



**37 Park Parade
Havant**

Noise & Vibration Assessment Report

13 May 2025

For
Kingfisher Properties

Contents

SUMMARY	3
1.0 INTRODUCTION	4
2.0 DESCRIPTION OF SITE AND PROPOSALS	4
3.0 ACOUSTIC STANDARDS	4
3.1 General Permitted Development Order	5
3.2 National Planning Policy Framework	5
3.3 Planning Practice Guidance	5
3.4 Noise Policy Statement for England	6
3.5 External Noise Intrusion	7
3.6 Open Windows and Overheating	7
3.7 Internal Sound Insulation	8
3.8 Vibration	8
4.0 NOISE SURVEY	8
4.1 Noise Survey Methodology	8
4.2 Noise Survey Results	10
5.0 EXTERNAL NOISE INTRUSION	11
5.1 Preliminary Recommendations	11
5.2 Open Windows	11
6.0 INTERNAL SOUND INSULATION	12
7.0 VIBRATION	15
7.1 Assessment Methodology	15
7.2 Results	15
8.0 CONCLUSION	16

APPENDIX A – ACOUSTIC TERMINOLOGY	18
APPENDIX B – TIME HISTORY GRAPHS.....	19

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Report Produced by	Nicholas Jones BEng(Hons) CEng MIOA	T: 07739 715411 E: njones@auricl.com	
auricl Limited www.auricl.com hello@auricl.com	107 Cheapside London EC2V 6DN	9 Greyfriars Road Reading RG1 1NU	
Registered Company 09824075			

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SUMMARY

It is proposed to develop the site at 37 Park Parade in Havant to create new residential dwellings.

The site is located in a mixed urban environment with commercial uses within the building, therefore **auricl** has been appointed to assess the potential noise and vibration impacts of the surroundings on the proposed dwellings.

A noise survey has therefore been carried out to assess typical noise levels affecting the development site over daytime and night-time, over weekday and weekend periods.

Based on the noise survey results, calculations have been undertaken to determine the acoustic requirements of the proposed residential façades, so as to achieve internal noise levels within the residential properties that are commensurate with the proposed internal noise level standards.

Our calculations indicate that the internal noise standards should be achievable using standard non-acoustic construction elements and the required levels of sound reduction should not be difficult to achieve.

External noise levels affecting future occupants have been assessed in relation to the noise limits contained in Approved Document O of the Building Regulations. It was concluded that on all sides of the site, external noise levels are such that *“use of opening windows as a primary means of mitigating overheating is not likely to result in adverse effect”*.

A preliminary assessment of internal noise transmission has been undertaken across the floor between the existing commercial uses and the proposed residential units at first floor level. The internal noise standards specified in BS 8233: 2014 are generally not predicted to be exceeded based on a suitable improvement over the standards specified in Approved Document E 2003 of the Building Regulations, which should therefore provide adequate protection against internal noise transmission to future occupiers.

Vibration measurements were undertaken to assess vibrations levels during operating of the ground floor gym. By comparison with the BS 6472 guidance, it was concluded that the predicted vibration levels are less than the perception threshold for the most sensitive quarter of the population. As the predictions are based on the maximum measured vibration levels, the assessment can be considered to represent a robust worst-case and therefore on this basis an adverse impact is considered to be unlikely.

1.0 Introduction

It is proposed to develop the site at 37 Park Parade in Havant to create new residential dwellings.

The site is located in a mixed urban environment with commercial uses within the building, therefore **auricl** has been appointed to assess the potential noise and vibration impacts of the surroundings on the proposed dwellings.

This report presents the methodology and results of noise and vibration surveys to determine the existing levels at the site, and subsequent assessments of internal noise and vibration levels within the proposed residential development.

The report is technical in nature therefore a description of the acoustic terminology used can be found in Appendix A.

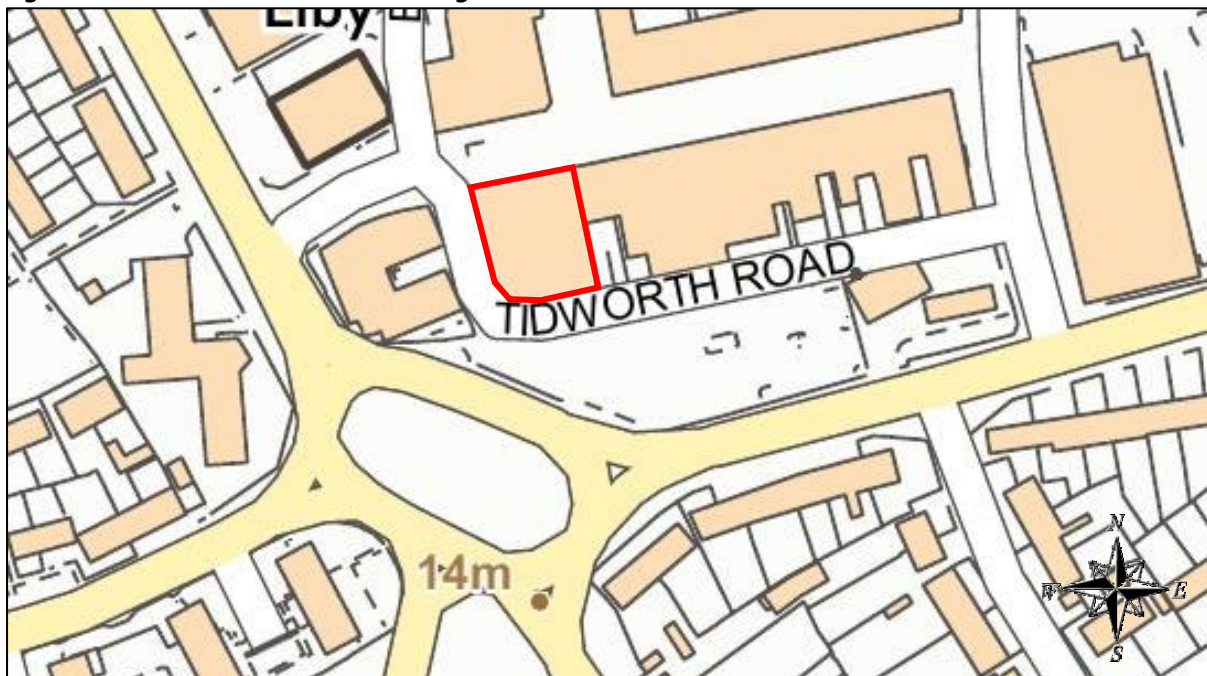
2.0 Description of Site and Proposals

The proposed development site is located at 37 Park Parade in Havant in a mixed commercial and residential area, and is occupied by a commercial building consisting of retail units, a dance studio and a gym at ground floor level, and a snooker hall at first floor level.

The site is bounded by a pedestrianised high street to the north, Park Parade to the west, Tidworth Road to the south and existing commercial and residential properties to the east.

Figure 2.1 indicates the approximate existing site extent in **red** in relation to the surrounding area.

Figure 2.1 Site Extent and Surroundings



It is proposed to develop the site to create 8 residential units at first floor level.

3.0 Acoustic Standards

We have based our assessment on the guidance and standards presented in the following sections.

3.1 General Permitted Development Order

Schedule 2, Part 3, Class MA, paragraph MA(1) of the GPDO (as amended) states the following:

“(1) Development under Class MA is permitted subject to the following conditions:

(2) Before beginning development under Class MA, the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required as to... impacts of noise from commercial premises on the intended occupiers of the development”

The National Planning Policy Framework (NPPF) sets out the Government’s core policies and principles with respect to land use planning in England. In respect to noise, the Framework states at paragraph 180 that planning policies and decisions should aim to:

- 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 quality of life; and
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

The Noise Policy Vision 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”.

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

- 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.

3.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the Government’s core policies and principles with respect to land use planning in England. In respect to noise, the Framework states at paragraph 180 that planning policies and decisions should aim to:

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- Where possible, contribute to the improvement of health and quality of life.

3.3 Planning Practice Guidance

The Planning Practice Guidance on Noise (PPG) ensures noise be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing

acoustics environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.

Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

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

3.4 Noise Policy Statement for England

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

The Observed Effect Levels are as follows:

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

Table 3.1 summarises the noise exposure hierarchy, based on the likely average response.

Table 3.1 Noise Exposure Hierarchy

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 changes 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			
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. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed adverse effect	Mitigate and reduce to a minimum

Perception	Examples of Outcomes	Increasing Effect Level	Action
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 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 harm, e.g. auditory and non-auditory.	Unacceptable adverse effect	Prevent

3.5 External Noise Intrusion

British Standard 8233: 2014 “*Guidance on sound insulation and noise reduction for buildings*” is currently the industry standard specifying acceptable internal noise limits for residential dwellings, which are presented in Table 3.2.

Table 3.2 BS 8233: 2014 Internal Noise Limits

Activity	Location	07:00 – 23:00 hours	23:00 – 07:00 hours
Resting	Living room	35 dB L _{Aeq} , 16 hr	-
Sleeping / daytime resting	Bedroom	35 dB L _{Aeq} , 16 hr	30 dB L _{Aeq} , 8 hr

In addition, the World Health Organisation (WHO) document “*Guidelines for Community Noise*” (1999) advises the following:

“For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dB L_{Amax} more than 10-15 times per night (Vallet & Vernet 1991).”

Compliance with the above standards is considered to represent appropriate mitigation of the impact of noise on health and quality of life of future residents.

3.6 Open Windows and Overheating

Where windows could be opened to control overheating, it is prudent to consider the impact on internal noise levels and residential amenity.

Approved Document O (ADO) 2021 of the Building Regulations states 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).

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).”*

3.7 Internal Sound Insulation

For a floor separating commercial and residential uses, it is generally recommended to provide an improvement upon the standards of Approved Document E of Building Regulations, and we would therefore recommend that $D_{nT,w} + C_{tr}$ 50 dB is targeted between commercial areas and the proposed residential units.

The internal noise limits specified in BS 8233: 2014 (see Section 3.5 above) should also be considered.

3.8 Vibration

For vibration associated with the existing ground floor gym, we have considered the following advice from BS 6472-1: 2008 *“Guide to evaluation of human exposure to vibration in buildings – Part 1. Vibration sources other than blasting”*:

“Perception thresholds for continuous whole-body vibration vary widely among individuals. Approximately half the people in a typical population, when standing or seated, can perceive a vertical weighted peak acceleration of 0.015 $m \cdot s^{-2}$. The weighting used is W_b . A quarter of the people would perceive a vibration of 0.01 $m \cdot s^{-2}$ peak, but the least sensitive quarter would only be able to detect a vibration of 0.02 $m \cdot s^{-2}$ peak or more. Perception thresholds are slightly higher for vibration duration of less than about 1 s.”

4.0 Noise Survey

4.1 Noise Survey Methodology

An unmanned environmental noise survey was undertaken over a 4-day period between Thursday 10 April 2025 and Monday 14 April 2025 to assess typical noise levels affecting the development site over daytime and night-time, over weekday and weekend periods.

The approximate measurement positions are shown in Figure 4.1 and described in Table 4.1.

Figure 4.1 Site Plan Indicating Approximate Location of Measurement Positions

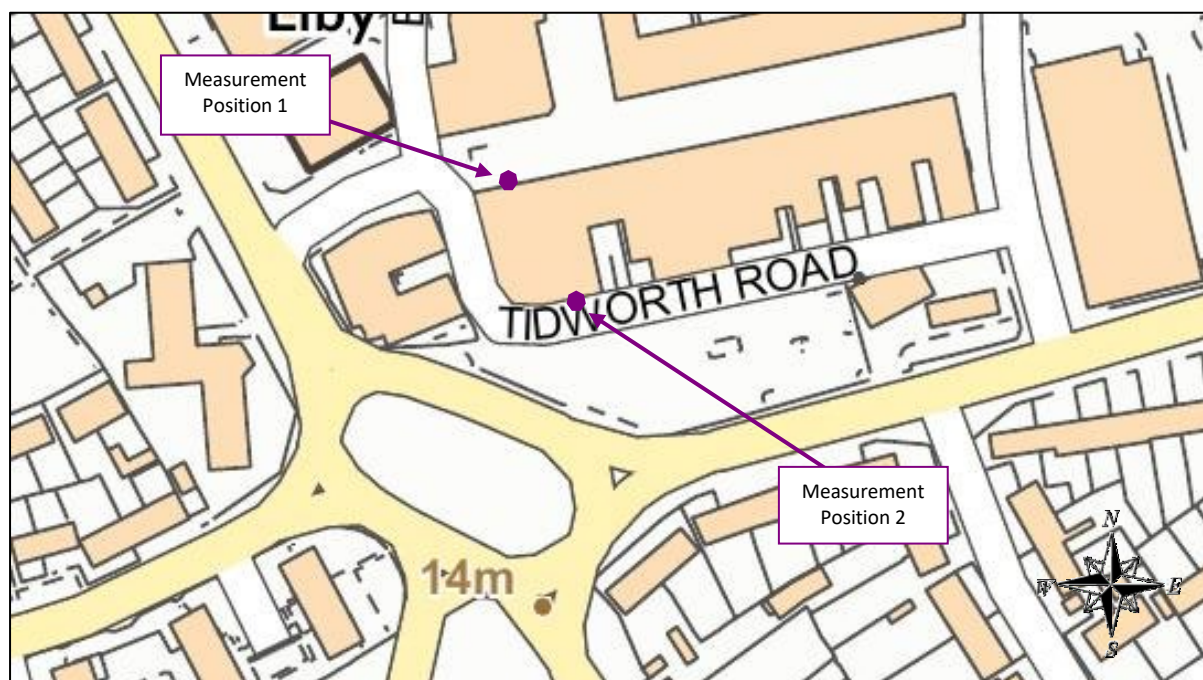


Table 4.1 Description of Measurement Positions

Measurement Position	Description
1	Mounted on a tripod on the first floor canopy on the northern side of the site overlooking the pedestrianised high street
2	Microphone attached to grille approximately 3m above ground level on the southern side of the site overlooking Tidworth Road

The equipment used for the noise surveys is summarised in Table 4.2.

Table 4.2 Description of Equipment used for Noise Survey

Measurement Position	Item	Make & Model	Serial Number
1	Type 1 automated logging sound level meter	01dB Fusion	11388
	Type 1 ½" microphone	GRAS 40CE	292539
2	Type 1 automated logging sound level meter	01dB Fusion	15995
	Type 1 ½" microphone	GRAS 40CE	625997
Calibrator		01dB CAL21	34375252

L_{Amax} , L_{Aeq} and L_{A90} sound pressure levels were measured throughout the noise survey over contiguous 1-second intervals.

The noise monitoring equipment was calibrated before and after each noise survey period. No significant change was found to have occurred in either instance. Laboratory equipment calibration certificates can be provided upon request.

At both the beginning and end of the survey period between, weather conditions were noted to be generally dry with clear skies and only light wind. Weather conditions during the survey period are not considered to have any significant effect on the measured noise levels.

4.2 Noise Survey Results

At both measurement positions, the measurement microphone was located approximately 1m from the façade of the building, therefore the measurements have been corrected for the façade reflection effect in accordance with the guidance in BS 8233: 2014.

Appendix B presents time history graphs showing the L_{Amax} , L_{Aeq} and L_{A90} sound pressure levels measured throughout the noise survey at each measurement position (displayed as 15-minute intervals).

A summary of the L_{Amax} , L_{Aeq} and L_{Amax} noise levels at each measurement position is presented in Table 4.3.

Table 4.3 Summary of Noise Survey Results

Measurement Position	Measured Noise Level (dB)		
	Daytime L_{Aeq} (16 hour) (07:00 – 23:00)	Night-time L_{Aeq} (8 hour) (23:00 – 07:00 hours)	Night-time L_{Amax} , 10th Highest (23:00 – 07:00 hours)
1	55	43	62
2	57	49	64

During our site visits, the ambient daytime noise climate at position 1 was noted to be affected dominated by pedestrian activity along the high street and occasional passing traffic along Park Parade.

At position 2, the daytime noise climate was noted to be affected dominated by passing pedestrians and occasional vehicles along Tidworth Road.

The measured noise levels are considered to be reasonable, taking into account the measurement positions and dominant nearby noise sources.

5.0 External Noise Intrusion

5.1 Preliminary Recommendations

Based on the measured external noise levels, we have undertaken preliminary calculations to predict the internal noise levels in the proposed residential units. Results of the calculations show that the standards described in Section 3.1 could be achieved by using suitable external façade constructions.

Our calculations indicate that the internal noise level criteria proposed in Section 3.1 should be achievable throughout the site using the following standard non-acoustic construction elements:

- Thermal double glazing achieving sound insulation of at least R_w 30 dB (e.g. 4mm glass / 16mm cavity / 4mm glass)
- Standard non-acoustic trickle ventilators achieving sound insulation of at least $D_{ne,w}$ 37 dB
- Lightweight timber frame external wall construction, achieving sound insulation of at least R_w 45 dB

The strategy above is to demonstrate viability for preliminary guidance only. Further modelling and assessment should be undertaken during the detailed project design stage to determine detailed acoustic specifications for the external façade elements.

5.2 Open Windows

It is commonly considered that a façade with an open window can achieve attenuation of external noise levels of between 10-15 dB (13 dB on average).

On this basis, we have predicted internal noise levels in the scenario where windows are open, based on the measured external noise levels, and in comparison with the Approved Document O noise limits (presented in Section 3.6) as shown in Table 5.1.

Table 5.1 Open Window Noise Risk Assessment

Façade Location	Measured External Noise Level at Façade	Predicted Internal Noise Level with Windows Open	ADO Comparison
North and West Façades	43 dB $L_{Aeq, T}$ Night-time	33 dB $L_{Aeq, T}$ Night-time	Does Not Exceed ADO Limit
	62 dB L_{Amax} (10th highest) Night-time	52 dB L_{Amax} (10th highest) Night-time	Does Not Exceed ADO Limit
South Façade	49 dB $L_{Aeq, T}$ Night-time	39 dB $L_{Aeq, T}$ Night-time	Does Not Exceed ADO Limit
	64 dB L_{Amax} (10th highest) Night-time	54 dB L_{Amax} (10th highest) Night-time	Does Not Exceed ADO Limit

For all of the façades, it is predicted that noise levels are not likely to exceed the Approved Document O noise limits, and therefore “*use of opening windows as a primary means of mitigating overheating is not likely to result in adverse effect*”.

6.0 Internal Sound Insulation

Detailed design of the separating floor construction between the ground floor commercial units and the proposed residential units is yet to be undertaken. It is assumed that the existing separating floor construction is based on a 200mm concrete slab (2,300kg/m³ minimum density) and a 50mm screed will be added on top.

auricl undertook measurements of internal activity noise levels within the existing gym and dance studio at ground floor within the building between Monday 14 April 2025 and Wednesday 16 April 2025 using the measurement equipment described in Table 4.2 above.

The operating hours of the gym are 06:00 – 21:00 hours, whilst the dance studio mainly operates from 16:00 - 22:00 hours.

The worst-case measured noise levels are presented in Table 6.1.

Table 6.1 Measured Internal Noise Levels – Dance Studio and Gym

Scenario	Parameter	Octave Band Centre Frequency (Hz)								L _A (dB)
		63	125	250	500	1k	2k	4k	8k	
Dance Studio Daytime	L _{Aeq} (1 hour)	99	99	91	80	80	76	68	59	88
Gym Daytime	L _{Aeq} (1 hour)	67	76	71	72	70	66	61	54	74
Gym 06:00 – 07:00 hours	L _{Aeq} (1 hour)	57	70	64	62	61	60	57	51	67
	L _{Amax}	82	81	78	85	82	86	86	79	92

Based on the assumed floor construction, we have undertaken calculations to predict the levels of noise transmission to the proposed first floor residential dwellings. Our calculations are shown in Tables 6.2 to 6.6 below.

Table 6.2 Noise Transmission Calculations – Dance Studio (Daytime L_{Aeq} (1 hour))

Element	Octave Band Centre Frequency (Hz)								L _{Aeq} (1 hour)
	63	125	250	500	1k	2k	4k	8k	
Measured Internal Noise Level (dB)	99	99	91	80	80	76	68	59	88
Predicted Sound Reduction of Separating Floor Construction (dB)	-42	-42	-43	-51	-59	-67	-73	-73	
Correction for Typical Floor Area and Receive Room Absorption (dB)	+9	+10	+9	+9	+11	+12	+12	+12	
Predicted Noise Level in First Floor Dwelling (dB)	67	67	57	38	32	21	7	<0	53

Table 6.3 Noise Transmission Calculations – Gym (Daytime L_{Aeq} (1 hour))

Element	Octave Band Centre Frequency (Hz)								L_{Aeq} (1 hour)
	63	125	250	500	1k	2k	4k	8k	
Measured Internal Noise Level (dB)	67	76	71	72	70	66	61	54	74
Predicted Sound Reduction of Separating Floor Construction (dB)	-42	-42	-43	-51	-59	-67	-73	-73	
Correction for Typical Floor Area and Receive Room Absorption (dB)	+9	+10	+9	+9	+11	+12	+12	+12	
Predicted Noise Level in First Floor Dwelling (dB)	35	44	37	30	22	11	<0	<0	33

Table 6.4 Noise Transmission Calculations – Gym (06:00 – 07:00 L_{Aeq} (1 hour))

Element	Octave Band Centre Frequency (Hz)								L_{Aeq} (1 hour)
	63	125	250	500	1k	2k	4k	8k	
Measured Internal Noise Level (dB)	57	70	64	62	61	60	57	51	67
Predicted Sound Reduction of Separating Floor Construction (dB)	-42	-42	-43	-51	-59	-67	-73	-73	
Correction for Typical Floor Area and Receive Room Absorption (dB)	+9	+10	+9	+9	+11	+12	+12	+12	
Predicted Noise Level in First Floor Dwelling (dB)	25	38	30	20	13	5	<0	<0	26

Table 6.5 Noise Transmission Calculations – Gym (06:00 – 07:00 L_{Amax})

Element	Octave Band Centre Frequency (Hz)								L_{Amax}
	63	125	250	500	1k	2k	4k	8k	
Measured Internal Noise Level (dB)	82	81	78	85	82	86	86	79	92
Predicted Sound Reduction of Separating Floor Construction (dB)	-42	-42	-43	-51	-59	-67	-73	-73	
Correction for Typical Floor Area and Receive Room Absorption (dB)	+9	+10	+9	+9	+11	+12	+12	+12	
Predicted Noise Level in First Floor Dwelling (dB)	50	49	44	43	34	31	25	18	43

It can be seen that, in most cases, the predicted level of noise transmission into the proposed residential units is less than the BS 8233: 2014 desirable internal noise limits. The exception is the dance studio however this is based on a mobile PA speaker which could easily be operated at a lower noise level.

A detailed review of the proposed constructions, junction details etc should be carried out during the detailed design stage.

7.0 Vibration

7.1 Assessment Methodology

Dropping of weights onto the floor within the ground floor gym demise has the potential to generate vibration which can be transmitted to the proposed first floor residential dwellings.

Vibration measurements were therefore undertaken between 12:00 and 13:00 hours on Tuesday 6 May 2025 to assess vibrations levels during operating of the ground floor gym.

Access to the existing first floor demise was not possible, therefore vibration measurements were undertaken at a ground floor position adjacent to the gym demise as a worst-case. A correction will then be applied to approximate the vibration levels at first floor level

Vibration measurements were carried out using a 01dB ORION vibration meter, sitting on the concrete base floor. The gym was noted to be in normal operation during the vibration measurements.

7.2 Results

For comparison with the BS 6472 guidance presented in Section 3.8 above, the maximum measured vibration acceleration levels (vertical z-axis, W_b -weighted) are shown in Table 7.1.

Table 7.1 Measured Vibration Levels (Vertical z-axis)

Measurement Period	Measured W_b -Weighted Vibration Acceleration Level (m/s^2 Vertical z-axis)
12:00 – 13:00	0.010
13:00 – 14:00	0.002

By comparison with the BS 6472 guidance presented in **Section 3.8** above, it can be seen that the predicted vibration levels are less than the perception threshold for the most sensitive quarter of the population. As the predictions are based on the maximum measured vibration levels, the assessment can be considered to represent a robust worst-case and therefore on this basis an adverse impact is considered to be unlikely.

8.0 Conclusion

It is proposed to develop the site at 37 Park Parade in Havant to create new residential dwellings.

The site is located in a mixed urban environment with commercial uses within the building, therefore **auricl** has been appointed to assess the potential noise and vibration impacts of the surroundings on the proposed dwellings.

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Our calculations indicate that the internal noise standards should be achievable using standard non-acoustic construction elements and the required levels of sound reduction should not be difficult to achieve.

External noise levels affecting future occupants have been assessed in relation to the noise limits contained in Approved Document O of the Building Regulations. It was concluded that on all sides of the site, external noise levels are such that *“use of opening windows as a primary means of mitigating overheating is not likely to result in adverse effect”*.

A preliminary assessment of internal noise transmission has been undertaken across the floor between the existing commercial uses and the proposed residential units at first floor level. The internal noise standards specified in BS 8233: 2014 are generally not predicted to be exceeded based on a suitable improvement over the standards specified in Approved Document E 2003 of the Building Regulations, which should therefore provide adequate protection against internal noise transmission to future occupants.

Vibration measurements were undertaken to assess vibrations levels during operating of the ground floor gym. By comparison with the BS 6472 guidance, it was concluded that the predicted vibration levels are less than the perception threshold for the most sensitive quarter of the population. As the predictions are based on the maximum measured vibration levels, the assessment can be considered

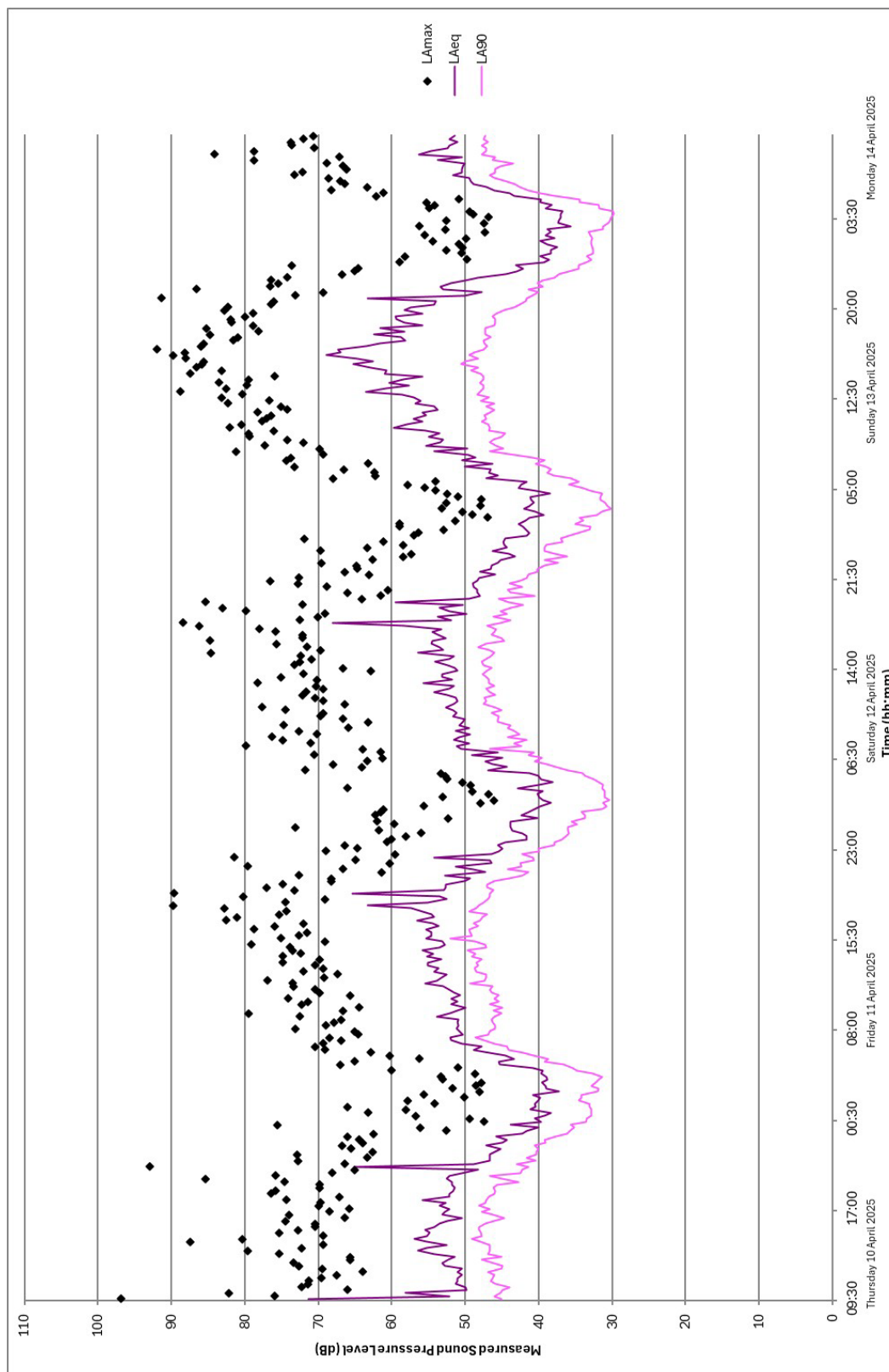
to represent a robust worst-case and therefore on this basis an adverse impact is considered to be unlikely.

Appendix A – Acoustic Terminology

Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing (20×10^{-6} Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
L_{Amax}	The A-weighted maximum noise level measured during the measurement period.
$L_{Aeq,T}$	The A-weighted equivalent continuous noise level over the time period T (typically T = 16 hours for daytime periods, T = 8 hours for night-time periods). This is the sound level that is equivalent to the average energy of noise recorded over a given period.
L_{A90} (15 min)	The noise level exceeded for 90% of the time (also referred to as the background noise level), measured over a 15-minute period
$L_{Ar,Tr}$	The rating sound level as described in BS 4142:2014+A1:2019. This is the specific sound level including corrections for acoustic features such as tonality, impulsivity, or intermittency, used in the assessment of industrial and commercial applications.
R_w	The weighted (w) sound reduction index (R), a single figure rating of the laboratory airborne sound insulation performance of a construction, usually measured across the frequency range 100-3150Hz. The higher the value, the greater the sound insulation, and the more onerous the requirement.
$D_{n,e,w}$	The weighted (w) element (e) normalised (n) level difference (D), a single figure indicator of the ability of a small building element (such as a trickle ventilator) to reduce sound. The higher the value, the greater the sound reduction, and vice versa.

Appendix B – Time History Graphs

Measurement Position 1



Measurement Position 2

