

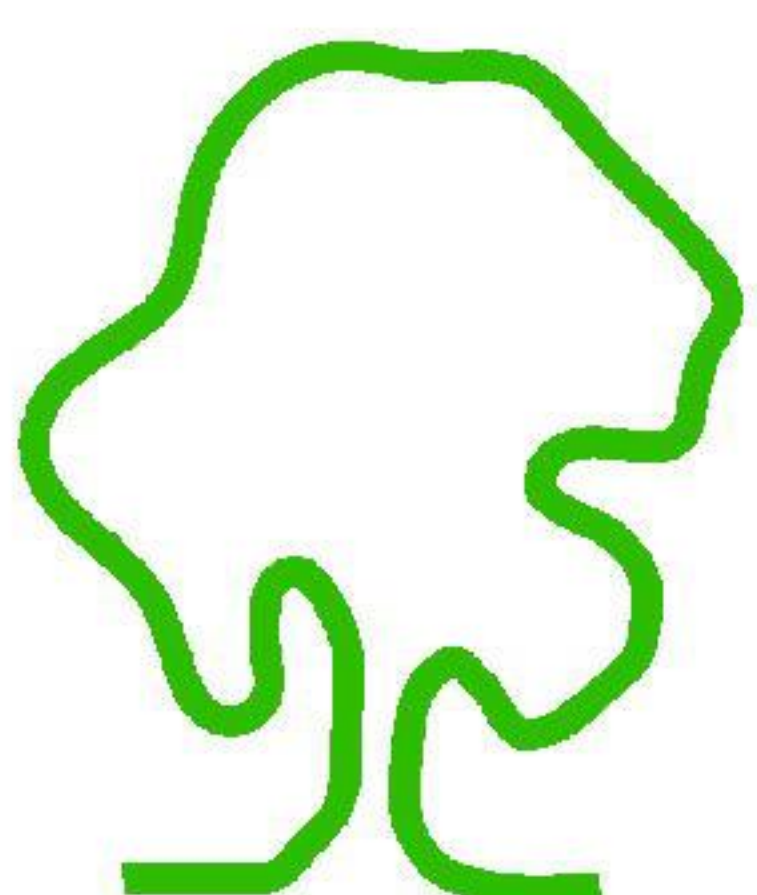
WOODSIDE GRANGE



WOODSLAND ROAD, HASSECKS, WEST SUSSEX, BN6 8EX

Noise Quality Assessments

January 2024



eas ltd

Environmental Assessment Services Ltd

REPORT DATA SHEET

Requirement	Data
Report Ref	654/WoodsideGrangeHassocks/Noise
Date	January 2024
Client	Tony Lock
Report type	Noise Impact Assessment
Purpose	Planning
Revisions	-
Prepared by	Xanthe Lyford BSc (Hons) Signed 
Approved by	Eur Ing Malcolm McKemey BSc (Hons), CEng, CEnv, MICE, MCIWEM, MIEnvSc  Signed

WOODSIDE GRANGE

WOODSLAND ROAD, HASSOCKS, BN6 8EX

Noise Impact Assessment

January 2024

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WOODSIDE GRANGE

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Noise Impact Assessment

January 2024

1. THE SITE AND BACKGROUND

- 1.1 The site comprises a plot of land currently occupied by a house with a parking area, garage, tennis court and swimming pool, which is to remain as a neighbouring residence. The rest of the property is currently laid to lawn with extensive mature trees and shrubs. There is an area of hardstanding along the eastern end of the site. The site is bordered to the north and east sides by the Taylor Wimpey housing estate (currently under construction), to the south by farmland (the location of the SuDS drainage pond for the Taylor Wimpey estate) and to the west by a ditch (probably a tributary of the Herring stream that runs through the village) and the London to Brighton railway line. See Figure 2 in Appendix A for the site layout. The Ordnance Survey reference for the site is TQ 30891 16422 and the site elevation is approximately + 44 m AOD. The total site area is 1.5 acres/0.61 hectares.
- 1.2 The site is to be developed (excluding the existing house, pool and garage) for use as two two-story residential properties, situated to the east of the pond (Site B) and a five-bedroom single story dwelling with disabled access and a swimming pool to the north of the site bordering on the SuDS field (Site A). The tennis courts are to be retained.
- 1.3 The surrounding land use comprises a mix of residential and farmland with residential properties lying to the east (currently under construction) and south of the site and fields to the north. To the west, directly bordering the site, runs the London to Brighton railway line.
- 1.4 The principal noise source at the site is considered to be the railway on the adjacent tracks to the west on an elevated embankment. The passenger trains run approximately every 10 minutes during the week, with a reduced timetable during the weekend, the freight runs intermittently throughout the day and night. The two two-story properties will look towards the railway line, separated by trees, gardens and a pond. The single-story property will have a side elevation facing the railway and will also be shielded from the tracks by trees and foliage.
- 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 9 January 2024 and revisited on 16 January 2024.

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’.

$L_{(A)10}$ – 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 Tuesday 9 January and Tuesday 16 January 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 construction noise from the building site to the east. However, the current noise impact caused by the ongoing construction at the adjacent Taylor Wimpey housing estate is not representative of the noise levels that will be experienced by the future residents. This has been taken into account when analysing the data.

- 3.3 Continuous noise monitoring was carried out level with the western façade of the single-story building at the edge of the tennis courts, in line of site of the railway line as this was deemed to be exposed to the most noise. Additional short-term noise monitoring was carried out at the western façade of the pond cottages (site B), overlooking the pond and facing the railway line and at the western most edge of the proposed single-story dwelling (Site A). See Figure 3 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). 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), level with the rear of the rear of the western facade of the proposed single-story property, facing towards the western border of the site and the railway line, between the two development sites. A sparse deciduous hedge borders the property and the tracks. This along with several deciduous trees separated the location and the western most boundary. The foliage present may have contributed to some very minor deadening of the ambient noise recorded; however, this would be negligible due to the time of year and when considered against the overall noise levels at the site.
- 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 nearest façade of the pond cottages and the single-story dwelling.
- 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			
Date	L _{(A)eq} dB _(A)	L _{(A)90} dB _(A)	L _{(A)10} dB _(A)	L _{(A)max} dB _(A)
Tuesday 9/1/24	52.7	43.3	51.9	84.5
Wednesday 10/1/24	51.7	42.5	50.7	81.5
Thursday 11/1/24	51.6	43.3	50.9	80.2
Friday 12/1/24	51.5	40.3	50.1	77.2
Saturday 13/1/24	51.0	31.4	46.3	72.2

Sunday 14/1/24	48.0	36.2	44.2	70.0
Monday 15/1/24	51.4	41.3	49.7	73.3
Tuesday 16/1/24	49.8	43.0	49.5	68.3

4.4 Professional Practice Guidance (ProPg): Planning & Noise Note 1 gives an initial noise risk assessment *risk of adverse effects* value in the range Negligible to High based on the daytime $L_{(A)eq\ 16hr}$ and night-time $L_{(A)eq\ 8hr}$ exposures recorded at the site. 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 Low. This indicates that good acoustic design process should be followed for residential properties at this site.

TABLE 4.2
AMBIENT NIGHT-TIME NOISE LEVELS

Location	1			
Date	$L_{(A)eq}\ dB_{(A)}$	$L_{(A)90}\ dB_{(A)}$	$L_{(A)10}\ dB_{(A)}$	$L_{(A)max}\ dB_{(A)}$
Tue/Wed 9/10 Jan 2024	42.7	26.5	39.1	68.4
Wed/Thu 10/11 Jan 2024	42.3	27.5	38.1	68.9
Thu/Fri 11/12 Jan 2024	43.6	31.1	39.1	69.6
Fri/Sat 12/13 Jan 2024	43.6	24.0	33.7	70.7
Sat/Sun 13/14 Jan 2024	44.2	25.4	35.2	70.2
Sun/Mon 14/15 Jan 2024	43.1	29.6	38.5	68.6
Mon/Tue 15/16 Jan 2024	44.5	28.6	39.4	69.9

TABLE 4.3
ADDITIONAL SHORT-TERM NOISE MONITORING

MONITORING LOCATION	2. Western façade of Pond Cottages, facing the train tracks, microphone on tripod.			
PERIOD	16 January 2024			
NOISE LEVELS dB _(A)	L _{(A)eq}	L _{(A)90}	L _{(A)10}	L _{(A)max}
	52.7	43.6	55.6	89.3
WEATHER	Light winds, generally cold and dry			
PRINCIPAL NOISE SOURCES	Trains on the tracks to the west of the site and construction noise from the building site to the east (a disc cutter was in use at the construction site and a helicopter was overhead at the time).			

MONITORING LOCATION	3. Western façade of the single-story dwelling, facing the train tracks, microphone on tripod.			
PERIOD	16 January 2024			
NOISE LEVELS dB _(A)	L _{(A)eq}	L _{(A)90}	L _{(A)10}	L _{(A)max}
	45.4	38.9	49.2	65.1
WEATHER	Light winds, generally cold and dry			
PRINCIPAL NOISE SOURCES	Trains on the tracks to the west of the site and construction noise from the building site to the east.			

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

5. INTERPRETATION OF THE RESULTS

- 5.1 The meteorological conditions at the site throughout the monitoring period were generally cold and dry with occasional snow, but not windy, therefore no allowance for weather conditions was considered necessary. There was some noise from the building site, adjacent to the site during the working day which has been taken into account.
- 5.2 The results confirm that the site is exposed to medium to low levels of noise, therefore some noise attenuation measures will be required in order to achieve an appropriate internal noise level suitable for a 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 21 dB_(A) of attenuation, the average L_{(A)eq} for the daytime readings being 50.96 dB_(A) and 43.23 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 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).
- 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 43.23 dB_(A), The average daytime L_{(A)eq} is 50.96 dB_(A). The attenuation provided by the open windows and the structure of the buildings would provide enough protection from to achieve the BS Maximum Standard of 35 dB_(A).
- 6.1.5 However, 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, say, 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 in 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 $55 \text{ dB}_{(A)} L_{(A)eq}$ as the threshold for annoyance, with the BS 8233:2014 stating that noise which does not exceed $50 \text{ dB}_{(A)} L_{(A)eq}$ to be "desirable". Less than $55 \text{ dB}_{(A)} L_{(A)eq}$ is likely to be achieved most of the time.
- 6.2.2 The highest peak ($L_{(A)max}$) noise level recorded was $89.3 \text{ dB}_{(A)}$, on the short-term monitoring. However, at the time of monitoring there was a helicopter passing and a disc cutter in use on the neighbouring building site. This is not considered representative of the noise levels at the site. During the continuous monitoring the highest daytime peak was $81.5 \text{ dB}_{(A)}$ and the highest night-time peak was $70.7 \text{ dB}_{(A)}$.
- 6.3 The proposed redevelopment of the site will have some noise impacts. However, the site is not directly adjacent to any residences that are currently in habitation (the Taylor Wimpey houses being still under construction). Construction work restricted to normal hours, 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.
- 7.2 Due to the location of the site, whereby the western façades (rear elevation for the two Pond Cottages, and side elevation for the single-story dwelling) overlook the railway line, the sites are likely to be impacted by train noise. The eastern and southern façades will be less impacted.
- 7.3 Professional Practice Guidance (ProPg): Planning & Noise Note 1 *risk of adverse effects* rating for the site is Medium to Low. This indicates a requirement that some acoustic design process should be followed for residential land use at this site.

- 7.4 In order to achieve the desired $<30 \text{ dB}_{(A)} L_{(A)eq}$ 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 $35 \text{ dB}_{(A)}$ WHO standard.
- 7.5 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 inlets.
- 7.6 External noise levels less than the $55 \text{ dB}_{(A)} L_{(A)eq}$ recommended as an annoyance threshold by WHO are likely to be achieved throughout the external area of the site.
- 7.7 The proposed redevelopment of the site, comprising the construction of two two-story houses and a five-bedroom single story dwelling, should not have significant adverse noise impacts on adjacent residential receptors as long as the work is restricted to normal hours.
- 7.8 The evidence of this assessment is 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: Proposed Development

Figure 3: Monitoring locations

Figure 4: Photographs

Figure 1: Site Location

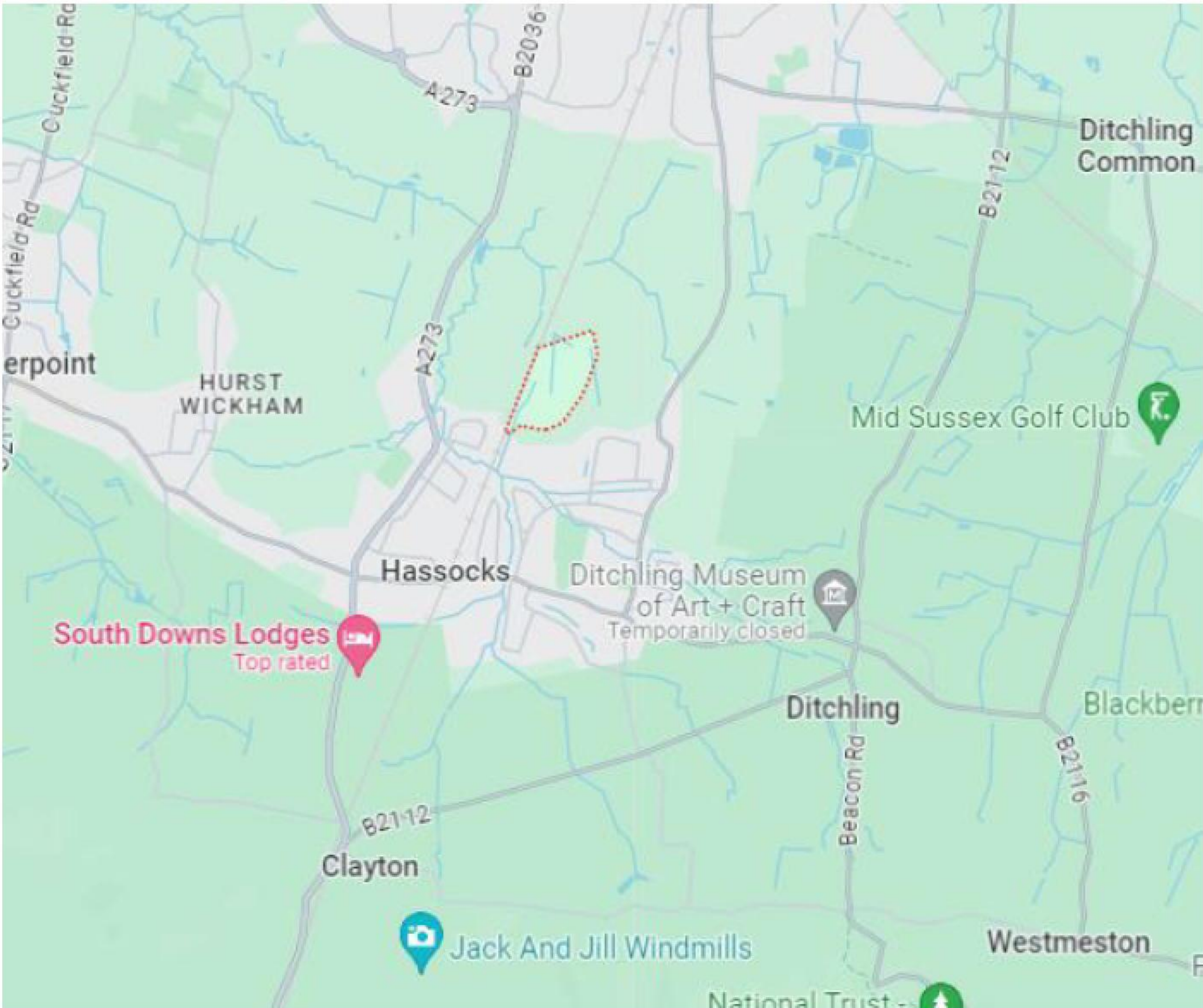


Figure 2: Proposed development

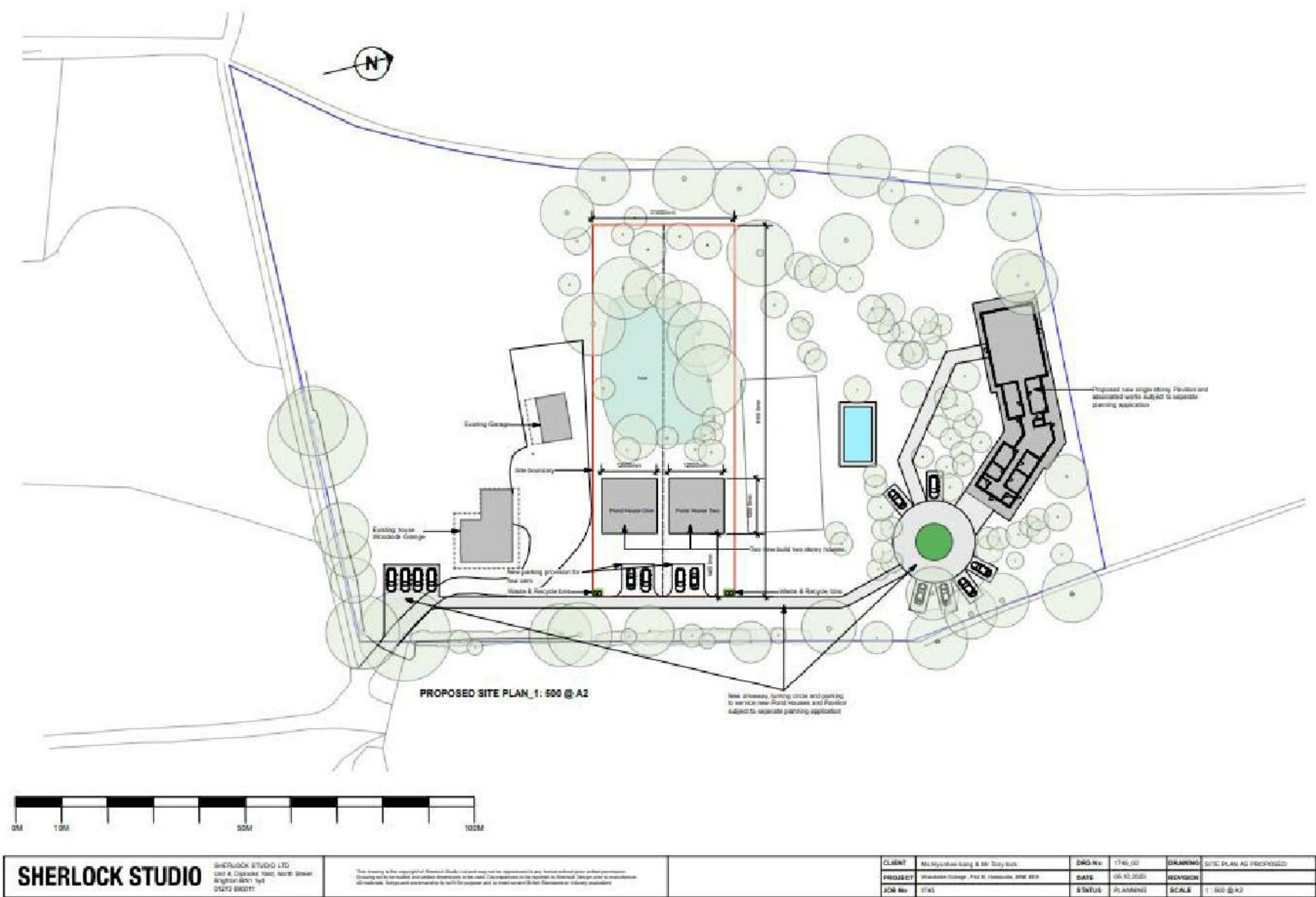
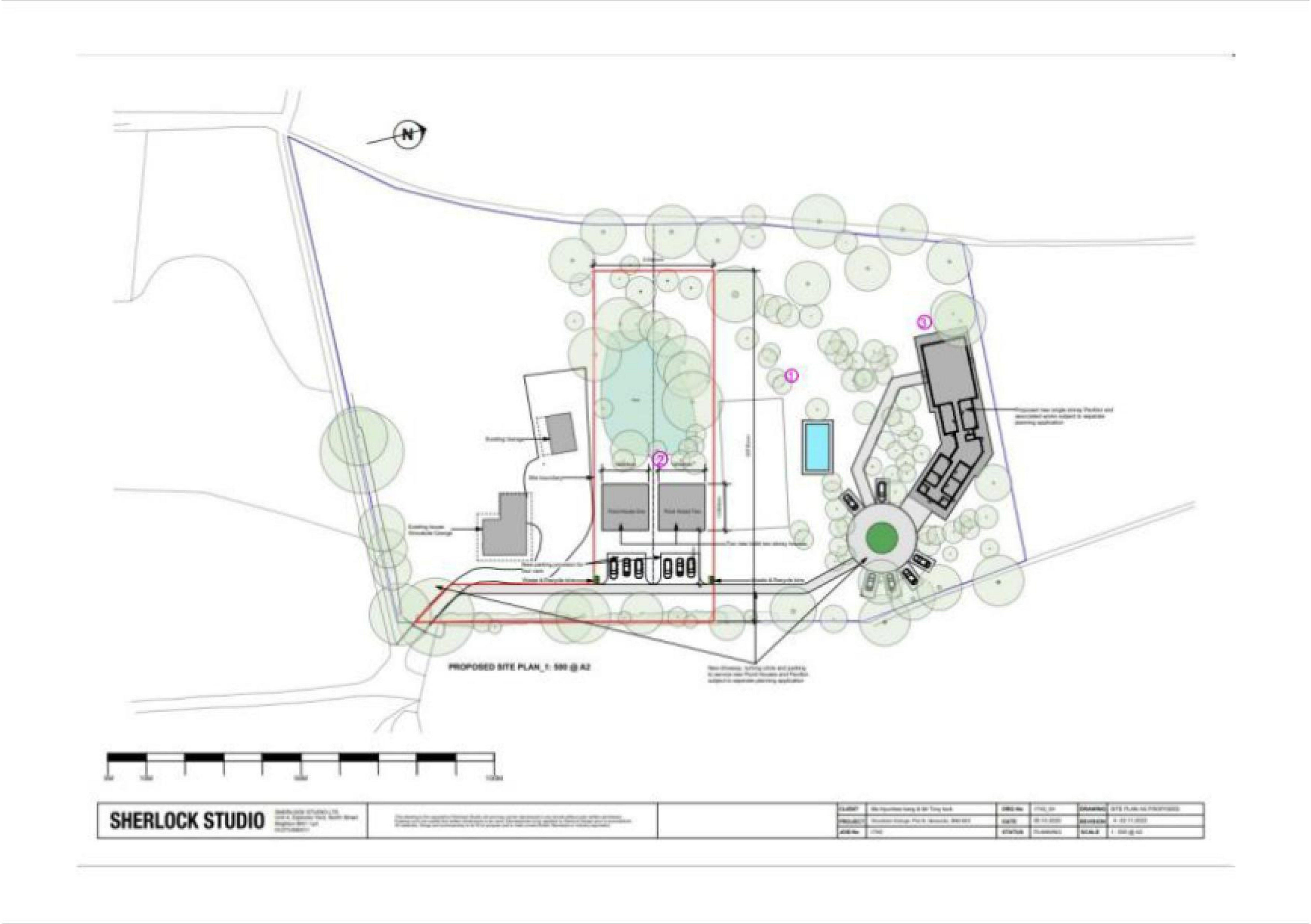


Figure 3: Monitoring Locations

- 1: Continuous monitoring location
- 2: Additional noise monitoring location
- 3: Additional noise monitoring location



Continuous Noise Monitoring Location at base of tree.



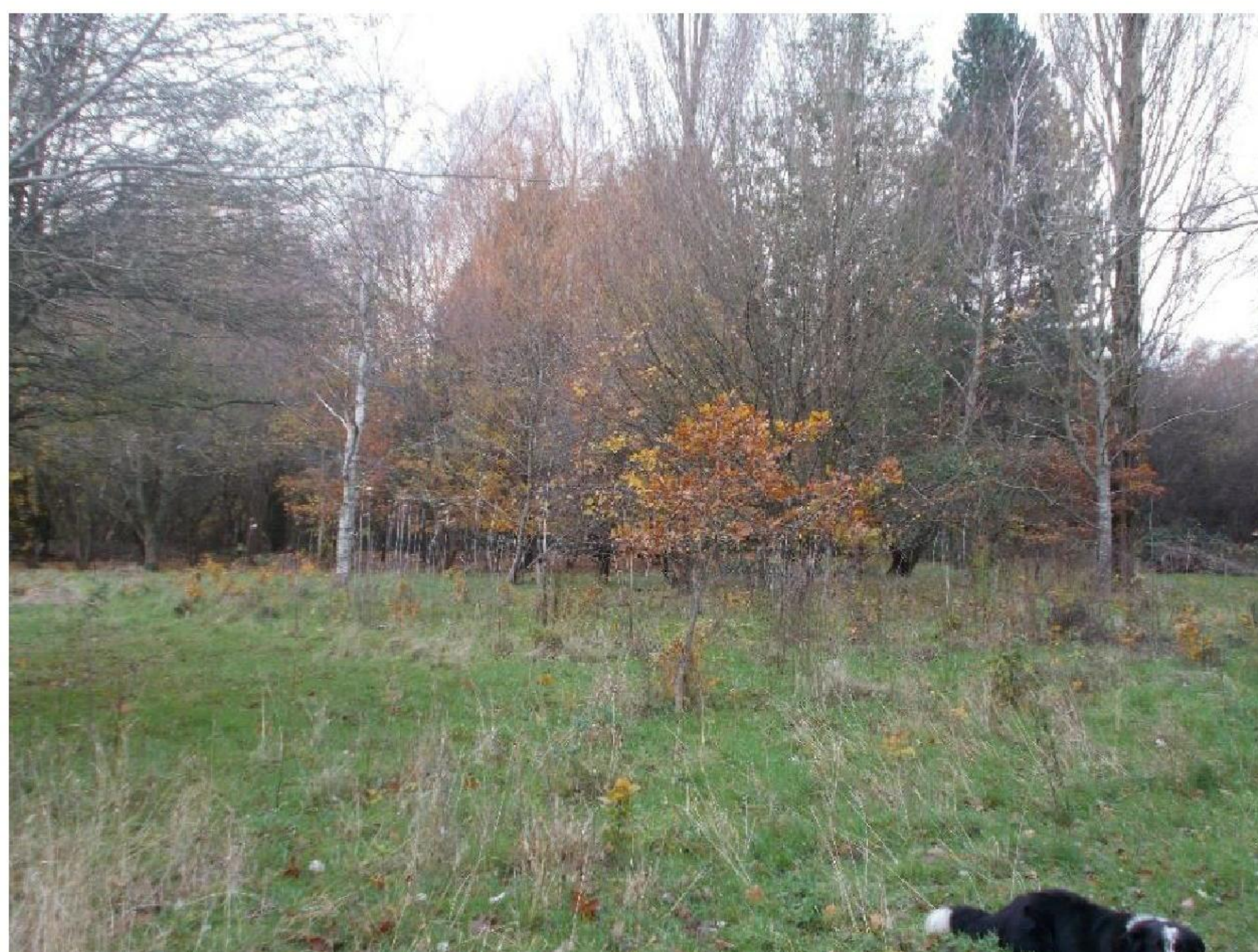
Photograph showing camera tripod location 2 (short term monitoring), at proposed western edge of pond cottages site.



Site A facing south towards the existing house.



Site A facing northwest towards the railway tracks (west) and the Tayor Wimpey
SuDS Pond (north).



Site B facing west towards the pond and the railway tracks.



Boundary with the railway tracks to the left of the picture.



APPENDIX B

Noise Monitor Calibration Certificates

Acoustic Calibration Services Limited
Unit 6H Diamond Industrial Centre
Works Road Letchworth Garden City
Hertfordshire SG6 1LW
Tel: 01462 677 197 Mobile: 0771 886 4944
Email: trevjohnlewis@aol.com
or
cal@acousticcalibration.co.uk
web: www.acousticcalibration.co.uk



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: 
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

Acoustic Calibration Services Limited
Unit 6H Diamond Industrial Centre
Works Road Letchworth Garden City
Hertfordshire SG6 1LW
Tel: 01462 677 197 Mobile: 0771 886 4944
Email: trevjohnlewis@aol.com
or
cal@acousticcalibration.co.uk
web: www.acousticcalibration.co.uk



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.

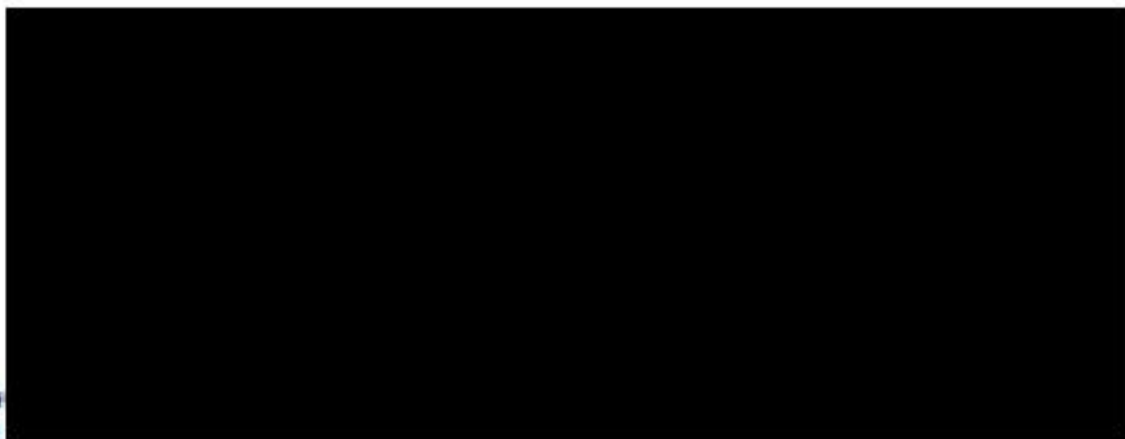
The ambient temperature during calibration was $22.0 \pm 1^{\circ}\text{C}$.
The barometric pressure was **99.4** to **99.5** kPa.
The relative humidity was **35** to **45** %

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.

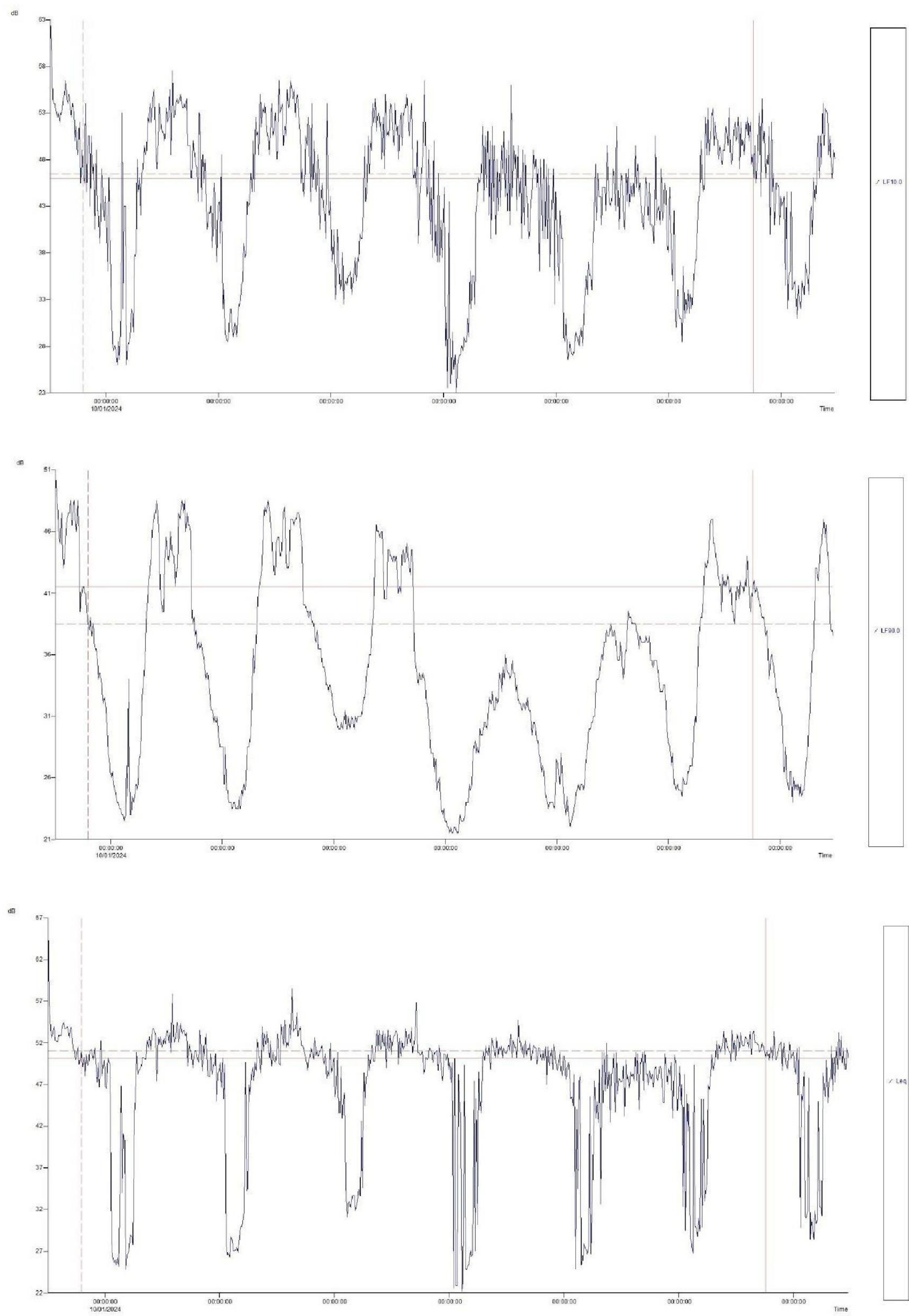
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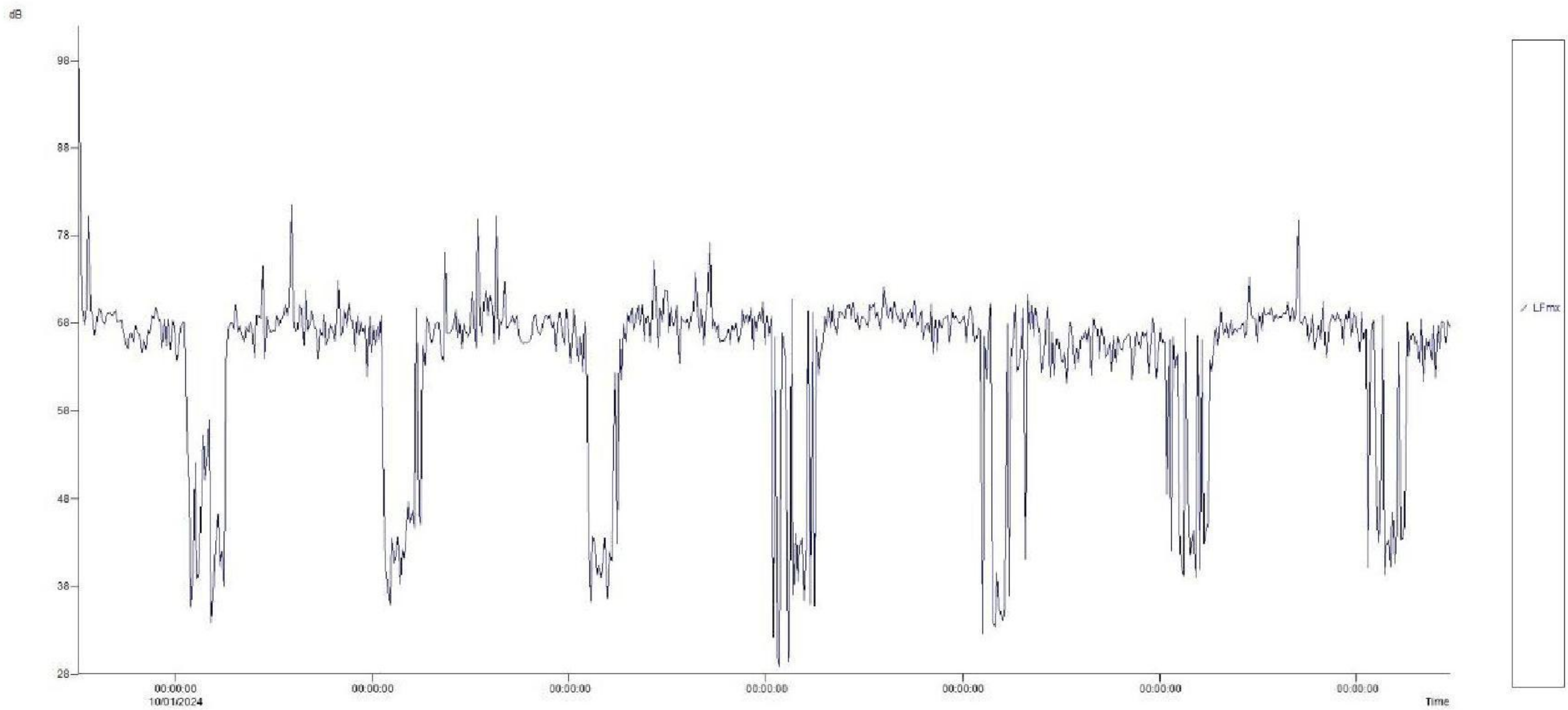
Signature: 
Print Name: Trevor Lewis

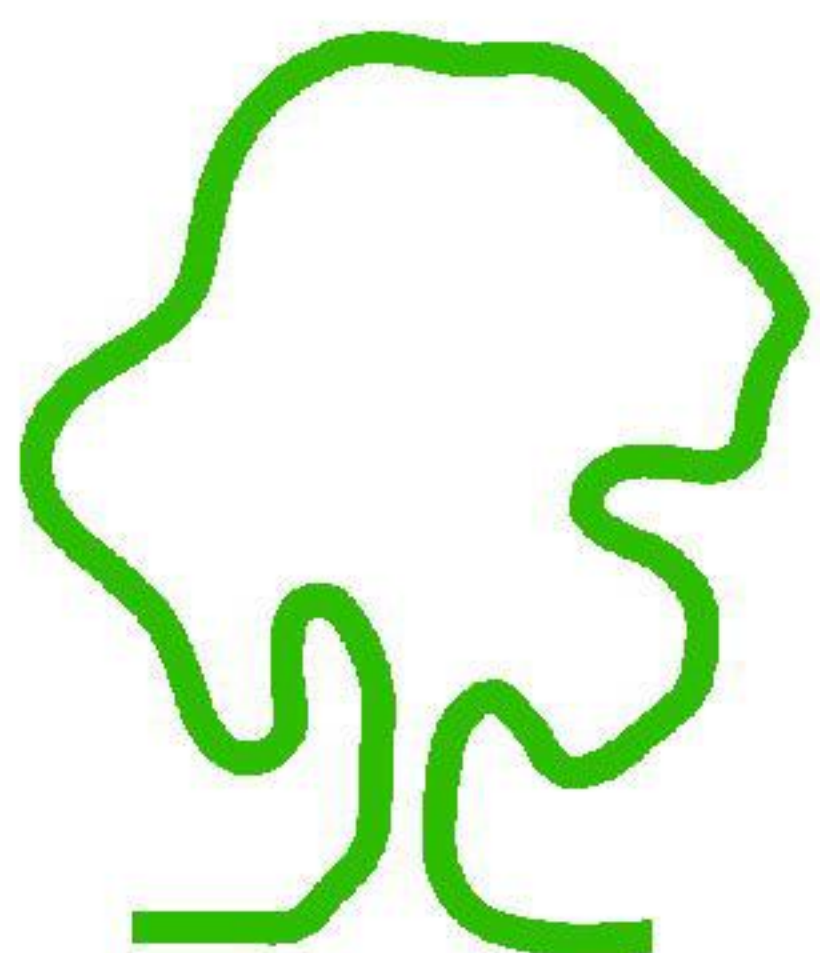
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APPENDIX C

SLM Traces







eas ltd

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