Compliance 4 Buildings Ltd

BS 4142:2014

NOISE SURVEY v3.1

Technical Report Number: 20222938M938C/1/3

Our Reference: 20222938M938C

Client: Amit Patel

Site: 4 Pebble Lane, Wellingborough

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Survey Date: 13th November 2022

Date of Issue: 8th May 2023

Title:	BS4142 Noise Survey
Project:	Kitchen extract fan installation
Our Reference:	20222938M938C
Technical Report Number:	20222938M938C/1/3
Survey Date:	13th November 2022
Site Address:	4 Pebble Lane, Wellingborough
Client:	Amit Patel
Submitted To:	Amit Patel
Submitted By:	Tony Trup
Date:	8th May 2023

QA CONTROL:

	NAME	POSITION	SIGNATURE	DATE
Prepared By	Tony Trup	Senior Acoustic Consultant		8th May 2023
Approved By	Elliot Hurst	Acoustic Consultant		8th May 2023

REVISION HISTORY:

REVISION	DESCRIPTION	DATE	PREPARED	APPROVED
Final	Final	12th December 2022	Tony Trup	Elliot Hurst
Final v2	Final v2	8th May 2023	Tony Trup	Elliot Hurst
Final v3	Final v3	8th May 2023	Tony Trup	Elliot Hurst

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TABLE OF CONTENTS.

APPENDICES

1.0 QUALIFICATIONS AND EXPERIENCE

The survey was undertaken by Elliot Hurst BSc MSc AMIOA. Elliot has substantial experience in acoustics surveying, in particular sound insulation testing, and an MSc in Applied Acoustics.

The assessment and report were written by Tony Trup, BMus MIOA. Tony has been in acoustics consultancy since 2012 and has significant experience in building and mechanical acoustics.

About Compliance 4 Buildings Ltd

Compliance 4 Buildings Ltd is a consultancy established in 2019 offering a project managed approach to building compliance and acoustics.

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Compliance 4 Buildings Accreditations

Compliance 4 Buildings hold numerous professional accreditations. Compliance 4 Buildings is insured and Registered with all appropriate authorities. Our testing equipment is of the highest quality and fully calibrated and serviced in line with manufacturer's instructions.

2.0 EXECUTIVE SUMMARY

2.1 Instruction

Compliance 4 Buildings Limited have been instructed to undertake a noise impact assessment of a proposed kitchen extract fan at 4 Pebble Lane, Wellingborough, NN8 1AS.

This report summarises the noise survey undertaken, and the results of the impact assessment, along with required mitigation measures.

2.2 Scope of Report

The measurements and assessment were undertaken in accordance with BS 7445: Parts 1 and 2 and British Standard 4142:2014 + A1(2019).

This report aims to establish the following:

- Existing background noise levels at the nearest residential façade ($L_{A90,T}$);
- Rating noise levels from the Proposed Plant ($L_{Aeq,r}$);
- Impact on the nearest noise sensitive property; and
- Mitigation measures, if required.

2.3 Assessment

Table 1 - Assessment Results

BRITISH STANDARD 4142:2014 + A1(2019)	NSR1	NSR2
Rating Level, $L_{Ar,Tr}$	35	20
Background sound level, $L_{A90,T}$	51	39
Difference	-16	-19

2.4 Conclusions

The assessment indicates that the proposed installation will have a negligible impact and is compliant with the proposed criterion (subject to approval by the Local Authority).

3.0 INTRODUCTION

3.1 Background

Compliance 4 Buildings have been instructed to undertake a noise impact assessment of a proposed kitchen extract fan at 4 Pebble Lane, Wellingborough, NN8 1AS.

The assessment of noise impact at the nearest sensitive receptor is undertaken in accordance with BS 4142[2014] + A1(2019), where rating noise due to the proposed plant ($L_{Ar,Tr}$) must be compared to the background noise level ($L_{A90,T}$).

3.2 Scope and Objectives

The scope of the noise assessment can be summarized as follows:

- Baseline sound monitoring survey to evaluate the prevailing sound levels at the nearest sensitive receptor ('NSR') to Site; and
- A detailed calculation of the noise emissions and noise Rating Level of the proposed installation.
- Recommendation of mitigation measures, where necessary, to comply with the requirements of <LPA>.

4.0 SITE DESCRIPTION AND SURROUNDING AREA

4.1 Site Description

4.1.1 The development site is located at 4 Pebble Lane, Wellingborough, NN8 1AS, within the purvue of North Northamptonshire Council. It comprises a ground floor commercial unit with a Local Authority library above.

4.1.2 The development is situated in the town centre of Wellingborough, in a mixed-use area. Directly above the site at first floor level is Wellingborough Library. Adjacent at ground floor level are commercial units.

Figure 1 Site context (Google Maps)

Figure 2 Satellite image (Google, CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, Maps)

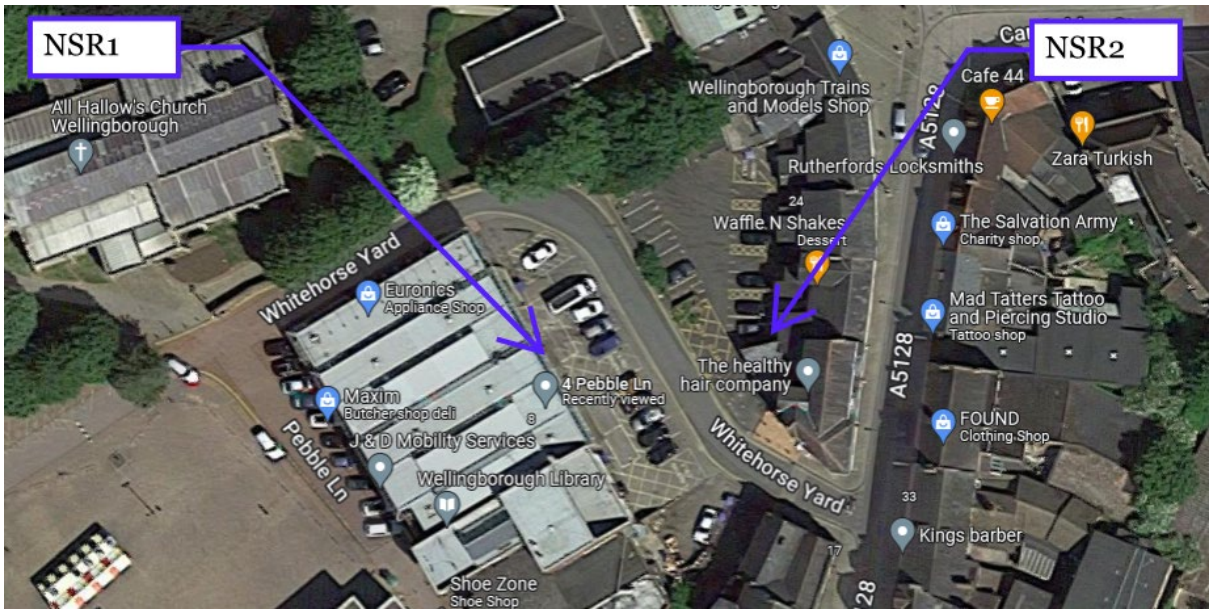
4.2 Nearest Noise Sensitive Receptors (NSR)

The nearest noise-sensitive development is believed to be Wellingborough Library, at first floor directly above the development site.

Residential premises are located approximately 27 metres away on the opposite site of Whitehorse Yard, above ground floor commercial units.

For the purposes of this assessment, we have taken the nearest noise sensitive receptor to be the Library, as it is immediately adjacent to site. This will be referred to as NSR1.

The nearest residential receptors are those across Whitehorse Yard, above the ground floor commercial units on the A5128. These are referred to as NSR2.



4.3 Nearest Noise Sources

The existing noise climate is dominated by distant road traffic from the surrounding area, and mechanical plant operation serving the adjacent commercial units. In particular, one item of plant serving the adjacent convenience and food store dominated the noise climate at the library.

5.0 PROPOSED DEVELOPMENT

The development proposes to install 1No. oven extract fan, comprising an exoflue Pizza Oven Inline Fan.

The following table presents the in-duct sound power level provided by the manufacturer. The are understood to be no other plant items ducted to the exterior.

Table 2 In-duct sound power levels of proposed plant, dB re 2 x 10^{-2} W at octave band centre frequencies, Hz

Item	63	125	250	500	1k	2k	4k	8k
Discharge	44	47	56	46	39	32	25	23

The flue is proposed to discharge approximately 1.5 metres away from the openable library window.

6.0 PLANNING POLICY, GUIDANCE AND ASSESSMENT CRITERIA

6.1 Local Authority Requirements

We were unable to find any reference to noise or noise impact assessments in the Local Authority's Sustainable Design Supplementary Planning Documents (SPD). We were unable to find other suitable SPDs or policies in the public domain.

Upon calling the Local Authority, we were advised that there was no duty planning officer, and any relevant information would be available on the website. Alternatively, it would be possible for the client to pay for pre-application advice.

In the absence of specific Local Authority requirements, we refer to British Standard 4142:2014.

6.2 British Standard 4142:2014 + A1(2019)

British Standard BS 4142[2014] + A1(2019) "Method for rating and assessing industrial and commercial sound" is widely used by local authorities to determine whether a new industrial noise source is likely to give rise to complaint from people living nearby.

BS 4142[2014] + A1(2019) sets out a method to assess the likely effect of sound from factories, industrial premises or fixed installations and sources of an industrial nature in commercial premises, on people who might be inside or outside a dwelling or premises used for residential purposes in the vicinity.

The procedure contained in BS 4142[2014] + A1(2019) for assessing the effect of sound on residential receptors is to compare the measured or predicted sound level from the source in question, the $L_{Aeq,Tr}$ 'specific sound level', immediately outside the dwelling with the LA90,T background sound level.

Where the sound contains a tonality, impulsivity, intermittency and other attention-catching acoustic characteristics, then a penalty depending on the grade of the aforementioned characteristics of the sound is added to the specific sound level to obtain the $L_{Ar,Tr}$ 'rating sound level'. A correction to include the consideration of a level of uncertainty in sound measurements, data and calculations can also be applied when necessary.

BS 4142[2014] + A1(2019) states: "The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs". An estimation of the impact of the specific sound can be obtained by the difference of the rating sound level and the background sound level and considering the following:

- "Typically, the greater this difference, the greater the magnitude of the impact."
- "A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context."
- "A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context."
- "The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact, depending on the context."

- During the daytime, the assessment is carried out over a reference time-period of 1-hour, and 15-minutes during the night-time. The periods associated with day and night, for the purposes of the assessment, are 07.00 to 23.00 and 23.00 to 07.00, respectively.

The initial estimate of the impact may need to be modified due to the context of the assessment. Section 11 of BS 4142[2014] + A1(2019) states that where background sound levels and rating levels are low, absolute levels might be more relevant than the margin by which the rating level exceeds the background.

7.0 SITE BS 4142[2014] + A1(2019) NOISE SURVEY

7.1 Measurement Methodology

Unattended daytime noise measurements close to NSR1 were undertaken between 19:00 and 23:00 on Sunday 13 November 2022.

Measurements were undertaken in general accordance with the guidance outlined in the relevant British Standards BS 4142[2014] + A1(2019) and BS 7445-1:2003.

7.2 Measurement Positions

The positions were selected to acquire prevailing background noise levels representative of the nearest noise sensitive receptors (Wellinborough Library).

Table 3 Measurement positions

MEASUREMENT POSITION	DESCRIPTION
1	The microphone was approximately 5m from the ground and 1m from the building façade. The noise climate at the measurement position was dominated by noise from neighbouring commercial plant at the rear of the adjacent food store. This was believed to be chilling plant, and it operated at an apparently steady duty throughout our survey.
2	The microphone was located around the corner on Pebble Lane on the pavement, approximately 1.5m from the façade of the library, and 1.5m from the ground. This position was largely screened from the noise of the chilling plant. This position was chosen to understand the noise climate at locations screened from the noise of the chilling unit. This could represent likely noise levels at NSR 2 (the residential units across Whitehorse Yard), and was chosen as no safe location could be found close to the rear façade of those residential units.*

*Safety concerns at NSR2 related to lone working after dark on a public footpath, potential conflict from measuring directly outside residential premises, and potential for injury if standing in the car park after dark.

Photographs of the measurement positions are contained within APPENDIX 4:.

7.3 Measurement Equipment

All equipment used during the survey(s) was calibrated at the start and end of each measurement period. No significant drift was observed.

All microphones were fitted with a wind shield for the entire measurements period.

Table 4 - Details of the Measurement Equipment Used

REFERENCE NAME	EQUIPMENT NAME	MANUFACTURER	MODEL	SERIAL	CALIBRATION
E1	Environmental Sound Monitor	Svantek	SV307A	119334	13/07/2022
E2	Calibrator	Svantek	SV36	109944	13/06/2022
E3	Sound Level Meter1	Svantek	SV977C	97481	16/06/2021

7.4 Meteorological Summary

During the survey, the weather was variable, however wind speeds of less than <5m/s were recorded on site and included no periods of rainfall. A record of the weather conditions as published by www.worldweatheronline.com was kept during the measurement survey period. Real-time data was captured using a Kestrel 5500 Weather Meter during set-up and collection and as detailed in the below table.

7.5 Noise Survey Results

All measurements were undertaken in accordance with BS 7445: Parts 1 and 2. All sound pressure levels are in dB (re: 20µPa), using a 1 second logger using a fast time setting and refactored to produce the results..

The following table summarised the noise levels measured during our survey. These levels are presented as measured (i.e. without any corrections for façade reflections).

Table 5 Summary of measured sound pressure levels, dB(A)

MEASUREMENT POSITION	TIME	MEASUREMENT PERIOD T, MIN	AMBIENT SOUND LEVEL $L_{AEQ,T}$	BACKGROUIND SOUND LEVEL $L_{A90,T}$
1	19:00	60	60	58
	20:00	60	60	54
	21:00	60	59	54
	22:00	60	58	53
2	22:30	15	45	42
	22:45	15	44	42

7.6 Discussion of background sound levels

The measurements at Position 1 are influenced by the presence of mechanical plant noise. With regards to considering noise from existing plant, BS4142:2014 states the following,

"Since the intention is to determine a background sound level in the absence of the specific sound that is under consideration, it is necessary to understand that the background sound level can in some circumstances legitimately include industrial and/or commercial sounds that are present as separate to the specific sound."

On this basis, the measurements at Position 1 are thought to be representative of the background sound level at the rear façade of Wellingborough library.

Measurements were undertaken at Position 2 to understand likely noise levels at locations screened or distant from the chiller (e.g. at the residential facades across Whitehorse Yard). No safe measurement position could be found close to these facades, and therefore this location was chosen.

On the basis of guidance in BS4142:2014 (see 6.2), we would suggest that noise emissions from the proposed kitchen extract fan (the Specific Sound Level L_{As}) should not exceed a sound level 5 dB below the measured background sound level.

7.7 Proposed noise emission criteria

The following table summarises our proposed noise emission criteria at the noise sensitive receptors, taking into account a -3 dB correction for reflections.

Table 6 Proposed plant noise emission criteria (daytime 07:00 to 23:00)

NOISE SENSITIVE RECEPTOR (NSR)	BACKGROUND SOUND LEVEL	CRITERIA FOR NOISE EMISSIONS FROM PROPOSED EXTRACT FAN AT NSR
1	51	46
2	39	34

8.0 IMPACT ASSESSMENT

8.1 Uncertainty

In our experience, HVAC noise levels as installed can vary by approximately ±5 dB(A) versus the design calculations due to manufacturing variations, measurement procedures and calculation uncertainty among other factors. Our assessment and proposed mitigation measures provide a suitable buffer to counteract a potential effect of uncertainty, such that a worst-case (+ 5dB) higher noise level than predicted would likely still have only a negligible impact.

8.2 Acoustic feature corrections

The noise of kitchen extract fans is typically broadband and constant, provided the equipment is installed, balanced, and commissioned in accordance with the manufacturer's requirements and design intent. Therefore, no acoustic feature corrections are considered necessary in this instance.

8.3 BS 4142 Assessment – NSR1

The noise impact assessment is provided in the table below.

Table 7 - Noise impact assessment to NSR1 (Library windows)

ITEM	63	125	250	500	1K	2K	4K	8K	DB(A)
In-duct SWL	44	47	56	46	39	32	25	23	50
Combined ducting losses, end reflection, directivity	3	3	2	0	-13	-13	-13	-13	-
1.5m point source propagation	-15	-15	-15	-15	-15	-15	-15	-15	-
Uncertainty and acoustic feature corrections	0	0	0	0	0	0	0	0	-
Rating level at receptor	33	35	44	31	11	5	-2	-4	36
Background sound level	51								
Difference	-16								
Impact	Negligible								
Proposed target (subject to approval by Local Authority)	≤46								
Compliance with proposed target	Pass								

8.4 BS 4142 Assessment – NSR2

The noise impact assessment is provided in the table below.

Table 8 - Noise impact assessment to NSR (residential windows)

ITEM	63	125	250	500	1K	2K	4K	8K	DB(A)
In-duct SWL	44	47	56	46	39	32	25	23	50
Combined ducting losses, end reflection, directivity	5	6	7	8	9	9	9	9	-
30m point source propagation	-38	-38	-38	-38	-38	-38	-38	-38	-
Uncertainty and acoustic feature corrections	0	0	0	0	0	0	0	0	-
Rating level at receptor	12	15	26	16	10	4	-3	-5	20
Background sound level	39								
Difference	-19								
Impact	Negligible								
Proposed target (subject to approval by Local Authority)	≤34								
Compliance with proposed target	Pass								

9.0 CONCLUSIONS

A noise assessment has been undertaken at 4 Pebble Lane, Wellingborough. The noise survey was required to assess the impact from a proposed oven extract fan.

Following on-site measurement of pre-existing noise levels, recommendations have been made relating to the rating levels at the nearest sensitive reception points.

The installation is predicted to have a negligible impact, and to be compliant with the Local Authority's requirements (subject to their approval of the criterion), on the understanding that the flue will be at least 1.5 metres away from the openable library window, and approximately 30 metres away from the nearest residential window.

10.0 REFERENCES

[1] BS 4142[2014] + A1(2019) – Method for Rating and Assessing Industrial and Commercial Sound. British Standards Institute, 2014.

[2] BS 8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings. British Standards Institute, 2014.

[3] BS 7445:2003 Part 1 – Description and Measurement of Environmental Noise: Guide to Quantities and Procedures. British Standards Institute, 2003.

[4] BS 7445:1991 Part 2 – Description and Measurement of Environmental Noise: Guide to Acquisition of Data Pertinent to Land Use. British Standards Institute, 1991.

[5] BS 7445:1991 Part 3 – Description and Measurement of Environmental Noise: Guide to Application to Noise Limits. British Standards Institute, 1991.

[6] BS 5969:1981 – Specification for Sound Level Meters. British Standards Institute, 1981

[7] ISO 9613-2:1996 – Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation. International Organization for Standardization, 1996.

[8] BS EN 12354-4:2017 – Estimation of Acoustic Performance in Buildings from the Performance of Elements. Transmission of Indoor Sound to the Outside. British Standards Institute, 2017

11.0 APPENDIX

APPENDIX 1: ACOUSTIC TERMINOLOGY

Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of 20µPa ($20x10^{-6}$ Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10(s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20µPa.
A-weighting, dB(A)	The unit of sound level weighted according to the A-Weighting Scale, which considers the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so several different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the "average minimum" noise level and is often used to describe the background noise.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m
Facade	At a distance of 1m in front of a large sound reflecting object such as a building façade.
Fast Time Weighting	An averaging time used in sound level meters. Defined in BS 5969.

To assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided. The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. To express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0 dB (the threshold of hearing) to over 120 dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

SOUND LEVEL	LOCATION
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street

SOUND LEVEL	LOCATION
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

The ear is less sensitive to some frequencies than to others. The A-weighting scale is used to approximate the frequency response of the ear. Levels weighted using this scale are commonly identified by the notation dB(A).

In accordance with logarithmic addition, combining two sources with equal noise levels would result in an increase of 3 dB(A) in the noise level from a single source. A change of 3 dB(A) is generally regarded as the smallest change in broadband continuous noise which the human ear can detect (although in certain controlled circumstances a change of 1 dB(A) is just perceptible). Therefore, a 2 dB(A) increase would not be normally perceptible. A 10 dB(A) increase in noise represents a subjective doubling of loudness.

A noise impact on a community is deemed to occur when a new noise is introduced that is out of character with the area, or when a significant increase above the pre-existing ambient noise level occurs.

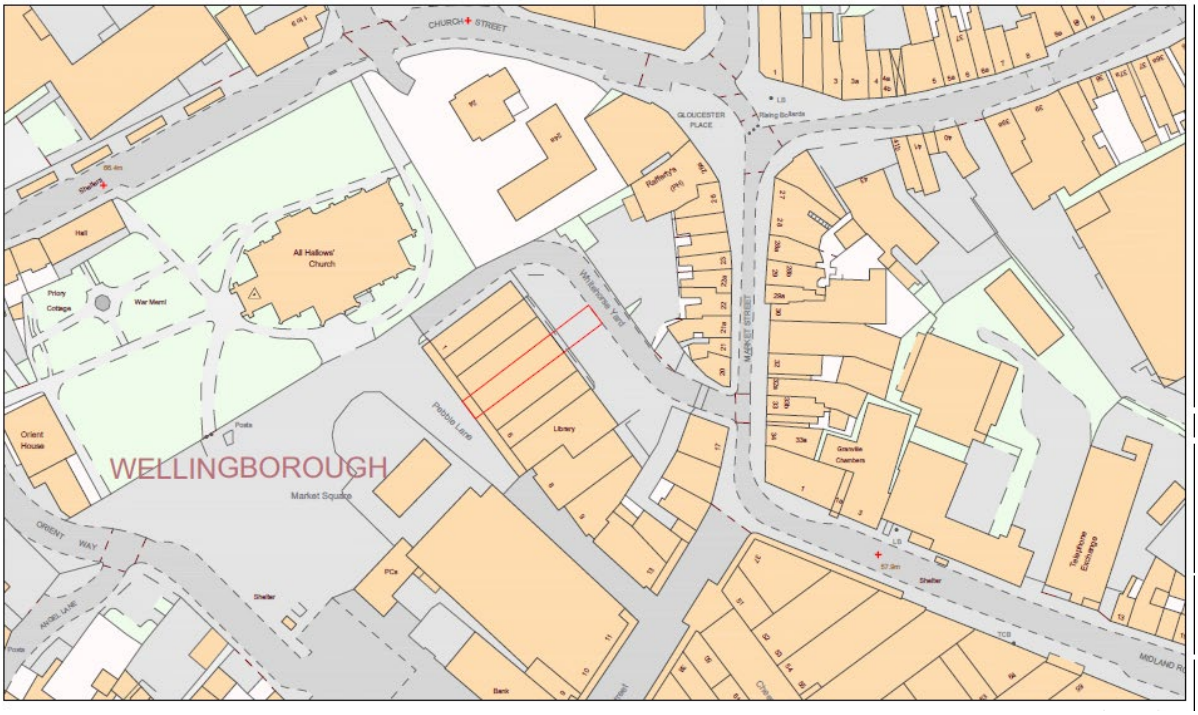
For levels of noise that vary with time, it is necessary to employ a statistical index that allows for this variation. These statistical indices are expressed as the sound level that is exceeded for a percentage of the time-period of interest. In the UK, traffic noise is measured as the L_{A10}, the noise level exceeded for 10% of the measurement period. The L_{A90} is the level exceeded for 90% of the

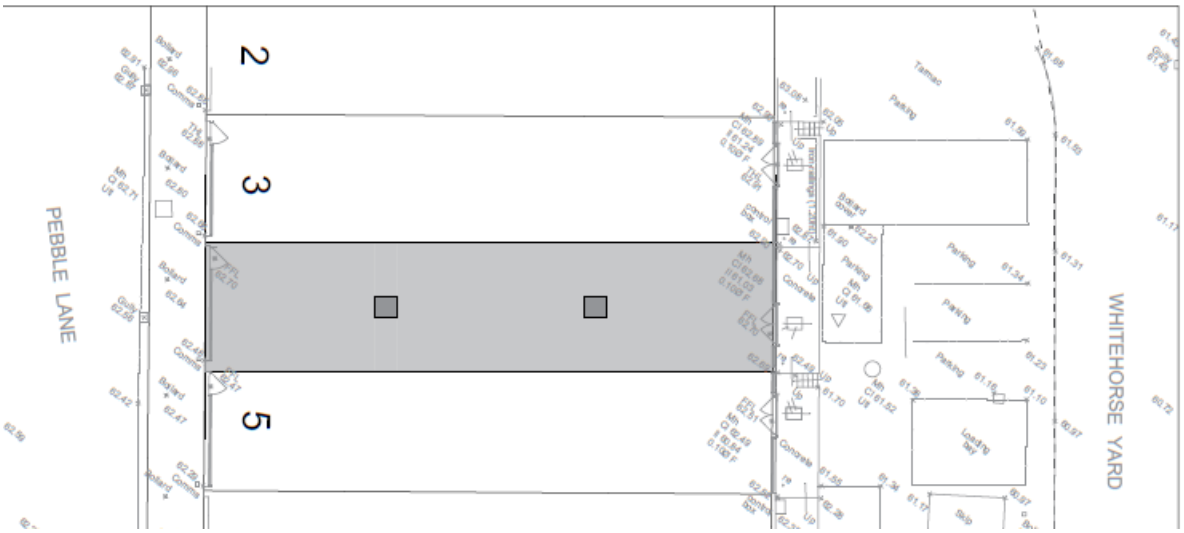
time and has been adopted to represent the background noise level in the absence of discrete events. An alternative way of assessing the time varying noise levels is to use the equivalent continuous sound level, L_{Aeq}.

This is a notional steady level that would, over a given period, deliver the same sound energy as the actual fluctuating sound. To put these quantities into context, where a receiver is predominantly affected by continuous flows of road traffic, a doubling or halving of the flows would result in a just perceptible change of 3 dB, while an increase of more than 25%, or a decrease of more than 20%, in traffic flows represent changes of 1 dB in traffic noise levels (assuming no alteration in the mix of traffic or flow speeds).

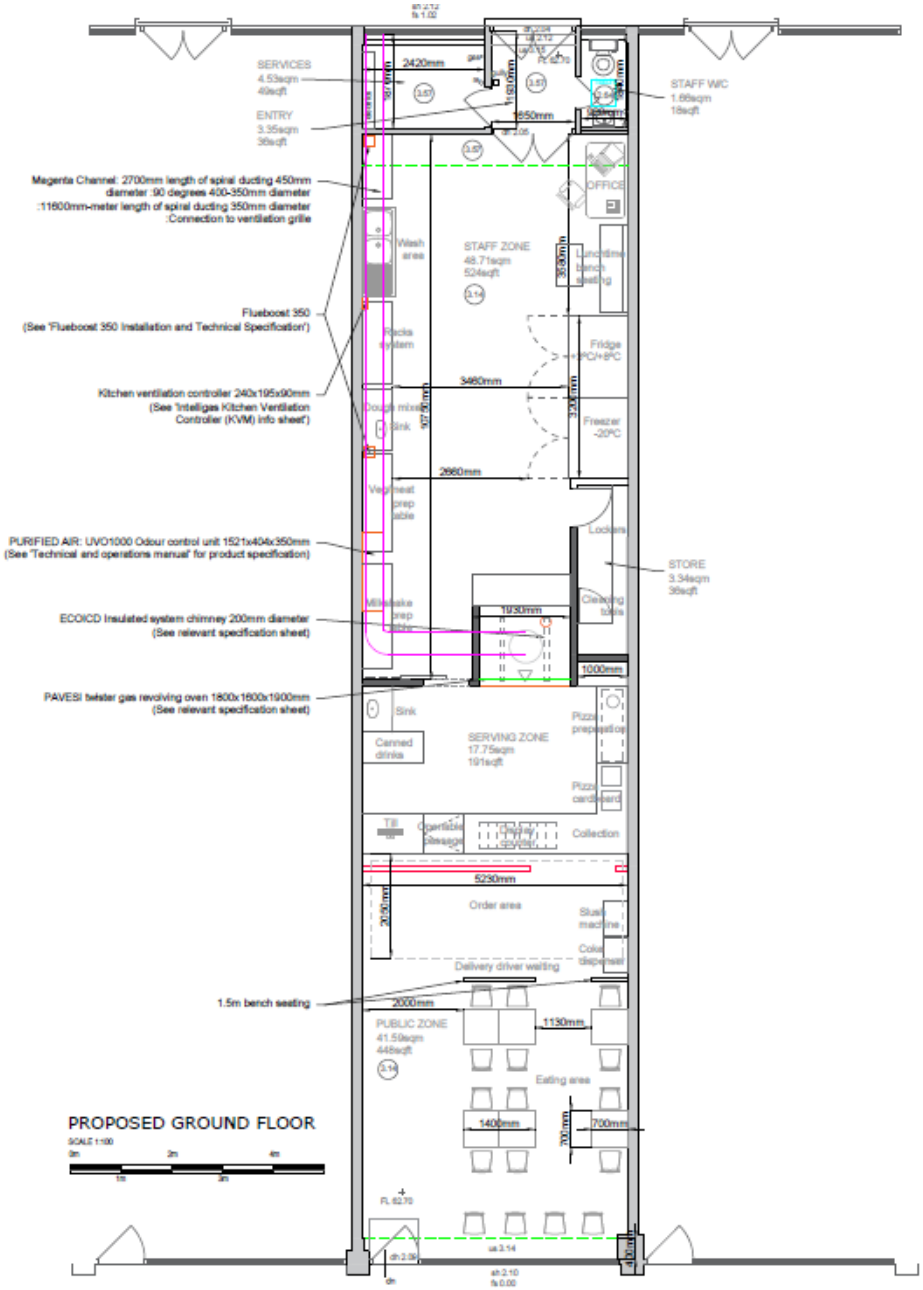
Note that the time constant and the period of the noise measurement should be specified. For example, BS 4142[2014] + A1(2019) specifies background noise measurement periods of 1-hour during the day and 15 minutes during the night. The noise levels are commonly symbolised as L_{A90},1hour dB and L_1 dB. The noise measurement should be recorded using a 'FAST' time response equivalent to 0.125ms.

APPENDIX 2: EXISTING SITE LOCATION AND PLAN

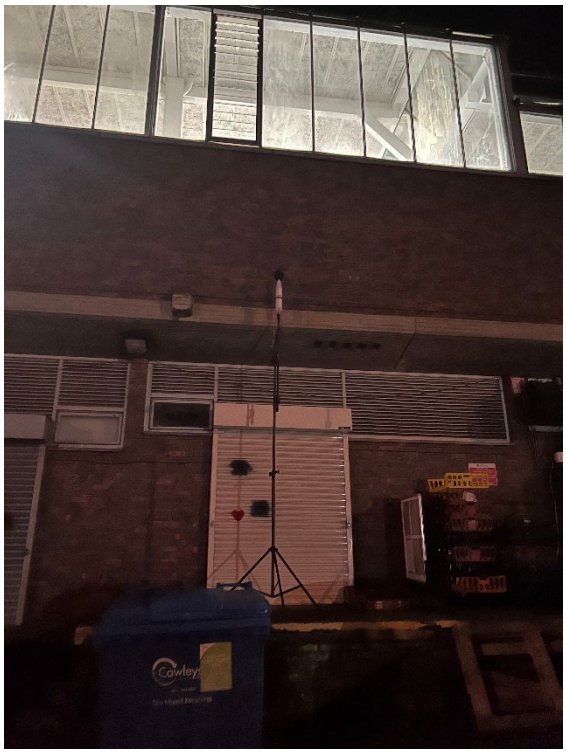


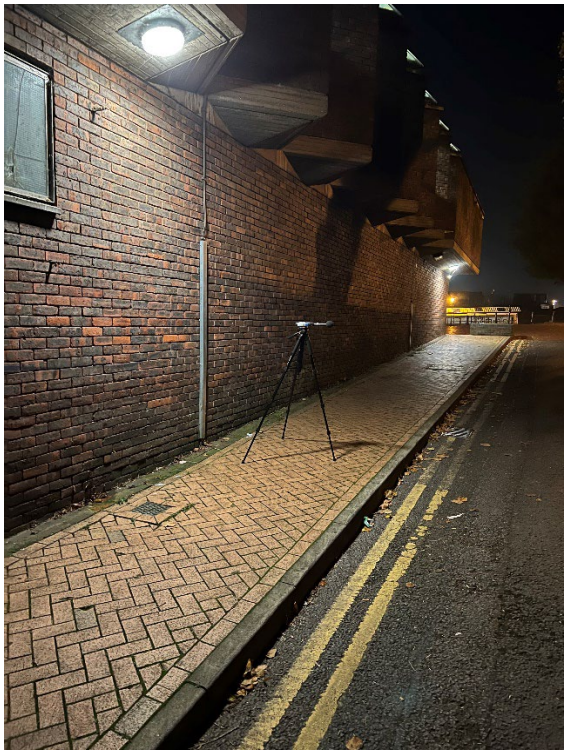


APPENDIX 3: PROPOSED SITE PLANS



APPENDIX 4: NOISE MEASUREMENT LOCATIONS

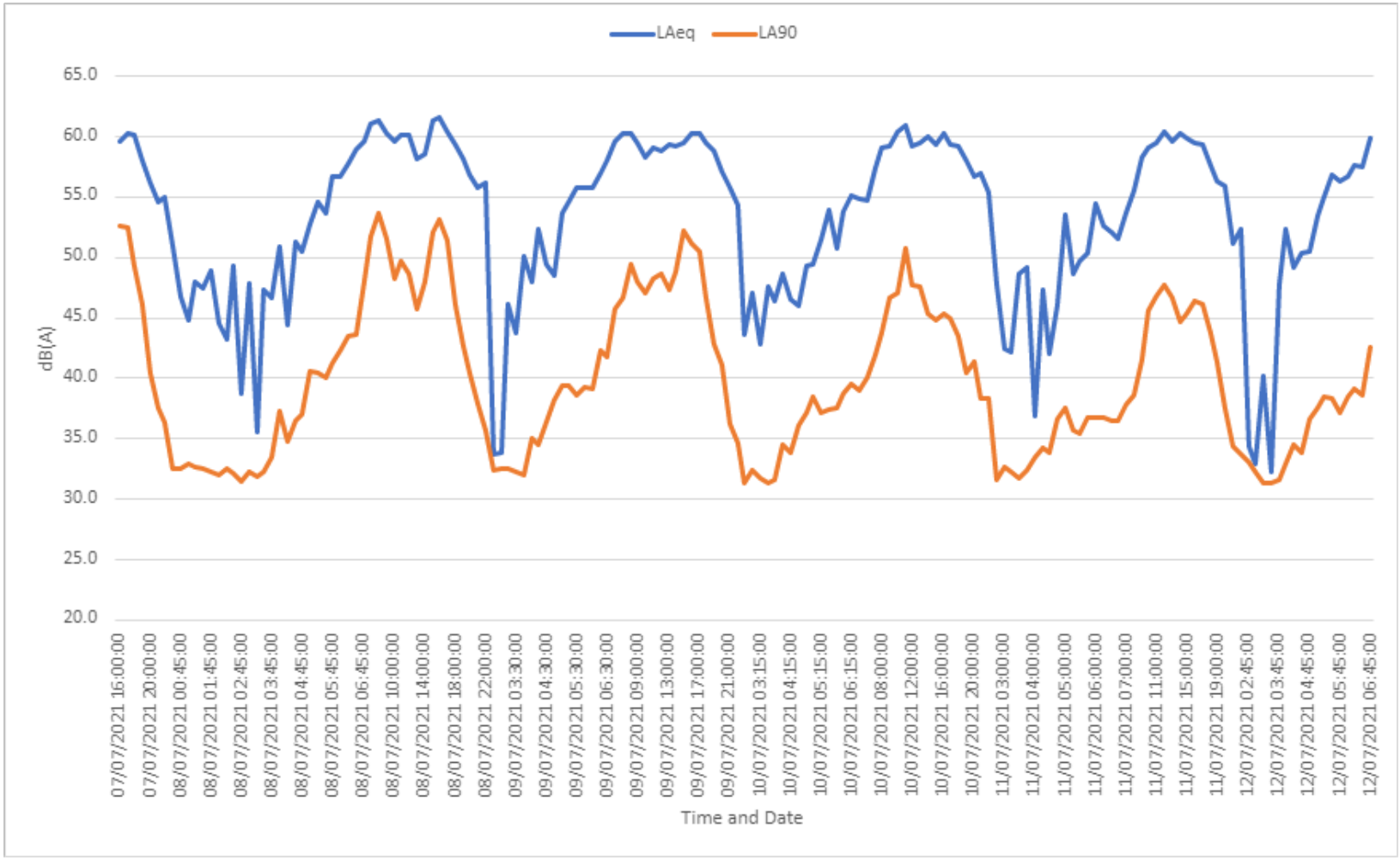




APPENDIX 5: BS 4142[2014] + A1(2019) SURVEY RESULTS

Survey Data Time History

Graph 1: Survey Data Time History Graph (15 min intervals)



APPENDIX 6: BS 4142[2014] + A1(2019) FURTHER INFORMATION

Rating Level

According to BS 4142[2014] + A1(2019), a correction may be applied to the specific sound level to account for certain acoustic characteristics that may make the noise generated by the <source> more noticeable, this is called the **Rating Level**.

It is appropriate to add a character correction where there is a new source that cannot be measured in line with BS 4142[2014] + A1(2019). There are 3 methods for approaching this:

- Subjective method
- Objective method (for tonality)
- Reference method

Subjective Method

The subjective method establishes a rating penalty that is added to the specific noise level if any of the following is present at the assessment position. If a tone is expected to be present a character correction of 0 dB to 6 dB is added depending on how perceptible it is at noise sensitive locations.

Table 9 - Subjective Method – Tonality

BS 4142[2014] + A1(2019) SECTION 9.2 SUBJECTIVE METHOD	PERCEPTIBILITY OF NOISE SENSITIVE FACADES	CORRECTION
Tonality Ranging from not tonal to prominently tonal	Not Tonal	+0
	Just Perceptible	+2
	Clearly Perceptible	+4
	Highly Perceptible	+6

If the source is expected to be impulsive a character correction of 0 dB to 9 dB is added depending on how perceptible it is at noise sensitive locations.

Table 10 - Subjective Method - Impulsivity

BS 4142[2014] + A1(2019) SECTION 9.2 SUBJECTIVE METHOD	PERCEPTIBILITY OF NOISE SENSITIVE FACADES	CORRECTION
Impulsivity Considering both the rapidity and any overall change in sound level	Not Tonal	+0
	Just Perceptible	+2
	Clearly Perceptible	+4
	Highly Perceptible	+6

When the sound features are neither tonal nor impulsive, a character correction of +3 is added for the readily distinctive quality against the acoustic environment or for the intermittency of the source.

Table 11 - Subjective Method – Distinctive/Intermittency

BS 4142[2014] + A1(2019) SECTION 9.2 SUBJECTIVE METHOD	PERCEPTIBILITY OF NOISE SENSITIVE FACADES	CORRECTION
Really Distinctive	Is not Present	+0
	Is Present	+3
Intermittency	Is not Present	+0
	Is Present	+3

Noise Criteria

The significance of the resulting noise on the residential property depends on the margin by which it exceeds the background noise levels. British Standard 4142:2014 provides the following guidance within section 11.

Table 12 - Assessment of Impact

DIFFERENCE	ASSESSMENT OF IMPACT
+10 dB	Indication of a significant adverse impact
+ 5 dB	Indication of an adverse impact
+ 0 dB	Indication of a low impact

BS4142:2014 advises, "The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact." The local authority requirement that noise from the equipment should not exceed 10dB. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a "**low impact**", depending on the context.

Noise Meter Floor

BS 4142[2014] + A1(2019) suggests that Care is necessary in circumstances where background sound levels are low to ensure that self-generated and electrical noise within the measurement system does not unduly influence reported values, which might be the case if the measured background sound levels are less than 10 dB above the noise floor of the measuring system. The floor of a typical class 1 noise meter is in the region of 14 dB(A) and therefore measurements of less than 24 dB(A) should be assessed with care.

Octave Band Frequency Analysis

All calculations carried out are done so on an octave band centre frequency basis and not an overall dB(A) level. This ensures that the tonal element from any proposed plant is minimised. A large majority of manufacturer's data is supplied in the octave band centre frequency (Hz) format.

BS 4142[2014] + A1(2019) Penalties

Whilst BS 4142[2014] + A1(2019) allows receptor assessments to made to achieve levels equal to prevailing background noise levels, it also ensures that appropriate and more stringent penalties are applied to the specific noise level to ensure the correct level of protection for the local residents.

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