# ENTERPRISE HOUSE




FOUNDRY LANE, HORSHAM, WEST SUSSEX, RH13 5PX

## Noise Impact Assessment

February 2024
(Revised May 2024)

eas ltd
Environmental Assessment Services Ltd

# REPORT DATA SHEET

| Requirement | Data |
|---|---|
| Report Ref | 674/NJA/EnterpriseHouse/Noise |
| Date | February 2024 |
| Client | Mark Ellis |
| Report type | Noise Impact Assessment |
| Purpose | Planning |
| Revisions | May 2024 |
| Prepared by | Xanthe Lyford BSc (Hons)<br><br>Signed [redacted] |
| Approved by | Eur Ing Malcolm McKemey BSc (Hons), CEng, CEnv, MICE, MCIWEM, MIEnvSc<br>[redacted]<br><br>Signed |

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## Noise Impact Assessment

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## 1. THE SITE AND BACKGROUND

1.1 The site comprises a plot of land currently occupied by a three-storey office block with a parking area. The rest of the site is currently to hard standing. The site is bordered to the north and south by commercial office units (attached to the building on the northern facade) and to the east and west by Foundry Lane See Figure 1 for the site location Figure 2 for the existing site layout, in Appendix A. The Ordnance Survey reference for the site is TQ 18154 31573 and the site elevation is approximately + 63 m AOD. The total site area is approximately 92.7 m².

1.2 The site is to be developed for use as four residential apartments comprising two one-bedroom apartments on the ground floor and a two-bedroom apartment on the first and on the second floor. The parking area is to be retained for use by the residents.

1.3 The surrounding land use comprises a mix of commercial and residential with commercial/office buildings directly adjacent to the site on all sides and residential properties lying further to the north, along Parsonage Road.

1.4 The principal noise source at the site is considered to be the railway tracks which run to the west of the site separated by several commercial properties. Also traffic along Foundry Lane directly adjacent to the site, Parsonage Road to the north and Kings Road to the southeast. Another consideration is noise from the neighbouring commercial properties. The rear elevation windows of the site face west towards the railway tracks and a car valeting business, the front (east) elevation onto Foundry Lane.

1.5 A noise impact assessment has been carried out in accordance with Professional Practice Guidance (ProPg): Planning & Noise (May 2017) and with reference to the recommendations given in the *National Planning Policy Framework* (NPPF) March 2012 and *Noise Policy Statement for England* (NPSE) 2010. Reference has been made to the British Standard Guidance on Sound Insulation and Noise Reduction for Buildings (BS 8233:2014) and the World Health Organisation publications Night Noise Guidelines for Europe 2009 and Community Noise Guidelines 1999. The site was visited on 15 February 2024 and revisited on 22 February 2024.

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## 2. DEFINITIONS

2.1 Noise assessment terms used in the report are defined and described below:

**$dB_{(A)}$** – the unit of noise measurement that expresses the loudness in terms of decibels (dB) weighted by frequency for human sensitivity to sound (A).

**$L_{(A)90}$** – A-weighted sound pressure level exceeded for 90 % of the measured time; defined as 'background noise level'.

**$L_{(A)eq}$** – equivalent continuous A-weighted sound pressure level over a given period of time; defined as 'average noise level'.

**$L_{(A)max}$** – equivalent maximum A-weighted sound pressure level over a given period of time; defined as 'maximum sound level'.

**$L_{(A)i0}$** – A-weighted sound pressure level exceeded for 10 % of the measured time; a measure frequently referred to relating to traffic noise.

## 3. THE ASSESSMENT

3.1 The assessment comprised:

- The selection of suitable noise monitoring stations reasonably representative of the exposure of the proposed residential receptors.
- The installation of the noise monitoring apparatus for suitable monitoring periods.
- Additional short-term noise monitoring around the site.
- General observations of factors affecting noise around the site.
- A review of the results of the monitoring.
- Recommendations regarding noise attenuation options, where indicated.

3.2 The monitoring was carried out at the site between Thursday 15 February and Thursday 22 February 2024. Noise levels at the site during the monitoring were considered to be reasonably representative of the ambient noise climate currently at the site, trains passing along the tracks to the west and some traffic passing along Foundry Lane.

3.3 Continuous noise monitoring was carried out on the third-storey roof of the building facing south along Foundry Lane as this was deemed to be exposed to the most noise from all directions. Additional short-term noise monitoring was carried out at ground level on the southernmost edge of the site and at the eastern façade of the site facing the railway line. See Figure 4 for monitoring locations.

3.4 The monitoring was carried out using a CEL (Casella) Type 490C Precision Sound Level Meter (SLM) and CEL-110/1 field calibrator (calibrated to national standards on 9 March 2023 – see certificate in Appendix B).

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3.5 The SLM was field calibrated before and after each monitoring session and no measurable drift was observed. Calibration readings before and after the monitoring sessions were all 113.9 dB.

## 4. RESULTS OF THE MONITORING

4.1 During the continuous monitoring, the SLM microphone boom was positioned on a pole (1.5 m high), above the roof facing the southern façade of the building, facing towards the Foundry Lane.

4.2 The short-term monitoring was carried out with the SLM mounted on a tripod 1.5 m above ground level, some 3 m from the southern façade and the eastern façade.

4.3 The results of the continuous noise monitoring are summarised in Tables 4.1 and 4.2 below:

TABLE 4.1
AMBIENT DAYTIME NOISE LEVELS

| Location | 1<br>Third -storey roof facing south towards Foundry Lane. | | | |
|---|---|---|---|---|
| Date | $L_{(A)eq}$ $dB_{(A)}$ | $L_{(A)90}$ $dB_{(A)}$ | $L_{(A)10}$ $dB_{(A)}$ | $L_{(A)max}$ $dB_{(A)}$ |
| Thursday 15/2/24 | 60.8 | 50.0 | 63.2 | 96.6 |
| Friday 16/2/24 | 58.5 | 52.4 | 61.2 | 82.4 |
| Saturday 17/2/24 | 58.6 | 51.0 | 61.8 | 81.6 |
| Sunday 18/2/24 | 61.5 | 53.5 | 64.2 | 98.4 |
| Monday 19/2/24 | 57.8 | 51.3 | 60.6 | 82.4 |
| Tuesday 20/2/24 | 58.6 | 53.0 | 61.2 | 86.3 |
| Wednesday 21/2/24 | 53.0 | 60.4 | 75.6 | 103.0 |
| Thursday 22/2/24 | 68.1 | 56.4 | 70.8 | 101.6 |

4.4 Professional Practice Guidance (ProPg): Planning & Noise Note 1 gives an initial noise risk assessment *risk of adverse effects* value in the range Medium to High based on the daytime $L_{(A)eq\ 16hr}$ and night-time $L_{(A)eq\ 8hr}$ exposures recorded at the site.

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4.5 From the results in Table 4.1 above and Table 4.2 below, the initial noise risk assessment value for the exposure at the site is Medium to High (the higher than average readings from Saturday 18 February and Thursday 22 February daytime and Saturday/Sunday 17/18 February night-time were due to the adverse weather conditions at the time of monitoring and can be disregarded). The results indicate that good acoustic design process should be followed for residential properties at this site.

TABLE 4.2
AMBIENT NIGHT-TIME NOISE LEVELS

| Location | 1<br>Third -storey roof facing south towards Foundry Lane. | | | |
|---|---|---|---|---|
| Date | $L_{(A)eq}$ $dB_{(A)}$ | $L_{(A)90}$ $dB_{(A)}$ | $L_{(A)10}$ $dB_{(A)}$ | $L_{(A)max}$ $dB_{(A)}$ |
| Thu/Fri<br>15/16 Feb 2024 | 48.7 | 40.3 | 51.2 | 77.0 |
| Fri/Sat<br>16/17 Feb 2024 | 45.8 | 39.6 | 46.7 | 75.0 |
| Sat/Sun<br>17/18 Feb 2024 | 71.9 | 60.4 | 75.4 | 103.1 |
| Sun/Mon<br>18/19 Feb 2024 | 44.8 | 39.4 | 46.2 | 85.4 |
| Mon/Tue<br>19/20 Feb 2024 | 45.9 | 40.9 | 48.1 | 74.4 |
| Tue/Wed<br>20/21 Feb 2024 | 51.9 | 42.7 | 55.1 | 84.0 |
| Wed/Thu<br>21/22 Feb 2024 | 48.8 | 42.0 | 50.1 | 73.8 |

TABLE 4.3
ADDITIONAL SHORT-TERM NOISE MONITORING

| MONITORING LOCATION | 2.<br>Southern façade, front corner of building, facing Foundry Lane, microphone on tripod. | | | |
|---|---|---|---|---|
| PERIOD | 22 February 2024 | | | |
| NOISE LEVELS $dB_{(A)}$ | $L_{(A)eq}$ | $L_{(A)90}$ | $L_{(A)10}$ | $L_{(A)max}$ |
| | 59.7 | 52.2 | 63.6 | 74.1 |
| WEATHER | Wind and rain intermittently | | | |
| PRINCIPAL NOISE SOURCES | Traffic noise along Foundry Lane. | | | |

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| MONITORING LOCATION | 3. Western façade, rear of building, facing the railway tracks, microphone on tripod. | | | |
|---|---|---|---|---|
| PERIOD | 22 February 2024 | | | |
| NOISE LEVELS $dB_{(A)}$ | $L_{(A)eq}$ | $L_{(A)90}$ | $L_{(A)10}$ | $L_{(A)max}$ |
| | 54.8 | 50.5 | 57.9 | 70.7 |
| WEATHER | Wind and rain intermittently | | | |
| PRINCIPAL NOISE SOURCES | Traffic noise along Foundry Lane. | | | |

4.5 The traces from the continuous monitoring at monitoring locations are given in Appendix C.

## 5. INTERPRETATION OF THE RESULTS

5.1 The meteorological conditions at the site throughout the monitoring period were generally wet and windy, therefore an allowance for weather conditions was considered necessary. There was some noise from the road adjacent to the site during the short-term monitoring.

5.2 The results confirm that the site is exposed to medium to high levels of noise, therefore some noise attenuation measures will be required in order to achieve an appropriate internal noise level suitable for residential use.

## 6. NOISE IMPACT ASSESSMENT

### 6.1 Internal Noise Level Guidelines (Stage 2, Element 2)

6.1.1 The World Health Organisation (WHO) recommends no more than 30 $dB_{(A)}$ $L_{(A)eq}$ to permit restful sleep. The same night-time guideline is given in BS 8233:2014, (night-time is classed as 23:00 - 07:00 hours). The permitted maximum daytime internal $L_{(A)eq}$ is given as 35 $dB_{(A)}$ in the British Standard (BS). In order to meet these guidelines, values for the windows on the western façade require some 25 $dB_{(A)}$ of attenuation, the average $L_{(A)eq}$ for the daytime readings being 59.6 $dB_{(A)}$ and 51.1 $dB_{(A)}$ for the night-time. No special acoustic glazing would be required to achieve this. The windows of the proposed development buildings, as standard thermal double glazing, should provide more than adequate attenuation.

6.1.2 The existing standard external rendered brick walls on the west façade would provide at least 50 - 55 dB of attenuation BS 8233.

6.1.3 The attenuation provided by standard insulated roof structure is likely to be >35 $dB_{(A)}$.

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6.1.4 Opening windows to permit cooling on hot days or nights will tend to result in internal noise levels exceeding the WHO and BS standards as an open window will only provide 12 - 15 $dB_{(A)}$ of attenuation. The average $L_{(A)eq}$ for night-time is 51.1 $dB_{(A)}$, The average daytime $L_{(A)eq}$ is 59.6 $dB_{(A)}$. The attenuation provided by the open windows and the structure of the buildings would provide enough protection to achieve the BS Maximum Standard of 35 $dB_{(A)}$.

6.1.5 The WHO guidance states that the number of individual night-time noise events ($L_{(A)max}$) exceeding 45 $dB_{(A)}$ within a bedroom should be limited. This is generally taken as not more than eight exceedances during a single night. From the $L_{(A)max}$ trace for the night-time period, it is apparent that $L_{(A)max}$ individual events that would result in exceedance of >45 $dB_{(A)}$ were recorded on average more than eight times per night. This suggests that attenuation would be required in order to limit internal exceedances of 45 $dB_{(A)}$ night-time noise events to less than eight. This also suggests that the attenuation levels calculated in 6.1.1 above should be increased by 1 $dB_{(A)}$.

6.1.6 It will be necessary to install acoustic ventilation with the same attenuation rating as the windows to provide an alternative to opening windows for room ventilation. In order to provide adequate cooling airflow through the acoustic vents, the affected rooms will also require powered extract ventilation. The outlet for powered extract ventilation will have to be attenuated or located on the roof where no attenuation should be necessary. An alternative would be a “whole house” ventilation system with heat recovery. The system inlets should be located on the rear façade to reduce both noise and air quality impacts. See Appendix C for the SLM traces.

6.2 External Noise Level Guidelines and Amenity Area Assessment (Stage 2 Element 3).

6.2.1 For external areas, the World Health Organisation (WHO) community noise guidelines suggest 55 $dB_{(A)}$ $L_{(A)eq}$ as the threshold for annoyance, with the BS 8233:2014 stating that noise which does not exceed 50 $dB_{(A)}$ $L_{(A)eq}$ to be "desirable". Less than 55 $dB_{(A)}$ $L_{(A)eq}$ is unlikely to be achieved most of the time, however as there are not external amenity areas it is unlikely to impact adversely on the proposed residents.

6.2.2 The highest peak ($L_{(A)max}$) noise level recorded was 74.1 $dB_{(A)}$, on the short-term monitoring. During the continuous monitoring the highest daytime peak was 103.0 $dB_{(A)}$ and the highest night-time peak was 103.1 $dB_{(A)}$.

6.3 Noise Impacts from the Adjacent Building

6.3.1 The proposed residential apartments will have a party wall shared with the adjacent offices. The activities within the offices are relatively quiet and generally limited to business hours. There should be no significant sound penetration into the proposed apartments from the adjacent existing office activities. No noise penetration from the adjacent offices was apparent during the site visits.

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6.3.2 However, the adjacent offices are classified under Use Class E and more noisy activities could be permitted in the adjacent building. Activities permitted under Use Class E include retail of goods, indoor sports, a creche or nursery, medical facilities or an industrial process suitable for inclusion in a residential area without adverse impacts on the amenity of that area due to noise, vibration, etc.

6.3.3 It is understood that Enterprise House was initially a free-standing building before the adjacent office building was added and the party wall is an external wall, probably comprising an outer leaf of facing brick, a cavity and internal leaf of concrete blockwork wet rendered/plastered on the inner face. This construction would be anticipated to have a high resistance to sound transmission, equivalent to Robust Details or better. Any breaks in the party wall for existing doorways, etc. not to be retained will require making good to the same standard.

6.3.4 If there remains uncertainty regarding the resistance to sound transmission of the party wall, it should be tested in accordance with Part E of the building Regulations prior to the occupation of the apartments.

6.4 The proposed redevelopment of the site will have some noise impacts. However, the site is not directly adjacent to any residential properties. Also, given that most of the construction work will take place internally, it is not considered likely that the development will cause undue noise disruption to the surrounding area provided that construction work is restricted to normal working hours. The proposed development should not be a significant concern with relation to noise impact.

## 7. CONCLUSIONS

7.1 The National Planning Policy Framework (NPPF) states that sustainable development should:

i. Avoid noise giving rise to significant adverse impacts on health and quality of life.

ii. Mitigate and reduce to a minimum, other adverse impact on health and quality of life arising from noise, including through the use of conditions attached to planning consents.

iii. Recognise that development will often create some noise and existing businesses, wanting to develop in continuance of their business, should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.

iv. Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value.

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7.1.1 Due to the location of the site, whereby the eastern façades (front elevation) overlook Foundry Lane, the site is likely to be impacted by traffic noise. The railway tracks to the rear of the building will also impact on the noise experienced by the proposed residents.

7.2 Professional Practice Guidance (ProPg): Planning & Noise Note 1 *risk of adverse effects* rating for the site is Medium to High. This indicates a requirement that some acoustic design process should be followed for residential land use at this site.

7.3 In order to achieve the desired <30 $dB_{(A)}$ $L_{(A)eq}$ within the west/rear façade bedrooms, and accounting for night-time peak noise events, acoustic double glazing and acoustic ventilation will be required in order to achieve 35 $dB_{(A)}$ WHO standard.

7.4 The ventilation will need to be powered to provide an adequate cooling airflow which would be unlikely to be provided by passive vents alone. An alternative to powered acoustic ventilation would be a "whole house" type ventilation system with heat recovery and roof mounted inlets.

7.5 External noise levels are greater than the 55 $dB_{(A)}$ $L_{(A)eq}$ recommended as an annoyance threshold by WHO are likely to be achieved throughout the external area of the site. However, as there are no amenity areas the proposed residents would not be impacted by this.

7.6 The proposed apartments will share a party wall with the adjacent offices. The noise impact from the present office use should not penetrate the proposed apartments However, under the Use Class E, the adjacent offices could be used for more noisy activities at some time in the future.

7.7 The party wall is understood to be a former external wall construction and should provide adequate resistance to sound transmission. This may be subject to sound transmission testing under Part E of Building Regulations prior to occupation of the apartments.

7.8 The proposed redevelopment of the site, comprising the conversion of a three-storey office block into of two one-bedroom apartments and two two-bedroom apartments, should not have significant adverse noise impacts on adjacent commercial receptors as long as the work is restricted to normal working hours.

7.9 The evidence in this assessment suggests that, subject to implementing the mitigation and attenuation measures recommended above, the proposed development on this site should not give rise to significant adverse impacts on health and quality of life for proposed future residents.

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# APPENDIX A
## Figure 1: Site Location
## Figure 2: Existing Layout
## Figure 3: Proposed Development
## Figure 4: Monitoring locations
## Figure 5: Photographs

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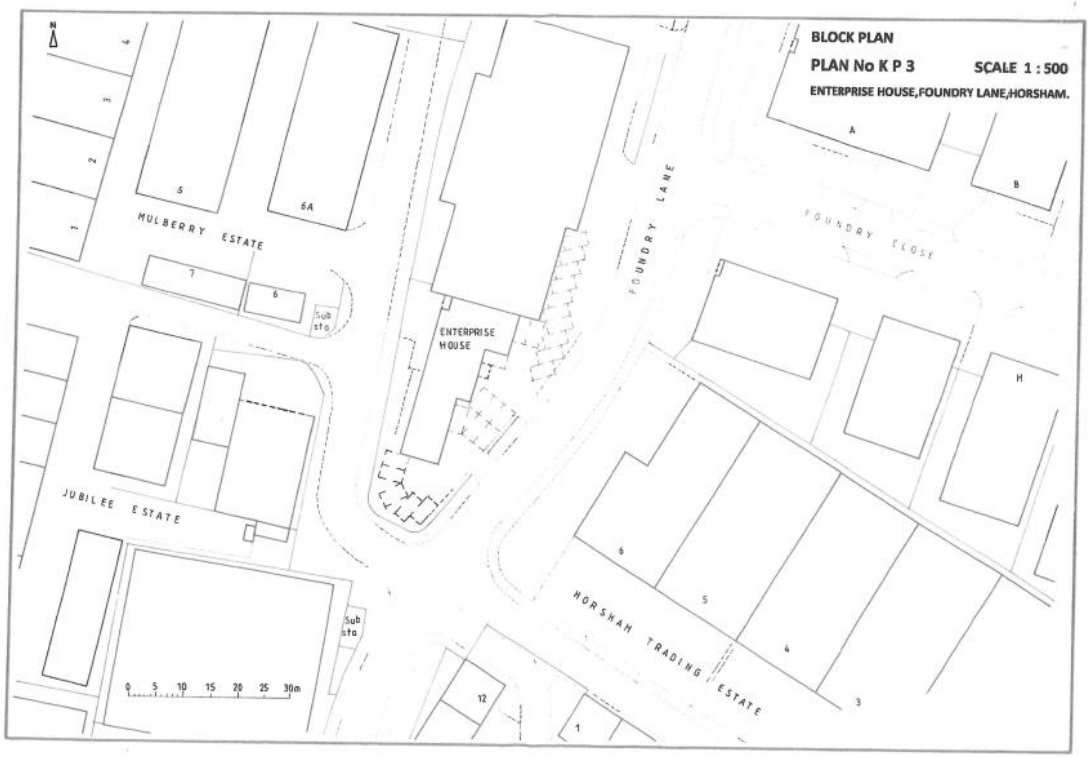
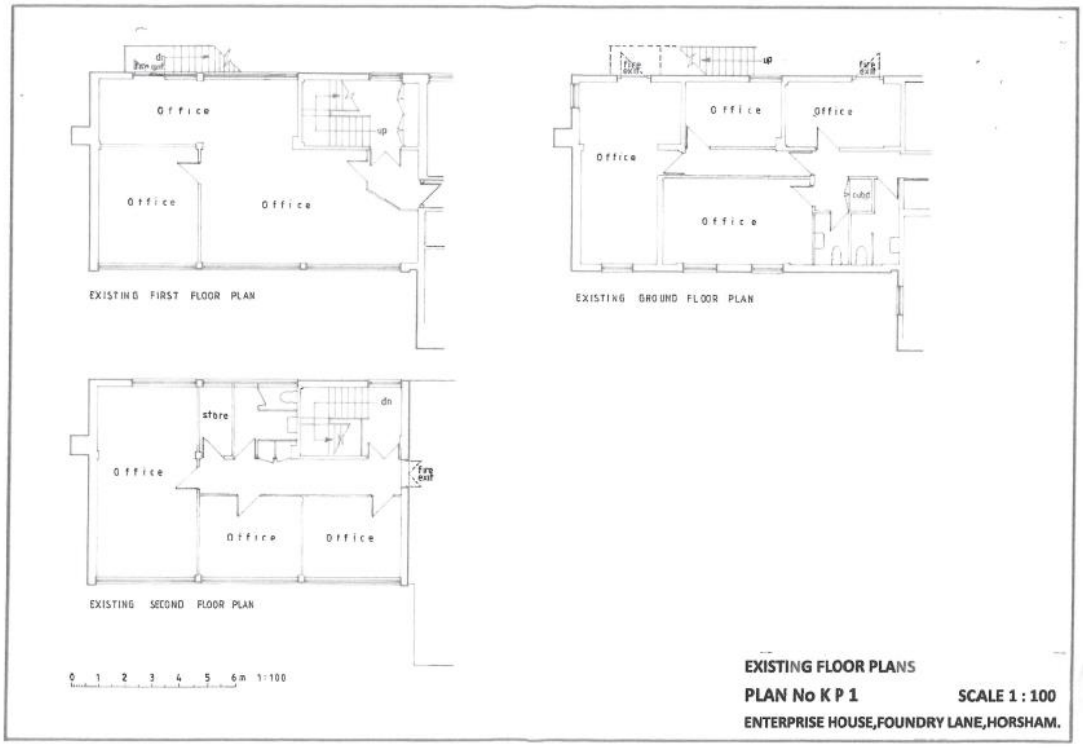
## Figure 1: Site Location




## Figure 2: Existing Layout

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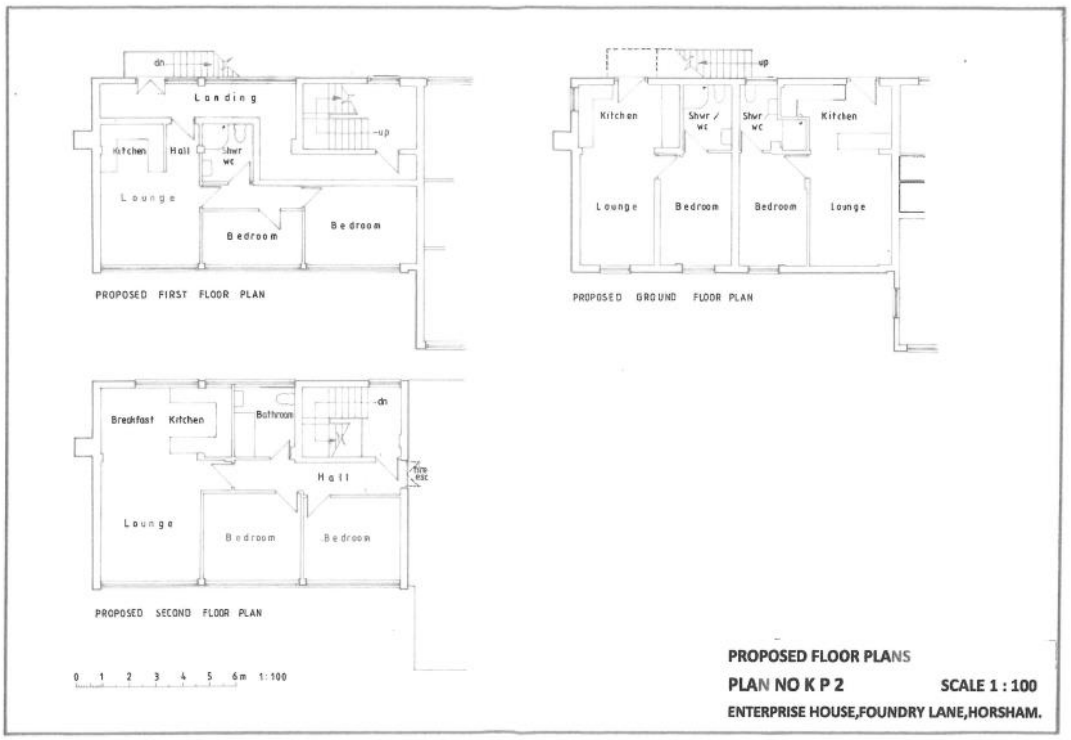
## Figure 3: Proposed Development







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## Figure 4: Monitoring Locations

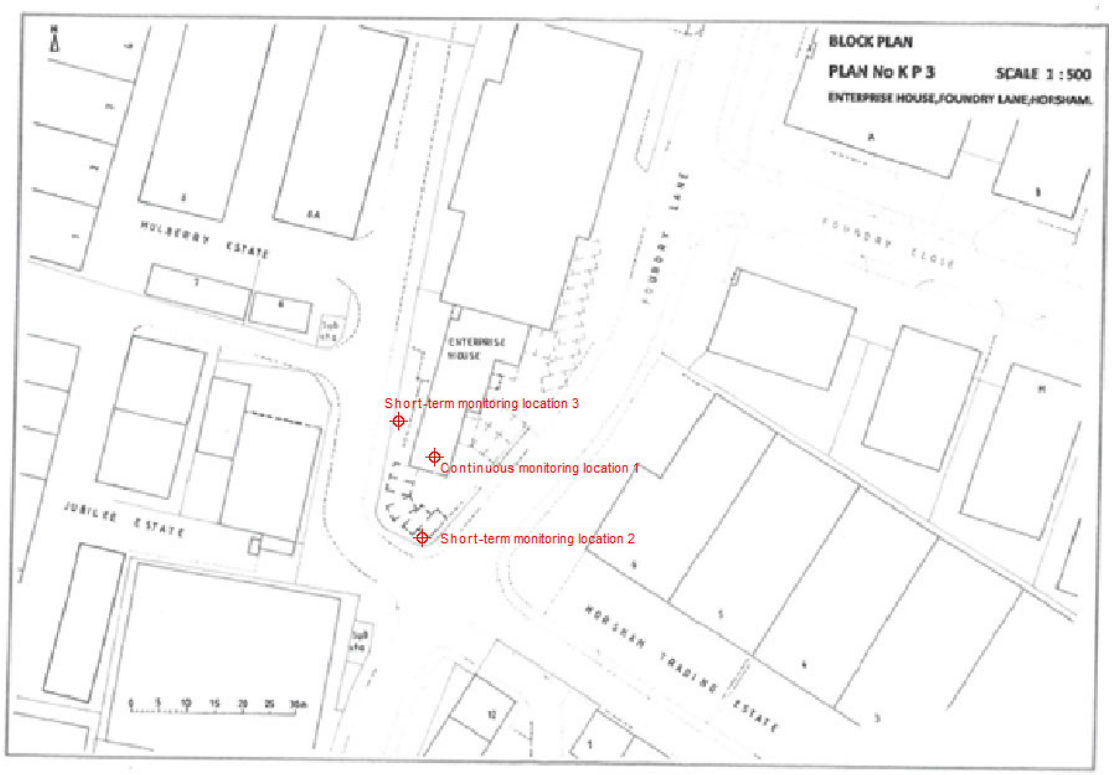


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**Figure 5: Photographs**

Roof view west towards the railway tracks



Roof view north towards Parsonage Road



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## Roof view south along Foundry Lane



## Roof view east across Foundry Lane




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Noise Monitor in position on the roof



Front of site building (building on the left to be developed)




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# APPENDIX B
# Noise Monitor Calibration Certificates

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Acoustic Calibration Services Limited
Unit 6H Diamond Industrial Centre
Works Road Letchworth Garden City
Hertfordshire SG6 1LW
[redacted]

*or*

cal@acousticcalibration.co.uk
web: www.acousticcalibration.co.uk

ACSL
Acoustic Calibration Services Limited

## CERTIFICATE OF CALIBRATION

**Model:** Casella CEL-490·C1 **Serial Number:** 129580

**Organisation:** Environmental Assessment Services Limited,1st Floor, Unit 1, Winterpick Business Park, Hurstpierpoint Road, Wineham, Henfield, West Sussex BN5 9BJ

**Job Number:** 2935 **Customer Order Reference:** SLM Calibration

The Sound Level Meter was assessed for conformance with International Standards IEC 60651 and IEC 60804 using test procedures described in BS 7580 Part 1. The meter claims Type 1 accuracy conformance and it was against these requirements that all the results were evaluated.

The sound level meter was fitted with a **GRAS 40AE** measurement microphone Serial No. **100742** and a **CEL-495** preamplifier Serial No. **001597**. The microphone was replaced with a suitable input device in order to apply electrical signals to the preamplifier.

A **Casella CEL-110/1** Acoustic Calibrator Serial No: **119427** was supplied with the meter and was utilised in establishing the initial acoustic calibration setting.

The sound level meter passed all applied tests with no deviations from Type 1 specification, in accordance with IEC 60651 and IEC 60804. Accordingly, the meter meets the requirements of BS 7580 Part 1.

The sound level meter should be set to read **113.9dB** when used with the associated acoustic calibrator, microphone and preamplifier, as detailed above at reference atmospheric pressure.

All ACSL's calibration instrumentation is fully traceable to National Standards. The acoustic references are calibrated by laboratories which are UKAS accredited for the purpose.

***Certificate No:*** **16161**
***Date of Issue:*** **9th March 2023**

***Signature:*** [redacted]
***Print Name:*** **Trevor Lewis**

Robert Lewis Accountants, Head Office: 4 Capricorn Centre Cranes Farm Road Basildon SS14 3JJ
Registered No: 4143457 VAT No: GB 770505441 Directors: Trevor J Lewis, G Parry BSc CPhys MInstP AMIOA, O R Clingan MIOA

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Acoustic Calibration Services Limited
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Works Road Letchworth Garden City
Hertfordshire SG6 1LW
[redacted]
*or*
cal@acousticcalibration.co.uk
web: www.acousticcalibration.co.uk

ACSL
Acoustic Calibration Services Limited

## CERTIFICATE OF CALIBRATION

**Model:** Casella CEL-110/1 **Serial Number:** 119427

**Organisation:** Environmental Assessment Services Limited, 1st Floor, Unit 1 Winterpick Business Park, Hurstpierpoint Road, Wineham Henfield, West Sussex BN5 9BJ

**Job Number:** 2935 **Customer Order Reference:** SLM Calibration

The acoustic calibrator was run for a period of time until a stable level was achieved. The output level was compared to the certified level of the laboratory measurement references. The calibrator was applied to the meter, removed, then reapplied to provide five separate readings, with the average value of these measurements recorded and certified.

The ambient temperature during calibration was **22.0** ± 1°C.
The barometric pressure was **99.4** to **99.5** kPa.
The relative humidity was **35** to **45** %

**The sound pressure level output from the Acoustic Calibrator was measured in its half inch configuration using a B&K 4134 microphone. The mean level output of the acoustic calibrator was 114.0 dB at the reference setting and 94.1 dB at the -20dB setting.**

**The output frequency signal of the acoustic calibrator is 1000Hz.**

All ACSL's calibration instrumentation is fully traceable to National Standards. The acoustic references are calibrated by laboratories which are UKAS accredited for the purpose.

***Certificate No:*** **16160** ***Signature:*** [redacted]
***Date of Issue:*** **9th March 2023** ***Print Name:*** **Trevor Lewis**

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# APPENDIX C
# SLM Traces

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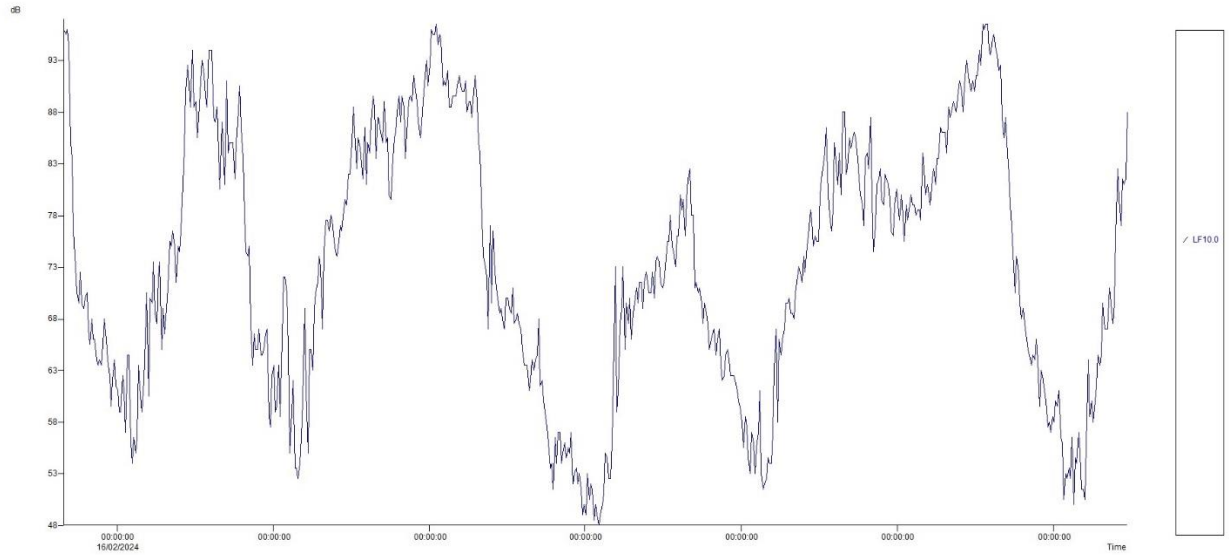


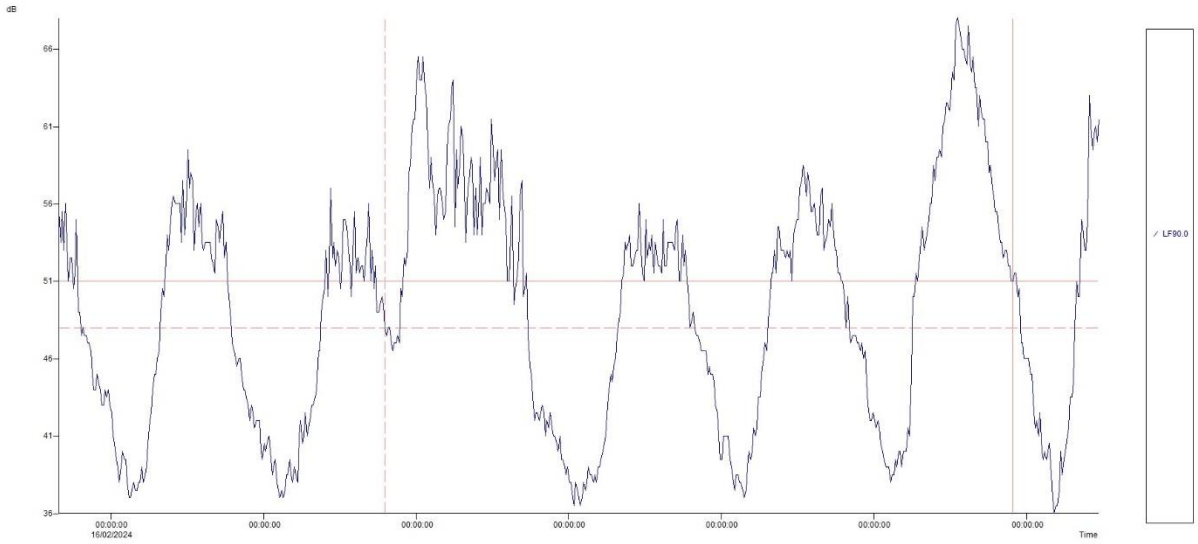


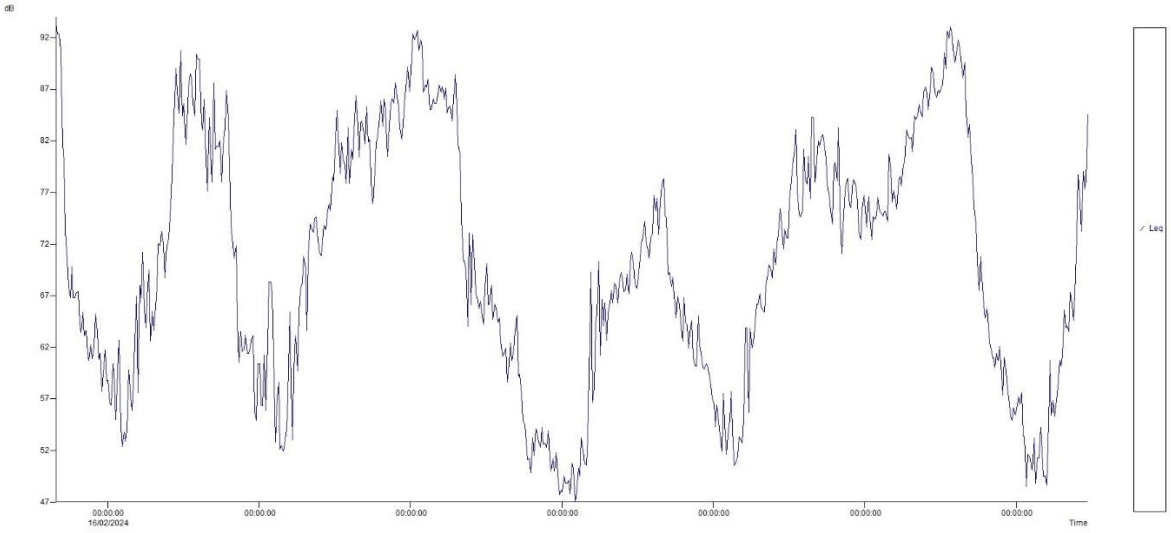


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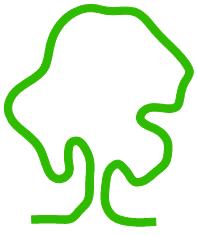

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