

## ENVIRONMENTAL NOISE ASSESSMENT

On behalf of

**Klifer Developments Ltd**

For the site at:

**Waterside House, Cowley Business Park, Cowley, Uxbridge, UB8 2AD**

REPORT DATE: 17<sup>th</sup> July 2023

**REPORT REF: AA/23/07/KD/WH/NIA**



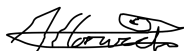
CLIENT: Klifer Developments Ltd

ENGINEER: Amber Acoustics  
34 Bury Old Road  
Manchester  
M25 0FT

Tel: 0161 820 1112

Email: [info@amberacoustics.co.uk](mailto:info@amberacoustics.co.uk)

Report Prepared By:



.....  
Aharon Horwich, PGDip, MSc, CEnv, AMIOA, MCIEH, MIEEnvSc, MCABE, MEI

Report Checked By:



.....  
Matthew Gore, BSc MSc MIOA

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## 1. INTRODUCTION

### 1.1. General

Amber Acoustics has been commissioned by Klifer Developments Ltd to carry out an Environmental Noise assessment to discharge a Planning condition for a development granted permission (REF 53180/APP/2021/1325) for the conversion of offices to apartments at Waterside House, Cowley Business Park, Cowley, Uxbridge, UB8 2AD

### 1.2. Assessment Scope

Following correspondence with Dr Philip Brewer, A noise specialist at Hillingdon Council, (23<sup>rd</sup> June 2023) a proposed methodology was approved that entailed a 24-hour survey, with the aim of the survey being to ensure that the internal ambient noise levels don't exceed the standards of Table 4 of BS8233:2014. Although the survey was undertaken at the adjacent property, the officer was happy for the survey results to be duplicated and adjusted for locational differences

This report will seek to demonstrate that through adequate mitigation and proactive implementation of an upgrade to the external façade, the effect of external noise in the nearby vicinity to the site will be low impact.

Amber Acoustics have completed this report for the benefit of the individuals referred to in Section 1.1 and any other relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use, or rely upon, the contents of this report unless explicit written approval has been gained from Amber Acoustics.

Amber Acoustics accepts no responsibility or liability for the consequences of this documentation being used for any purpose or project other than that for which it was commissioned. It should also be noted herein that the issue of this document to any third party with whom approval for use has not been agreed.



## 2. SITE DESCRIPTION

This Noise Survey is to assist with the discharge of a Planning condition for a development granted permission (REF 53180/APP/2021/1325) for the conversion of offices to apartments at Waterside House, Cowley Business Park, Cowley, Uxbridge, UB8 2AD.

Waterside House is a former office block set in the Cowley Business Park. The building is set on a road known as Cowley Business Park which is shielded from the main Cowley Road by existing housing stock.

## 3. ASSESSMENT STANDARDS

This section of the report outlines the context of the proposed development with respect to noise.

### 3.1. Planning Condition

Planning was granted (REF 53180/APP/2021/1325) on 21<sup>st</sup> May 2021 for the Change of use from offices (Use Class B1a ) to residential use (Use Class C3) to create 51 studio apartments. In its decision, the Council required under Condition 7

**The development must achieve the following internal noise levels:**

**Indoors 35 dB LAeq,16hrs daytime (07.00 to 23.00hrs);**

**Inside bedrooms 30 dB LAeq,8hrs night-time (23.00 to 07.00hrs);**

**Inside bedrooms 45 dB LAFmax to be exceeded no more than 15 times per night-time from sources other than emergency sirens.**

Prior to occupation of the first residential unit, a report must be submitted to the Council confirming that these standards (through appropriate acoustic mitigation if necessary) will be met unless otherwise agreed in writing with the Local Planning Authority. These levels (or alternative as agreed in writing with the Local Planning Authority) must be maintained as a minimum within the development throughout its lifetime.



### 3.2. National Planning Policy Framework and Planning Practice Guidance

The NPPF, published in March 2012, sets out the Government's planning policies for England and how these are to be expected to be applied. The NPPF must be taken into account in the preparation of local and neighbourhood plans and is to be a material consideration in planning decisions.

Paragraph 123 of the NPPF advises that, with respect to noise emissions, planning policies and decisions should aim to:

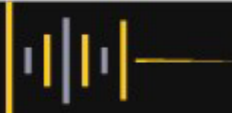
- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum, other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions

Planning Practice Guidance, published in March 2014, advises on how planning can manage potential noise impacts in new development. The guidance states that noise needs to be considered when *"...new developments would be sensitive to the prevailing acoustic environment."* Although noise can override other planning concerns, *"neither the NPSE1 nor the NPPF expects noise to be considered in isolation from the economic, social and other environmental dimensions of the proposed development."*

When making decisions, local planning authorities should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

In line with the Explanatory Note of the NPSE this would include identifying whether the overall effect of the noise exposure would be above or below the significant observed adverse effect level. The guidance points to the



Explanatory Note for Noise Policy Statement for England 2010 for further information.

### 3.3. Noise Policy Statement for England 2010

The NPSE sets out the long-term vision of Government noise policy. The Noise Policy Vision is supported by the following Noise Policy Aims:

- Avoid significant impacts on health and quality of life;
- Mitigate and minimise adverse effects on health and quality of life; and
- Where possible, contribute to the improvement of health and quality of life.

The NPSE categorises noise exposure through the concept of observed effect levels:

- No Observed Effect Level (NOEL): The level below which no effect can be detected.
- Lowest Observed Adverse Effect Level (LOAEL): the level above which adverse effects on health and quality of life can be detected.
- Significant Observed Adverse Effect Level (SOAEL): the level of noise exposure above which significant adverse effects on health and quality of life occur.

The second Noise Policy Aim refers to the situation where the noise impact lies between the LOAEL and the SOAEL. It requires that, “...*all reasonable steps should be taken to mitigate and minimise effects on health and quality of life... This does not mean that such adverse effects cannot occur.*”

The NPSE does not contain specific noise level limits to define the SOAEL as it is likely to be different for different noise sources and parameters. In the absence of national LOAEL and SOAEL noise level criteria, noise levels have been assessed against criteria contained within BS8233:2014 and WHO Guidelines.



### 3.4. The World Health Organisation Guidelines

The WHO Guidelines for Community Noise 1999 consolidate scientific knowledge on the health impacts of community noise and provide guidance to protect people from the harmful effects of noise in non-industrial environments.

Although this guidance was updated in 2018, the specific references to noise levels were omitted, and have still, to the best of the authors' knowledge, not been updated or clarified by the WHO. Therefore, the 1999 guidelines are referenced herein as they contain the specific noise level targets which tie in nicely with those listed in other British Standards.

The WHO Guidelines for Community Noise set out health-based guideline values for community noise, including recommended noise level values for the onset of sleep disturbance, annoyance and speech interference for the general population. Guideline values are provided for outdoor living areas, living rooms and bedrooms, for both continuous noise and discrete noise events. These are:

**$L_{Aeq,T}$**  - the A-weighted equivalent continuous noise energy level over a given period of time T, applied to fluctuating noise levels to give single figure descriptor and sometimes referred to as the 'average'; and

**$L_{AFmax}$**  - the maximum A-weighted noise instantaneous sound pressure level recorded during a measurement period using a fast time response.

With regard to outdoor living areas, the WHO Guidelines for Community Noise state that, “... *in order to protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55dB(A)  $L_{Aeq}$  on balconies, terraces, and in outdoor living areas*”.





**Table 1: WHO Guideline Values for Community Noise**

Specific Environment	Critical Health Effect (s)	$L_{Aeq}$ dB(A)	Time base (hours)	$L_{AFmax}$ fast dB(A)
Outdoor living area	Serious annoyance, daytime and evening.	55	16	-
	Moderate annoyance, daytime evening.	50	16	-
Dwelling indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedroom	Sleep disturbance night-time	30	8	45
Outside bedroom	Sleep disturbance, window open (outdoor values)	45	8	60

*Source: World Health Organisation 1999*

### 3.5. BS8233:2014

BS8233:2014 contains suggested criteria for common situations, such as resting and sleeping, and proposes noise levels that normally satisfy those criteria for most people. For dwellings, the main considerations are:

- For bedrooms, the acoustic effect on sleep; and
- For other rooms, the acoustic effect on resting, listening and communicating.

Suggested noise levels reflect those contained within the WHO Guidelines. BS8233:2014 advises that the time period T, should be appropriate for the activity involved, in this case the daytime  $L_{Aeq,16hr}$  (07:00-23:00) and night-time  $L_{Aeq,8hr}$  (23:00-07:00).

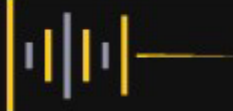


Table 2 below details guideline values for dwellings as recommended within BS8233:2014.

**Table 2: BS8233:2014 Recommended Noise Levels**

Criterion	Typical situations	Time		
		Daytime 07:00 to 23:00 ( $L_{Aeq}$ )	Night-time 23:00 to 07:00 ( $L_{Aeq}$ )	Night-time 23:00 to 07:00 ( $L_{AMax}$ )
Resting	Living room	35	-	
Sleeping (daytime resting)	Bedroom	35	30	45

Source: BS8233:2014

With regard to external noise levels in amenity spaces such as gardens, the guidance advises that “...it is desirable that the external noise level does not exceed 50dB  $L_{Aeq,T}$ , with an upper guideline value of 55dB  $L_{Aeq,T}$  which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited.”



## 4. SURVEY MEASUREMENTS

The Environmental Noise Assessment (referred to as MP1 in this report) took place over 24 hours commencing at 07:00 on Thursday 6<sup>th</sup> July 2023 and concluding at 07:00 on Friday 7<sup>th</sup> July 2023

The Noise survey was carried out in accordance with BS7445: 2003 'Description and Measurement of Environmental Noise'.

### 4.1. Measurement Locations

The Measurement location was as follows:

MP1 – A meter was positioned out of an opening on the front facade as agreed with the Noise Specialist at Hillingdon Council.

### 4.2. Meteorological Conditions

No excessive precipitation was noted during the survey, and the general wind speed in all directions was less than 5m/s, which is suitable for a noise survey. Detailed weather conditions are given in **Appendix C**.

### 4.3. Measurement Equipment

L<sub>Aeq,T</sub> and L<sub>A</sub>F<sub>max</sub> sound levels were recorded using a Type 1 Svantek SV307 Sound Analyser (serial number 116709). Measurements were A-weighted and recorded using a fast time response.

The sound level meter was calibrated using a Svantek SV36 Sound Calibrator (serial number 83149) at the start and finish of the monitoring period. No significant calibration drifts were observed. A detailed equipment list is given in **Appendix B** with calibration information in **Appendix D**.

### 4.4. Observations

The general background level noise was provided by road traffic noise from Cowley Road.

Based upon the results of both the desktop and site assessments, it is considered that commercial noise emissions do not significantly affect the noise climate at site. As a result of this, the assessment will only consider the resultant internal noise level due to road traffic noise, in accordance with BS8233:2014 – *Guidance on sound insulation and noise reduction for buildings*.



## 5. RESULTS

To assess the environmental noise climate, noise measurements were undertaken over 24 hours. The testing took place over 6<sup>th</sup> – 7<sup>th</sup> July 2023. The results of the measurements are tabulated below.

Date	L <sub>Aeq</sub> 16hr (dB)	L <sub>Aeq</sub> 8hr (dB)	L <sub>Amax</sub> (dB)
6-7/07/2023	54.4	48.9	64.6

Table 1: Measurement Summary of Noise Survey 1 (MP1) Results.

As the measurements were taken within 1.5 metres of the façade, a 3.0 dB adjustment must be made to the results, in accordance with the guidance contained in BS8233:2014 Section 3.1.10. These adjusted results can be seen in Table 2 below.

	L <sub>Aeq</sub> 16hr (dB)	L <sub>Aeq</sub> 8hr (dB)	L <sub>Amax</sub> (dB)
6-7/07/2023	51.4	45.9	61.6

Table 2: Measurement Summary of Noise Survey Results with Façade correction.

The worst-case results are highlighted in red, and all mitigation measures will be factored against those results as the baseline.

As the survey took place at the site immediately next to the development and utilising the below formula to calculate sound attenuation of a line source over a distance, the adjustment for a 1 metre difference produces a 1 dB difference to the results.

$$L_p(R2) = L_p(R1) - 10 \cdot \log_{10}(R2/R1)$$

Formula 1 : Formula for calculating sound attenuation over a distance for a line source

These adjusted results can be seen in Table 3 below.

	L <sub>Aeq</sub> 16hr (dB)	L <sub>Aeq</sub> 8hr (dB)	L <sub>Amax</sub> (dB)
Adjusted Levels	52.4	46.9	62.6

Table 3: Summary of Noise Survey Results with Façade and Distance correction.



## 6. ASSESSMENT

### 6.1. Existing Noise Climate

The general background level noise was provided by road traffic noise from Long Street with localised sound level peaks were provided by pedestrians passing the property.

The majority of noise from road traffic is attributable to tyre 'roar', which has a characteristic mid frequency tonal peak. It is considered that road traffic also determines the background noise levels for the site, for both daytime and night-time, given the lack of other significant noise sources in the area.

### 6.2. BS8233: 2014 and WHO Guidelines Assessment

A summary of external and internal sound levels to be achieved at the proposed development is provided below:

Living rooms (daytime)	$L_{Aeq,T}$ 35dB(A);
Bedrooms(daytime)	$L_{Aeq,T}$ 35dB(A)
Bedrooms(night-time)	$L_{Aeq,T}$ 30dB(A);
Bedrooms (night-time)	$L_{AFmax}$ 45dB(A); and
Gardens	$L_{Aeq,T}$ 50-55dB(A).

With regard to internal sound levels, from the site measurement data, it may be extrapolated that, in order to achieve BS8233: 2014 and WHO criteria, the building fabric of the façade will need to provide a minimum sound reduction of up to 17.4dB(A) during the daytime, and up to 16.9 dB(A) during the night-time.

With regard to  $L_{AFmax}$  sound levels in bedrooms during the night-time, the building fabric of the façade will need to provide a minimum sound reduction of up to 17.6 dB(A).



## 7. MITIGATION

It has been identified that the environmental noise climate on site is dominated by road traffic noise with a minor contribution from the noise from passing pedestrians.

A façade specification (glazing and ventilation) has been identified with the overall aim of reducing the incident external to internal noise ingress to within desirable criteria, as given in *BS8233:2014 – Guidance on sound insulation and noise reduction for buildings*.

As windows are typically the acoustically weakest point in a façade, requisite sound reduction to be provided by glazing and ventilation systems to achieve the guideline values has been considered.

Assessment indicates that a sound reduction of up to 18 dB ( $R_w$ ) will be required overall to meet the requirements of BS8233:2014.

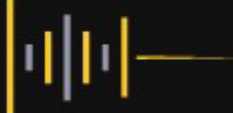
Thermal double glazing, of the following specification (4/(6 to 16)/4) is generally capable of providing a typical sound reduction of approximately 25dB  $R_w + C_{tr}$ . (BS EN 12758:2019)

Background ventilation must be provided in accordance with the Building Regulations Approved Document F. To achieve this, window mounted trickle vents or through-wall ventilators that are acoustically attenuated to provide equivalent sound reduction to the glazing should be installed.

The sound reduction performance of acoustic ventilators is usually specified as a  $D_{n,e,w}$  rating. In order to provide a sound reduction equivalent to that of the specified glazing, the  $D_{n,e,w}$  value of the vent (when open) should be at least 7dB higher than the specified performance of the glazing.

To assist in identifying appropriate ventilators, a guide to the sound reduction performance delivered by example window mounted trickle ventilators is provided in the Table below.

Example Ventilator	Standard Vent	Titon SF Xtra V25 + standard canopy
Sound Reduction ( $D_{n,e,w}$ )	23	35



## 8. SUMMARY AND CONCLUSIONS

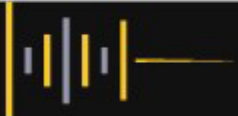
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The Environmental Noise Assessment has sought to establish existing daytime and night-time sound levels at the site, and then determine specific mitigation requirements based on the external and internal sound level criteria as set out within BS8233:2014 'Guidance on sound insulation and noise reduction for buildings' and World Health Organisation 'Guidelines for Community Noise' as well as the planning decision for the site.

Noise survey results and assessment indicate that low level mitigation of local sound sources (pedestrian and road traffic noise) will be required in order to achieve the requisite internal sound level criteria in all areas of the proposed development.

The proposed mitigation strategy for the development comprises the installation of new thermal double glazing, with a typical minimum sound reduction of  $R_w$  18 dB, and suitable acoustically attenuated passive ventilation.

It is considered that, with implementation of the specified mitigation strategy, sound levels will be attenuated to achieve recommended internal sound level criteria for new dwellings.



## APPENDICES

### APPENDIX A - Measurement Details

Measurement	Kit	Start Date	Start Time	End Date	End Time
MP1	AA1	6 <sup>th</sup> July 2023	07:00	7 <sup>th</sup> July 2023	07:00

### APPENDIX B - Equipment Details

Kit	Equipment	Make	Model	Class	Serial Number
AA12	Sound Meter	Svantek	SV307	1	116709
AA2	Calibrator	Svantek	SV36	1	83149

### APPENDIX C - Meteorology Details

Measurement	Temp C (Average)	Wind Speed m/s	Humidity %
MP1	16.2	2.3	68

### APPENDIX D - Calibration Details

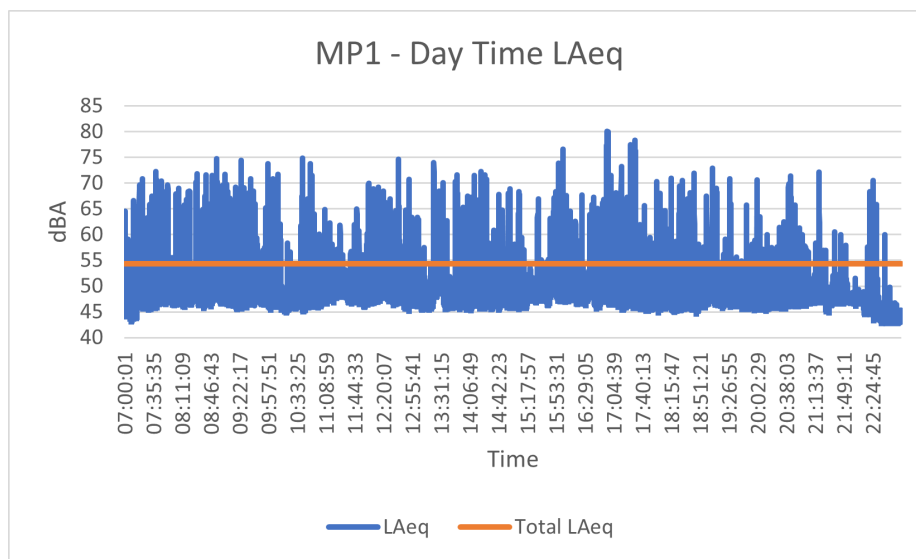
Measurement	Calibrator Ref Level (dB)	Level Before (dB)	Deviation Before (dB)	Level After (dB)	Deviation After (dB)
MP1	114	114.1	-0.1	114.0	0



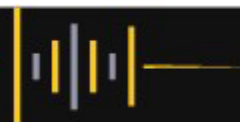
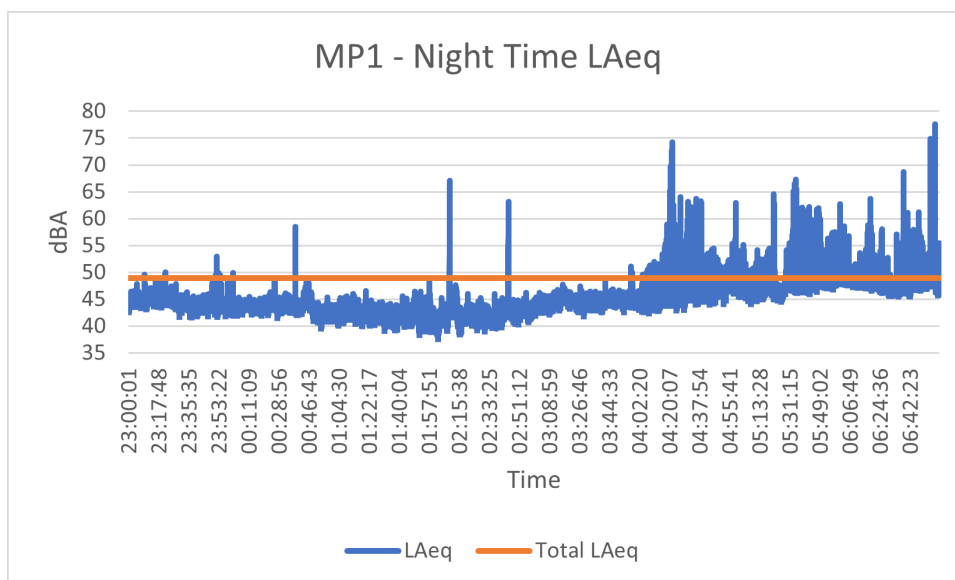


## APPENDIX E – Survey Data

### Daytime $L_{Aeq}$ Noise Survey Data



### Night time $L_{Aeq}$ Noise Survey Data



## Night time $L_{Max}$ (F) Noise Survey Data

