



**179-181 West End Lane  
West Hampstead**

**Plant Noise Assessment Report**

29 March 2022

**For**  
Perfect Smile Limited

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## SUMMARY

New condenser units are proposed at the rear of the proposed dental surgery at 179-181 West End Lane in West Hampstead.

The local authority, Camden Council, has requirements in relation to building services noise emissions affecting noise sensitive properties.

**auricl** has undertaken a noise assessment of the proposed plant, in relation to the Camden Council requirements.

A noise limit has been proposed for the condenser units, based on the typical measured background noise level and the Camden Council requirements.

Our calculations indicate that cumulative noise emissions associated with the proposed condenser units should not exceed the noise limit.

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|---|--|--|---------------|
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## 1.0 Introduction

New condenser units are proposed at the rear of the proposed dental surgery at 179-181 West End Lane in West Hampstead.

The local authority, Camden Council, has requirements in relation to building services noise emissions affecting noise sensitive properties.

**auricl** has been commissioned to carry out a noise assessment of the proposed plant, in relation to the Camden Council requirements.

This report presents the methodology and results of a noise survey to determine background noise levels that are representative of the nearest noise sensitive property, as well as an acoustic assessment of the condenser units.

The report is technical in nature, and such, a summary of noise units and acoustic terminology are included in Appendix A for reference.

## 2.0 Description of Site and Proposals

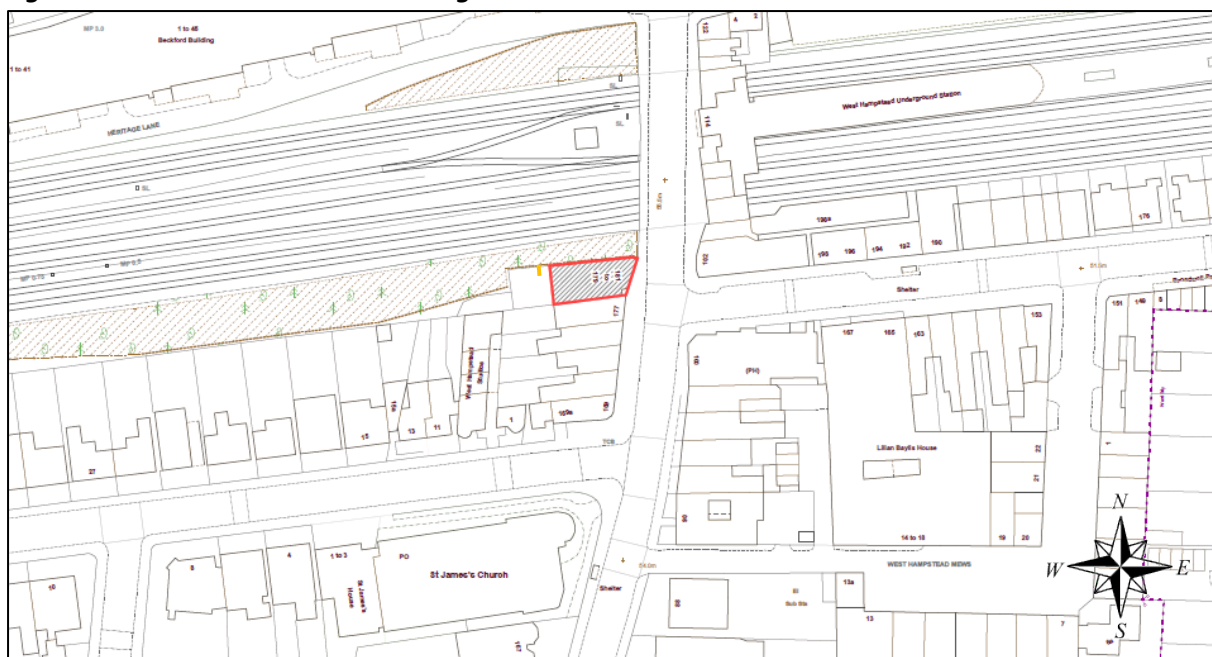
The site is located on the western side of West End Lane in West Hampstead and is occupied by a dental surgery (currently being fitted out) at ground floor and basement level with residential apartments at second floor level above. The site is bounded by a railway line to the north, West End Lane to the east, a commercial property to the south and outdoor amenity areas to the west.

Existing condenser units are located to the rear/west of the site at basement level, which are to be replaced.

The nearest noise sensitive properties to the existing/proposed condenser units are understood to be the residential apartments at second floor level above the dental surgery demise.

Figure 2.1 shows the approximate site extent in **red** and surrounding properties, with the approximate locations of the condenser units shown in **orange**.

**Figure 2.1 Site Extent and Surroundings**



### 3.0 Camden Council Requirements

Camden Council typically requires that the Rating Level for fixed external plant (determined in accordance with BS 4142), including any character corrections for tonality, impulsivity etc. are controlled to a level at least 10 dB less than the lowest measured  $L_{A90}$  background noise level (15 dB if tonal components are present) at a distance of 1m external to nearest noise sensitive premises.

### 4.0 Noise Survey Methodology and Results

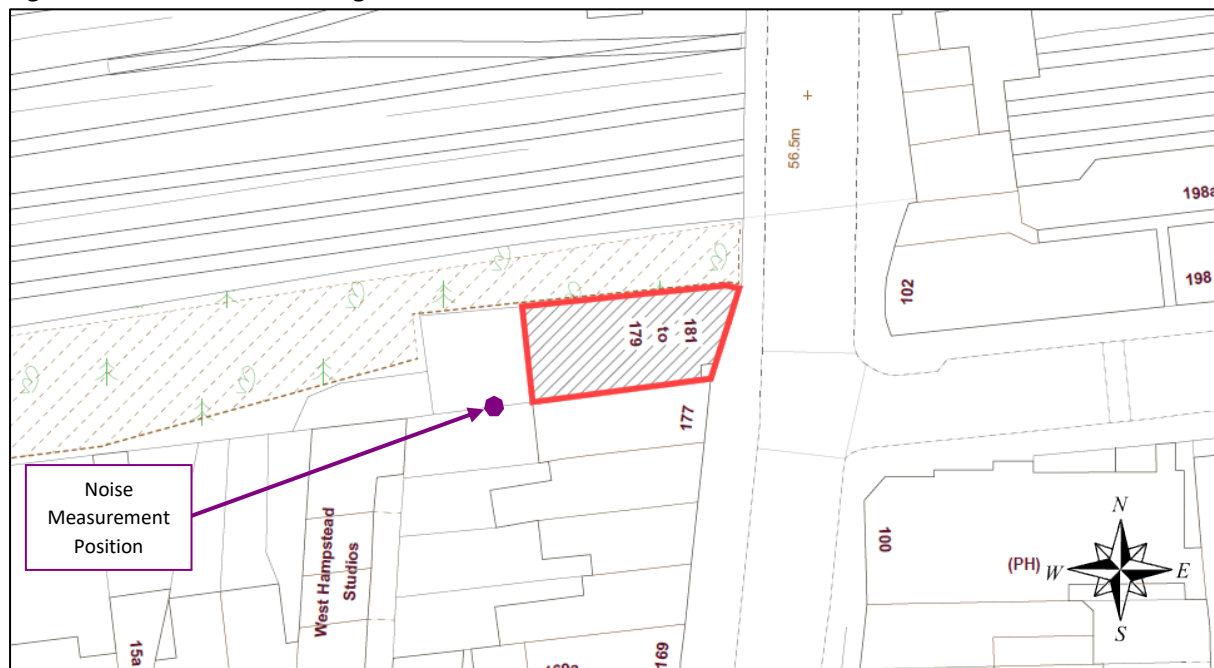
#### 4.1 Methodology

An unmanned environmental noise survey was carried out over a 2-day period between Monday 14 February 2022 and Wednesday 16 February 2022 to determine existing background noise levels at a position considered to be representative of the nearest noise sensitive properties.

The measurement microphone was attached to a railing at ground level in free-field on the western side of the site. The measurement position is considered to be representative of the lowest background noise levels at the nearest noise sensitive properties to the condenser units.

The approximate location of the measurement position is indicated in **purple** in Figure 4.1 below.

**Figure 4.1 Site Plan Indicating Noise Measurement Position**



The equipment used for the noise survey is summarised in Table 4.1.

**Table 4.1 Description of Equipment used for Noise Survey**

| Item                          | Make & Model | Serial Number |
|-------------------------------|--------------|---------------|
| Type 1 sound level meter      | SVAN 945A    | 11906         |
| Type 1 ½" external microphone | GRAS 40AN    | 56012         |
| Calibrator                    | 01 dB CAL 21 | 86020         |

$L_{Aeq}$  and  $L_{A90}$  sound pressure levels were measured throughout the noise survey over 15-minute intervals.

The noise monitoring equipment was calibrated before and after the survey. No significant change was found. Laboratory equipment calibration certificates can be provided upon request.

Due to the nature of the noise survey, i.e. unmanned, we are unable to comment on the weather conditions throughout the entire noise survey period, however at the beginning and end of the survey period, there was noted to be no rainfall, a clear sky and only light wind. These conditions are understood to be representative of the survey period and are considered appropriate for undertaking environmental noise measurements.

## 4.2 Results & Observations

Appendix B presents a time history graph showing the  $L_{Aeq}$  and  $L_{A90}$  sound pressure levels measured throughout the noise survey.

We would consider the levels measured to be reasonable, taking into account the location of the measurement position and the dominant nearby noise sources.

Due to the nature of the unmanned noise survey, we are unable to comment on the exact noise climate throughout the entire survey period. However, at the beginning and end of the survey period, the daytime noise climate at the measurement position was dominated by road traffic using West End Lane and frequent passing trains on the adjacent tracks. We would expect this to also be true of night-time periods.

The lowest background noise level measured during the proposed operating period (08:00 – 19:00 hours, Monday to Friday) was 51 dB  $L_{A90}$  (1 hour).

## 5.0 Plant Noise Assessment

This section presents our assessment and calculations of noise emissions from the condenser units, in relation to the Camden Council requirements.

### 5.1 Plant Noise Limit

Based on the typical measured background noise level and the Camden Council requirements, the plant noise limit during the proposed operating period (08:00 – 19:00 hours, Monday to Friday) is **41 dB  $L_{Aeq}$  (1 hour)**.

## 5.2 Proposed Plant

Five condenser units are to be installed in the location indicated on Figure 2.1.

The condenser units and associated manufacturer's noise levels are as follows:

- Mitsubishi SRC60ZSX-W1 65 dB  $L_{WA}$  sound power level (2No proposed)
- Mitsubishi SCM100ZS-W 60 dB  $L_{WA}$  sound power level (2No proposed) – including attenuation
- Mitsubishi SCRC25ZSP-5 59 dB  $L_{WA}$  sound power level (1No proposed)

Examination of the manufacturer's octave band noise data for these units confirms no tonal element, as is typical of modern condenser units of this type, therefore no character corrections will be applied in the calculation.

## 5.3 Nearest Noise Sensitive Property

We have considered the nearest noise sensitive property to be the residential property located at second-floor level on the western side of the building. This property is located approximately 11m from the basement level condenser units and will be subject to acoustic screening provided by a balcony.

## 5.4 Assessment

On the basis of the above, our calculations to predict the plant noise level at the nearest noise sensitive property are presented in Table 5.1.

**Table 5.1 Plant Noise Calculation Results**

| Element  | Level (dB)             |                       |                   |
|--|------------------------|-----------------------|-------------------|
|  | Mitsubishi SRC50ZSX-W1 | Mitsubishi SCM100ZS-W | Daikin RXS50G2V1B |
| Unit Sound Power Level   | 65                     | 60                    | 59                |
| Quantity Correction  | +3                     | +3                    | 0                 |
| Acoustic Reflections   | +5                     | +5                    | +5                |
| Distance Attenuation   | -29                    | -29                   | -29               |
| Screening Attenuation  | -5                     | -5                    | -5                |
| Predicted Noise Level at Noise Sensitive Property              | 39                     | 34                    | 30                |
| <b>Total Predicted Noise Level at Noise Sensitive Property</b> | <b>41</b>              |                       |                   |
| <b>Noise Limit</b>   | <b>41</b>              |                       |                   |

It can be seen that the predicted noise level associated with the condenser units would comply with the Camden Council requirements at the nearest noise sensitive property.

## Appendix A – Acoustic Terminology

| Parameter                      | Description  |
|--------------------------------|--|
| Decibel (dB)                   | A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ( $20 \times 10^{-6}$ Pascals).  |
| Sound Pressure Level ( $L_p$ ) | The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.   |
| A-weighting ( $L_A$ or dBA)    | The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.  |
| $L_{Amax}$                     | The A-weighted maximum noise level measured during the measurement period.   |
| $L_{Aeq,T}$                    | <p>The A-weighted equivalent continuous noise level over the time period T (typically T= 16 hours for daytime periods, T = 8 hours for night-time periods).</p> <p>This is the sound level that is equivalent to the average energy of noise recorded over a given period.</p> |
| $L_{A90}$ (15 min)             | The noise level exceeded for 90% of the time (also referred to as the background noise level), measured over a 15-minute period  |



## Appendix B – Time History Graph

