5a King Street Twickenham

Environmental Noise Survey and Noise Impact Assessment Report

31978/NIA1 Rev1

12 November 2024

For:
EL Retail No2 Ltd
2nd floor, Gaspe House
66-72 Esplanade
St Helier, Jersey
JE1 1GH

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration

Head Office: Duke House, 1-2 Duke Street, Woking, Surrey, GU21 5BA (t) +44 (0) 1483 770 595
Manchester Office: First Floor, 346 Deansgate, Manchester, M3 4LY (t) +44 (0) 161 832 7041
(w) hanntucker.co.uk (e) enquiries@hanntucker.co.uk

Hann Tucker Associates

Environmental Noise Survey and Noise Impact Assessment Report
31978/NIA1 Rev1

Document Control

Rev	Date	Comment	Prepared by	Reviewed by	Approved by
1	12/11/2024	-			
			James Corbey Technical Assistant	Kyle Donald Senior Consultant BSc(Hons), MIOA	Gareth Evans Director BSc(Hons), MIOA
0	08/11/2024	-	James Corbey Technical Assistant	Kyle Donald Senior Consultant BSc(Hons), MIOA	Gareth Evans Director BSc(Hons), MIOA

Hann Tucker Associates

Environmental Noise Survey and Noise Impact Assessment Report
31978/NIA1 Rev1

Contents

Attachments

1.0 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned by EL Retail No2 Ltd to undertake a noise assessment for a site in Twickenham, as part of a Permitted Development Planning Application for the scheme.

The site, which is located on King Street, is being considered for residential development. The proposals are for the conversion of a commercial storage unit to residential use.

Permitted development rights allow certain changes to be made to a building without the need to apply for full planning permission. Notwithstanding, noise from commercial premises near to the site needs to be considered, however, it is assumed that there is no mandatory requirement to consider noise from other sources (i.e. transport).

Hann Tucker has therefore been commissioned to undertake an environmental noise survey and noise impact assessment to assess potential noise impact from existing commercial premises on the occupiers of the development.

There are already residential dwellings adjacent to the site, therefore the proposal would not alter the existing mix of use classes in the area.

2.0 Objectives

To undertake an environmental noise survey and noise impact assessment in order to assess the noise from commercial premises on the occupiers of the proposed development.

The survey will enable noise emission limits from the development to be identified with reference to the requirements of the Local Authority and/or the application of BS 4142: 2014 and to minimise the possibility of noise nuisance to neighbours.

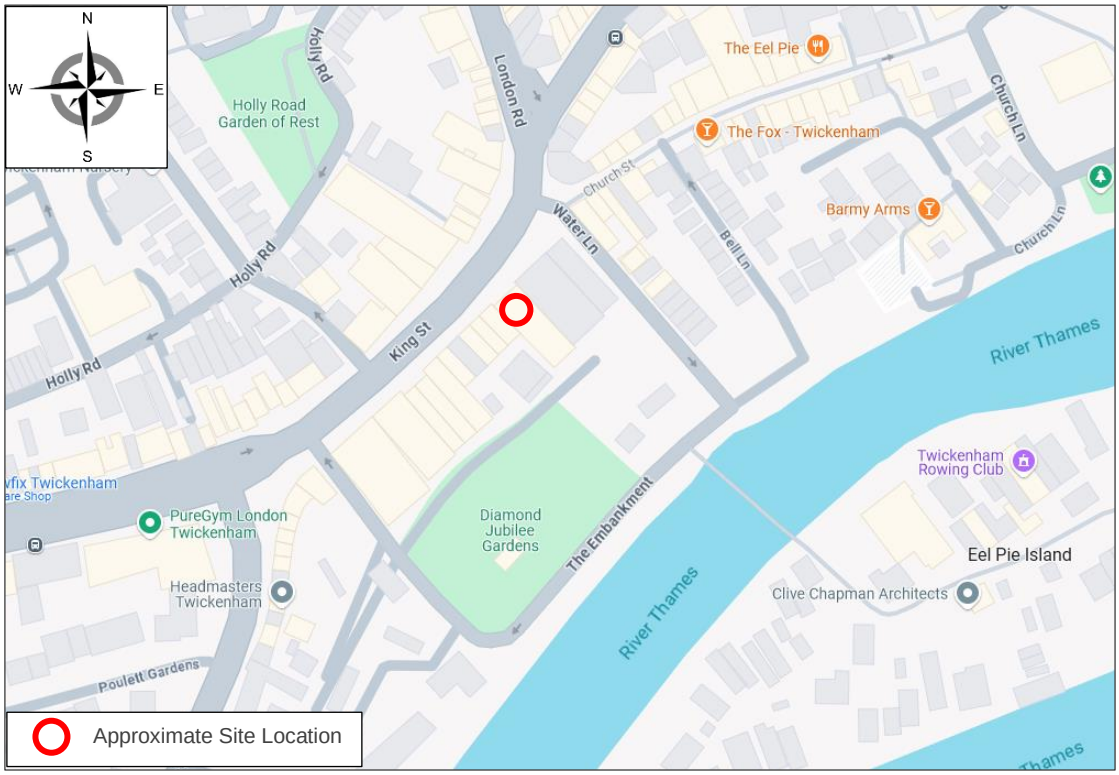
3.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

4.0 Site Description

4.1 Location

The site is located at 5a King Street, Twickenham, TW1 3SD. The location is shown in the Location Map below.



Location Map (Map Data @ 2024 Google)

The site falls within the jurisdiction of the London Borough of Richmond Upon Thames.

4.2 Description

The site is located above a Boots store on a predominantly commercial street. The surrounding buildings to the north, east and west have a height of ground plus 2 storeys, with the ground floor assumed to be commercial use, and the upper 2 floors assumed to be mixed-use (commercial/residential). To the south is a park, Diamond Jubilee Gardens.

To the south-west of the site is a KFC restaurant with a residential property above on the first floor, which has a height of ground plus 2 storeys. Multiple units of fixed plant equipment are located on the ground floor roof at the back of the building, which are understood to be operational until 00:00 hours.

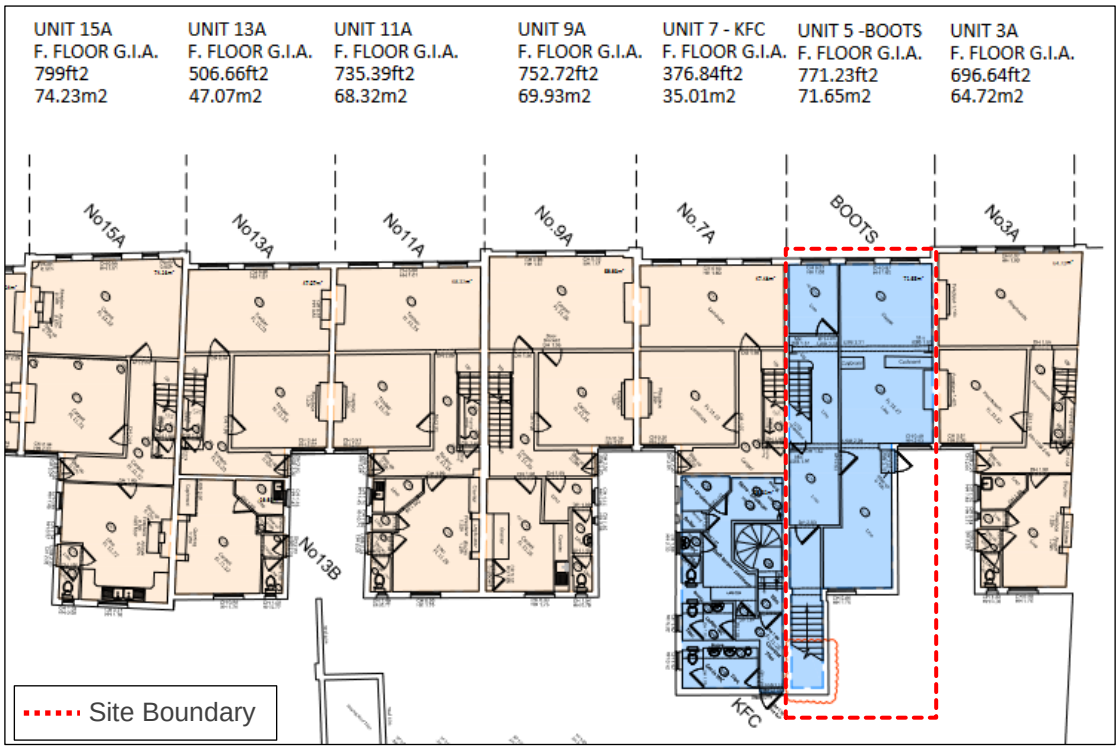
The site is bounded by King Street to the north, Water Lane to the east, and Wharf Lane / The Embankment to the south.

The site is shown in the Site Plan below.

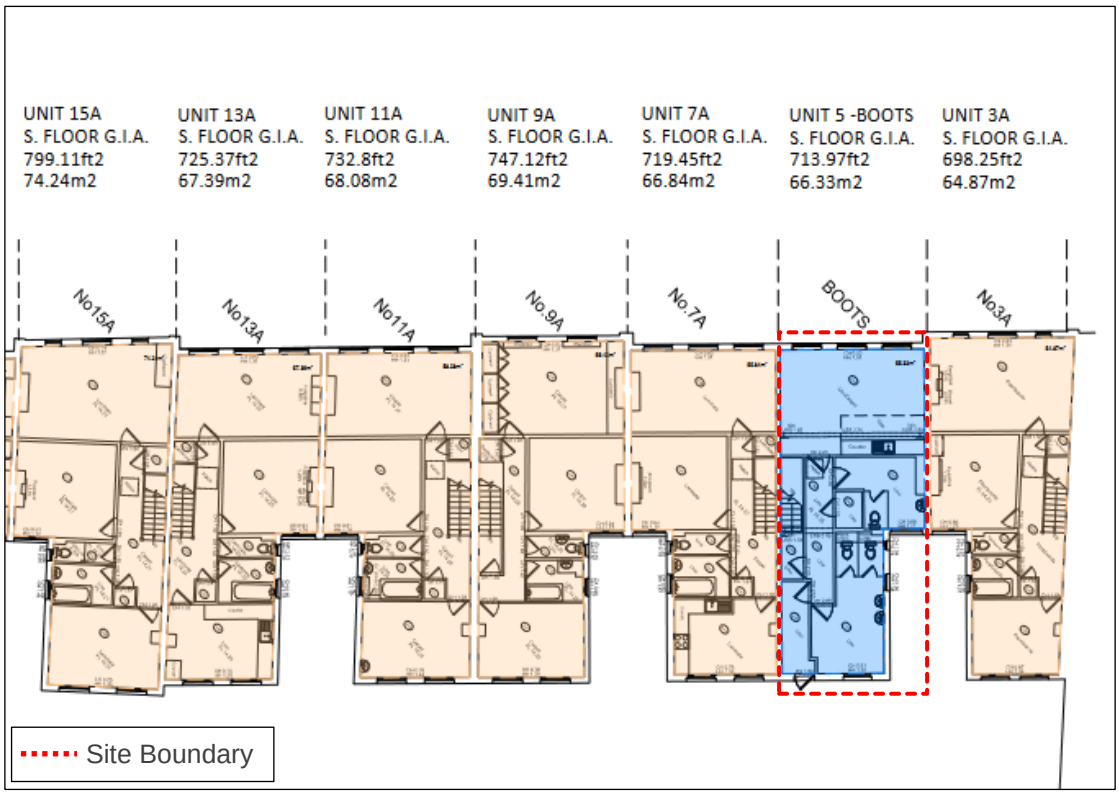
Site Plan (Imagery © 2024 Airbus, Maxar Technologies, Map Data © 2024)

5.0 Proposed Development

Our understanding is that the proposed development shall remodel the existing 1st and 2nd floor space above the Boots to provide a 4-bedroom residential apartment. The site is currently used as a commercial building and is outlined in the drawings overleaf.



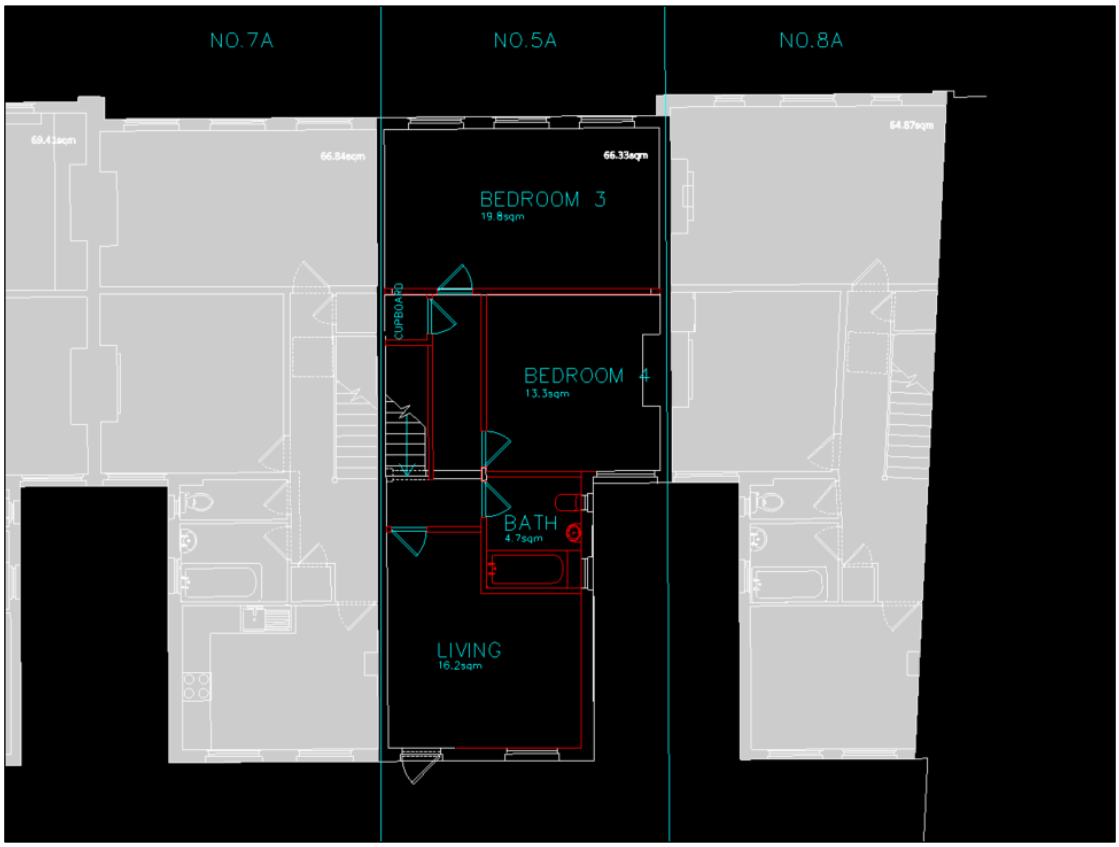
First Floor Existing Retail & Residential Units (Drawing by Juice Architects)



Second Floor Existing Retail & Residential Units (Drawing by Juice Architects)

Drawings for the proposed residential property have also been included below, outlining each room's proposed use.

First Floor Proposed Plan (Drawing given by Essential Living)



First Floor Proposed Plan (Drawing given by Essential Living)

6.0 Planning Policy, Standards & Guidance

6.1 Policies & Guides

In order to provide a suitable assessment, a number of national planning policies have been considered, including:

- General Permitted Development (England) (Amendment) Order 2021 (GPDO)

The above document highlights the importance of considering the potential noise effects on any new residential developments and provides a qualitative approach to assessment. However, the above does not provide any quantitative guidance. As such, all quantitative guidance used to form a noise impact assessment is taken from various other standards, guidance, and Local Authority requirements as summarised below:

- The National Planning Policy Framework (NPPF), 2023
- The Noise Policy Statement for England (NPSE), 2010
- Planning Practise Guidance – Noise (PPGN), 2019
- World Health Organisation: 2018

- British Standard BS8233: 2014
- ProPG : Planning & Noise: 2017

Detailed information for relevant planning policies and guidance can be found within Appendix B.

6.2 Permitted Development Rights

Permitted development rights allow certain changes to be made to a building without the need to apply for planning permission. These derive from a general planning permission granted by parliament, rather than by the local planning authority. The updated Town and Country Planning General Permitted Development (England) (Amendment) Order 2021 (GPDO).

Class MA in Part 3 of Schedule 2 relates to development consisting of a change of use of a building and any land within its curtilage from a use falling within Class E (commercial, business and service) of Schedule 2 to the Use Classes Order to a use falling within Class C3 (dwellinghouses) of Schedule 1 to that Order.

"MA.2. — (1) states Development under Class MA is permitted subject to the following conditions… (d) impacts of noise from commercial premises on the intended occupiers of the development".

As such, for this proposal noise from commercial premises needs to be considered, however it is assumed that there is no mandatory requirement to consider noise from other sources.

6.3 Specific Local Authority Criteria

London Borough of Richmond Upon Thames's Supplementary Planning Document for Noise generating and Noise Sensitive Development contains criteria for internal noise levels, which is presented below.

"5.2 STAGE 2 - INTERNAL DESIGN NOISE LEVELS

The Boroughs will normally seek to achieve the design noise levels contained in Table 4 of BS8233:2014 in all noise sensitive rooms. It should be noted that the acoustic integrity of the building envelope will be compromised in the event windows are opened for ventilation purposes, typically reducing the insulation to no more than 10 to 15 dB(A). The use of good acoustic design should aspire to achieve the internal design levels in noise sensitive rooms with windows partially open, although on certain sites the Boroughs may agree to assess the

proposal assuming windows are closed. In many sites classified as NRC 0 then it should be possible to achieve the design noise levels with windows open."

Activity	Location	Desirable Internal Ambient Criteria	
		07:00 – 23:00	23:00 – 07:00
Resting	Living Rooms	35 dB $L_{Aeq,16hour}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq,16hour}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$
Sleeping	Bedroom	-	45 dB L_{Amax}

7.0 Baseline Noise Survey

7.1 Procedure

Fully automated environmental noise monitoring was undertaken by James Corbey and assisted by Kelvin Carray BSc AMIOA from approximately 12:30 hours on Friday 25 October 2024 to 12:30 hours on Wednesday 30 October 2024, to establish existing baseline noise levels. Measurements were taken continuously of the A-weighted (dBA) L_{90}, L_{eq}, and L_{max} sound pressure levels over discrete 2 and 15-minute periods.

Additional attended measurements were performed by Kelvin Carray BSc AMIOA between 12:30 hours and 13:10 hours on Wednesday 30 October 2024 with the purpose of establishing specific noise levels associated with nearby building services from the KFC at the noise sensitive façades of the site**.**

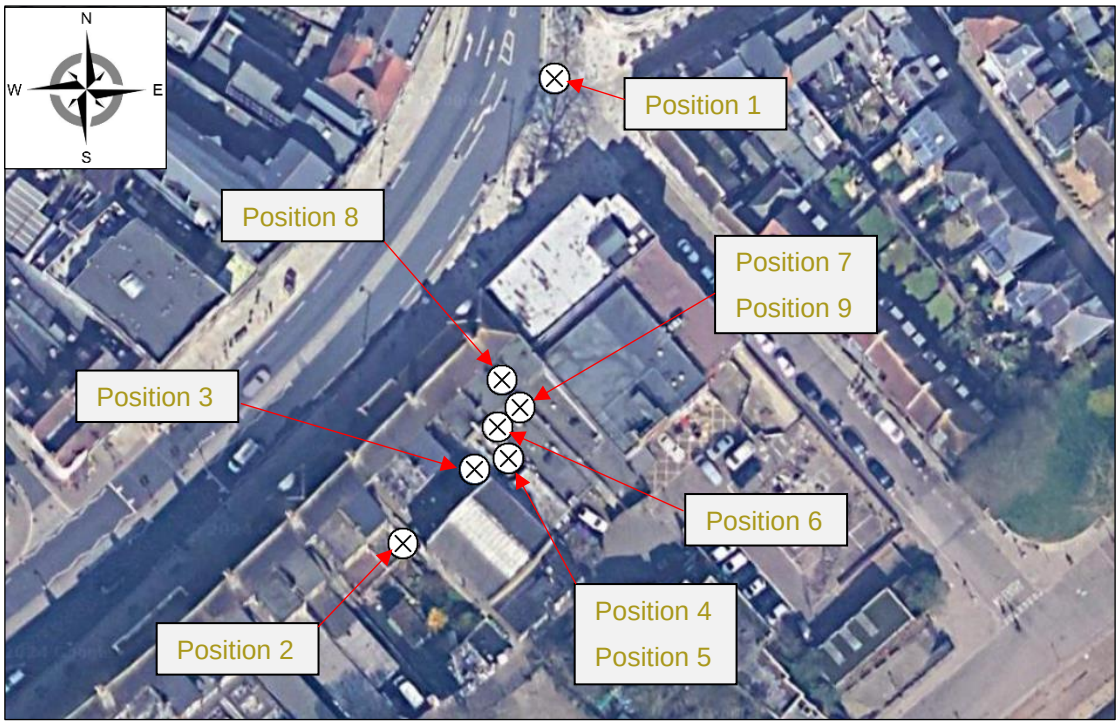
7.2 Measurement Positions

The noise level measurements were undertaken at 9No. positions as described in the table below. These positions were selected based on the noise climate at different points around the site and specific nearby building services.

Position	Type	Description
1	Unattended	The sound level meter was installed inside a small security box with the microphone protruding approximately 6cm out of the box. The security box was fixed to a lamp post on King Street (Facing the street) with the microphone at a height of approximately 2m above ground level. In order to minimise the effect of the box, the microphone was orientated vertically downwards such that it was not screened from the road.
2	Unattended	The microphone was positioned south-west of the site on a 1st floor railing. The microphone was approximately 1.5m above the ground floor

Position	Type	Description
		roof, and approximately 1.5m from the nearest façade. The dominant noise source was nearby building services plant. The microphone is considered to be in free field conditions.
3	Attended	The microphone was handheld approximately 1.5m above the ground floor roof, approximately 1.5m away from KFC plant on the south side. The plant is approximately 4m from the site boundary. The microphone is considered to be in free field conditions.
4	Attended	The microphone was handheld approximately 1.5m above the ground floor roof, 1m away from a wall mounted KFC plant. The plant is approximately 3m away from the site boundary, and the dominant noise source is assumed to be a broken fan case for the wall mounted plant. The on-site radiating conditions are considered to be hemispherical.
5	Attended	The microphone was handheld approximately 1.5m above the ground floor roof, 1m away from a wall mounted KFC plant. The plant is approximately 3m away from the site boundary. The measurement was made with the fan case held in place such that the noise emissions were observed to be lower. The on-site radiating conditions are considered to be hemispherical.
6	Attended	The microphone was handheld approximately 1.5m above the first-floor roof level next to a fire exit, 1m away from the nearest façade and site boundary. This position has direct line of sight to the KFC plant. This position includes façade reflections.
7	Attended	The microphone was handheld approximately 4m above the ground floor roof, 1m away from the nearest façade and site boundary. The microphone was extended from the fire exit staircase and held adjacent to the 2nd floor rear window of the site. This position has direct line of sight to the KFC plant. This position includes façade reflections
8	Attended	The microphone was handheld approximately 1.5m above the ground floor roof, 1.5m from the nearest façade. The measurement was taken at the rear east corner of the site. The microphone is considered to be in free field conditions.
9	Attended	The microphone was handheld approximately 1.5m above the ground floor roof, 1.5m from the nearest façade and noise sensitive window. The measurement was taken next to the rear 1st floor window, adjacent to the fire exit staircase. The microphone is considered to be in free field conditions.

The positions are shown in the plan overleaf.



Plan Showing Measurement Positions (Imagery © 2024 Airbus, Maxar Technologies, Map Data © 2024)

7.3 Weather Conditions

For the unattended survey between Friday 25 October 2024 and Wednesday 30 October 2024, local weather reports indicated no notable periods of rainfall, with temperatures ranging from 7°C (night) to 15°C (day) and wind speeds less than 5 m/s. During our time on site, skies were overcast, wind conditions were moderate and from an easterly direction and road surfaces were fairly wet.

During the attended survey on Wednesday 30 October 2024, the weather was generally clear and dry with no periods of rainfall and light wind conditions.

7.4 Instrumentation

The information used during the survey is presented in the table below:

Position	Description	Manufacturer	Type	Serial Number	Calibration
1	Type 1 ½" Condenser Microphone	PCB	377B02	107842	Calibration on 03/01/2024
	Preamp	Larson Davis	PRM902	0880	Calibration on 03/01/2024
	Type 1 Data Logging Sound Level Meter	Larson Davis	824	3541	Calibration on 03/01/2024
2 → 9	Type 1 ½" Condenser Microphone	PCB	377B02	107427	Calibration on 17/05/2024
	Preamp	Larson Davis	PRM902	1308	Calibration on 17/05/2024
	Type 1 Data Logging Sound Level Meter	Larson Davis	824	3155	Calibration on 17/05/2024
-	Type 1 Calibrator	Bruel & Kjaer	4230	1558535	Calibration on 26/07/2024

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred (no more than 0.2 dB).

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. Each microphone was fitted with a windshield.

7.5 Results

The results from the unattended survey have been plotted on Time History Graphs 31978/TH1 to 31978/TH2 enclosed in Appendix C presenting the 15 minute A-weighted (dBA) L_{90}, L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

In order to compare the results of our survey with the relevant guidelines it is necessary to convert the measured $L_{Aeq(15\,minute)}$ noise levels into single figure daytime $L_{Aeq(16\text{-}hour)}$ (07:00-23:00 hours) and night-time $L_{Aeq(8\text{-}hour)}$ (23:00-07:00 hours) levels.

A summary of the results, as used to inform subsequent assessments against current guidelines, is presented in the table overleaf. The L_{A90} values presented are the 'representative' levels determined through statistical analysis of the 15-minute readings, in line with BS 4142.

L_{Afmax} values are the '10th highest' 2-minute value.

Position	Date	Daytime (07:00 – 23:00 hrs)		Night-time (23:00 – 07:00 hrs)		
		$L_{Aeq,16hr}$	Representative $L_{A90(15min)}$	$L_{Aeq,8hr}$	Representative $L_{A90(15min)}$	L_{Amax}
1	Friday 25/10/2024	- [1]	61	67	40	87
	Saturday 26/10/2024	70		67		92
	Sunday 27/10/2024	70		66		91
	Monday 28/10/2024	70		67		82
	Tuesday 29/10/2024	71		66		85
	Wednesday 30/10/2024	- [1]		- [1]		- [1]
2	Friday 25/10/2024	- [1]	50	49	37	67
	Saturday 26/10/2024	53		49		68
	Sunday 27/10/2024	53		50		66
	Monday 28/10/2024	55		49		62
	Tuesday 29/10/2024	54		50		66
	Wednesday 30/10/2024	- [1]		- [1]		- [1]

[1] Insufficient data for specified time period due to survey start/end time.

Position	Date	Period	Parameter		
			LAeq,T	LA90,T	LAmax,T
3	30/10/2024	12:36:12-12:36:35	67	66	68
4	30/10/2024	12:42:28-12:42:41	77	76	79
5	30/10/2024	12:42:56-12:43:09	65	64	68
6	30/10/2024	12:49:51-12:50:20	62	61	63
7	30/10/2024	12:56:17-12:56:42	57	56	59
8	30/10/2024	12:57:31-12:57:48	50	49	52
9	30/10/2024	13:05:44-13:05:48	51	50	52

7.6 Discussion of Noise Climate

Due to the nature of the unattended survey, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However, at the beginning and end of the survey period the noise climate at Position 1 was noted to be dominated by road noise from King Street directly adjacent to the position, and noise from pedestrians. The noise climate at Position 2 was noted to be dominated by nearby building services serving the neighbouring commercial and residential units.

During the attended noise survey, on-site observations were recorded, and it was noted that noise from a wall mounted fan mentioned in the description for Position 4 & 5 was subjectively louder than other nearby building services. This is assumed to be due to a broken case surrounding the fan.

At Position 1, activity associated with nearby commercial sites was subjectively considered inaudible over the prevailing and dominant road traffic noise.

Analysis of Position 2 and attended survey data suggests that commercial noise influences the overall noise climate at the rear façade of the site.

8.0 Target Internal Noise Levels

With reference to the policy of London Borough of Richmond Upon Thames set out in Section 6.3, and the acoustic standards and guidelines as reviewed in Appendix B, the external noise intrusion levels from environmental sources (without character) should be controlled so as to not exceed the following criteria.

Activity	Location	Desirable Internal Ambient Criteria	
		07:00 – 23:00	23:00 – 07:00
Resting	Living Rooms	35 dB $L_{Aeq,16hour}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq,16hour}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

Note: For this site the $L_{Aeq,T}$ noise parameter alone is considered to be sufficient given the character of the noise climate we have measured. This is consistent with Section 2.2.2 of The World Health Organisation Environmental Noise Guidelines for the European Region and Note 4 of Section 7.7.2 of BS8233:2014)

Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target noise levels may be relaxed (subject to the requirements of any planning conditions) by up to 5 dB and reasonable internal conditions still achieved.

Note: BS 8233 ambient noise level guidelines are intended for anonymous noise sources, i.e. noise without character,

The above design targets are subject to the requirements of any planning conditions.

9.0 Noise from Commercial Activities

In relation to the change of use from offices to dwellings/houses, the updated Town and Country Planning General Permitted Development (England) (Amendment) Order 2021 (GPDO) states:

> *"MA.2. — (1) states Development under Class MA is permitted subject to the following conditions… (d) impacts of noise from commercial premises on the intended occupiers of the development"*.

As such for this proposal noise from commercial premises needs to be considered.

The adjacent properties 1st and 2nd floors along King Street (as well as other nearby properties) are almost all residential. Therefore, the inclusion of use Class C3 at 5a King Street would not alter the existing mix of uses in the area.

As discussed in Section 7.6, the noise climate for attended measurements undertaken at the site are deemed to include perceivable noise from commercial operations. It is considered that these commercial noise sources influence the results above road traffic noise at the rear façade (south-east) of the building, indicating that noise from commercial premises could be obtrusive to future occupiers without appropriate mitigation measures.

On the basis of the above it is considered that the conversion of 5a King Street may fetter the operation of the existing nearby commercial activities without appropriate measures. Mitigation measures are discussed in Section 9.1.

9.1 Achieving Internal Noise Levels

Worst-case external night-time noise levels have been assumed based on the attended measurement results presented in Section 7.5 of the nearby commercial plant items, and their assumed operational hours. It is assumed that the plant serving the nearby KFC commercial unit will sometimes operate beyond 23:00 as per the businesses opening hours, therefore the daytime L_{eq} levels presented have been used in the following calculations.

Based on the prevailing noise climate at the site, open windows as a means of background

ventilation in accordance with Approved Document F would not be suitable along the rear façade of the site. As such, an appropriate ventilation measure would be required.

Allowances should be made to provide appropriate sound insulation solutions as required including, where necessary, suitably specified glazing and attenuated ventilators. Preliminary calculations have been carried out to determine the likely façade sound insulation performance requirements for each façade. Calculation methods follow those outlined in BS 8233:2014 Section G.2 and are based on the following:

- Conventional brick/block cavity external wall.
- 33/39m^3 approximate room volume.
- 1.6m^2 approximate window area
- Reverberation time of 0.5 seconds.

From the results of the assessment, the following minimum preliminary acoustic performance specifications are recommended. These are intended for planning use only, and detailed design stage octave band acoustic specifications will need to be developed for tender. These specifications have been assessed for achieving the criteria set out in Section 8.0 for internal noise levels.

Room	Façade Element	Preliminary Minimum Sound Reduction Specification
Rear Living Room	Window	27 dB Rw + Ctr
	Ventilator	33 Dnew + Ctr
Rear Bedroom	Window	27 dB Rw + Ctr
	Ventilator	33 Dnew + Ctr

9.1.1 Example Glazing Configurations

Example glazing configurations commensurate with achieving the sound insulation specifications noted in Section 9.1 are given below.

Glazing Specification, Rw + Ctr (dB)	Example Configuration
27	Double Glazed System; e.g 6/16/6 mm.

9.1.2 Example Ventilation Solutions

Example ventilation solutions commensurate with achieving the elemental sound insulation performances noted in Section 9.1 are discussed below.

Ventilator Specification, Dnew + Ctr (dB)	Example Configuration
33	1 x 2,500mm2 standard hit-miss trickle vent per habitable room

10.0 Conclusions

The environmental noise impact upon the proposed dwellings has been assessed in the context of national and local planning policies.

For this proposal noise from commercial premises needs to be considered, however it is assumed that there is no mandatory requirement to consider noise from other sources.

A detailed environmental noise survey has been undertaken in order to establish the currently prevailing environmental noise climate around the site. It was found that commercial noise sources were influencing the results above road traffic noise at certain locations, indicating the potential for adverse noise impacts on future residents from commercial noise without appropriate mitigation measures.

Appropriate target internal noise levels have been proposed and should be achievable with incorporation of the recommended mitigation measures set out in this report.

The upper floors of the adjacent properties along King Street (as well as other nearby properties) are already residential. Therefore, the inclusion of use Class C3 at 5a King Street would not alter the existing mix of uses in the area.

This assessment concludes that noise should not be a planning issue provided the aforementioned mitigation measures are implemented.

Appendix A

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

L_p — Sound Pressure Level (SPL) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

L_w — Sound Power Level (SWL) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).

Appendix B

Planning Policies, Standards & Guidance

B.1 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) was published in March 2010 (i.e. before the NPPF). The NPSE is the overarching statement of noise policy for England and applies to all forms of noise other than occupational noise, setting out the long term vision of Government noise policy which is to:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

That vision is supported by the following NPSE noise policy aims which are reflected in three of the four aims of planning policies and decisions in paragraph 123 of the NPPF (see paragraph 8.2 (b) below):

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life."*

The Explanatory Note to the NPSE has three concepts for the assessment of noise in this country:

NOEL – No Observed Effect Level
This is the level below which no effect can be detected and below which there is no detectable effect on health and quality of life due to noise.

LOAEL – Lowest Observable Adverse Effect Level
This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level
This is the level above which significant adverse effects on health and quality of life occur.

None of these three levels are defined numerically and for the SOAEL the NPSE makes it clear that the noise level is likely to vary depending upon the noise source, the receptor and the time of day/day of the week, etc. The need for more research to investigate what may represent an SOAEL for noise is acknowledged in the NPSE and the NPSE asserts that not stating specific SOAEL levels provides policy flexibility in the period until there is further evidence and guidance.

The NPSE concludes by explaining in a little more detail how the LOAEL and SOAEL relate to the three NPSE noise policy aims listed above. It starts with the aim of avoiding significant adverse effects on health and quality of life, then addresses the situation where the noise impact falls between the LOAEL and the SOAEL when *"all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development."* The final aim envisages pro-active management of noise to improve health and quality of life, again taking into account the guiding principles of sustainable development which include the need to minimise travel distance between housing and employment uses in an area.

B.2 National Planning Policy Framework (NPPF)

The following paragraphs are from the NPPF (published December 2023):

191. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

    a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

    b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

    c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

193. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

Paragraph 185 also references the Noise Policy Statement for England (NPSE). This document does not refer to specific noise levels but instead sets out three aims:

- "Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development."

B.3 Planning Practice Guidance on Noise

Planning Practice Guidance (PPG) under the NPPF has been published by the Government as a web based resource at http://planningguidance.planningportal.gov.uk/blog/guidance/. This includes specific guidance on Noise although, like the NPPF and NPSE the PPG does not provide any quantitative advice. It seeks to illustrate a range of effect levels in terms of examples of outcomes as set out in the following table:

Perception	Examples of Outcomes	Increasing effect level	Action
Not noticeable	No effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	

Perception	Examples of Outcomes	Increasing effect level	Action
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed Adverse Effect Level	
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable hard, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

B.4 World Health Organisation

The current Environmental Noise Guidelines 2018 for the European Region (ENG) supersede the Guidelines for Community Noise from 1999 (CNG). Nevertheless, the ENG recommends that all CNG indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) remain valid.

A summary of the guidance from the ENG and CNG is shown in the table below.

Source	CNG guideline indoors all sources	ENG guideline outdoors noise from specific source only
Road traffic noise	35 $L_{Aeq,\ 16h}$	53 dB L_{den}
	30 $L_{Aeq,\ 8h}$	45 dB L_{night}
Railway noise	35 $L_{Aeq,\ 16h}$	54 dB L_{den}
	30 $L_{Aeq,\ 8h}$	44 dB L_{night}
Aircraft noise	35 $L_{Aeq,\ 16h}$	45 dB L_{den}
	30 $L_{Aeq,\ 8h}$	40 dB L_{night}

With regard to single-event noise indicators, Section 2.2.2 of the WHO Environmental Noise Guidelines 2018 state:

"In many situations, average noise levels like the L_{den} or L_{night} indicators may not be the best to

explain a particular noise effect. Single-event noise indicators – such as the maximum sound pressure level ($L_{A,max}$) and its frequency distribution – are warranted in specific situations, such as in the context of night-time railway or aircraft noise events that can clearly elicit awakenings and other physiological reactions that are mostly determined by $L_{A,max}$. Nevertheless, the assessment of the relationship between different types of single-event noise indicators and long-term health outcomes at the population level remains tentative. The guidelines therefore make no recommendations for single-event noise indicators."

B.5 British Standard BS8233: 2014

British Standard 8233: 2014 "Guidance on sound insulation and noise reduction for buildings" provides guidance for the control of noise in and around buildings.

Internal Areas

BS8233:2014 Section 7.7.2 titled "Internal ambient noise levels for dwellings" states:

"In general for steady external noise sources, it is desirable that internal ambient noise levels do not exceed the following guideline values:

Activity	***Location***	***Desirable Internal Ambient Criteria***	
		07:00 – 23:00	***23:00 to 07:00***
Resting	*Living Rooms*	*35 dB $L_{Aeq,16hour}$*	-
Dining	*Dining Room/Area*	*40 dB $L_{Aeq,16hour}$*	-
Sleeping (Daytime Resting)	*Bedroom*	*35 dB $L_{Aeq,16hour}$*	*30 dB $L_{Aeq,8hour}$*

Note 1 The above table provides recommended levels for overall noise in the design of a building. These are the sum total of structure-borne and airborne noise sources. Groundborne noise is assessed separately and is not included as part of these targets, as human response to groundborne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.

Note 2 The levels shown in the above table are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the levels recommended in the above table.

Note 3 These levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks nigh or News Year's Eve.

Note 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and

number of events per night. Sporadic noise events could require separate values.

Note 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.

If applicable, any room should have adequate ventilation (e.g. trickle ventilators should be open) during assessment.

Note 6 Attention is drawn to the Building Regulations.

Note 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved."

External Amenity Areas

BS8233:2014 Section 7.7.3.2 titled "Design criteria for external noise" states:

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$[1], with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized 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.

Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens, and terraces, which might be intended to be used for relaxation. In high-noise areas consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55dB $L_{Aeq,T}$ or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space."

B.6 ProPG : Planning & Noise : 2017

The primary goal of the ProPG is to assist the delivery of sustainable development by promoting good health and well-being through the effective management of noise. It seeks to do that through encouraging a good acoustic design process in and around proposed new residential development having regard to national policy on planning and noise. It is applicable to noise

from existing transport sources (noting that good professional practice should have regard to any reasonably foreseeable changes in existing and/or new sources of noise). The recommended approach is also considered suitable where some industrial or commercial noise contributes to the acoustic environment provided that is “not dominant”.

This ProPG advocates a systematic, proportionate, risk based, 2-stage, approach. The approach encourages early consideration of noise issues, facilitates straightforward accelerated decision making for lower risk sites, and assists proper consideration of noise issues where the acoustic environment is challenging.

The two sequential stages of the overall approach are:

- Stage 1 – an initial noise risk assessment of the proposed development site; and
- Stage 2 – a systematic consideration of four key elements.

The four key elements to be undertaken in parallel during Stage 2 of the recommended approach are:

- Element 1 – demonstrating a “Good Acoustic Design Process”;
- Element 2 – observing internal “Noise Level Guidelines”;
- Element 3 – undertaking an “External Amenity Area Noise Assessment”; and
- Element 4 – consideration of “Other Relevant Issues”.

The ProPG considers suitable guidance on internal noise levels found in “BS8233:2014: Guidance on sound insulation and noise reduction for buildings”.Table 4 in Section 7.7.2 of the standard suggests that “in general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values”. The standard states (Section 7.7.1) that “occupants are usually more tolerant of noise without a specific character” and only noise without such character is considered in Table 4 of the standard.

Activity	Location	07:00 – 23:00 Hours	23:00 – 07:00 Hours
Resting	Living Room	35dB $L_{Aeq,16hr}$	-
Dining	Dining Room / Area	40dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hr}$	30dB $L_{Aeq,16hr}$ 45dB $L_{Amax,F}$

NOTE 1 the Table provides recommended internal L_{Aeq} target levels for overall noise in the design of a building. These are the sum total of structure-borne and airborne noise sources.

Ground-borne noise is assessed separately and is not included as part of these targets, as human response to ground-borne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.

NOTE 2 The internal L_{Aeq} target levels shown in the Table are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the L_{Aeq} target levels recommended in the Table.

NOTE 3 These internal L_{Aeq} target levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year's Eve.

NOTE 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events (see Appendix A).

NOTE 5 Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the "open" position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded, subject to the further advice in Note 7.

NOTE 6 Attention is drawn to the requirements of the Building Regulations.

NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5dB and reasonable internal conditions still achieved. The more often internal L_{Aeq} levels start to exceed the internal L_{Aeq} target levels by more than 5dB, the more that most people are likely to regard them as "unreasonable". Where such exceedances are predicted, applicants should be

required to show how the relevant number of rooms affected has been kept to a minimum. Once internal L_{Aeq} levels exceed the target levels by more than 10dB, they are likely to be regarded as "unacceptable" by most people, particularly if such levels occur more than occasionally. Every effort should be made to avoid relevant rooms experiencing "unacceptable" noise levels at all and where such levels are likely to occur frequently, the development should be prevented in its proposed form (See Section 3.D).

B.7 British Standard 4142:2014 + A1:2019

When setting plant noise emission criteria reference is commonly made to BS 4142:2014 "*Methods for rating and assessing industrial and commercial sound".*

The procedure contained in BS 4142:2014 provides an assessment of the likely effects of sound on people when comparing the specific noise levels from the source with representative background noise levels. Where the noise contains "a tone, impulse or other characteristic" then various corrections can be added to the specific (source) noise level to obtain the "rating level".

BS 4142 states that: *"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 noise can be obtained by the difference of the rating noise level and the background noise 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 low impact, depending on the context."*

The determination of the "rating level" and the "background level" are both open to interpretation, depending on the context.

B.8 The London Plan (2021)

The London Plan was published March 2021.

Policy D14 Noise states:

A. *"In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:*

1) *avoiding significant adverse noise impacts on health and quality of life*
2) *reflecting the Agent of Change principle as set out in Policy D13*
3) *mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses*
4) *improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)*
5) *separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation*
6) *where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles*
7) *promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.*

B. *Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations.*

3.14.1 *The **management of noise** is about encouraging the right acoustic environment, both internal and external, in the right place at the right time. This is important to promote good health and a good quality of life within the wider context of achieving sustainable development. The management of noise should be an integral part of development proposals and considered as early as possible. Managing noise includes improving and enhancing the acoustic environment and promoting appropriate soundscapes. This can mean allowing some places or certain times to become noisier within reason, whilst others become quieter. Consideration of existing noise sensitivity within an area is important to minimise potential conflicts of uses or activities, for example in relation to internationally important nature conservation sites which contain noise*

sensitive wildlife species, or parks and green spaces affected by traffic noise and pollution. Boroughs, developers, businesses and other stakeholders should work collaboratively to identify the existing noise climate and other noise issues to ensure effective management and mitigation measures are achieved in new development proposals.

*3.14.2 The **Agent of Change Principle** places the responsibility for mitigating impacts from existing noise-generating activities or uses on the new development. Through the application of this principle existing land uses should not be unduly affected by the introduction of new noise sensitive uses. Regard should be given to noise-generating uses to avoid prejudicing their potential for intensification or expansion.*

*3.14.3 The management of noise also includes promoting **good acoustic design of the inside of buildings**. Section 5 of BS 8223:2014 provides guidance on how best to achieve this. The Institute of Acoustics has produced advice Pro:PG Planning and Noise (May 2017) that may assist with the implementation of residential developments. BS4214 provides guidance on monitoring noise issues in mixed residential/industrial areas.*

*3.14.4 Deliberately **introducing sounds** can help mitigate the adverse impact of existing sources of noise, enhance the enjoyment of the public realm, and help protect the relative tranquillity and quietness of places where such features are valued. For example, playing low-level music outside the entrance to nightclubs has been found to reduce noise from queueing patrons, leading to an overall reduction in noise levels. Water features can be used to reduce the traffic noise, replacing it with the sound of falling water, generally found to be more pleasant by most people.*

*3.14.5 Heathrow and London City Airport Operators have responsibility for noise action plans for airports. Policy T8 Aviation sets out the Mayor's approach to **aviation-related development**.*

*3.14.6 The definition of **Tranquil Areas, Quiet Areas and spaces of relative tranquillity** are matters for London boroughs**.** These are likely to reflect the specific context of individual boroughs, such that Quiet Areas in central London boroughs may reasonably be expected not to be as quiet as Quiet Areas in more residential boroughs. Defra has identified parts of Metropolitan Open Land and local green spaces as potential Quiet Areas that boroughs may wish to designate."*

Appendix C

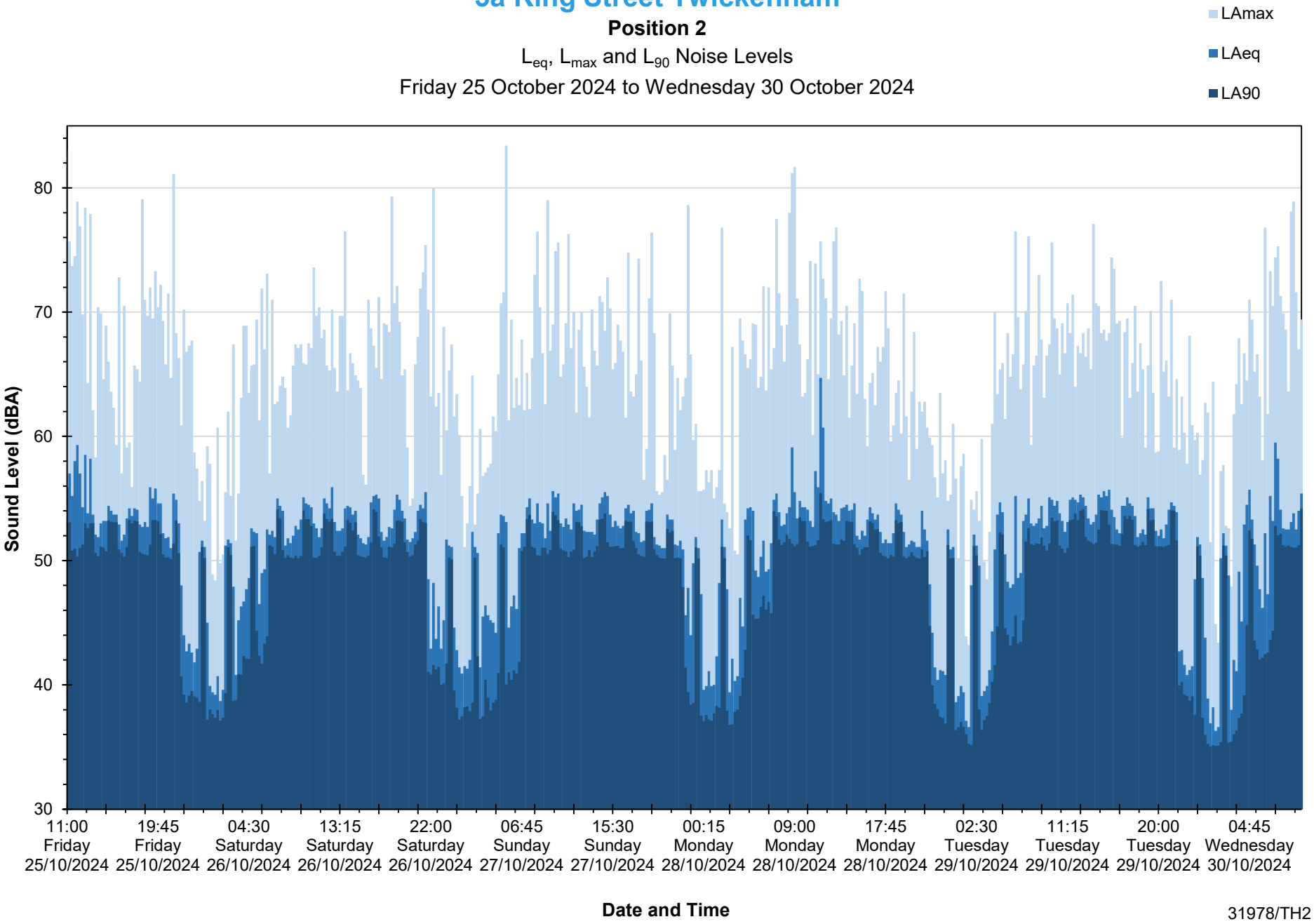
Time History Graphs

5a King Street Twickenham

Position 2

L_{eq}, L_{max} and L_{90} Noise Levels

Friday 25 October 2024 to Wednesday 30 October 2024



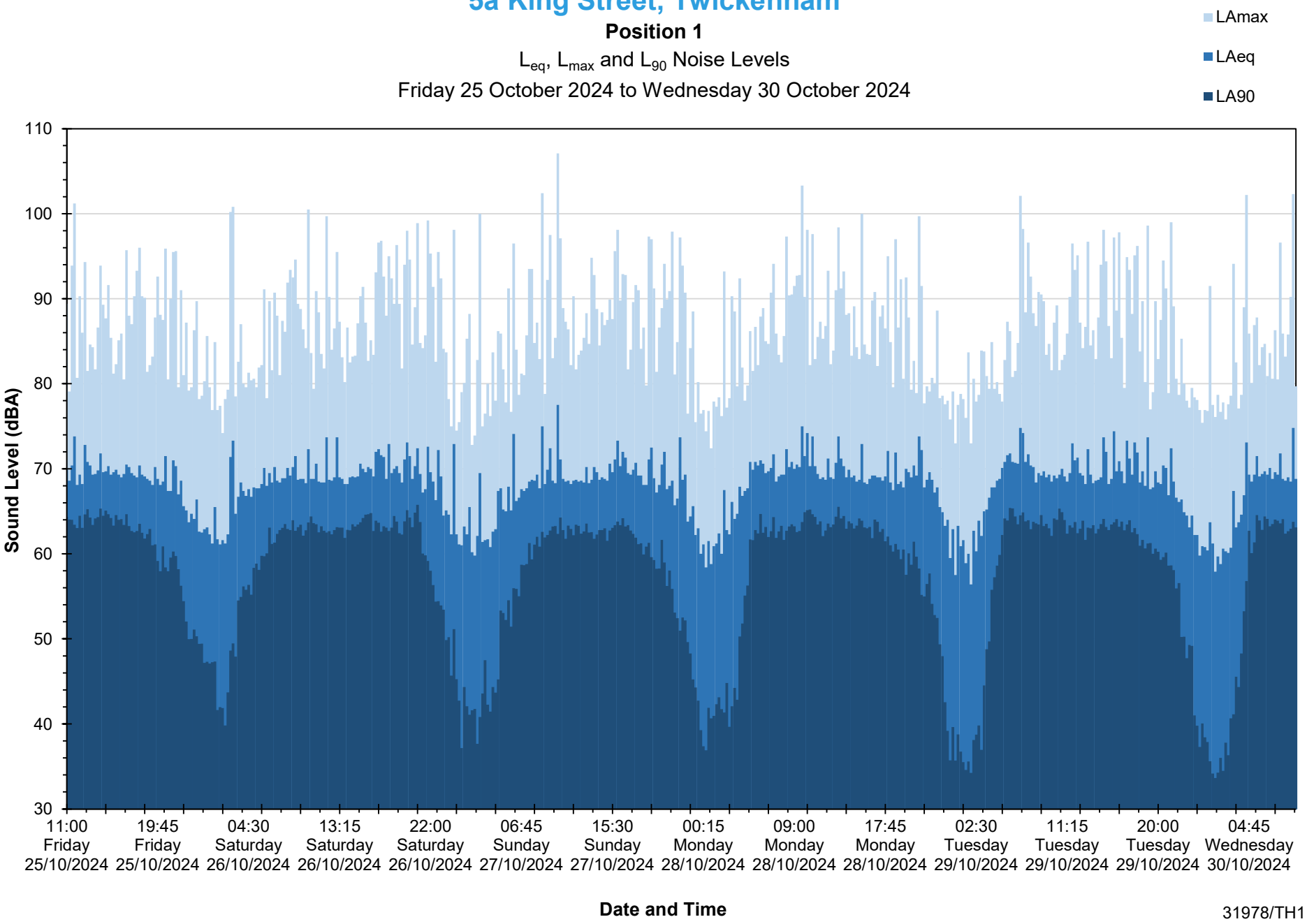
31978/TH2

5a King Street, Twickenham

Position 1

L_{eq}, L_{max} and L_{90} Noise Levels

Friday 25 October 2024 to Wednesday 30 October 2024



31978/TH1