

266-278 Yeading Lane Hayes

Environmental Noise Survey and Noise Impact Assessment Report

31666/NIA1Rev1

20 August 2024

For:
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Document Control

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1	20/08/2024	Updated drawings in line with latest issue		-	
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1.0 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned Threshold Land & Estates Ltd to undertake a noise assessment for a site in Hayes, Middlesex.

The site, which is located Yeading Lane, is being considered for residential development. The proposals are to demolish the existing first floor residential flats and replace them with two stories of flatted residential units which are double loaded from a central corridor.

This would create an increase in residential units from 5 to 17. A new centrally located residential entrance at grade from Yeading Lane includes a stair, lift, cycle storage, and refuse hold is also proposed.

Retail frontages are to remain at ground floor level and will be refurbished with new windows, signage, and awnings etc.

The site is subject to road traffic noise from Yeading Lane and the surrounding area. There is also contribution to the noise climate from air traffic serving Heathrow Airport which is located approximately 6km to the south of the site.

Baseline noise conditions have been established by means of a detailed noise survey presented herein. The findings have subsequently been used to assess the suitability of the site for residential use. Measures required to mitigate noise impacts for the proposed development (when operational) have been discussed in context with relevant national & local planning policies, design standards and good practice guides.

2.0 Objectives

To undertake an environmental noise survey to establish the existing L_{Amax} , L_{Aeq} and L_{A90} environmental road, and air traffic noise levels at selected accessible positions.

To obtain data that can be used to determine the requirements for sound insulation of the external facades at a later date.

Based on the results of the survey, to undertake a noise assessment to assess the suitability of the site for residential use in accordance with the Noise Policy Statement for England (NPSE), National Planning Policy Framework (NPPF), Planning Practice Guidance (ProPG), British Standard BS8233:2014 and Local Authority requirements.



To discuss noise mitigation and acoustic design solutions to achieve acceptable noise levels in residential areas.

With reference to BS 4142 and other relevant guides, to propose suitable noise limits for plant and commercial operations to protect neighbouring noise sensitive receptors.

3.0 Acoustic Terminology

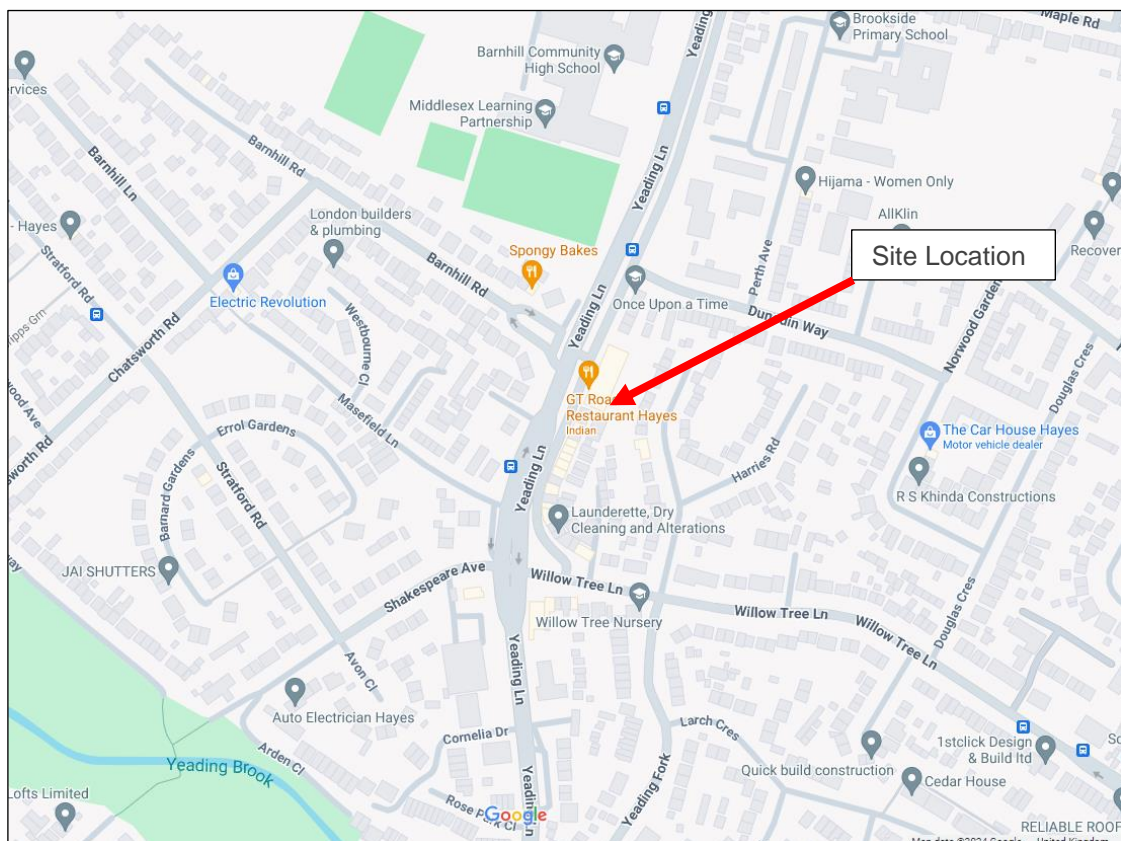
For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

4.0 Site Description

4.1 Location

The site is located at 266 – 278 Yeading Lane, Hayes.

The site location is shown on the following Location Map.



Location Map showing site location.

The site falls within the jurisdiction of London Borough of Hillingdon.



4.2 Description

The existing building comprises a parade of 6 retail units at ground floor level with 5 residential flats located on the first floor facing the Yeading Lane. To the rear of the property lies a shared service road/yard which facilitates access to the commercial property on Yeading Lane from Willow Tree Lane.

To the east of the service yard lie semi-detached residential properties with gardens backing onto the rear of the site.

Yeading Lane is a busy vehicular thoroughfare with a feeder access road running parallel and adjacent to the property.

The surrounding area comprises residential properties with the exception of Barnhill High School which located to the north of the site at a distance of approximately 150m to the nearest school building and approximately 80m from an outdoor football pitch/sports field.

The site extent is shown on the following Site Plan.



Site Plan showing approximate site extent.



5.0 Proposed Development

Existing residential flats on the 1st floor are to be demolished and replaced with new residential apartments at 1st floor level and also within a proposed additional 2nd floor level. The units at ground floor level are to remain as retail units with exception of 1No. unit where an entrance lobby and cycle storage serving the new residential apartments on the 1st and 2nd floors are proposed.

The proposed site is shown in the following drawings.



Proposed Ground Floor Plan – (718-CDA-ZZ-00-DR-A-05-0100 Rev01) © Create



Proposed First Floor Plan – (718-CDA-ZZ-01-DR-A-05-0101 Rev01) © Create



Proposed Second Floor Plan – (718-CDA-ZZ-02-DR-A-05-0102 Rev01) © Create



Proposed West (Front) and East (Rear) Elevations – 718-CDA-ZZ-XX-DR-A-05-0200 Rev01) © Create

6.0 Planning Policies, Standards & Guidance

6.1 Policies & Guides

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



- The National Planning Policy Framework (NPPF), 2023
- The Noise Policy Statement for England (NPSE), 2010
- Planning Practice Guidance – Noise (PPGN), 2019

The above documents highlight the importance of considering the potential noise effects on any new residential development and provide a qualitative approach to assessment.

However, each of 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:

- Local Planning Policy - Policy EM8
- The London Plan (2021) – Policy D13 and Policy D14
- World Health Organisation: 2018
- Building Regulations Approved Document O: 2021
- British Standard BS8233: 2014
- ProPG : Planning & Noise: 2017
- British Standard 4142:2014 + A1:2019

Detailed information for relevant planning policies and guidance can be found within Section 6.2 and Appendix B.

6.2 Specific Local Authority Criteria

London Borough of Hillingdon have included the following section within their pre-application advice Ref: 723/PRC/2023/40 dated 29 January 2024:

NOISE

Policy D14 of the London Plan (Noise) states that new noise and other nuisance-generating development proposed close to residential and other noise-sensitive uses should put in place measures to mitigate and manage any noise impacts for neighbouring residents and businesses.

Development proposals should manage noise and other potential nuisances by ensuring good design mitigates and minimises existing and potential nuisances with necessary and appropriate provisions including ongoing and future management responsibilities, and proposals should seek to separate new noise-sensitive development from existing noise-



generating businesses and uses through distance, screening, internal layout, sound-proofing, insulation and other acoustic design measures.

Policy D13 of the London Plan (Agent of Change) sets out that proposals should mitigate and minimise 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, improving and enhancing the acoustic environment and promoting appropriate soundscapes.

Proposals should first seek to separate new noise-sensitive development from major noise sources through the use of distance, screening, layout, orientation, uses and materials, in preference to sole reliance on sound insulation. 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, promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.

It is generally accepted that noise emanating from residential properties is lower than commercial premises, and industrial uses are associated with the highest noise profile.

Any subsequent application should be accompanied by a Noise Impact Assessment, which should demonstrate that the increase in noise from the intensification of the site would not significantly worsen noise conditions in the area and that the new residential properties will be able to achieve satisfactory internal noise conditions, noting the major sources of noise in the area (likely to be road traffic from Yeading Lane and the operational use of the ground floor commercial units), and having regard to the agent of change principle. It is very important that the continued operation of the ground floor commercial units is not affected by the additional residential properties above, and that their operation does not lead to future noise complaints from the additional flats, as these commercial units are important to the area and their loss or reduced ability to operate would cause significant harm to the vitality and viability of the local centre as whole.

The policies referenced within the above advice are outlined below:

Policy D14 Noise

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 Agent of Change*
- 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.³⁷

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.

Policy D13 Agent of Change

A The Agent of Change principle places the responsibility for mitigating impacts from existing noise and other nuisance-generating activities or uses on the proposed new noise-sensitive development. Boroughs should ensure that Development Plans and planning decisions reflect the Agent of Change principle and take account of existing noise and other nuisance-generating



uses in a sensitive manner when new development is proposed nearby.

B Development should be designed to ensure that established noise and other nuisance-generating uses remain viable and can continue or grow without unreasonable restrictions being placed on them.

C New noise and other nuisance-generating development proposed close to residential and other noise-sensitive uses should put in place measures to mitigate and manage any noise impacts for neighbouring residents and businesses.

D Development proposals should manage noise and other potential nuisances by:

1) ensuring good design mitigates and minimises existing and potential nuisances generated by existing uses and activities located in the area

2) exploring mitigation measures early in the design stage, with necessary and appropriate provisions including ongoing and future management of mitigation measures secured through planning obligations

3) separating new noise-sensitive development where possible from existing noise-generating businesses and uses through distance, screening, internal layout, sound-proofing, insulation and other acoustic design measures.

E Boroughs should not normally permit development proposals that have not clearly demonstrated how noise and other nuisances will be mitigated and managed.

The following is taken from Policy EM8 as outlined in Hillingdon Local Plan: Part 1 - Strategic Policies (Adopted November 2012):

Noise

The Council will investigate Hillingdon's target areas identified in the Defra Noise Action Plans, promote the maximum possible reduction in noise levels and will minimise the number of people potentially affected.

The Council will seek to identify and protect Quiet Areas in accordance with Government Policy on sustainable development and other Local Plan policies.

The Council will seek to ensure that noise sensitive development and noise generating development are only permitted if noise impacts can be adequately controlled and mitigated.



7.0 Baseline Noise Survey

7.1 Procedure

Fully automated environmental noise monitoring was undertaken by Kelvin Carray BSc AMIOA from approximately 15:00 hours on 25 July 2024 to 08:45 hours on 30 July 2024, to establish full daytime and night-time noise levels over a typical weekday and weekend period.

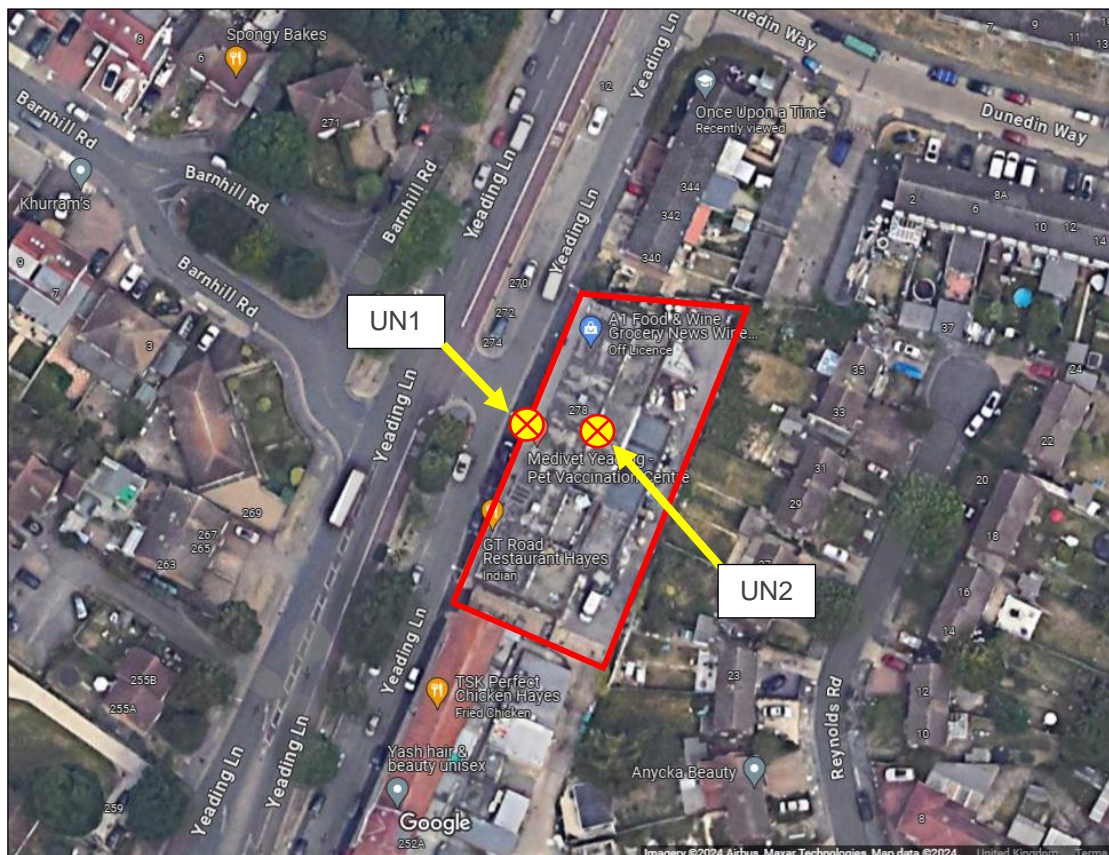
Measurements were taken continuously of the A-weighted (dBA) L_{90} , L_{eq} , and L_{max} sound pressure levels over discrete 2 and 15-minute periods.

7.2 Measurement Positions

The noise level measurements were undertaken at 2No. positions as described in the following table.

Position	Description
UN1	<p>The microphone was attached to a pole which was fixed horizontally at roof level. The microphone protruded the western façade of the existing building which overlooks Yeading Lane by approximately 0.5m, and approximately 7m above ground level.</p> <p>Measurements at this position are therefore representative of noise levels incident upon the front elevation of the proposed development including any local reflections.</p>
UN2	<p>The microphone was attached to a pole which was fixed vertically to the eastern façade of the existing building, overlooking the rear of properties Reynolds Road and the service access road to the rear of the site. The microphone was located approximately 0.5m below roof height, approximately 7m above ground level and approximately 2.5m above the first floor roof gardens/terrace.</p> <p>Measurements at this position are screened from Yeading Lane by the existing building. Measurements at this position are therefore representative of incident noise levels at the rear elevation of the proposed development including any local reflections.</p>

The measurement positions are shown on the following site plan.



Plan Showing Measurement Positions.

7.3 Weather Conditions

For the unattended survey between 15:00 hours on 25 July 2024 and 08:45 hours on 30 July 2024, local weather reports indicated no notable periods of prolonged or heavy rainfall other than a period of light rainfall on the evening of 25 July, with temperatures ranging from 11 °C (night) to 27 °C (day) and wind speeds less than 5 m/s.

During our time on site on 25 July, skies were overcast, wind conditions were light and from a south-westerly direction. Road surfaces were largely dry.

These conditions are considered suitable for obtaining representative measurement results.



7.4 Instrumentation

The instrumentation used during the survey is presented in the following table:

Position	Description	Manufacturer	Type	Serial Number	Calibration
UN1	Type 1 ½" Condenser Microphone	PCB	377B02	139312	Calibration on 18/08/2023
	Preamp	Larson Davis	PRM902	5161	Calibration on 18/08/2023
	Type 1 Data Logging Sound Level Meter	Larson Davis	824	3443	Calibration on 18/08/2023
UN2	Type 1 ½" Condenser Microphone	PCB	377B02	122885	Calibration on 18/08/2023
	Preamp	Larson Davis	PRM902	3692	Calibration on 18/08/2023
	Type 1 Data Logging Sound Level Meter	Larson Davis	824	3444	Calibration on 18/08/2023
UN1 + UN2	Type 1 Calibrator	Bruel & Kjaer	4230	1411668	Calibration on 27/07/2023 and 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 have been plotted on Time History Graphs 31666/TH1 and 31666/TH2 enclosed 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 $L_{Aeq(15\text{ minute})}$ 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 below. The L_{A90} values presented are the 'representative' levels determined through statistical analysis of the 15-minute readings, in line with BS 4142. L_{Amax} values are the '10th highest' 2-minute value in line with Approved Document O (Part O) requirements.

Position	Date	Daytime (07:00 – 23:00 hrs)		Night-time (23:00 – 07:00 hrs)		
		$L_{Aeq,16hr}$	$L_{A90,15min}$	$L_{Aeq,8hr}$	$L_{A90,15min}$	L_{Amax}
UN1	25/07/2024*	65	52	60	41	76
	26/07/2024	64		59		74
	27/07/2024	64		60		76
	28/07/2024	64		61		76
	29/07/2024	64		60		76
	30/07/2024*	63		-	-	-
UN2	25/07/2024*	53	46	49	42	62
	26/07/2024	52		47		63
	27/07/2024	50		48		64
	28/07/2024	53		51		64
	29/07/2024	52		48		65
	30/07/2024*	49		-	-	-

*Denotes an incomplete period.

The above levels are as measured at the measurement positions and include local reflections.

7.6 Discussion of Noise Climate

Due to the nature of the survey, i.e. unattended, 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 was noted to be dominated by road traffic from the surrounding road, particularly from Yeading Lane and the junction with Willow Tree Lane to the south of the site with occasional contribution from air traffic movements.



8.0 Achieving Internal Noise Levels

There are 3No ventilation conditions applicable to proposed residential dwellings. These are Background Ventilation as described in Approved Document F (Part F), Overheating as described in Approved Document O (Part O), and Purge Ventilation (odour and smells).

8.1 Purge Ventilation

It should be noted that the internal noise level guidelines are generally not applicable under “*purge ventilation*” conditions as defined by Part F, as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food).

As such, acoustic conditions are generally not a concern during purge ventilation.

8.2 Background Ventilation Condition

8.2.1 Criteria

With reference to the acoustic standards and guidelines as reviewed in Appendix B, the external noise intrusion levels from environmental sources 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 $L_{Aeq,8hour}$ 45 dB ^[1] L_{Amax}

[1] regular noise events such as trains, aircraft (10th highest)

Note: For this site the $L_{Aeq,T}$ noise parameter alone is not 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.



8.2.2 Outline Specifications

Based on the prevailing noise climate at the site, open windows as a means of background ventilation would not be suitable on any façade across the development. As such, alternative ventilation measures would be required.

Allowance should be made to provide appropriate sound insulation solutions as required including, where necessary, suitably specified glazing and attenuated ventilators/mechanical ventilation systems. 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.
- Typical room volume as per latest drawings
- Typical window area as per latest drawings
- 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.

Façade Zone		Façade Element	Preliminary Minimum Sound Reduction Specification
A	Purple	Window	32 dB $R_w + C_{tr}$
		Ventilator	37 $D_{new} + C_{tr}$
B	Green	Window	27 dB $R_w + C_{tr}$
		Ventilator	33 $D_{new} + C_{tr}$

The following plans show the location of each façade zone noted in the table above.



Proposed First Floor Plan – (718-CDA-ZZ-01-DR-A-05-0101 Rev01) © Create



Proposed Second Floor Plan – (718-CDA-ZZ-02-DR-A-05-0102 Rev01) © Create

8.2.3 Example Glazing Configurations

Example glazing configurations commensurate with achieving the sound insulation specifications noted in Section 8.2.2 are given below.

Glazing Specification, $R_w + C_{tr}$ (dB)	Example Configuration
32	double glazed system e.g 10/16/6mm.
27	double glazed system e.g 6/16/6 mm.

8.2.4 Example Ventilation Solutions

Example ventilation solutions commensurate with achieving the elemental sound insulation performances noted in Section 8.2.2 are discussed below.



Ventilator Specification, $D_{\text{new}} + C_{\text{tr}}$ (dB)	Example Configuration
34-42	Acoustic trickle vent per habitable room, or a mechanically assisted supply & extract solution (e.g. local MVHR).
33	1 x 2,500mm ² standard hit-miss trickle vent per habitable room, or a mechanically assisted supply & extract solution (e.g. local MVHR).

The preliminary performance specifications included above are based on the provision of either full MVHR for rooms or 1 no. ventilator only per habitable room as required. If additional numbers of ventilators are required to achieve the ventilation rates, the performance requirement for the individual ventilators will need to increase.

The table below provides guidance on the increase in performance specification required for additional numbers of ventilators.

Number of Ventilators	Performance Increase on Ventilator Specifications Stated Above
1	+0 dB
2	+3 dB
3	+5 dB
4	+6 dB

8.3 Overheating Condition

Approved Document O 'Overheating' (ADO) was released in December 2021 and came into effect in England on 15 June 2022. It sets out the suitable methodologies to limit unwanted solar gains in summer and provide adequate means to remove heat from the indoor environment. Requirement O1(2)(a) contains criteria relating to noise with Sections 3.2 to 3.4 of ADO stating the following:

"In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

- 40 dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).*
- 55 dB L_{AFmax} , more than 10 times a night (between 11pm and 7am)."*



Further to the above, the acoustic requirements of ADO relates to bedrooms and night and does not consider daytime hours or other living spaces.

To assess overheating ADO sets out 2 ways this can be done: These are by either using the simplified method or through dynamic thermal modelling (ie a TM59 assessment). For an acoustic assessment suitable to accompany a Planning Application, the simplified method is often used as it splits England into “Moderate” and “High” risk zones depending on the location of the site and provides “minimum free areas” for window openings in bedrooms. These are as follows:

- 13% of the floor area for “High Risk” locations
- 4% of the floor area for “Moderate Risk” locations

Based on the minimum free areas noted above, the IoA & ANC guidance note “Demonstrating Compliance with the Noise Requirements of Approved Document O” sets out the external noise levels above which the simplified method cannot be used and alternative overheating strategy should be developed. These are shown below:

Zone	Risk Category	Incident Noise Level (dB)		Notes
		L _{Aeq,8h}	L _{AFmax,2min}	
Red	High	>44	>59	Open windows based on simplified model not suitable. Detailed modelling via TM59 assessment advised. Limited area opening windows or closed windows may be required to comply with AD-O
	Moderate	>49	>64	

The site is located in within the UB4 postcode and therefore falls into the “High” risk category.

Based on the table above, external noise levels at all locations are above the point at which the simplified ADO model can be used and detailed modelling thermal modelling and a subsequent acoustic assessment is advisable to show compliance with Requirement O1(2)(a). Where a facade is not highlighted opening windows as a means of overheating control should be suitable from an acoustic perspective without a more detailed assessment.

At this stage, bedrooms should be designed to avoid or severely restrict the reliance on opening windows to satisfy overheating targets. This can be achieved by use of solar rated glazing, external shutters or fenestration design. In addition, mitigation measures in the form of attenuated or plenum windows, attenuated louvres or vents for overheating and sound attenuating balconies may be suitable. These methods for reducing solar gains can be assisted with mechanical ventilation, such as MVHR with a manual summer boost function.



Air conditioning can also be considered. However, the introduction of mechanical solutions should be considered carefully; not only with regard to cost and maintenance, but sustainability and the environment.

9.0 External Amenity Area

Noise levels in external amenity areas should ideally not be above the range of 50 to 55 dB $L_{Aeq,16hr}$, as stated in BS8233:2014.

As the proposed shared rooftop garden space balconies and terraces are located to the rear of the development, noise levels in these locations should be in line with those measured as Position UN2, which did not exceed 51 dB $L_{Aeq,16hr}$, during the survey.

As an additional 2nd floor level is proposed, noise levels at the rear of the proposed development may be lower due to the increased level of screening from Yeading Lane.

It is acknowledged that noise levels on some balconies located at the front facade may be above the guidance noise levels set out in BS8233:2014. However, in addition to these balconies all dwellings will have access to the rooftop garden, where noise levels will be below/within the range of 50-55dB $L_{Aeq,16hr}$ as stated in BS8233:2014.

The above is as noted within ProPG, which states that where despite following a good acoustic design, adverse noise impacts remain on any private external amenity space (ie garden or balcony), then the impact may be partially off-set if the residents are provided through the design of the development or the planning process, with access to:

“a relatively quiet alternative or additional external amenity space for sole use by a household, (e.g. a garden, roof garden or large open balcony in a different, protected, location)”

It should also be noted that BS8233:2014 states: *“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.”*

BS 8233 also states the following with regards to small private balconies (which those proposed within the development would classify under):



“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.”

Therefore, considering that the scheme has a shared rooftop amenity space within the guideline noise levels, we would suggest that noise on the private external balconies proposed should not be a reason for refusal.

10.0 Operational Noise Impacts

10.1 Fixed Plant & Equipment

Based on the results of the noise survey and the requirements of the Local Authority, we propose that the following plant noise emission criteria be achieved incident at the nearest noise sensitive residential windows, in free-field conditions, with all plant operating simultaneously.

Location	Plant Noise Emission Criteria ($L_{Aeq,T}$, dB)	
	Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
Houses located on the opposite side of Yeading Lane / Front of neighbouring residential apartments on Yeading Lane (Position UN1)	49	38
Rear of houses Reynolds Road / Rear of neighbouring residential apartments on Yeading Lane (Position UN2)	43	39

Noise shall be assessed in accordance with BS 4142:2014 with corrections applied for any plant emitting noise of a tonal or irregular quality. The above limits shall be subject to the final approval of the Local Authority.

10.2 Amenity/Commercial Unit Operations

At ground floor level commercial/amenity units are proposed as part of the development. Our understanding is that the units are for retail use, however exact uses of these units have not yet been confirmed.

Considering the ground floor units are currently active and of mixed retail use including restaurants/takeaways, combined with the environmental noise climate at the site, we would expect that noise egress via the unit frontage from most general commercial uses (e.g. restaurant, café, shop) should be readily controllable.

However, for completeness we advise that operational noise break-out from any proposed use is controlled to no more than 5 dB below the existing background noise level as follows:



Location	Period	Commercial noise break-out Limit L_{Aeq} (dB)
Front of development (Position UN1)	Daytime (07:00-23:00)	44
	Night-time (23:00-07:00)	33
Rear of development (Position UN2)	Daytime (07:00-23:00)	38
	Night-time (23:00-07:00)	34

¹Should the operation include music noise, we advise that the above limits are reduced by a further 5 dB

² Established based on achieving suitable internal noise levels within noise sensitive premises.

Furthermore, noise transfer through the separating floor structure (and associated flanking paths) from the ground floor commercial units to first floor apartments shall be considered. Once final uses have been confirmed for each unit, an assessment of noise transfer to structurally connected habitable rooms shall be carried out which considers typical noise levels within the commercial unit and the sound insulation performance of the separating construction.

For noise transfer to apartments above, the design intent should be to ensure operational L_{max} noise transfer to apartments does not exceed a level at least 5 dB lower than the anticipated background L_{90} noise level in each octave band.

11.0 Conclusions

A detailed environmental noise survey has been undertaken in order to establish the currently prevailing environmental noise climate around the site.

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

Appropriate target internal noise levels have been proposed. These are achievable using conventional mitigation measures.

Preliminary acoustic performance specifications for the external building fabric elements have been recommended such that appropriate internal noise levels should be achieved. These are intended for planning use only, and detailed design stage octave band acoustic specifications will need to be developed for tender.

The assessment shows the site, subject to appropriate mitigation measures, is suitable for residential development in terms of noise.

Appendix A

Acoustic Terminology

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} L₉₀ 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 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.

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 Building Regulations Approved Document O

Building Regulations Approved Document O relates to setting standards for overheating in new residential buildings. It aims to protect the health and welfare of occupants of the building by reducing the occurrence of high indoor temperatures.

Requirement O1 of Approved Document O is met by designing and constructing the building to achieve both of the following:

- a. Limiting unwanted solar gains in summer.
- b. Providing an adequate means of removing excess heat from the indoor environment.

Sections 3.2 to 3.4 of this document relate to noise and state the following:

“In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

- a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).
- b. 55dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).

Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants’ Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.

NOTE: Guidance on reducing the passage of external noise into buildings can be found in the *National Model Design Code: Part 2 – Guidance Notes (MHCLG, 2021)* and the *Association of Noise Consultants’ Acoustics, Ventilation and Overheating: Residential Design Guide (2020)*.

B.8 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.

Appendix C

Time History Graphs

266-278 Yeading Lane

Position UN1

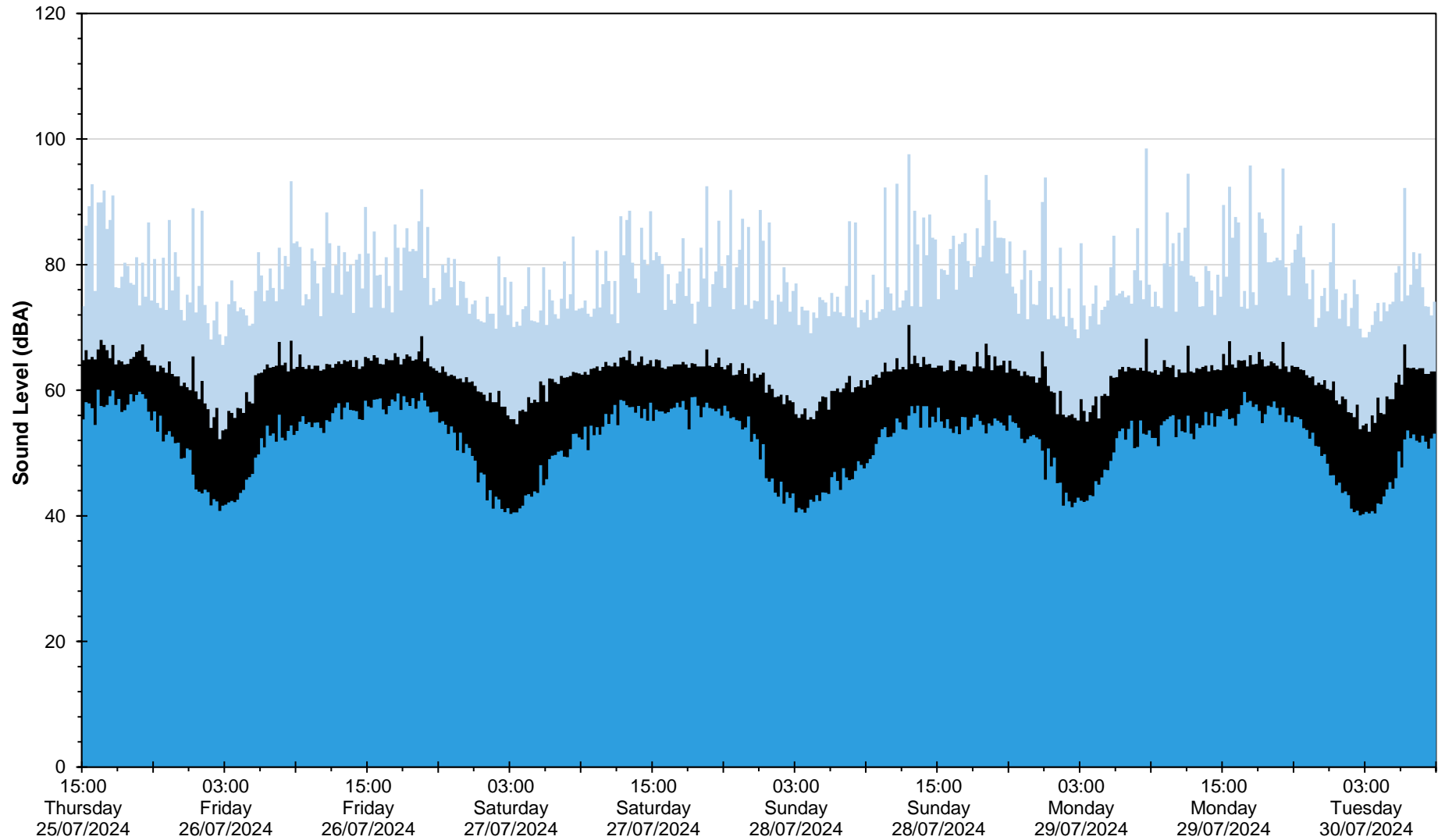
L_{eq} , L_{max} and L_{90} Noise Levels

Thursday 25 July 2024 to Tuesday 30 July 2024

■ L_{max}

■ L_{eq}

■ L_{90}



Date and Time

31666/TH1

266-278 Yeading Lane

Position UN2

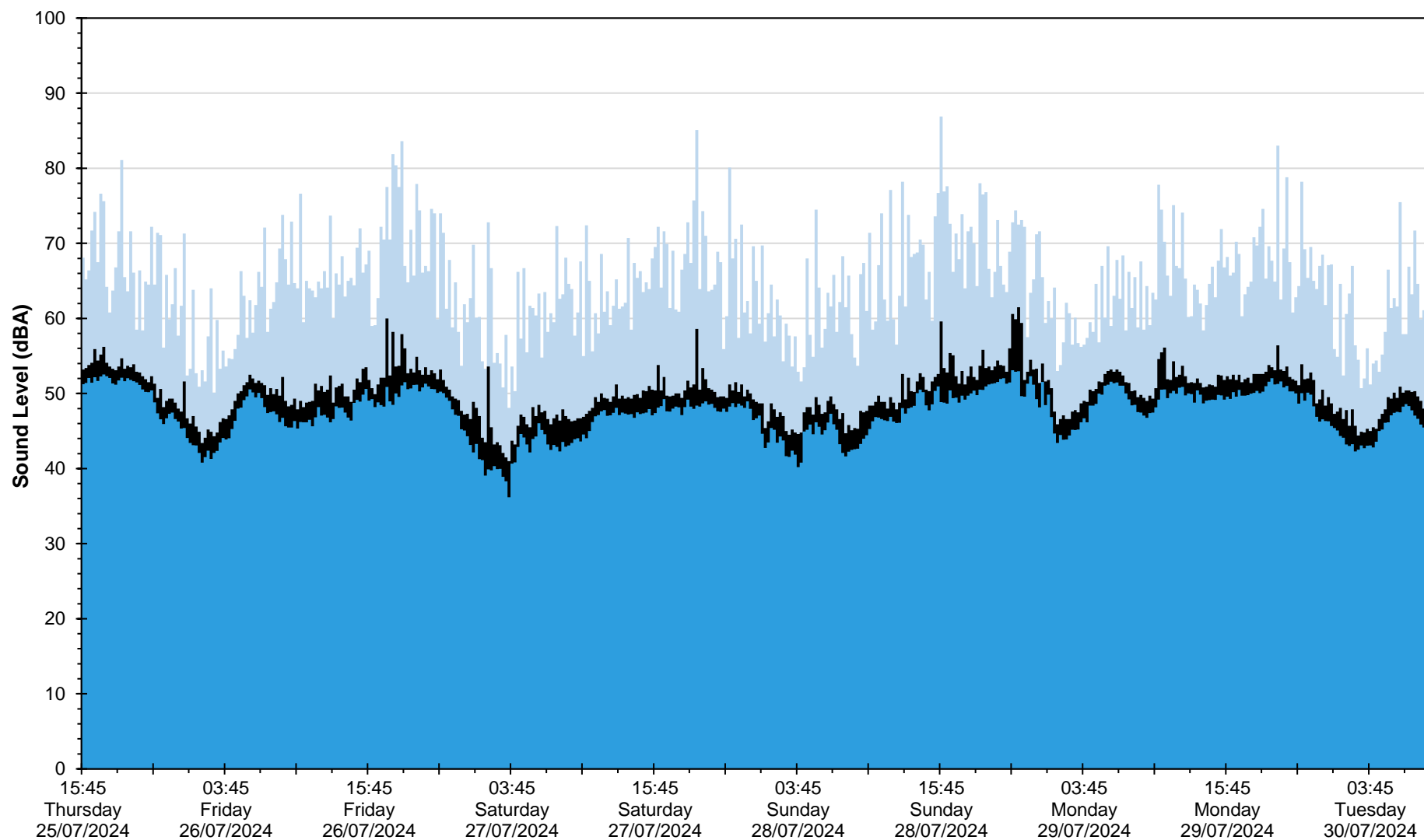
L_{eq} , L_{max} and L_{90} Noise Levels

Thursday 25 July 2024 to Tuesday 30 July 2024

■ L_{max}

■ L_{eq}

■ L_{90}



Date and Time

31666/TH2