
424 - 426 Reading Road, Winnersh, Wokingham RG41 5GP

Noise Impact Assessment Report
Report 31676.PCR.01

Mado Homes Ltd.

Report 31676.PCR.01 Revision History		
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1.0 INTRODUCTION

KP Acoustics Ltd has been commissioned by Mado Homes Ltd to prepare a Noise Impact Assessment for the proposed ground floor restaurant and takeaway use at 424–426 Reading Road, Winnersh, Wokingham RG41 5GP.

The Local Planning Authority has requested that a Noise Assessment Report be prepared by a suitably qualified acoustician to assess the potential noise impacts associated with the proposed use. This report addresses that requirement and considers the potential impact of environmental noise, plant noise, internal noise transfer to residential accommodation above, and noise breakout to the surrounding area.

The assessment has been undertaken in accordance with relevant national planning policy, British Standards, and recognised industry guidance, as set out later in this report.

2.0 SITE SURVEYS

2.1 Site Description

The site is located on Reading Road in Winnersh, Wokingham. The surrounding area comprises a mix of commercial and residential uses. Residential properties are located in close proximity to the site, including accommodation above the proposed ground floor commercial unit.

At the time of the survey, the prevailing noise climate in the area was dominated by road traffic noise from Reading Road and other local roads, with intermittent contributions from local commercial activity.

2.2 Environmental Noise Survey Procedure

An environmental noise survey was undertaken at two locations representative of the site's exposure to local noise sources. The monitoring positions were selected to capture worst-case noise levels likely to affect the proposed development.

Unattended continuous noise monitoring was undertaken between Friday 09 January 2026 and Monday 12 January 2026. The survey measured $L_{Aeq,T}$, $L_{A90,T}$ and L_{Amax} parameters and was conducted in general accordance with ISO 1996-2:2017. Weather conditions during the survey period were suitable for environmental noise measurement.

2.3 Measurement Positions

Details of the measurement positions are summarised in Table 2.1 and illustrated on Figure 2.1.

Icon	Descriptor	Location Description
①	Noise Measurement Position 1	The microphone was installed at a distance of 2 metres from the existing front façade. The microphone was installed on a tripod at least 1.5 metres above ground level.
②	Noise Measurement Position 2	The microphone was installed at the rear of the site. The microphone was installed on a tripod at least 1.5 metres above ground level and at least 3.5 metres from any other reflective surface.
NSR1-3	Noise sensitive receptors	The nearest noise sensitive receptors (NSR) are residential windows of the properties shown in Figure 2.1. NSR1: First floor residential window on the side façade of the residential property. Located at a distance of 6 metres from the nearest façade. NSR2: First floor residential window on the rear façade of the residential property. Located at a distance of 40 metres from the proposed rear façade. NSR3: First floor residential window on the side façade of the residential property. Located at a distance of 6 metres from the nearest façade. Not Shown: First floor windows of Unit 1 Bedroom (F25) and Unit 2 Bedroom (F07) located directly above the ground floor.

Table 2.1 Measurement positions and descriptions

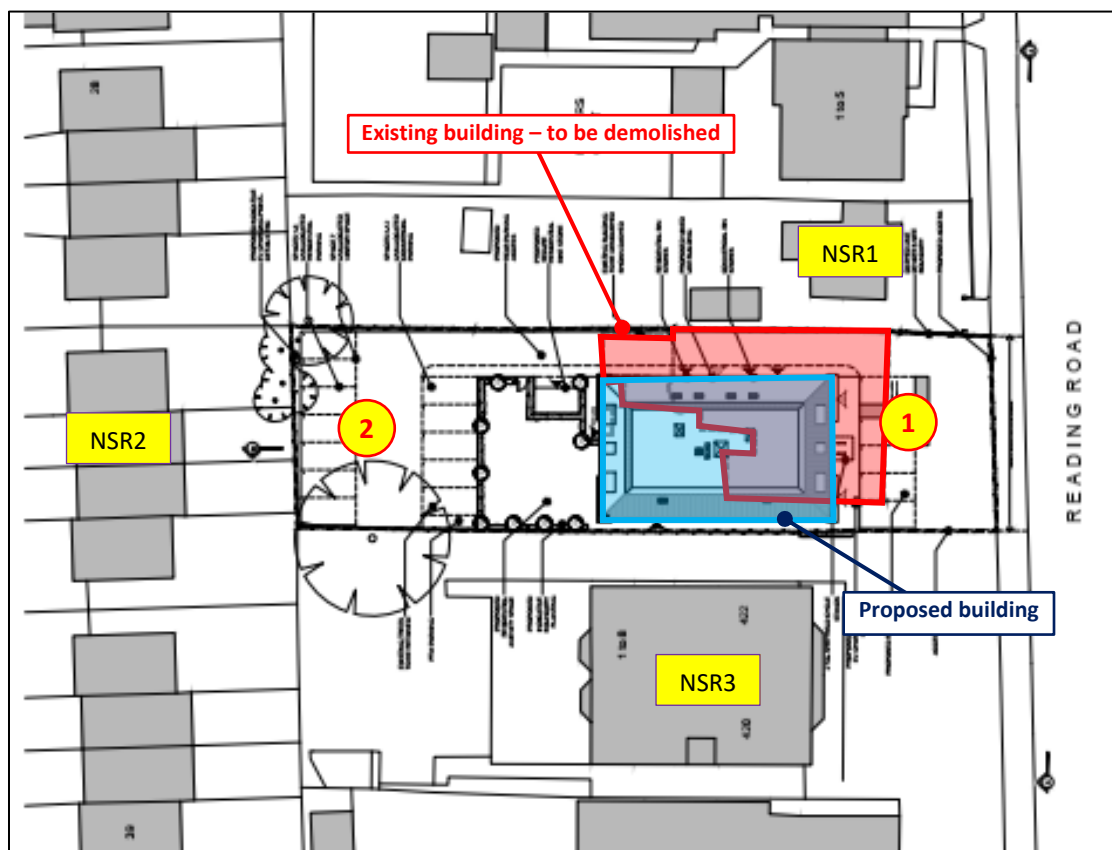


Figure 2.1 Site measurement positions

2.4 Equipment

The equipment calibration was verified before and after use and no abnormalities were observed. The equipment used is described within Table 2.2.

Ref.	Measurement Instrumentation	Serial No.	Calibration Date
NV7	Svantek Type 958A Class 1 Sound & Vibration Level Meter	98394	01/05/2025
	Free-field microphone PCB 377B02	347071	
	Preamplifier PCB 426E01	82937	
	External windshield	-	-
N25	NTI Audio XL2 Class 1 Sound Level Meter	A2A-21141-E0	22/07/2024
	Free-field microphone NTI Acoustics MC230A	A23583	
	Preamplifier NTI Acoustics MA220	10992	
	NTI Audio External Weatherproof Shroud	-	-
NTi Class 1 Sound Calibrator CR515		107395	01/04/2025

Table 2.2 Measurement instrumentation

3.0 ASSESSMENT METHODOLOGY

This assessment comprises the following elements:

- Review of environmental noise levels at the site (Section 4)
- Plant noise impact assessment in accordance with BS 4142 (Section 6)
- Desktop assessment of noise breakout from the restaurant to the surrounding environment (Section 7.5)
- Desktop assessment of noise transfer from the ground floor restaurant to residential accommodation above (Section 7.6).

The existing site is proposed to be demolished, therefore no investigative sound insulation testing has been undertaken as part of this commission.

4.0 RESULTS

4.1 Noise Survey

The results of the environmental noise survey are summarised in Table 4.1. Time history plots are provided in the Appendices.

Time Period	Measured noise levels (dBA)			
	Position 1		Position 2	
	Average Ambient, $L_{Aeq,T}$	Typical Background, L_{A90}	Average Ambient, $L_{Aeq,T}$	Derived Background, L_{A90}
Daytime (07:00-23:00)	69	56	55	42
Night-time (23:00-07:00)	61	42	49	30

Table 4.1 Site average and background noise levels for daytime and night time

The measured noise levels are considered representative of the existing noise climate at the site and have been used to inform the subsequent assessments presented in this report.

Note: Background $L_{A90,T}$ values at Position 2 are derived in accordance with the methodology set out in Section 4.2.

4.2 Derivation of Background Sound Level at Position 2

Background

Continuous $L_{A90,T}$ data were not recorded at Noise Measurement Position 2 due to a logging issue. However, continuous $L_{Aeq,T}$ data were captured at both monitoring positions over the full survey period.

Methodology for Derivation

For the purposes of the plant noise assessment, a representative background sound level at Position 2 has been derived using the measured relationship between $L_{Aeq,T}$ and $L_{A90,T}$ at Position 1 over the corresponding assessment periods.

In road-traffic-dominated environments, the difference between $L_{Aeq,T}$ and $L_{A90,T}$ is generally stable over a given assessment period and provides a reasonable basis for estimating background sound levels where $L_{Aeq,T}$ data are available but $L_{A90,T}$ data are unavailable.

The $L_{Aeq}-L_{A90}$ offset measured at Position 1 has therefore been applied to the measured $L_{Aeq,T}$ at Position 2 to derive a representative $L_{A90,T}$ value for Position 2.

Derived Background Sound Levels

Time Period	Position 1 L_{Aeq}	Position 1 L_{A90}	$L_{Aeq}-L_{A90}$ Offset	Position 2 L_{Aeq}	Derived Position 2 L_{A90}
Daytime	69	56	$\Delta 13$	55	42
Night-time	61	42	$\Delta 19$	49	30

Table 4.2 Derivation of background sound levels

The derived background sound levels at Position 2 are considered representative and conservative for the purposes of establishing planning-stage fixed plant noise criteria in accordance with BS 4142.

This approach avoids reliance on absolute front-to-rear level differences and instead reflects the statistical structure of the prevailing road-traffic-dominated noise climate.

In practice, background sound levels at rear façades are often influenced by more stable and distant noise sources and may not reduce to the same extent as ambient levels subject to screening and distance effects. By deriving $L_{A90,T}$ using the $L_{Aeq}-L_{A90}$ offset measured at the more exposed front façade, the resulting background sound levels at Position 2 are unlikely to be underestimated and are therefore precautionary.

The use of these derived background levels results in more stringent fixed plant noise limits when applying the BS 4142 assessment criteria, thereby representing a worst-case scenario for the proposed development. This approach is considered robust and appropriate for planning-stage assessment, ensuring that compliance with Local Planning Authority requirements can be achieved under conservative assumptions.

5.0 NOISE ASSESSMENT GUIDANCE

5.1 Local Authority Requirements

The site is located within the jurisdiction of Wokingham Borough Council (WBC).

WBC does not publish a standalone SPD for fixed plant noise but applies policy CC06 (Noise Pollution) from its Local Plan to protect the amenity of nearby noise-sensitive receptors. In line with this, recent 2025 planning approvals require compliance with the principles of BS 4142:2014+A1:2019.

Planning conditions applied to extract and mechanical plant typically state that:

“The rating level of noise emitted from all fixed plant and equipment shall not exceed a level of 5 dBA below the existing background noise level (L_{A90}) at 1 metre from the façade of the

nearest noise-sensitive receptor. Where the plant noise exhibits tonal characteristics, the limit shall be reduced to 10 dBA below background."

This effectively sets a design criterion of:

- $L_{Ar,Tr} \leq L_{A90,T} - 5$ dB under normal conditions
- $L_{Ar,Tr} \leq L_{A90,T} - 10$ dB where tonality is present (as defined in BS 4142).

These criteria apply at the nearest residential window or sensitive façade.

5.2 National Planning Policy Framework 2024 & Noise Policy Statement for England 2010

The National Planning Policy Framework (NPPF, 2024) replaces PPG24 and sets out the overarching approach to noise in the planning system. Paragraph 187 requires that development should prevent unacceptable risks from, and adverse effects of, noise pollution, and where possible improve the local environment. Paragraph 198 further requires that development is appropriate for its location, taking account of pollution impacts on health and living conditions, and that noise impacts are avoided, mitigated and minimised, with protection of tranquil areas.

The Noise Policy Statement for England (NPSE), published by DEFRA in 2010, aims to promote good health and quality of life through effective noise management. Its core objectives are to avoid significant adverse effects, mitigate and minimise adverse effects, and where possible improve health and quality of life.

The NPSE defines the concepts of NOEL (No Observed Effect Level), LOAEL (Lowest Observed Adverse Effect Level) and SOAEL (Significant Observed Adverse Effect Level). It does not prescribe fixed noise limits, recognising that SOAEL cannot be defined by a single value applicable to all sources and situations.

5.3 ProPG: Planning and Noise

ProPG: Planning and Noise was published in 2017 to promote good acoustic design for new residential development. It complements the NPPF by providing a structured, design-led approach to assessing noise, where no specific criteria are defined in national policy.

ProPG encourages a holistic assessment of site suitability, considering noise exposure alongside layout, orientation and mitigation, rather than relying solely on measured noise levels. It is not statutory guidance, but is widely used as a recognised good-practice framework.

5.4 British Standard BS4142:2014

British Standard BS 4142:2014+A1:2019 describes a method for rating and assessing sound of an industrial and/or commercial nature. This includes noise arising from fixed plant and equipment, as well as operational noise associated with commercial premises, such as restaurant activity and noise breakout from buildings.

The assessment method involves comparing the rating level of the specific sound source with the representative background sound level, expressed as L_{A90} , measured when the source is not operating. The comparison is undertaken over a one-hour period during the daytime (07:00–23:00) and a fifteen-minute period during the night-time (23:00–07:00).

The rating level comprises the specific sound level, $L_{Aeq,Tr}$, with the addition of any relevant acoustic feature corrections to account for characteristics such as tonality, impulsivity or intermittency where these are perceptible at the noise-sensitive receptor. Where such characteristics are not present or not readily perceptible, no correction is applied.

The difference between the rating level and the background sound level provides an initial indication of impact, as follows:

- A rating level equal to or below the background sound level is an indication of a low impact
- A rating level of around +5 dB relative to background may indicate an adverse impact, depending on context
- A rating level of around +10 dB or more relative to background is likely to indicate a significant adverse impact, depending on context.

The standard notes that the initial assessment should be considered alongside contextual factors, including the existing acoustic environment, the nature of the sound source, the time of occurrence and the sensitivity of the receptor. Adverse impacts may include annoyance and disturbance, although not all adverse impacts necessarily result in complaints.

5.5 British Standard BS8233:2014

BS8233:2014 '*Sound insulation and noise reduction for buildings*' describes recommended internal noise levels for residential spaces. These levels are shown in Table 5.1.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Rooms	35 dBA	-
Dining	Dining Room/area	40 dBA	-
Sleeping (daytime resting)	Bedrooms	35 dBA	30 dBA

Table 5.1 BS 8233 recommended internal background noise levels

5.6 CIBSE Guide A 2015

CIBSE Guide A (2015) provides guidance on recommended internal noise levels within occupied spaces arising from building services and other steady noise sources. While primarily intended for mechanical services noise, the guidance is commonly referenced when assessing the acceptability of internally generated noise within residential accommodation.

For dwellings, CIBSE Guide A recommends the following maximum internal noise levels during daytime periods:

- Bedrooms: NR25
- Living rooms: NR30

These criteria have been referenced when assessing potential noise transfer from the proposed commercial use to the residential accommodation above.

5.7 Approved Document E 2003

Approved Document E (ADE) 2003 sets out minimum requirements for resistance to the passage of sound between adjoining dwellings and between dwellings and other uses. For airborne sound insulation between refurbished dwellings, the minimum performance standard is $D_{nT,w} + C_{tr} \geq 45$ dB.

Where residential accommodation is located above commercial premises, it is generally accepted that enhanced acoustic performance beyond the minimum Building Regulations standards may be required, due to the higher and more variable noise levels associated with commercial activities such as restaurants and takeaways.

Approved Document E therefore provides a baseline minimum standard only, and additional acoustic design measures may be necessary to ensure acceptable internal noise conditions within residential accommodation.

6.0 PLANT NOISE IMPACT ASSESSMENT

6.1 Introduction

This section considers the potential noise impact associated with fixed mechanical plant serving the proposed ground floor restaurant and takeaway use. The assessment has been undertaken to support the planning application and to demonstrate that the development can be designed to protect the amenity of nearby noise-sensitive residential receptors.

The assessment focuses on external plant associated with kitchen extract, ventilation and any other fixed building services equipment, with reference to relevant Local Planning Authority requirements and British Standards guidance.

At this stage, the assessment adopts a performance-based approach, establishing noise limits that any future plant installation must achieve in order to comply with planning requirements.

6.2 Availability of Plant Information

At the time of writing, detailed information relating to the proposed mechanical plant serving the restaurant and takeaway use, including plant type, manufacturer, model numbers, sound power levels and exact locations, has not yet been provided.

In the absence of this information, a performance-based plant noise assessment approach has been adopted. This approach establishes site-specific noise limits that any future plant installation must achieve in order to comply with Local Planning Authority requirements and relevant guidance.

6.3 Methodology

The plant noise assessment has been undertaken in accordance with the principles of BS 4142:2014+A1:2019, which provides a method for rating and assessing sound of an industrial and commercial nature.

In the absence of confirmed plant details, the assessment establishes site-specific background noise levels derived from the environmental noise survey and uses these to define limiting plant noise emission criteria. These limits are set with reference to the BS 4142 methodology and represent the maximum rating levels that future plant installations must not exceed at the nearest noise-sensitive residential receptors.

6.4 Assessment Criteria

Based upon Local Planning Authority requirements and the principles of BS 4142:2014+A1:2019, the rating level of noise from fixed plant should not exceed the representative background sound level, $L_{A90,T}$, at the nearest noise-sensitive residential receptor.

In line with typical planning conditions, a margin of at least 5 dB below background has been adopted for non-tonal plant noise, with a more stringent margin of 10 dB below background applied where tonal characteristics are present.

The resulting plant noise emission limits, applicable at the nearest noise-sensitive residential receptors, are set out in Table 6.1.

Plant noise limits (dBA) at the nearest NSR				
Time Period	Front Façade NSRs		Rear Façade NSRs	
	Non-tonal	Tonal	Non-tonal	Tonal
Daytime	51	46	37	32
Night-time	37	32	25	20

Table 6.1 Plant noise criteria

Compliance will be dependent on appropriate plant selection, location and, where necessary, the inclusion of suitable acoustic mitigation measures.

Final confirmation of compliance shall be demonstrated at the detailed design stage, once plant selection is complete, through submission of manufacturer noise data and a detailed BS 4142 assessment to the Local Planning Authority for approval.

6.5 Information Required to Discharge Plant Noise Condition

To enable discharge of a planning condition relating to plant noise, the following information will be required once the mechanical services design has been finalised:

- Plant manufacturer, model numbers and quantity
- Octave band or third-octave band sound power levels for each item of plant
- Confirmed plant locations and mounting arrangements
- Details of any acoustic mitigation measures (e.g. attenuators, enclosures, screens).

On receipt of the above information, a detailed BS 4142:2014+A1:2019 plant noise assessment can be undertaken to demonstrate compliance with the noise limits set out in this report. This assessment would typically be submitted to the Local Planning Authority prior to installation of the plant, in accordance with a planning condition.

7.0 NOISE TRANSFER AND BREAKOUT ASSESSMENT

7.1 Proposals

It has been proposed that two (2) takeaways/restaurants are to be located on ground floor. Six (6) residential flats are proposed at Level 1 and 2. Four (4) of these proposed flats are located at Level 1, directly above the commercial ground floor use.

The applicant has confirmed that the proposed commercial use would operate between 16:00 and 23:00, with an estimated maximum occupancy of approximately 40 covers for the restaurant element and approximately 8 covers for the takeaway element. These details have

been used to define the representative assessment period and to inform the adopted internal source noise assumptions for the noise transfer and breakout assessments.

7.2 Noise Source

Source noise levels for the proposed restaurant and takeaway use have been derived from recognised acoustics reference literature, namely *The Little Red Book of Acoustics: A Practical Guide* (3rd Edition, Blue Tree Acoustics, R. Watson et al.). The data are used to define typical internal noise levels associated with restaurant activity and are considered representative of reasonable worst-case operating conditions.

Table 7.1 presents indicative octave band and overall A-weighted sound pressure levels for both quiet and busy restaurant scenarios. These values have been adopted for the purposes of the noise transfer and breakout assessments presented within this report.

Description	Noise level (dB) at octave band frequency (Hz)							dBA
	63	125	250	500	1k	2k	4k	
Quiet restaurant	60	60	60	65	65	55	50	67
Busy Restaurant	60	70	75	75	75	75	70	80

Table 7.1 Restaurant noise levels (Little Red Book of Acoustics, R. Watson et al.)

Separate kitchen-specific noise levels are not prescribed within British Standards. For the purposes of this assessment, kitchen activity noise has therefore been considered as part of the overall internal restaurant noise environment, with source levels adopted from recognised acoustics reference literature.

A representative worst-case internal noise level of 80 dBA L_{eq} has been adopted to account for combined restaurant and kitchen activity during busy service periods. This assumption is considered reasonable and precautionary for a restaurant and takeaway of the scale proposed.

7.3 Proposed Building Fabric (Applicant's Information)

The separating floor and external wall constructions currently proposed as part of the development have been reviewed to inform the noise transfer and noise breakout assessments. The following sections summarise the applicant's proposed constructions and set out the associated acoustic performance assumed for assessment purposes.

Separating Floor (Floor ref. F2)

The separating floor between the ground floor restaurant and the residential accommodation above is proposed to comprise the following elements, from top to bottom:

- 20mm floor finishes zone
- 65mm sand cement screed
- Polythene separation layer
- 25mm insulation (Celotex XR4000 or equal approved)
- 6mm Isorubber Base with Isoedge flanking strip
- 150mm precast concrete plant floor structure
- 12.5mm plasterboard on MF system (150mm services zone within ceiling)
- 3mm plaster skim finish.

The proposed separating floor has been calculated to have an airborne sound insulation rating of $R_w (C; C_{tr})$ 63 (-2; -7) dB. This would be expected to achieve an indicative in-situ performance of approximately $D_{nT,w} + C_{tr}$ 46 dB, which is above the minimum Building Control requirements set within Approved Document E 2003 for residential floors.

The assessment indicates that the proposed separating floor construction, as currently specified, does not provide sufficient airborne sound insulation to control noise transfer to the residential accommodation above to within the adopted internal noise criteria, and therefore an upgrade has been specified in Section 7.4.

External Wall – Full Fill Cavity Wall (Wall ref. W1)

The external wall construction is proposed to comprise the following elements, from outside to inside:

- 102.5mm facing brickwork
- 10mm low emissivity cavity
- 115 Celotex Thermaclass Cavity Wall
- Insulation to fill cavity
- 100mm dense blockwork
- 15mm air cavity
- 12.5mm plasterboard on dabs
- 3mm skim finish.

This form of construction is considered appropriate for controlling noise breakout from the commercial use, provided that all junctions, penetrations and interfaces are detailed and installed to maintain the assumed acoustic performance.

The proposed external wall (ref. W1) has been assessed to determine its airborne sound insulation performance. The resulting octave band sound reduction indices, derived from acoustic calculations for the proposed constructions, are presented in the table below:

Element	Sound Reduction Index, dB, at Octave Band Centre Frequency, Hz					
	125	250	500	1k	2k	4k
External wall (ref. W1)	40	38	48	55	63	69
Note: the above SRI is the minimum performance that would be expected when the construction is tested in accordance with the BS EN ISO 10140 series of standards						

Table 7.2 Calculated sound reduction performance for non-glazed elements

Glazing

At the time of writing, no glazing specification for the ground floor commercial façade has been provided, therefore an acoustic specification has been provided in Section 7.4 that must be adhered to.

7.4 Required Acoustic Performance and Mitigation Measures

The assessment has demonstrated that, while the proposed constructions exceed minimum Building Regulations requirements, additional acoustic enhancement is required to control noise transfer from the commercial use to the residential accommodation above in accordance with the criteria set out in Section 7.5.

Separating Floor – Required Upgrades

Based on the adopted internal noise criteria and calculated performance, the separating floor must achieve enhanced mid-frequency airborne sound insulation to control noise transfer from restaurant and kitchen activity.

The following measures are therefore required to achieve compliance:

- The suspended ceiling void shall be infilled with a minimum of 50-75 mm acoustic mineral wool (minimum density 45–60 kg/m³, such as RWA45 or equivalent)
- The ceiling lining shall comprise two layers of high-density (min 840kg/m³) acoustic plasterboard (minimum 15 mm per layer) (such as Gyproc SoundBloc or similar equivalent)

- The MF ceiling system shall be suspended using acoustically resilient hangers or cleats to reduce structure-borne transmission
- Where practicable, rigid PIR insulation beneath the screed should be replaced with mineral wool floor insulation to improve damping at mid-frequencies.

With these measures in place, the upgraded separating floor is expected to achieve an airborne sound insulation performance sufficient to meet the internal noise criteria adopted in Section 7.5.

The upgraded separating floor has been assessed to determine its airborne sound insulation performance. The resulting octave band sound reduction indices, derived from acoustic calculations for the proposed constructions, are presented in the table below:

Element	Sound Reduction Index, dB, at Octave Band Centre Frequency, Hz					
	125	250	500	1k	2k	4k
Upgraded separating floor	45	54	66	75	75	75
Note: the above SRI is the minimum performance that would be expected when the construction is tested in accordance with the BS EN ISO 10140 series of standards						

Table 7.3 Calculated sound reduction performance for non-glazed elements

Glazing to Ground Floor Commercial Façade – Minimum Required Performance

The glazing serving the ground floor commercial use has not yet been specified. A minimum glazing performance is therefore proposed in the following table to ensure that noise breakout from the restaurant use does not result in an unacceptable impact at nearby noise-sensitive residential receptors.

The minimum required octave band sound reduction index (SRI) values for glazed elements are set out in Table 7.4. The specified performance applies to the complete window system, including glazing, frames, seals and installation details. Performance data for the glass alone is not sufficient to demonstrate compliance.

Sound Reduction Index, dB, at Octave Band Centre Frequency, Hz						R _w (C; C _{tr})	Example Glazing Type
125	250	500	1k	2k	4k		
24	20	25	35	38	35	31 (-1; -4)	4/12/4mm

Table 7.4 Acoustic specification for glazed elements

Any glazing system installed as part of the development shall achieve, as a minimum, the sound reduction performance specified at each octave band centre frequency. An indicative glazing specification has been provided for guidance only and does not preclude alternative solutions, provided the minimum acoustic performance requirements are met or exceeded.

Compliance shall be demonstrated using independent laboratory test data in accordance with the BS EN ISO 10140 series of standards for the final installed window configuration.

7.5 Assessment: Noise Breakout to Neighboring Residential Receptors

A desktop assessment has been undertaken to assess potential noise breakout from the proposed ground floor restaurant and takeaway use to neighbouring noise-sensitive residential receptors, including residential accommodation located adjacent to the site.

Source Noise Levels

Internal source noise levels representative of a reasonable worst-case operating scenario have been adopted for the assessment, based on published reference data as described in Section 7.2.

The assessment has been undertaken for the proposed operating period (16:00 to 23:00), using representative “busy restaurant” internal noise levels as a reasonable worst-case scenario for an approximately 40-cover restaurant with ancillary takeaway provision.

Nearest Noise Sensitive Residential Receptors (NSR)

The nearest neighbouring noise-sensitive residential receptors (NSRs) are located at the positions shown in Figure 2.1.

Additional residential receptors have been identified as the worst case affected windows of the most sensitive rooms of the flats directly above the ground floor. In this instance, these have been identified as Unit 1 Bedroom (F25) and Unit 2 Bedroom (F07).

Predicted noise levels at these receptors have been calculated at a position 1 metre external to the relevant façades.

Assessment Criteria

Noise breakout from the proposed restaurant and takeaway use has been assessed with reference to the principles of BS 4142:2014+A1:2019, which is commonly applied by Local Planning Authorities when considering noise from commercial activities affecting nearby noise-sensitive receptors.

While BS 4142 is primarily intended for the assessment of industrial and commercial sound sources, its methodology is considered appropriate for assessing noise breakout from building façades associated with restaurant uses, particularly where comparison against existing background sound levels is required for planning purposes.

Calculations and Results

The predicted external noise levels have been compared against representative minimum background noise levels derived from the environmental noise survey during the proposed hours of operation.

Noise associated with patron activity within the restaurant and takeaway is expected to be broadband in nature and typical of commercial uses of this type. When transmitted externally via building façade breakout, the sound would not be expected to exhibit tonal, impulsive or otherwise distinctive characteristics at nearby noise-sensitive receptors. Accordingly, no acoustic feature corrections in accordance with BS 4142:2014+A1:2019 have been applied.

The following table presents the calculated noise levels at the nearest noise-sensitive residential receptors (NSRs), based on the proposed building fabric and upgrade measures described in Sections 7.3 and 7.4. Full calculation details are provided in Appendix B1:

Calc Ref.	Receiver	Relevant Dominant Noise Sources	Background Noise Level (dBA)	Resultant Noise Level (dBA)	Comparison with Background (dB)
BO1	NSR1	G01 Dining Area + G02 Kitchen	56 (Position 1)	36	-20 "Low Impact"
BO2	NSR2	G01 Dining Area + G12 Collection/Waiting Area	42 (Position 2)	21	-21 "Low Impact"
BO3	NSR3	G12 Collection/Waiting Area	42 (Position 2)	37	-5 "Low Impact"
BO4	Unit 1 Bedroom (F25)	G01 Dining Area + G12 Collection/Waiting Area	42 (Position 2)	41	-1 "Low impact"
BO5	Unit 2 Bedroom (F07)	GO2 Kitchen	56 (Position 1)	34	-22 "Low impact"

Table 7.5 Breakout calculation results

The assessment demonstrates that predicted noise breakout levels at the nearest residential windows, including the residential accommodation located directly above the ground floor commercial use, are below the representative minimum background noise levels during the relevant assessment periods. In accordance with the principles of BS 4142:2014+A1:2019, this indicates that noise breakout from the proposed restaurant and takeaway use would be expected to result in a low impact at nearby noise-sensitive receptors, provided that the proposed external wall construction (Section 7.3) and specified acoustic glazing (Section 7.4) are implemented as set out in this report.

7.6 Assessment: Direct Noise Transfer to Residential Accommodation Above

A desktop assessment has been undertaken to assess noise transfer from the proposed ground floor commercial spaces (G01 Dining Area, G02 Kitchen, G12 Collection/Waiting Area and G14 Kitchen) to the residential accommodation directly above. The assessment considers airborne sound transmission through the separating floor.

Source Noise Levels

Internal source noise levels representative of a reasonable worst-case operating scenario have been adopted for the assessment, based on recognised acoustics reference data as described in Section 7.2. These levels are intended to represent 'busy restaurant' and kitchen operation.

Criteria

The proposed restaurant and takeaway operating hours are 16:00 to 23:00. The assessment has therefore focused on the relevant evening period up to 23:00. Where assessment results are referenced against daytime criteria, this is considered appropriate for the proposed hours of use.

On this basis, noise intrusion from the ground floor commercial use into the residential accommodation above should be controlled such that internal noise levels attributable to the commercial activity do not exceed the following during the proposed hours of operation:

- Bedrooms: NR15
- Living rooms: NR20

These levels are substantially lower (approx. 10dB) than typical daytime internal ambient noise levels within residential spaces and would therefore be expected to be effectively masked by normal background noise conditions, thereby avoiding disturbance to occupants.

Typical daytime internal noise criteria for residential spaces are commonly referenced in guidance such as CIBSE Guide A: Environmental Design, as outlined in Section 5.6, which

indicates higher acceptable noise levels than those adopted here. The criteria set out above therefore represent a conservative design target intended to protect residential amenity.

Calculations and Results

Predicted internal noise levels within the first-floor residential accommodation have been calculated taking into account the calculated airborne sound insulation performance of the upgraded separating floor construction set out in Section 7.4. Full calculation details are provided in Appendix B2.

The following table presents the predicted resultant noise levels within worst-case affected rooms due to direct airborne noise transfer from the commercial spaces below:

Calc Ref.	Source (Ground Floor)	Receiver (Level 1)	Maximum Criterion	Resultant Noise Rating Level
DT1	G01 Dining Area	F25 Bedroom (Unit 1)	NR15	NR14
DT2	G02 Kitchen	F07 Bedroom (Unit 2)	NR15	NR14
DT3	G12 Collection/Waiting Area	F19 Bedroom (Unit 3)	NR15	NR14
DT4	G14 Kitchen	F18 Living/dining (Unit 3)	NR20	NR14

Table 7.6 Direct transfer calculation results

The assessment indicates that the separating floor would be suitable only where the upgraded construction described in Section 7.4 is implemented in full.

7.7 General Advice

For airborne sound insulation, special attention should be given to workmanship regarding the proper sealing of junctions and penetration details. Where any gaps between external (flanking) walls and floors exist, they should be caulked with sealant or similar type material. It should be also noted that flanking strips (Yelofon ES5/100) should be installed around the perimeter of the floor to isolate the floor from walls and skirtings. The strip should be turned up so that the skirting boards rest on them and any excess cut away.

Ideally, a gap between the head of the wall and the underside of the soffit should not be greater than 10mm. A polyethylene backing rod could be inserted in the gap with tightly packed mineral wool while silicone caulk is used to seal the joint.

In the case of any new walls, isolation strips would need to be used, which would isolate the wall leaves from the sub-floor, therefore minimising any flanking paths. Please note that a

material such as Monarfloor or Regupol Isolation Strip can be used to isolate any new walls built on any steel structure.

8.0 CONCLUSION

An environmental noise survey has been undertaken and confirms that the existing noise climate at the site is dominated by road traffic. The measured and derived background sound levels have been used to inform conservative, planning-stage assessment criteria.

In the absence of confirmed plant details, this report establishes site-specific fixed plant noise limits in accordance with the principles of BS 4142 and typical Wokingham Borough Council planning conditions. These limits provide a robust performance framework that can be secured by condition, with detailed BS 4142 compliance to be demonstrated at the detailed design stage once plant selection is confirmed.

The assessment demonstrates that predicted noise breakout from the proposed restaurant and takeaway use would be below representative background noise levels at nearby noise-sensitive residential receptors, including residential windows directly above the ground floor commercial use, during the proposed operating hours of 16:00 to 23:00. Subject to implementation of the specified minimum acoustic glazing and external wall construction, noise breakout is therefore predicted to result in a low impact in planning terms.

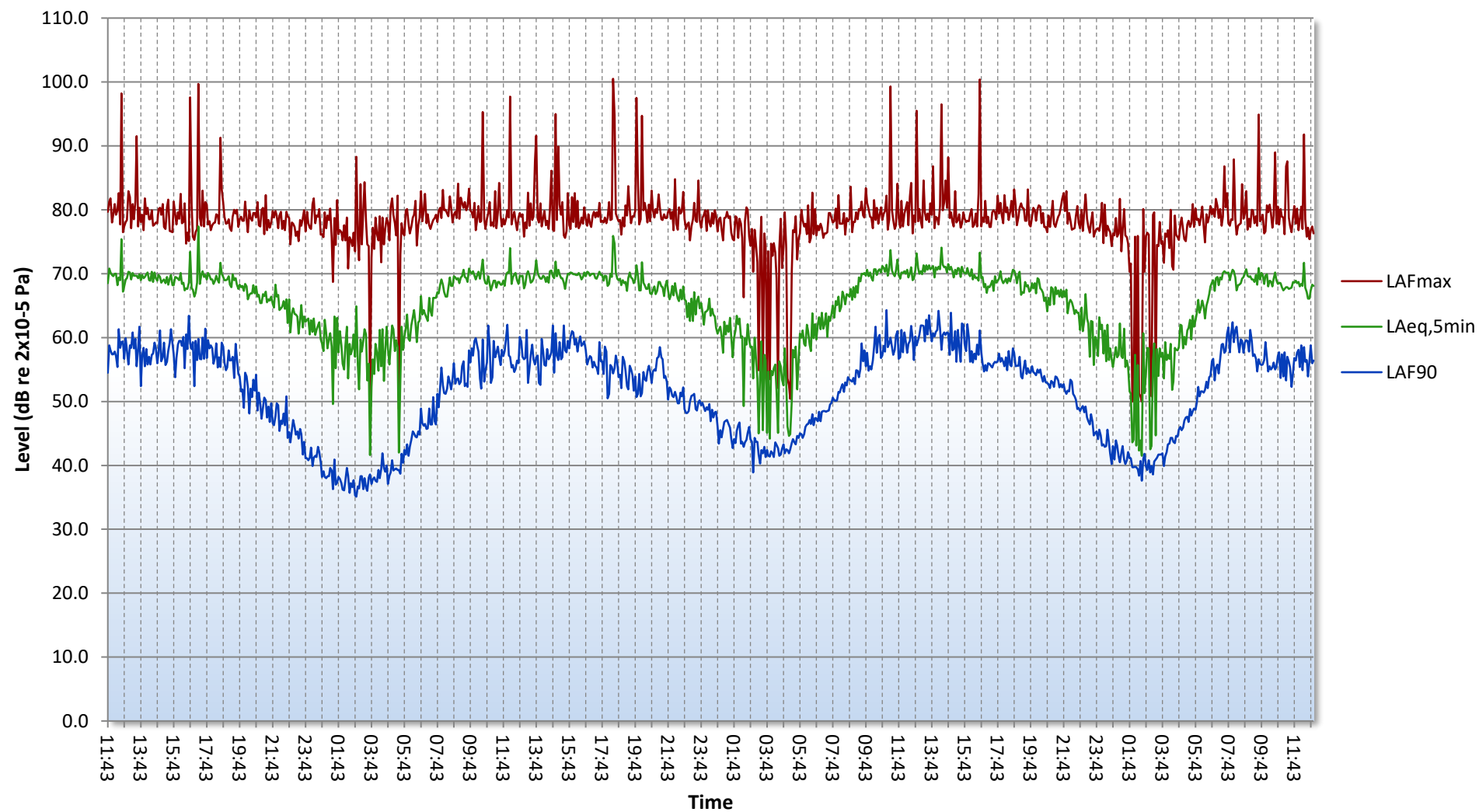
While the applicant's proposed separating floor exceeds the minimum requirements of Approved Document E, it is not sufficient on its own to control commercial noise to the adopted internal noise criteria for residential accommodation above. With the upgraded separating floor construction specified in this report implemented in full, the assessment indicates that internal noise levels within the flats above can be controlled to NR15 in bedrooms and NR20 in living rooms during the proposed hours of operation.

On this basis, the proposed development is considered acceptable in acoustic terms for planning purposes, subject to the performance requirements and mitigation measures set out within this report being secured by condition and implemented as part of the final design and construction.

424 – 426 READING ROAD, WINNERSH, WOKINGHAM RG41 5GP - Position 1

Environmental Time History

09/01/2026 to 12/01/2026



424 – 426 READING ROAD, WINNERSH, WOKINGHAM RG41 5GP - Position 1
Representative Daytime Background Noise Level
09/01/2026 to 12/01/2026

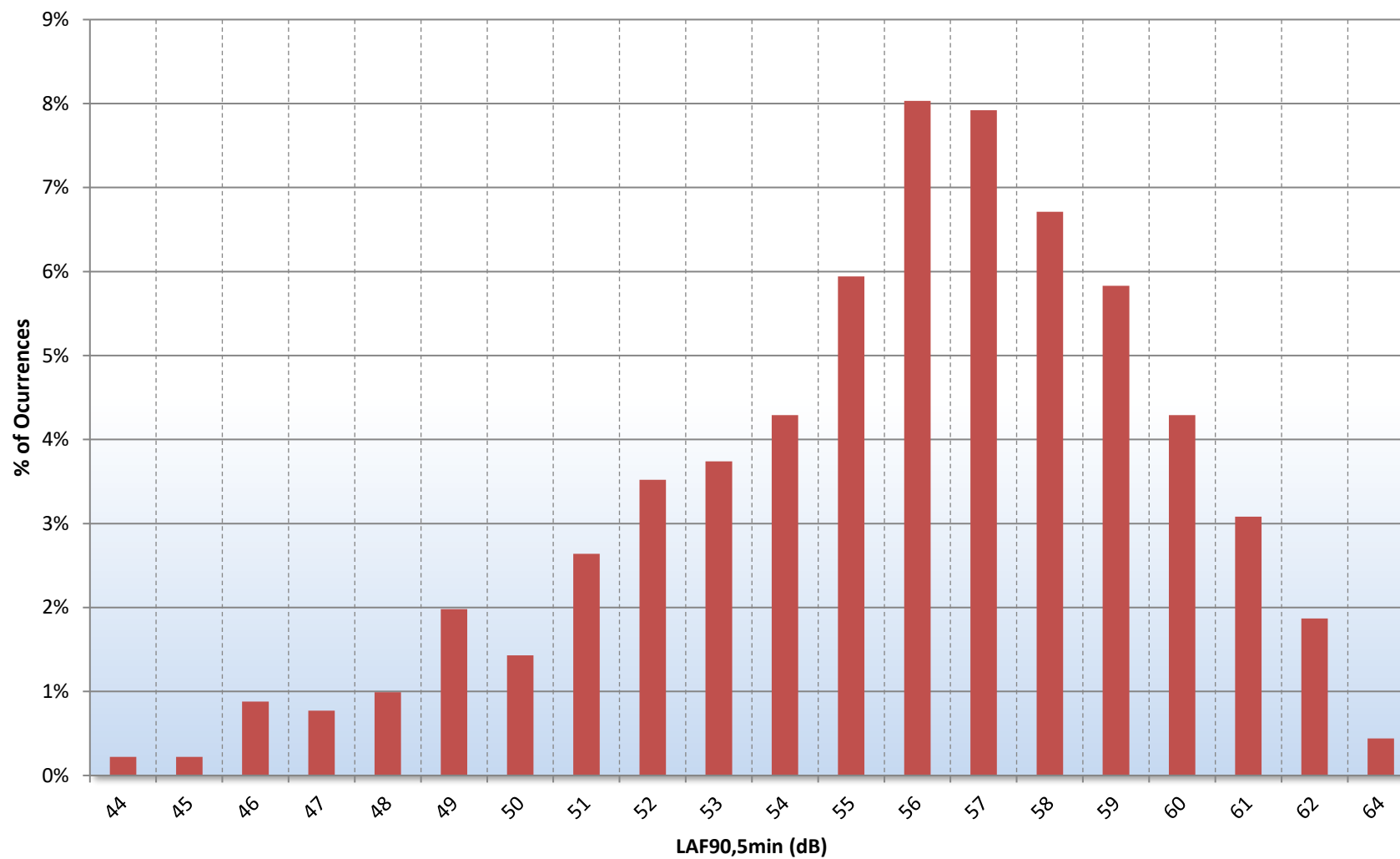


Figure 31676.Daytime L90.TH1

424 – 426 READING ROAD, WINNERSH, WOKINGHAM RG41 5GP - Position 1
Representative Night-time Background Noise Level
09/01/2026 to 12/01/2026

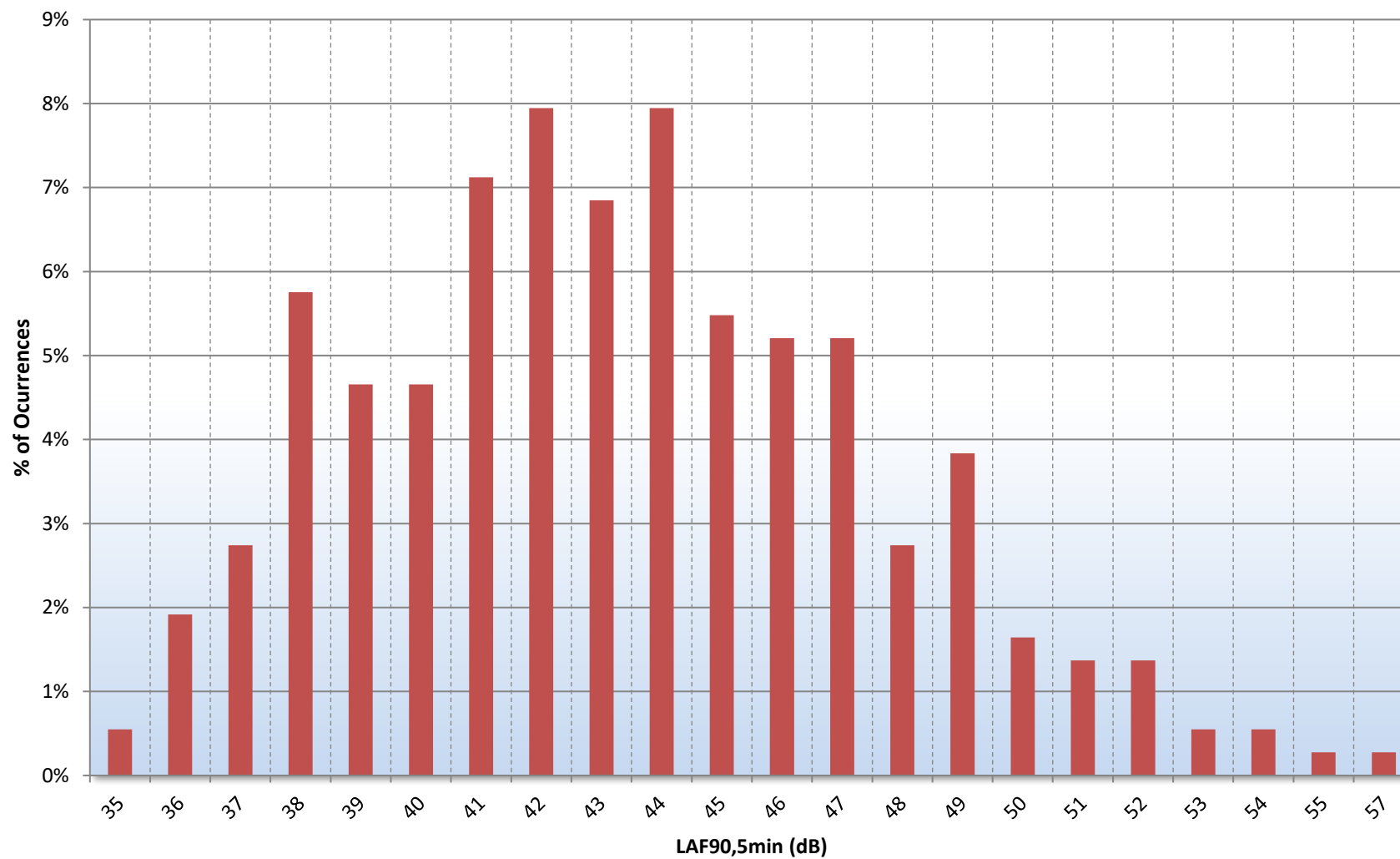


Figure 31676.Night-time L90.TH1

424 – 426 READING ROAD, WINNERSH, WOKINGHAM RG41 5GP - Position 2

Environmental Time History

09/01/2026 to 12/01/2026

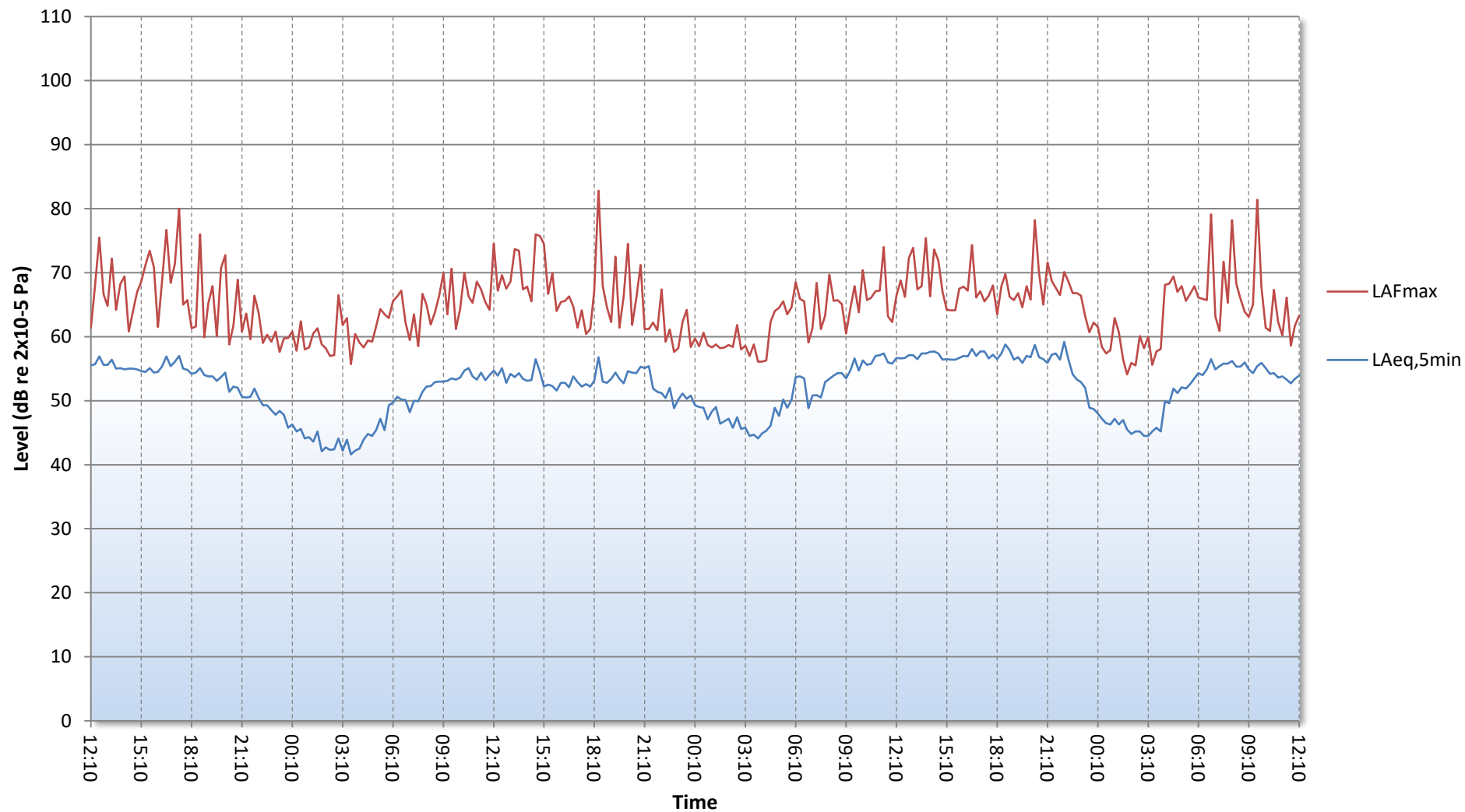


Figure 31676.TH2

GENERAL ACOUSTIC TERMINOLOGY

Decibel scale - dB

In practice, when sound intensity or sound pressure is measured, a logarithmic scale is used in which the unit is the 'decibel', dB. This is derived from the human auditory system, where the dynamic range of human hearing is so large, in the order of 10^{13} units, that only a logarithmic scale is the sensible solution for displaying such a range.

Decibel scale, 'A' weighted - dB(A)

The human ear is less sensitive at frequency extremes, below 125Hz and above 16Khz. A sound level meter models the ears variable sensitivity to sound at different frequencies. This is achieved by building a filter into the Sound Level Meter with a similar frequency response to that of the ear, an A-weighted filter where the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq} . The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for no more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise.

L_{90}

This is the level exceeded for no more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 11 such octave bands whose centre frequencies are defined in accordance with international standards. These centre frequencies are: 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000 and 16000 Hertz.

Environmental noise terms are defined in BS7445, *Description and Measurement of Environmental Noise*.

APPLIED ACOUSTIC TERMINOLOGY

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than a single source and 4 sources produce a 6dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Hearing perception is highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud

Transmission path(s)

The transmission path is the path the sound takes from the source to the receiver. Where multiple paths exist in parallel, the reduction in each path should be calculated and summed at the receiving point. Outdoor barriers can block transmission paths, for example traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and construction.

Ground-borne vibration

In addition to airborne noise levels caused by transportation, construction, and industrial sources there is also the generation of ground-borne vibration to consider. This can lead to structure-borne noise, perceptible vibration, or in rare cases, building damage.

Sound insulation - Absorption within porous materials

Upon encountering a porous material, sound energy is absorbed. Porous materials which are intended to absorb sound are known as absorbents, and usually absorb 50 to 90% of the energy and are frequency dependent. Some are designed to absorb low frequencies, some for high frequencies and more exotic designs being able to absorb very wide ranges of frequencies. The energy is converted into both mechanical movement and heat within the material; both the stiffness and mass of panels affect the sound insulation performance.

APPENDIX B1
424 - 426 Reading Road, Winnersh, Wokingham RG41 5GP
NOISE BREAKOUT CALCULATIONS

Calculation Ref: BO1

Source: G01 Dining Area + G02 Kitchen Receiver: NSR1	Frequency, Hz								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Reverberant Sound Pressure Level in Room, dB	60	70	75	75	75	75	70	68	80
Correction for 2No. rooms generating simultaneous noise, dB	3	3	3	3	3	3	3	3	
Combined noise level, dB	63	73	78	78	78	78	73	71	83
Approximate area of the windows underneath receiver location, m ²	17	17	17	17	17	17	17	17	
Correction for area, dB	12	12	12	12	12	12	12	12	
Composite SRI of proposed 4/12/4mm glazing, dB	-22	-24	-20	-25	-35	-38	-35	-35	
Distance from façade to receiver, m	6	6	6	6	6	6	6	6	
Correction for distance, dB	-16	-16	-16	-16	-16	-16	-16	-16	
Correction due to no reverberant field externally + propagation effect of the wall surface, dB	-14	-14	-14	-14	-14	-14	-14	-14	
Sound Pressure Level at 1m from Receiving Façade	24	32	41	36	26	23	21	19	36
BS4142 Assessment	Background sound level (07:00-23:00) (Position 1), dB								56
	Difference to background, dB								-20

Calculation Ref: BO2

Source: G01 Dining Area + G12 Collection/Waiting Area Receiver: NSR2	Frequency, Hz								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Reverberant Sound Pressure Level in Room, dB	60	70	75	75	75	75	70	68	80
Correction for 2No. rooms generating simultaneous noise, dB	3	3	3	3	3	3	3	3	
Combined noise level, dB	63	73	78	78	78	78	73	71	83
Approximate area of the windows underneath receiver location, m ²	24	24	24	24	24	24	24	24	
Correction for area, dB	14	14	14	14	14	14	14	14	
Composite SRI of proposed 4/12/4mm glazing, dB	-22	-24	-20	-25	-35	-38	-35	-35	
Distance from façade to receiver, m	40	40	40	40	40	40	40	40	
Correction for distance, dB	-32	-32	-32	-32	-32	-32	-32	-32	
Correction due to no reverberant field externally + propagation effect of the wall surface, dB	-14	-14	-14	-14	-14	-14	-14	-14	
Sound Pressure Level at 1m from Receiving Façade	9	17	26	21	11	8	6	4	21
BS4142 Assessment	Background sound level (07:00-23:00) (Position 2), dB								42
	Difference to background, dB								-21

Calculation Ref: BO3

Source: G12 Collection/Waiting Area Receiver: NSR3	Frequency, Hz								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Reverberant Sound Pressure Level in Room, dB	60	70	75	75	75	75	70	68	80
Correction for 2No. rooms generating simultaneous noise, dB	3	3	3	3	3	3	3	3	
Combined noise level, dB	63	73	78	78	78	78	73	71	83
Approximate area of the windows underneath receiver location, m ²	22	22	22	22	22	22	22	22	
Correction for area, dB	13	13	13	13	13	13	13	13	
Composite SRI of proposed 4/12/4mm glazing, dB	-22	-24	-20	-25	-35	-38	-35	-35	
Distance from façade to receiver, m	6	6	6	6	6	6	6	6	
Correction for distance, dB	-16	-16	-16	-16	-16	-16	-16	-16	
Correction due to no reverberant field externally + propagation effect of the wall surface, dB	-14	-14	-14	-14	-14	-14	-14	-14	
Sound Pressure Level at 1m from Receiving Façade	25	33	42	37	27	24	22	20	37
BS4142 Assessment	Background sound level (07:00-23:00) (Position 2), dB								42
	Difference to background, dB								-5

The calculation is based on the following formula:

$$SPL2 = SPL1 - SRI + 10\log(S) + 10\log(r) - 14$$

where:

SPL is sound pressure level

S is the area of the breakout wall, in m²

r is the distance correction, in metres (10log for line source, 20log for point source)

SRI is the sound reduction index of the break-out façade, in decibels

APPENDIX B1
424 - 426 Reading Road, Winnersh, Wokingham RG41 5GP
NOISE BREAKOUT CALCULATIONS

Calculation Ref: BO4

Source: G01 Dining Area + G12 Collection/waiting area Receiver: Unit 1 Bedroom F25	Frequency, Hz								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Reverberant Sound Pressure Level in Room, dB	60	70	75	75	75	75	70	68	80
Correction for 2No. rooms generating simultaneous noise, dB	3	3	3	3	3	3	3	3	
Combined noise level, dB	63	73	78	78	78	78	73	71	83
Approximate area of the windows underneath receiver location, m ²	12	12	12	12	12	12	12	12	
Correction for area, dB	11	11	11	11	11	11	11	11	
Composite SRI of proposed 4/12/4mm glazing, dB	-22	-24	-20	-25	-35	-38	-35	-35	
Distance from façade to receiver, m	3	3	3	3	3	3	3	3	
Correction for distance, dB	-10	-10	-10	-10	-10	-10	-10	-10	
Correction due to no reverberant field externally + propagation effect of the wall surface, dB	-14	-14	-14	-14	-14	-14	-14	-14	
Sound Pressure Level at 1m from Receiving Façade	28	36	45	40	30	27	25	23	41
BS4142 Assessment	Background sound level (07:00-23:00) (Position 2), dB								42
	Difference to background, dB								-1

Calculation Ref: BO5

Source: G02 Kitchen Receiver: Unit 1 Bedroom F25	Frequency, Hz								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Reverberant Sound Pressure Level in Room, dB	60	70	75	75	75	75	70	68	80
Approximate area of the windows underneath receiver location, m ²	6	6	6	6	6	6	6	6	
Correction for area, dB	7	7	7	7	7	7	7	7	
Composite SRI of proposed 4/12/4mm glazing, dB	-22	-24	-20	-25	-35	-38	-35	-35	
Distance from façade to receiver, m	3	3	3	3	3	3	3	3	
Correction for distance, dB	-10	-10	-10	-10	-10	-10	-10	-10	
Correction due to no reverberant field externally + propagation effect of the wall surface, dB	-14	-14	-14	-14	-14	-14	-14	-14	
Sound Pressure Level at 1m from Receiving Façade	22	30	39	34	24	21	19	17	34
BS4142 Assessment	Background sound level (07:00-23:00) (Position 1), dB								56
	Difference to background, dB								-22

The calculation is based on the following formula:

$$SPL2 = SPL1 - SRI + 10\log(S) + 10\log(r) - 14$$

where:

SPL is sound pressure level

S is the area of the breakout wall, in m²

r is the distance correction, in metres (10log for line source, 20log for point source)

SRI is the sound reduction index of the break-out façade, in decibels

APPENDIX B2
424 - 426 Reading Road, Winnersh, Wokingham RG41 5GP
DIRECT NOISE TRANSFER CALCULATIONS

Calculation Ref: DT1

Source: G01 Dining Area Receiver: F25 Bedroom (Unit 1)	Frequency, Hz								dB(A)	NR
	63	125	250	500	1k	2k	4k	8k		
Reverberant Sound Pressure Level in Room, dB	60	70	75	75	75	75	70	68	80	NR78
SRI of proposed separating floor, dB	-38	-45	-54	-66	-75	-75	-75	-75		
Approximate area (S) of the separating floor, m²	12	12	12	12	12	12	12	12		
Correction for area (S), dB	11	11	11	11	11	11	11	11		
Volume of receiving room, m³	30	30	30	30	30	30	30	30		
Expected reverberation time of receiver space, s	1.0	1.0	1.0	0.8	0.5	0.4	0.4	0.4		
Correction for receiver space, dB	-7	-7	-7	-8	-10	-11	-11	-11		
SPL2: Sound Pressure Level Within Receiver Space	26	29	25	12	1	0	-5	-7		
Breakout Noise Criterion (NR15)	47	35	26	19	15	12	9	7		
Compliant with Criterion?	✓	✓	✓	✓	✓	✓	✓	✓		

Calculation Ref: DT2

[illegible]

Calculation Ref: DT3

[illegible]

Calculation Ref: DT4

[illegible]