

## Technical Note

### The Northern, West Didsbury, Manchester



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Summary of Extended Commissioning Exercise Undertaken for Padel Courts

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## 1.0 PURPOSE AND SCOPE

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Development works have recently been undertaken at The Northern Lawn Tennis Club premises at Palatine Road, West Didsbury, Manchester M20 3YA to form two covered padel courts for use by members.

A noise impact assessment was undertaken at design stage, to demonstrate predicted noise emission levels due to use of the courts in accordance with relevant criteria established in Sport England document '*Artificial Grass Pitches (AGP) Acoustics – Planning Implications*'.

The Local Authority planning conditions require a schedule of commissioning measurements to be carried out, such that it can be demonstrated whether the targeted noise emission levels are being achieved.

Further to an earlier commissioning exercise, where shortened measurements were taken during lulls in residual noise to quantify padel court noise emissions in isolation, the Local Authority has requested that full one-hour monitoring periods of noise levels during padel activity are instead presented.

This document provides a summary of the additional measurements undertaken and the resulting findings.



## 2.0 SUMMARY OF REQUIREMENTS

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### 2.1 Adopted Design Targets at Design Stage

When providing a predictive noise impact assessment, noise emissions criteria were established as follows, in accordance with the stated requirements in the AGP Document:

*“The determining noise criteria for AGPs proximity to residential properties, to avoid moderate annoyance in the daytime and evenings, as set by the World Health Organisation’s ‘Guidelines for Community Noise’: 50 dB  $L_{Aeq(1hour)}$  upper noise limit external to residential properties and within external living areas.”*

### 2.2 Commissioning Requirements

The relevant planning condition imposed by the Local Authority states the following with regards to a requirement for commissioning measurements:

*“Prior to the courts hereby approved becoming operational, a post completion report will be required to validate that the development, as implemented, conforms to the recommendations and requirements in the approved Noise Impact Assessment. This report should include the results of post completion testing, which shall be undertaken to confirm whether the target noise level criteria set out in the Clement Acoustics Noise Impact Assessment have been met. The post-completion report shall be submitted to the City Council as Local Planning Authority for its approval.”*

## 3.0 COMMISSIONING MEASUREMENTS

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In order to allow for further extended commissioning measurements to be undertaken, trial matches were arranged in the padel courts and on surrounding tennis courts on 20 February 2024.

The padel court matches involved 8 players in total, with a doubles match played on each court. In addition, arranged matches were played on surrounding tennis court, as well as an ongoing half-term tennis club being in operation.

It was noted that a solid timber screen has been installed along the boundary of the site and access road, in accordance with the recommendations of report 16764-NIA-02 RevD.

Access was arranged to external areas of No. 29 and No. 31 Elm Road, to allow measurements to be taken in the closest affected receivers. Additional measurements were taken on the boundary with 33 Elm Road, on the side of The Northern.

### 3.1 Measurement Procedure

Measurement positions are summarised as follows:

- Position 1: Boundary with 33 Elm Road, on edge of tennis court
- Position 2: No. 29 Decking, in front of façade at ground floor level
- Position 3: No. 31 Decking, in line with façade at first floor level

For all measurement positions, the microphone was mounted on a tripod approximately 1.5 m above the floor level. Figure 3.1 shows the microphone positions on tripods at each monitoring location.

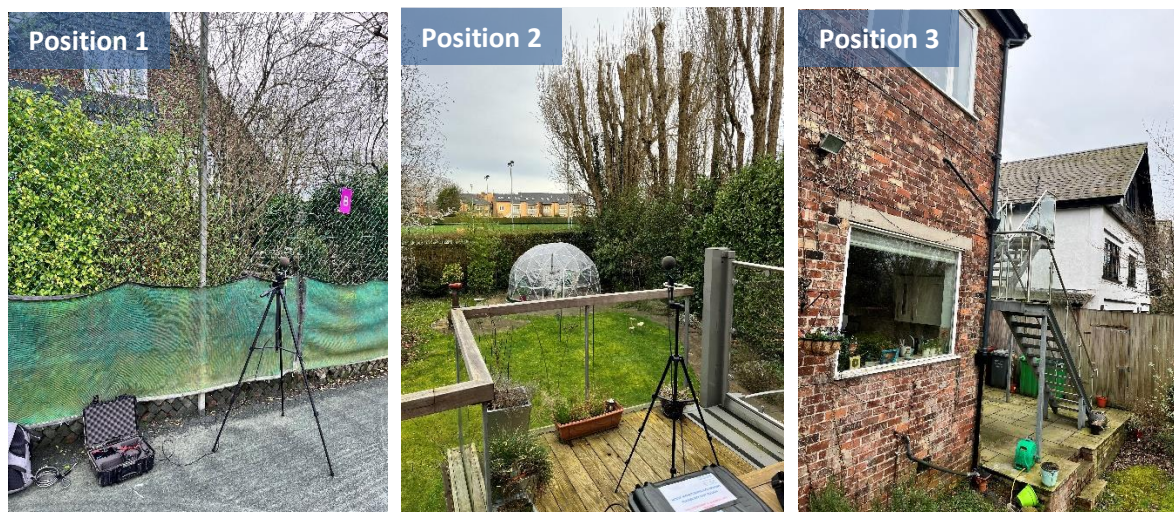


**Figure 3.1 View of microphone position at each monitoring location**

The measurement positions are shown relative to the recently constructed padel court location, in Figure 3.2.

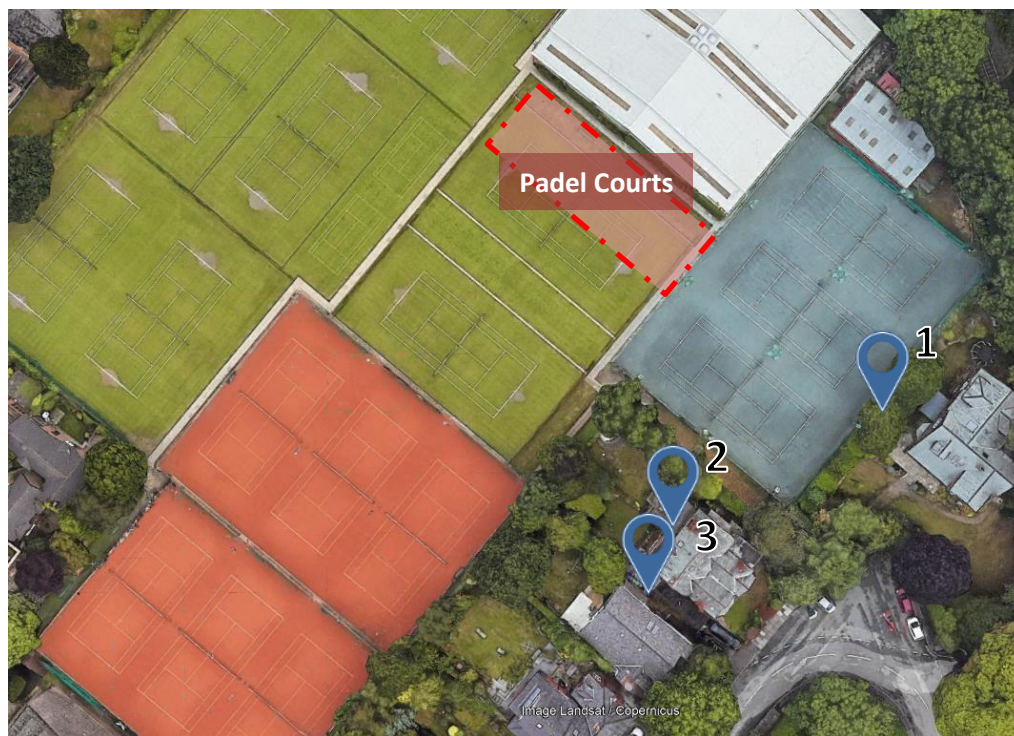


**Figure 3.2 Plan view showing measurement locations (base image © Google Earth)**

Measurements were undertaken during the following conditions for each measurement position:

- 08:30<sup>[1]</sup> to 09:00: Residual measurements, with no activities (padel, tennis or ground works) at The Northern,
- 09:00 to 10:00: Measurements with two doubles matches on padel courts and tennis matches on surrounding courts.

*[1] Due to access issues at Positions 2 and 3, measurements at these positions commenced at 08:55.*

Measurements were undertaken of the continuous ambient noise level in single octave bands between 63 Hz and 8 kHz.

At the time of the attended measurements, the weather conditions were dry with minimal wind and were therefore considered suitable for the measurement of environmental noise.

### 3.2 Equipment

The equipment calibration was verified, by means of a field verification check, before and after use and no abnormalities were observed.

The equipment used was as follows.

- 1 No. Svantek 958 Class 1 Sound Level Meter
- 1 No. Svantek 957 Class 1 Sound Level Meter

- 1 No. Svantek 977 Class 1 Sound Level Meter
- Norsonic Type 1251 Class 1 Calibrator

## 4.0 RESULTS

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Results are presented for each measurement position in the subsequent sections. For each position, the 1-minute continuous ambient noise level is shown as a time history, with the determined overall ambient noise level  $L_{Aeq,T}$  stated.

It is noted that the adopted criteria are in terms of a 1-hour ambient noise level. Short-term exceedance over 50 dB(A) are therefore acceptable, provided they do not result in the overall ambient noise level exceeding.

It should be noted that during both measurement periods described in Section 3.1, there were apparent residual sounds including distant road traffic noise on the M60, tram movements on the nearby tram lines, birdsong and general urban sounds.

During the 1-hour measurement of padel and tennis noise, two particularly noticeable noise sources were identified as follows:

- 09:13 short period of grinding type noise caused by nearby construction works,
- 09:56 single overhead aeroplane passby.

These have generally been considered part of the cumulative noise environment and included in the analyses.

For all charts, the time when padel and tennis matches commenced are marked with a red dashed line.

4.1 Measurement Position 1

Measurement Position 1 is on the edge of the tennis court, close to the boundary with 33 Elm Road. There was direct line of sight to the padel courts.

A 30-minute measurement of residual noise and one-hour measurement of activity noise was taken as displayed on the time history in Figure 4.1. An omitted period during the measurement of residual noise is noted on the chart. This does not affect the analysis of padel and tennis court noise.

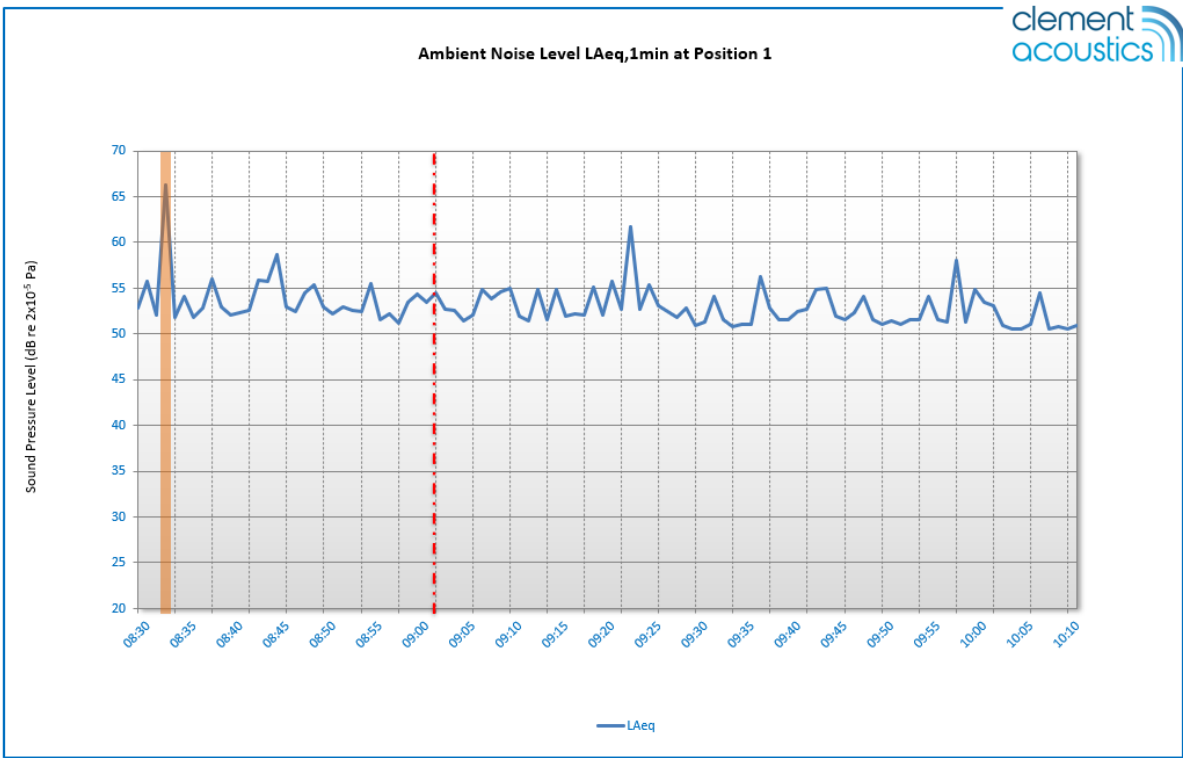


Figure 4.1 Time history of Position 1 measurement

The average ambient noise level for the measurement periods, with the highlighted period omitted, are shown in Table 4.1.

| Period                             | Average Ambient Noise Level LAeq,T |
|------------------------------------|------------------------------------|
| Residual Noise<br>[08:30 to 09:00] | 53.9 dB(A)                         |
| Activity Noise<br>[09:00 to 10:00] | 53.4 dB(A)                         |

Table 4.1 Summary of measured levels at Position 1

As shown in Table 4.1, the level of ambient noise during the activities is marginally lower than the level of residual noise, indicating that the introduction of padel and tennis activities does not increase noise levels above the existing residual level.

4.2 Measurement Position 2

Measurement Position 2 is on raised decking area to the rear of 29 Elm Road, a ground floor property. The padel courts were partially visible over the top of the installed barrier.

A 5-minute measurement of residual noise and one-hour measurement of activity noise was taken as displayed on the time history in Figure 4.2.

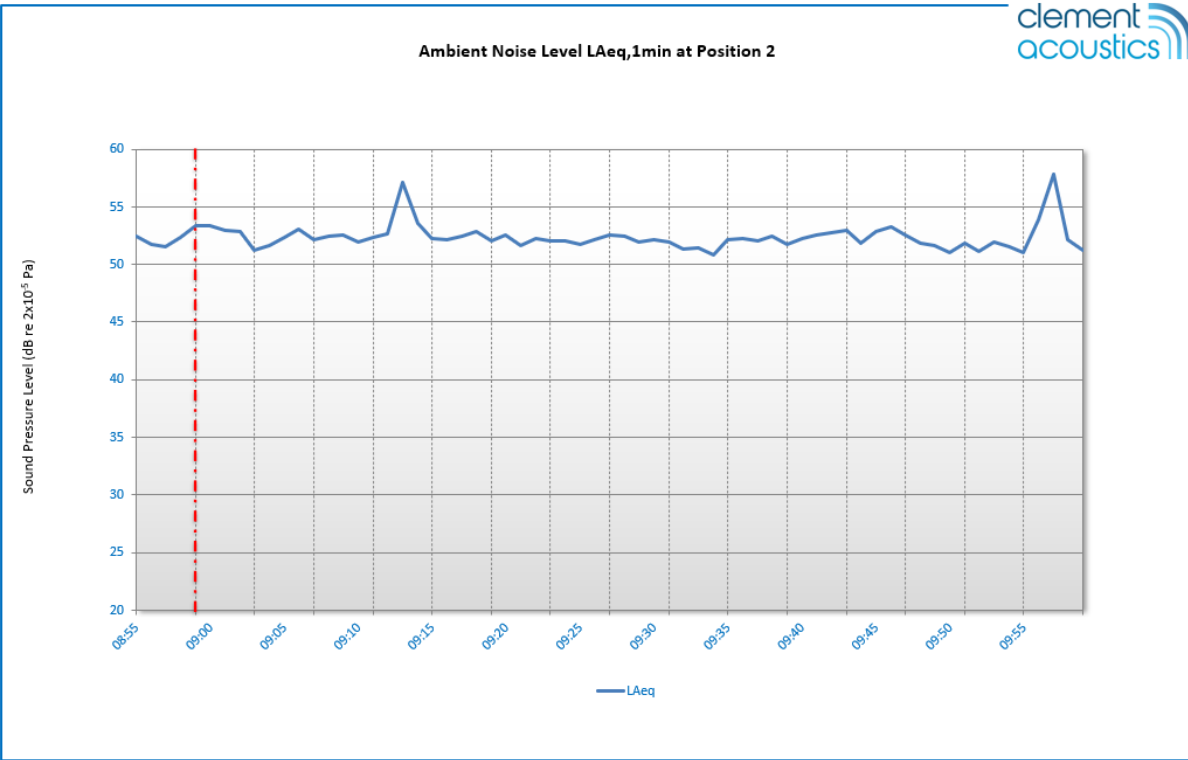


Figure 4.2 Time history of Position 2 measurement

The average ambient noise level for the measurement periods, with the highlighted period omitted, are shown in Table 4.2.

| Period                             | Average Ambient Noise Level LAeq,T |
|------------------------------------|------------------------------------|
| Residual Noise<br>[08:30 to 09:00] | 52.3 dB(A)                         |
| Activity Noise<br>[09:00 to 10:00] | 52.5 dB(A)                         |

Table 4.2 Summary of measured levels at Position 2

As shown in Table 4.2, the level of ambient noise during the activities is marginally higher than the level of residual noise, but by an insignificant amount. This indicates that the introduction of padel and tennis activities does not increase noise levels above the existing residual level. It is further noted that the

assessed period of activity noise includes periods of construction noise and an aeroplane pass, which are clearly visible on the chart as dominant noise sources.

4.3 Measurement Position 3

Measurement Position 3 is on decking area at the side of 31 Elm Road, a first floor property. The padel courts were clearly visible over the top of the installed barrier.

A 5-minute measurement of residual noise and one-hour measurement of activity noise was taken as displayed on the time history in Figure 4.3.

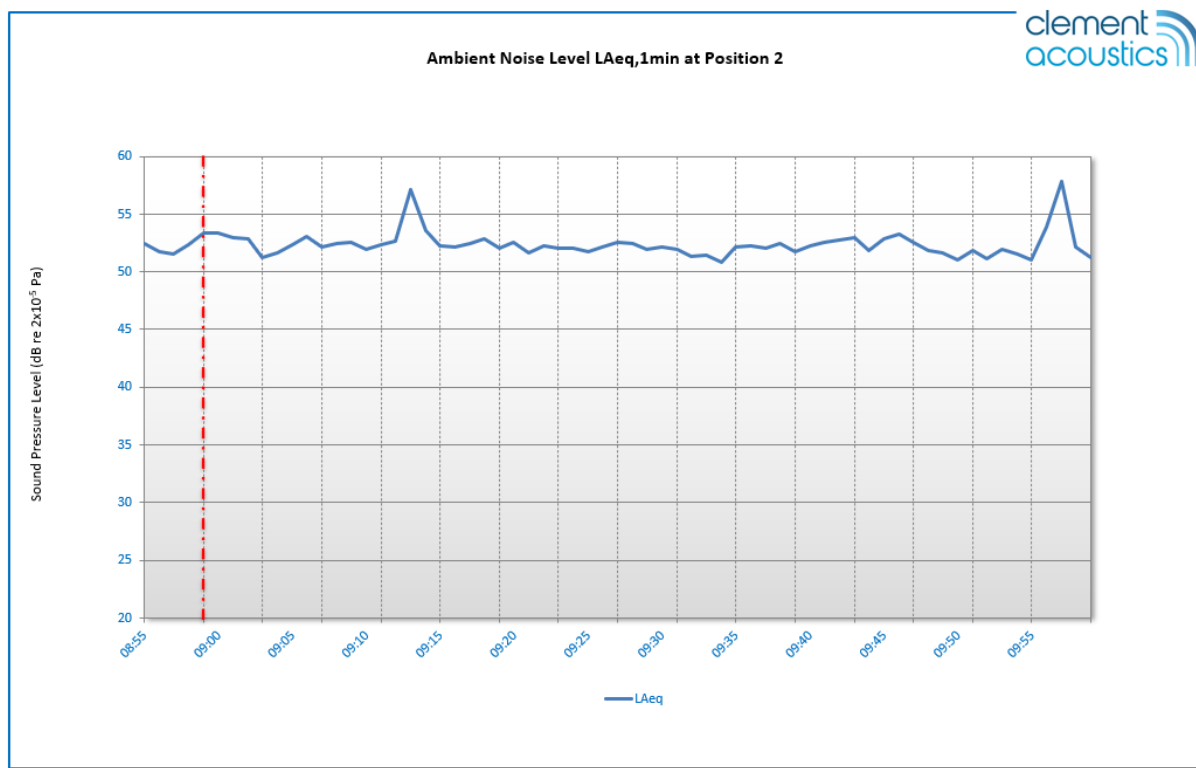


Figure 4.3 Time history of Position 3 measurement

The average ambient noise level for the measurement periods, with the highlighted period omitted, are shown in Table 4.3.

| Period                             | Average Ambient Noise Level LAeq,T |
|------------------------------------|------------------------------------|
| Residual Noise<br>[08:30 to 09:00] | 53.4 dB(A)                         |
| Activity Noise<br>[09:00 to 10:00] | 52.7 dB(A)                         |

Table 4.3 Summary of measured levels at Position 3

As shown in Table 4.3, the level of ambient noise during the activities is below the level of residual noise. This indicates that the introduction of padel and tennis activities does not increase noise levels above the existing residual level. It is further noted that the assessed period of activity noise includes periods of construction noise and an aeroplane pass, which are clearly visible on the chart as dominant noise sources.

#### 4.4 Summary of Ambient Noise Level Results

As shown in Sections 4.1, 4.2 and 4.3, the introduction of padel and tennis court noise does not materially increase the existing levels during residual periods.

In order for residual noise levels of  $L_{Aeq,T}$  52.3 - 53.9 dB to not be increased by the introduction of a new source, this is an indication that the noise level of the new source is below  $L_{Aeq,T}$  50 dB.

In order to provide further understanding of the new noise source, a further spectral analysis has been undertaken, as detailed in Section 4.5.

#### 4.5 Further Spectral Analysis

As shown in Section 4.4, analysis of broadband ambient noise levels indicates that the stated design targets have been met.

However, an additional analysis of the frequency content of noise levels during the different assessment periods has been undertaken, in order to investigate whether introduction of padel and tennis court noise could lead to tangible increases in the character of noise levels.

The average noise level in each frequency band between 63 Hz and 8 kHz has been derived for each measurement period at each measurement position for comparison.

The comparison of noise levels in each frequency band during residual and activity noise periods are shown in Figure 4.4 to 4.6 for the different measurement positions.

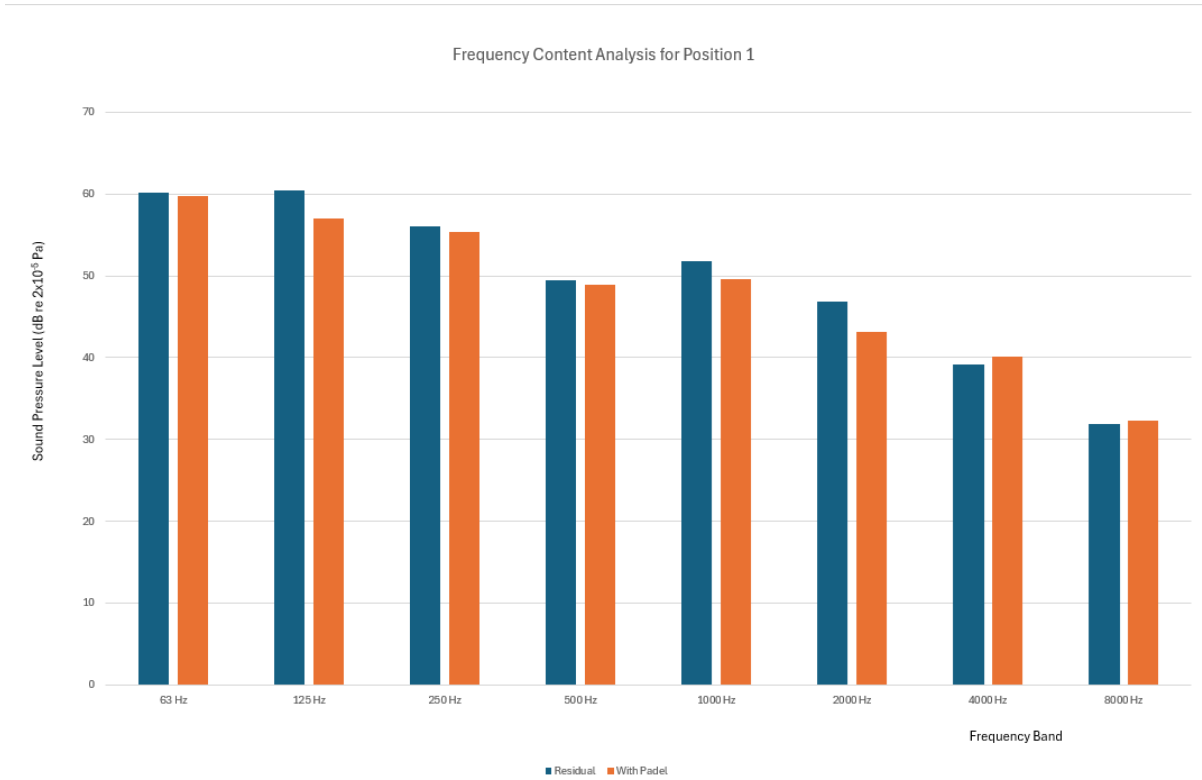


Figure 4.4 Frequency analysis at Position 1

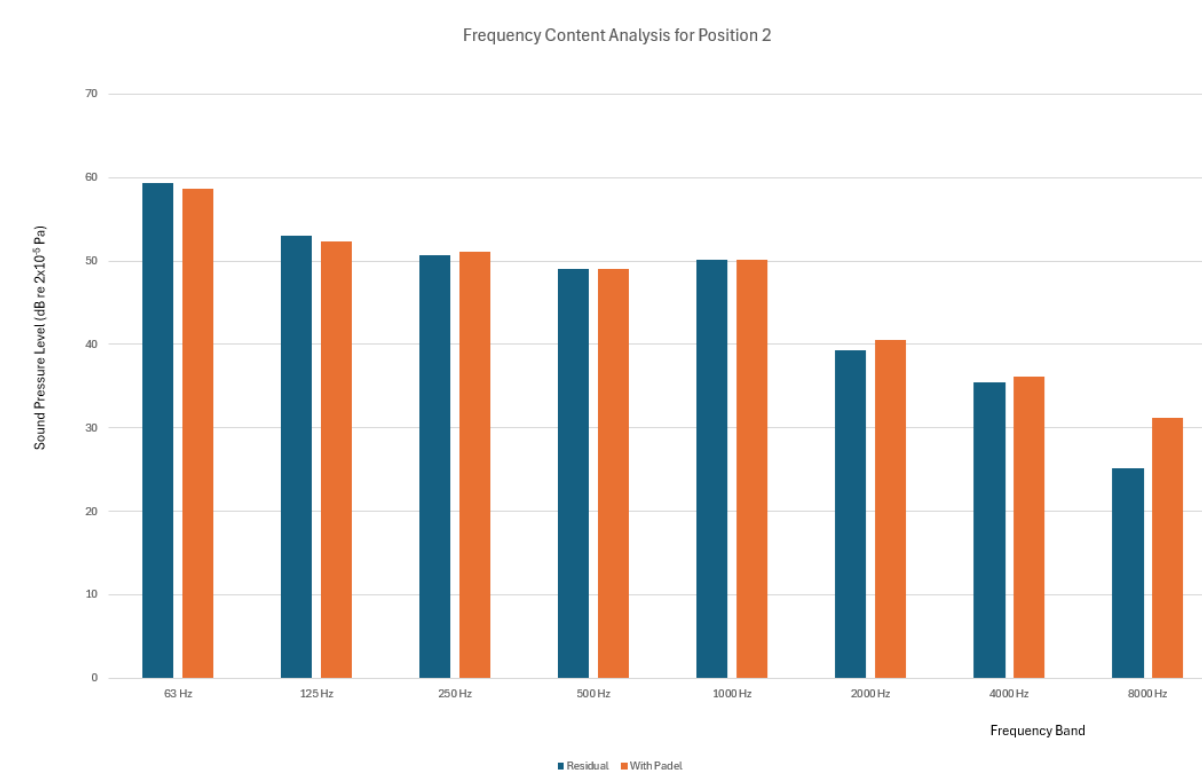


Figure 4.5 Frequency analysis at Position 2

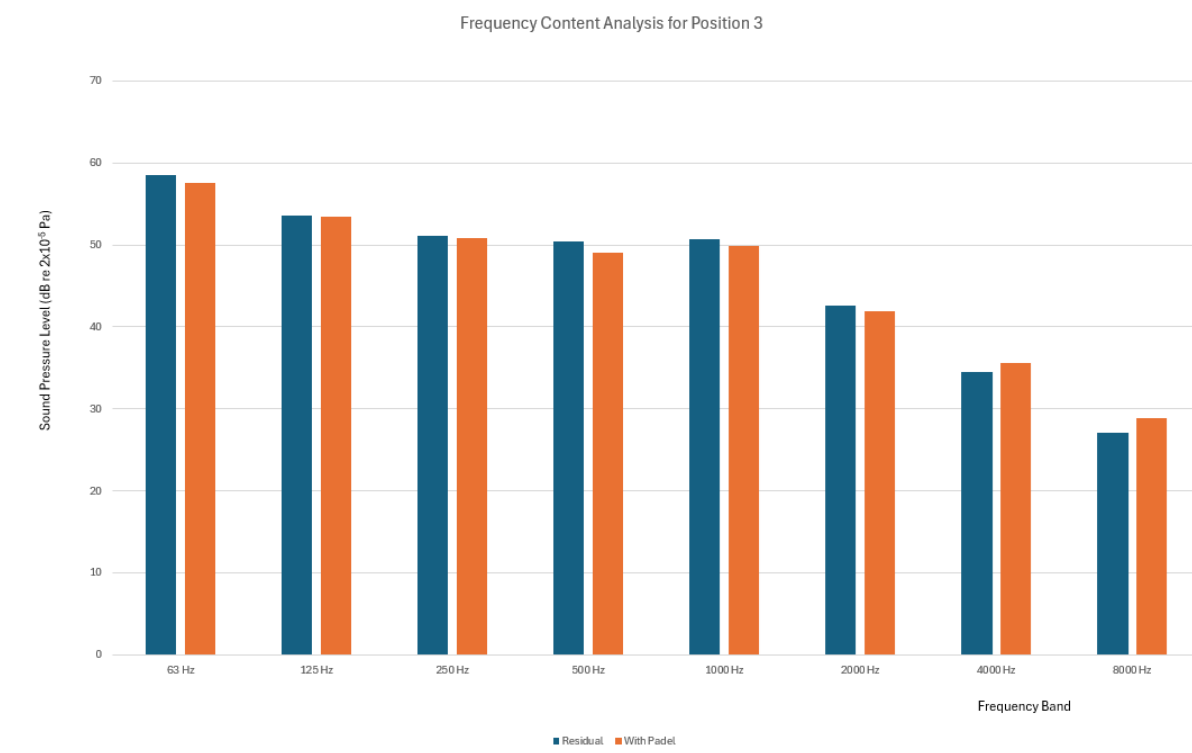


**Figure 4.6 Frequency analysis at Position 3**

Measurements of padel court noise at source have previously demonstrated that peak noise levels due to padel court noise are in the 500 Hz and 1 kHz frequency bands.

As shown in Figures 4.4 to 4.6, there are no increases in the noise levels in these frequency bands at any measurement position due to the introduction of padel and tennis court noise.

This demonstrates that the introduction of these noise sources does not lead to a measurable increase in received noise levels, as well as the measured levels indicating that the design targets have been met.

## 5.0 SUMMARY

Commissioning measurements have been undertaken for a recently installed padel court facility at The Northern, West Didsbury, Manchester.

Measurements undertaken during an arranged trial match in the courts indicate that the resulting noise levels in the closest affected receiver are within previously established design targets for noise emissions.