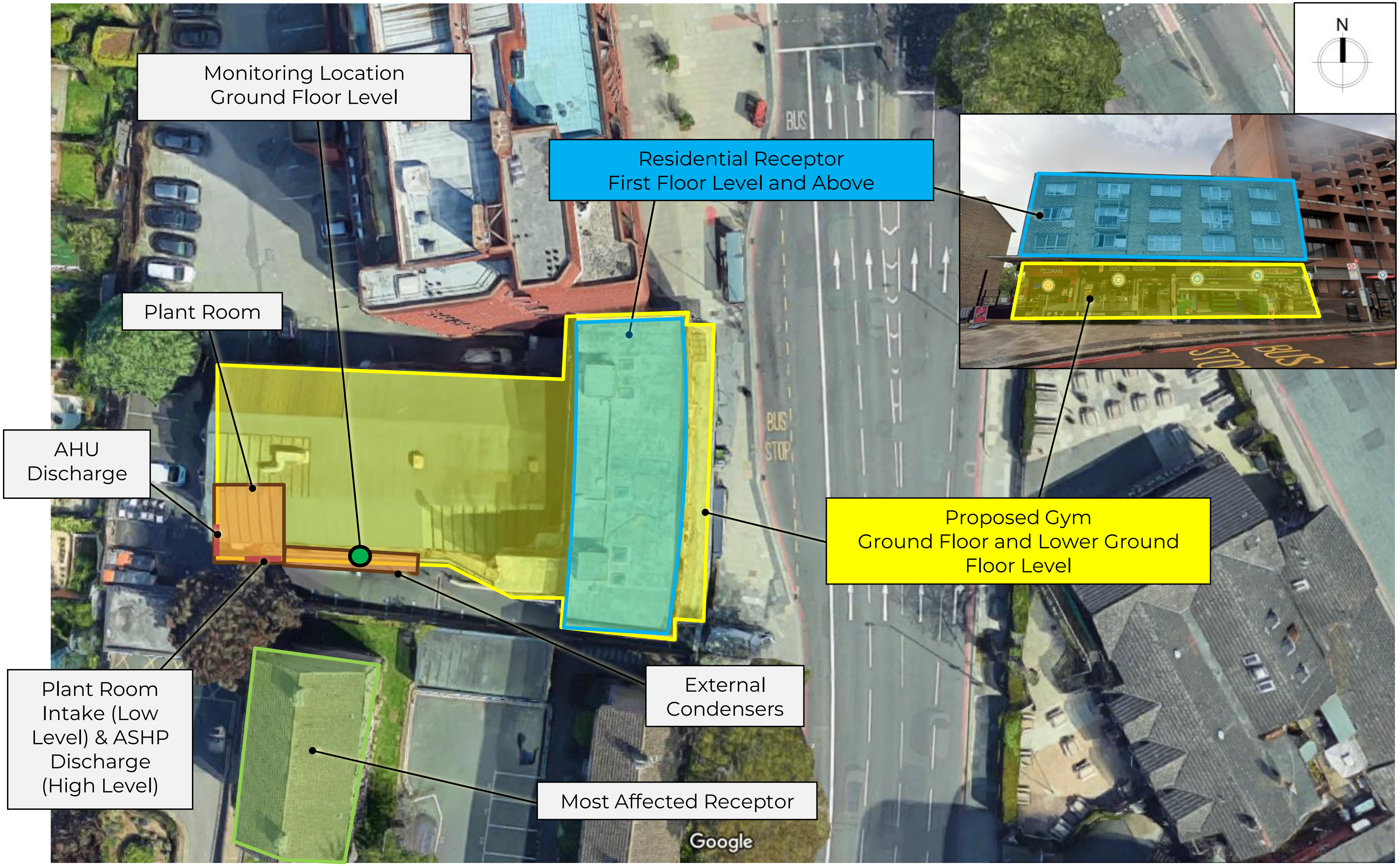
7.2 Environmental noise survey data and manufacturer confirmed plant noise levels have been used to determine the noise levels from the proposed plant at the most affected receptors located to the south on Dobson Close.

7.3 Attenuation and acoustic enclosures have been confirmed for the proposed plant scheme.

7.4 The risk level for the proposed plant have been shown to be “Green” following the London Borough of Camden assessment methodology.

7.5 No further mitigation measures are required.

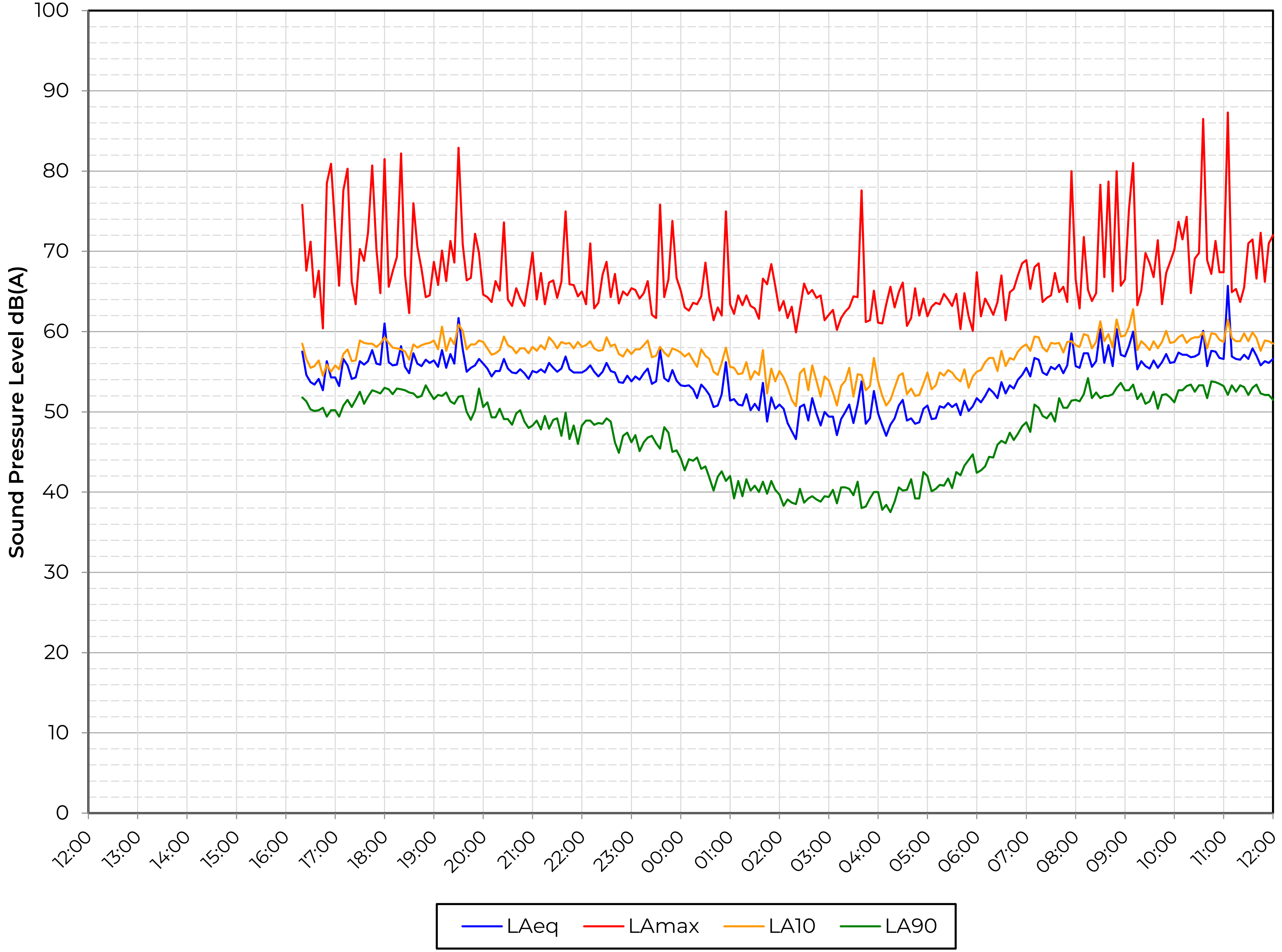
Ravee Long AMIOA
CLARKE SAUNDERS ACOUSTICS


N
Monitoring Location
Ground Floor Level
Residential Receptor
First Floor Level and Above
Plant Room
AHU
Discharge
Proposed Gym
Ground Floor and Lower Ground
Floor Level
External
Condensers
Plant Room
Intake (Low
Level) & ASHP
Discharge
(High Level)
Most Affected Receptor
Google
BUS
BUS
STOP

clarke saunders acoustics

TGG 115 Finchley Road

**Position 1**



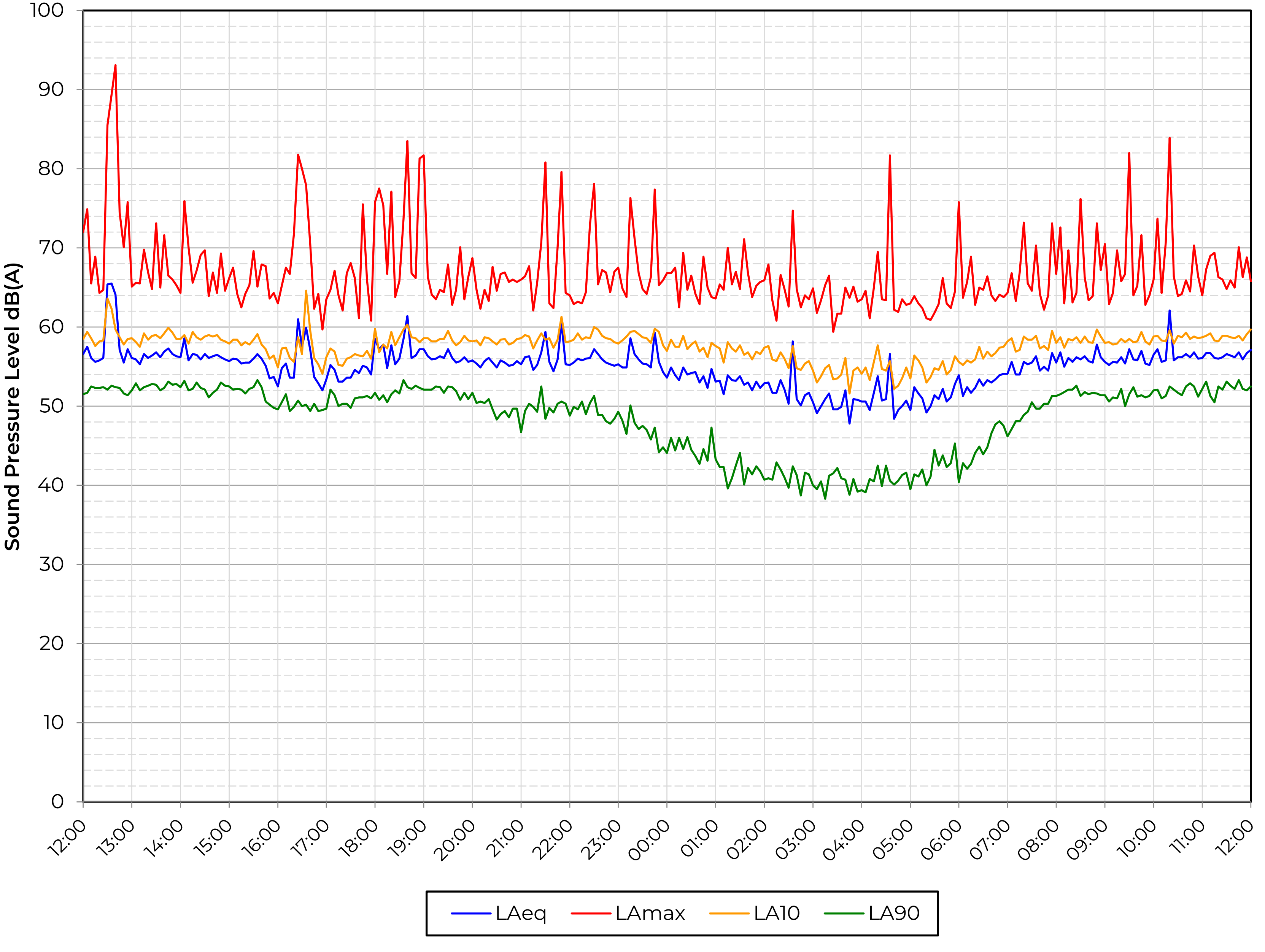

Wed 10 Jan to Thu 11 Jan

Figure AS13377/TH1

clarke saunders
acoustics

TGG 115 Finchley Road

## Position 1




Thu 11 Jan to Fri 12 Jan

Figure AS13377/TH2

## Acoustic Terminology

The human impact of sounds is dependent upon many complex interrelated factors such as 'loudness', its frequency (or pitch) and variation in level. In order to have some objective measure of the annoyance, scales have been derived to allow for these subjective factors.

| | |
|---|---|
| **Sound** | Vibrations propagating through a medium (air, water, etc.) that are detectable by the auditory system. |
| **Noise** | Sound that is unwanted by or disturbing to the perceiver. |
| **Frequency** | The rate per second of vibration constituting a wave, measured in Hertz (Hz), where 1Hz = 1 vibration cycle per second. The human hearing can generally detect sound having frequencies in the range 20Hz to 20kHz. Frequency corresponds to the perception of 'pitch', with low frequencies producing low 'notes' and higher frequencies producing high 'notes'. |
| **dB(A):** | Human hearing is more susceptible to mid-frequency sounds than those at high and low frequencies. To take account of this in measurements and predictions, the 'A' weighting scale is used so that the level of sound corresponds roughly to the level as it is typically discerned by humans. The measured or calculated 'A' weighted sound level is designated as dB(A) or $L_A$. |
| **$L_{eq}$:** | A notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 8 hour, 1 hour, etc).<br>The concept of $L_{eq}$ (equivalent continuous sound level) has primarily been used in assessing noise from industry, although its use is becoming more widespread in defining many other types of sounds, such as from amplified music and environmental sources such as aircraft and construction.<br>Because $L_{eq}$ is effectively a summation of a number of events, it does not in itself limit the magnitude of any individual event, and this is frequently used in conjunction with an absolute sound limit. |
| **$L_{10}$ & $L_{90}$:** | Statistical $L_n$ indices are used to describe the level and the degree of fluctuation of non-steady sound. The term refers to the level exceeded for n% of the time. Hence, $L_{10}$ is the level exceeded for 10% of the time and as such can be regarded as a typical maximum level. Similarly, $L_{90}$ is the typical minimum level and is often used to describe background noise.<br>It is common practice to use the $L_{10}$ index to describe noise from traffic as, being a high average, it takes into account the increased annoyance that results from the non-steady nature of traffic flow. |
| **$L_{max}$:** | The maximum sound pressure level recorded over a given period. $L_{max}$ is sometimes used in assessing environmental noise, where occasional loud events occur which might not be adequately represented by a time-averaged $L_{eq}$ value. |

## Octave Band Frequencies

In order to determine the way in which the energy of sound is distributed across the frequency range, the International Standards Organisation has agreed on "preferred" bands of frequency for sound measurement and analysis. The widest and most commonly used band for frequency measurement and analysis is the Octave Band.

In these bands, the upper frequency limit is twice the lower frequency limit, with the band being described by its "centre frequency" which is the average (geometric mean) of the upper and lower limits, e.g. 250 Hz octave band extends from 176 Hz to 353 Hz. The most commonly used octave bands are:

| Octave Band Centre Frequency Hz | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
|---|---|---|---|---|---|---|---|---|

## Human Perception of Broadband Noise

Because of the logarithmic nature of the decibel scale, it should be borne in mind that sound levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) sound level is not twice as loud as 50dB(A). It has been found experimentally that changes in the average level of fluctuating sound, such as from traffic, need to be of the order of 3dB before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10dB is perceived by the average listener as a doubling or halving of loudness. Using this information, a guide to the subjective interpretation of changes in environmental sound level can be given.

INTERPRETATION

| Change in Sound Level dB | Subjective Impression | Human Response |
|---|---|---|
| 0 to 2 | Imperceptible change in loudness | Marginal |
| 3 to 5 | Perceptible change in loudness | Noticeable |
| 6 to 10 | Up to a doubling or halving of loudness | Significant |
| 11 to 15 | More than a doubling or halving of loudness | Substantial |
| 16 to 20 | Up to a quadrupling or quartering of loudness | Substantial |
| 21 or more | More than a quadrupling or quartering of loudness | Very Substantial |

## Earth Bunds and Barriers - Effective Screen Height

When considering the reduction in sound level of a source provided by a barrier, it is necessary to establish the "effective screen height". For example if a tall barrier exists between a sound source and a listener, with the barrier close to the listener, the listener will perceive the sound as being louder if he climbs up a ladder (and is closer to the top of the barrier) than if he were standing at ground level. Equally if he sat on the ground the sound would seem quieter than if he were standing. This is explained by the fact that the "effective screen height" is changing with the three cases above. In general, the greater the effective screen height, the greater the perceived reduction in sound level.

Similarly, the attenuation provided by a barrier will be greater where it is aligned close to either the source or the listener than where the barrier is midway between the two.

| PLANT ROOM BREAKOUT | | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | dB(A) |
|---|---|---|---|---|---|---|---|---|---|---|
| AHU | | | | | | | | | | |
| AHU Intake | Lw | 76 | 75 | 75 | 64 | 56 | 53 | 49 | 52 | 69 |
| Attenuation Loss | | -7 | -12 | -20 | -33 | -39 | -40 | -35 | -28 | |
| | **Subtotal** | **69** | **63** | **55** | **31** | **17** | **13** | **14** | **24** | **50** |
| AHU | | | | | | | | | | |
| AHU Breakout | Lw | 72 | 65 | 63 | 63 | 51 | 46 | 40 | 40 | 62 |
| Attenuation Loss | None | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | **Subtotal** | **72** | **65** | **63** | **63** | **51** | **46** | **40** | **40** | **62** |
| ASHP | | | | | | | | | | |
| QAHV-N560YA-HPB(-BS) (Lw correct | Lw | 79 | 66 | 67 | 64 | 60 | 57 | 52 | 47 | 66 |
| | **Subtotal** | **79** | **66** | **67** | **64** | **60** | **57** | **52** | **47** | **66** |
| Internal Combined Lw | Lw | 80 | 70 | 69 | 67 | 61 | 57 | 52 | 48 | 68 |
| Intake Louvre | | | | | | | | | | |
| Direct Contribution at Louvre | Lp | 66 | 56 | 55 | 53 | 47 | 43 | 38 | 34 | |
| Reverberent Contribution | Lp | 71 | 60 | 59 | 57 | 51 | 48 | 43 | 39 | |
| Combined SPL at Louvre | Lp | 72 | 62 | 61 | 59 | 53 | 49 | 44 | 40 | |
| **SWL at Intake Louvre** | **Lw** | **76** | **66** | **65** | **63** | **57** | **53** | **48** | **44** | **64** |

| PLANT SOUND TO SOUTH RECEPTOR DOBSON CLOSE - DAYTIME | | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | dB(A) |
|---|---|---|---|---|---|---|---|---|---|---|
| Condensers | | | | | | | | | | |
| PUZ-ZM250YKAR1 | Lp @ 1m | 71 | 61 | 60 | 61 | 57 | 53 | 49 | 43 | 62 |
| Number of | 6no | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| Attenuation Loss | | -6 | -10 | -14 | -20 | -30 | -33 | -30 | -22 | |
| Distance Loss | 10m | -20 | -20 | -20 | -20 | -20 | -20 | -20 | -20 | |
| | **Subtotal** | **53** | **39** | **34** | **29** | **15** | **8** | **7** | **9** | **31** |
| AHU Discharge | | | | | | | | | | |
| AHU Exhaust | Lw | 82 | 77 | 79 | 81 | 78 | 77 | 75 | 75 | 84 |
| Attenuation Loss | | -9 | -18 | -30 | -48 | -50 | -50 | -50 | -40 | |
| Surface Area Correction | 2.5m² | -4 | -4 | -4 | -4 | -4 | -4 | -4 | -4 | |
| Rathe Decay | | -28 | -28 | -28 | -28 | -28 | -28 | -28 | -28 | |
| Directivity | | -1 | -2 | -6 | -9 | -9 | -9 | -9 | -9 | |
| End Reflection | | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Screening Loss | No Screer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | **Subtotal** | **42** | **26** | **11** | **0** | **0** | **0** | **0** | **0** | **18** |
| ASHP Discharge | | | | | | | | | | |
| QAHV-N560YA-HPB(-BS) (Lw correct | Lw | 79 | 66 | 67 | 64 | 60 | 57 | 52 | 47 | 66 |
| Attenuation Loss | | -9 | -16 | -24 | -37 | -48 | -50 | -50 | -38 | |
| Surface Area Correction | 2.0m² | -3 | -3 | -3 | -3 | -3 | -3 | -3 | -3 | |
| Rathe Decay | | -28 | -28 | -28 | -28 | -28 | -28 | -28 | -28 | |
| Directivity | | 2 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | |
| End Reflection | | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Screening Loss | No Screer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | **Subtotal** | **43** | **23** | **16** | **0** | **0** | **0** | **0** | **0** | **18** |
| Plant Room Intake | | | | | | | | | | |
| Plant Room Intake Louvre rev1 | Lw | 76 | 66 | 65 | 63 | 57 | 53 | 48 | 44 | 64 |
| Attenuation Loss | | -7 | -11 | -18 | -32 | -40 | -40 | -36 | -33 | |
| Surface Area Correction | 2.5m² | -4 | -4 | -4 | -4 | -4 | -4 | -4 | -4 | |
| Rathe Decay | | -27 | -27 | -27 | -27 | -27 | -27 | -27 | -27 | |
| Directivity | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| End Reflection | | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Screening Loss | No Screer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | **Subtotal** | **42** | **26** | **18** | **1** | **0** | **0** | **0** | **0** | **18** |
| **Specific sound level at receptor** | $L_{eq\ 1hr}$ | **54** | **39** | **34** | **29** | **15** | **10** | **9** | **10** | **32** |

# APPENDIX B

| PLANT SOUND TO SOUTH RECEPTOR DOBSON CLOSE - NIGHT-TIME | | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | dB(A) |
|---|---|---|---|---|---|---|---|---|---|---|
| Condensers | | | | | | | | | | |
| PUZ-ZM250YKAR1 | Lp @ 1m | 71 | 61 | 60 | 61 | 57 | 53 | 49 | 43 | 62 |
| Number of | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| Night time Set Back | | -4 | -4 | -4 | -4 | -4 | -4 | -4 | -4 | |
| Attenuation Loss | | -6 | -10 | -14 | -20 | -30 | -33 | -30 | -22 | |
| Distance Loss | 10m | -20 | -20 | -20 | -20 | -20 | -20 | -20 | -20 | |
| | **Subtotal** | **49** | **35** | **30** | **25** | **11** | **4** | **3** | **5** | **27** |
| AHU Discharge | | | | | | | | | | |
| AHU Exhaust | Lw | 82 | 77 | 79 | 81 | 78 | 77 | 75 | 75 | 84 |
| Attenuation Loss | | -9 | -18 | -30 | -48 | -50 | -50 | -50 | -40 | |
| Surface Area Correction | 2.5m² | -4 | -4 | -4 | -4 | -4 | -4 | -4 | -4 | |
| Rathe Decay | | -28 | -28 | -28 | -28 | -28 | -28 | -28 | -28 | |
| Directivity | | -1 | -2 | -6 | -9 | -9 | -9 | -9 | -9 | |
| End Reflection | | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Screening Loss | No Screen | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | **Subtotal** | **42** | **26** | **11** | **0** | **0** | **0** | **0** | **0** | **18** |
| ASHP Discharge | | | | | | | | | | |
| QAHV-N560YA-HPB(-BS) (Lw correct | Lw | 79 | 66 | 67 | 64 | 60 | 57 | 52 | 47 | 66 |
| Attenuation Loss | | -9 | -16 | -24 | -37 | -48 | -50 | -50 | -38 | |
| Surface Area Correction | 2.0m² | -3 | -3 | -3 | -3 | -3 | -3 | -3 | -3 | |
| Rathe Decay | | -28 | -28 | -28 | -28 | -28 | -28 | -28 | -28 | |
| Directivity | | 2 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | |
| End Reflection | | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Screening Loss | No Screen | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | **Subtotal** | **43** | **23** | **16** | **0** | **0** | **0** | **0** | **0** | **18** |
| Plant Room Intake | | | | | | | | | | |
| Plant Room Intake Louvre rev1 | Lw | 76 | 66 | 65 | 63 | 57 | 53 | 48 | 44 | 64 |
| Attenuation Loss | | -7 | -11 | -18 | -32 | -40 | -40 | -36 | -33 | |
| Surface Area Correction | 2.5m² | -4 | -4 | -4 | -4 | -4 | -4 | -4 | -4 | |
| Rathe Decay | | -27 | -27 | -27 | -27 | -27 | -27 | -27 | -27 | |
| Directivity | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| End Reflection | | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Screening Loss | No Screen | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | **Subtotal** | **42** | **26** | **18** | **1** | **0** | **0** | **0** | **0** | **18** |
| **Specific sound level at receptor** | $L_{eq\ 1hr}$ | **51** | **36** | **30** | **25** | **12** | **7** | **7** | **8** | **29** |