Existing Noise Climate Assessment

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Project:	16 King Street Barwell Leicester LE9 8GQ
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1.0 Summary

A noise survey with proposals for achieving appropriate noise levels for the future occupants of 16 King Street, Barwell is required. The existing building is a 2-storey disused commercial property which is to be converted into six flats – three on each floor.

Noise level conditions need to be assessed and reviewed for the change of use. Policies including the 'WHO guidelines for community noise' and 'ProPG' will be assessed against. The NPPF document specifies that noise levels should be deemed appropriate with reference to BS8233:2014.

In addition to this, an assessment of the rating level of the commercial and industrial noise will be assessed using guidance document BS4142:2014. An assessment of the existing rating level and confirmation of how the proposals will ensure the final development will have either no impact or low impact from the adjacent non-domestic noise will be completed.

In support of the application, Climat BCT was commissioned to undertake an assessment of the existing noise climate at 16 King Street, Barwell and use the data from the existing noise climate survey, to assess the likely internal noise climate within the proposed flats resulting from external noise break-in. This will include an assessment of the proposed ventilation and glazing strategy.

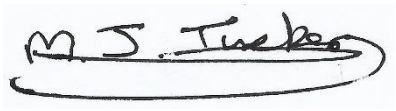
All measurements recorded demonstrate compliance with the planning conditions will be achieved. The existing day and night LAeq,t values met the requirements already. Improvements to the glazing and external walls that are proposed will only improve this further.

Based on the proposed upgrades, the commercial and industrial noise will likely have a low impact on the occupants.

The proposed build ups will reduce the number of excessive peaks sufficiently to meet the relevant requirements.

From all measurements recorded there does not appear to be any issues with appropriate noise levels being achieved that have been set in the planning condition referenced. An assessment of the completed noise levels and noise impact from the adjacent non domestic units on completion but prior to occupancy of the properties is recommended.

Report Prepared by:



Matthew Tucker AMIOA Dip IOA

Managing Director – Climat BCT Ltd

2.0 Introduction

A noise survey with proposals for achieving appropriate noise levels for the future occupants of 16 King Street, Barwell is required. The existing building is a 2-storey disused commercial property which is to be converted into six flats - three on each floor.

Noise level conditions need to be assessed and reviewed for the change of use. Policies including the 'WHO guidelines for community noise' and 'ProPG' will be assessed against. The NPPF document specifies that noise levels should be deemed appropriate with reference to BS8233:2014.

In addition to this, an assessment of the rating level of the commercial and industrial noise will be assessed using guidance document BS4142:2014. An assessment of the existing rating level and confirmation of how the proposals will ensure the final development will have either no impact or low impact from the adjacent non-domestic noise will be completed.

In support of the application, Climat BCT was commissioned to undertake an assessment of the existing noise climate at 16 King Street, Barwell and use the data from the existing noise climate survey, to assess the likely internal noise climate within the proposed flats resulting from external noise break-in. This will include an assessment of the proposed ventilation and glazing strategy.

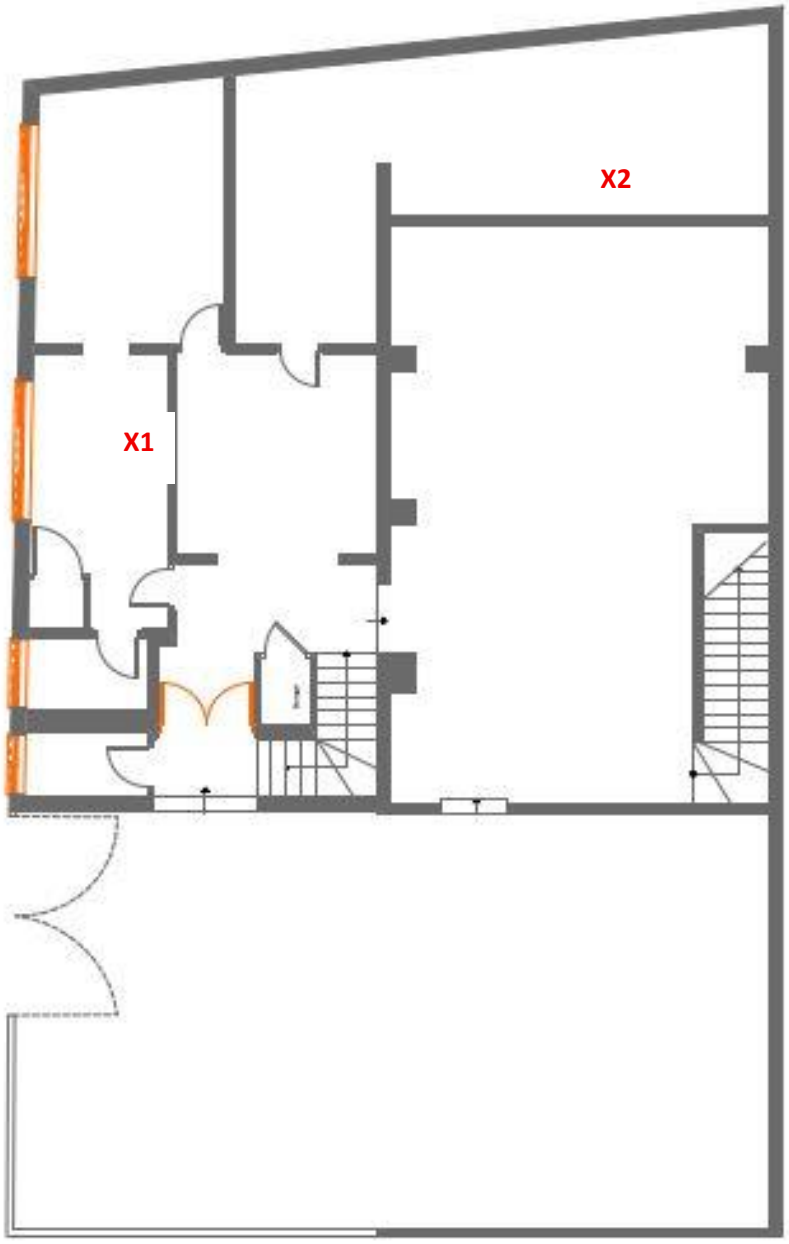
3.0 Site Description

The proposal for the development is for a full change of 16 King Street from a two-storey commercial space into a block of six flats. The existing noise climate is regarded as being essentially suburban in character with minimal road traffic on King Street. To the south of the development is Shilton Road – a residential road. Office units are located immediately to the West of the site across King Street. To the North and East of site are industrial premises. It is understood these units are not operational at weekends or during the evening and night. Johnsons Plumbing immediately adjacent to the development has operating hours of Monday to Friday 7am-5pm. That said, the impact sound rating will assess all hours of the day and night as there are no set restrictions in operating hours.



The existing site, at time of measuring, is in a stripped-out state with internal floors and walls missing, effectively leaving the whole unit as an open space. A roller shutter door acts as a clear weakness in allowing excess external noise in to the premises.

Existing layout



Existing Ground Floor Plan @1:100

***Red X marks location of Sound level meter. X1 is the location of the first site visit and X2 is the location of the additional noise survey**

Proposed layout



***Red X marks location of Sound level meter. X1 is the location of the first site visit and X2 is the location of the additional noise survey**

4.0 Assessment Criteria

The planning permission application for the conversion of the former commercial block at 16 King Street, Barwell requires the following:

'The potential impact from adjacent commercial premises from noise will need to be considered. This can either be done prior to determination or through a suitable condition.

C40. Noise attenuation

a) *Development shall not begin until a scheme for protecting the proposed dwellings from noise from adjacent commercial premises has been submitted to and approved by the Local Planning Authority*
b) *All works which form part of the scheme shall be completed before any of the permitted dwellings are first occupied.*

With reference to the analysis of the likely internal noise levels within the permitted flats, reference will be made to the guidance contained within: The World Health Organisation's "Guidelines for Community Noise" document and British Standard (BS) 8233:2014 "Guidance on sound insulation and noise reduction for buildings". Further guidance will be employed, as appropriate, from documents such as the Planning and Noise: Professional Guidance on Planning and Noise (ProPG), May 2017, document.
An assessment using BS4142:2014 guidance will be used to assess the likely impact and rating level of the industrial and commercial sound.

Achieving recommended internal noise levels from BS8233:2014 and WHO guidance along with BS4142:2014 rating levels should be acceptable to achieving compliance with condition C40.

4.1 World Health Organisation (WHO) Guidance

The WHO "Guidelines for Community Noise" is a comprehensive document that co-defines much of the work contained within the earlier "Community Noise" document produced in 1995. The 1999 document includes summaries on: the effects of noise on health, guideline values, noise management proposals and recommendations. It is the guideline values on community noise levels contained in Table 1 of the Executive Summary that are amongst the most frequently cited elements of this document. For the sake of clarity, the sections of this table that are applicable to residential dwellings are reproduced in Table 1 below.

Table 1. Guidelines for noise levels in specific environments (reproduced from Table 1 of the "Guidelines for Community Noise document, (WHO 1999))

Specific environment	Critical health effect(s)	L_{Aeq} [dB(A)]	Time base [hours]	L_{Amax}, fast dB
Outdoor living area	Serious annoyance, daytime and evening. Moderate annoyance, daytime and evening.	55 50	16 16	- -
Dwelling, indoors Inside bedrooms	Speech intelligibility and moderate annoyance, daytime and evening. Sleep disturbance, night time	35 30	16 8	- 45

4.2 BS 8233:2014 "Guidance on Sound Insulation and Noise Reduction for Buildings"

BS 8233:2014 draws together research and best practice relating to building design, providing guidance to facilitate the development of buildings that have internal noise environments that are consistent with and appropriate for their intended use. The British Standard highlights methods for the control of noise from a number of sources including external noise and building services etc., as well as evaluating the effect that noise from these sources may have on the acoustics of the internal spaces.

With reference to the design guidance relating to the internal noise climate of residential dwellings, BS 8233:2014 summarises this guidance within table 4 of section 7.7.2. The main elements of this guidance are reproduced in table 2 below.

Table 2. Indoor ambient noise levels for dwellings (reproduced from table 4 of BS8233:2014)

Activity	Location	0700 to 2300	2300 to 0700
Resting	Living room	35dB $L_{Aeq,\ 16\ hour}$	-
Dining	Dining room/area	40dB $L_{Aeq,\ 16\ hour}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,\ 16\ hour}$	30dB $L_{Aeq,\ 8\ hour}$

4.3 BS4142:2014 – non domestic noise assessment

BS 4142:2014 'Methods for rating and assessing industrial and commercial sound' is the current British Standard providing guidance for assessment of noise impact from industrial and commercial sites. In general, the likelihood of adverse impact for a particular noise source is dependent upon factors including the margin by which it exceeds the background noise level, the character of the noise and its occurrence. The Standard recommends the determination of the Rating Level of the specific source and advises a correction factor of between +3dB and +9dB if the sound has a tonal quality, is intermittent or impulsive or has any other distinct characteristics which would make it more noticeable.
The determination of these noise characteristic penalties is to be considered at the noise sensitive receptor location in the presence of typical prevailing ambient and background noise sources and not at the sound source location.
The degree of impact is assessed by comparing the measured background level with the Rating Level. Where the Rating Level exceeds the background, the level of impact increases as shown in the following table.

Table 3:

Comparison with background	Assessment
+0dB or below measured background	Low impact
+5dB	Adverse impact
+10dB or more above measured background	Significant adverse impact

4.4 Planning and Noise: Professional Guidance on Planning and Noise (ProPG)

This document was published in May 2017 and was produced jointly by representatives of the Chartered Institute of Environmental Health (CIEH), the Institute of Acoustics (IoA) and the Association of Noise Consultants (ANC). The ProPG document seeks to provide guidance on and complement the wider aims contained within the Noise Policy Statement for England (NPSE) and the additional guidance contained within the National Planning Policy Framework (NPPF). In addition, the ProPG document acknowledges the contribution made by existing guidance contained within both the World Health Organisation's (WHO) "Guidelines for Community Noise" and (BS) 8233:2014 "Guidance on sound insulation and noise reduction for buildings".

The ProPG document guidance is restricted to the consideration of new residential developments and the potential implications for these developments arising from predominantly airborne noise that typically emanate from transportation noise sources.

The guiding principle of the ProPG document with reference to the existing noise climate, is that once the potential impact on a development has been quantified, good acoustic design should be implemented to mitigate the potential effects that the existing noise climate may have on the proposed resident of any new residential development. In this case the good design principle relates to both the internal acoustic environment within dwellings and any external amenity areas serving those dwellings. With reference to good acoustic design Pro PG does recognise that this does not mean "overdesign or gold plating", but it does mean delivering "the optimum acoustic outcome for a particular site".

With respect to the internal noise level guidelines, ProPG makes reference to the guidance contained within table 2 of section 7.7.2BS 8233:2014, reproduced in section 4.2 above. Whilst recognising that it is preferable to achieve the internal noise guidelines ProPG does, at paragraph 2.30, recognise that national planning and noise policy does not always require that these levels are achieved. This is particularly the case where to do so would "disproportionately increase the cost of the development".

Remaining with the issue of internal noise level guidance and the proposed levels for individual noise events, expressed as an L_{max}, the guidance contained within Appendix A of the ProPG is instructive. The Appendix contains a short summary of research into the effects of individual noise events and the effect that these can have on sleep. In the light of this summary the document, at paragraph A.20, states the following, "*...therefore, it is considered that if, in bedrooms at night, the $L_{Amax,F}$ from individual noise events (from all sources) would not normally exceed 45dB more than 10 times a night, then this represents a reasonable threshold below which the events on sleep can be regarded as negligible*".

The potential impact of ventilation on the acoustic integrity of the façade of a dwelling is also addressed by the ProPG document. The document suggests that good acoustic design should be used to achieve the internal design targets in noise sensitive rooms with windows open. Here it is assumed that this relates to windows partially open for ventilation purposes. Despite this it also recognises the limitations of acoustic design and highlights that internal noise levels may only be achievable with windows closed in certain environments such as urban areas or sites adjacent to transportation noise sources. In these situations, it is suggested that internal noise levels are assessed with windows closed but with any façade openings used for ventilation purposes in their open position (trickle ventilators). Finally, and with reference to ventilation ProPG at paragraph 2.35 states that "internal noise level guidance are generally not applicable under purge ventilation conditions".

5.0 Survey Details

5.1 Survey Times and Personnel

The noise survey, to evaluate the existing noise climate in the vicinity of 16 King Street was undertaken between Sunday 11th and Tuesday 13th October. The Sound level meter was left in proposed flat 2 lounge area from 11am on Sunday until 10am Tuesday. This time frame was chosen as the key noise contributors are from King Street traffic noise which will be at a peak during typical 'business hours' for the nearby industrial premises. As ascertained in section 3.0 above, these units open from 7am on Monday and operate through the weekday closing at 5pm. The time frame selected will gauge the noise impact from these non-domestic noise sources. In addition, the typical weekend noise levels for the area will be established. There are no nearby pubs/bars/cafes therefore the time frame selected should be representative.

A further noise assessment was completed at location 'X2' marked on the plans above to assess the noise impact of the neighbouring non-domestic unit on 6th and 7th November. As the unit currently operates during the week an assessment of a full working day and night was completed to demonstrate typical sound levels and the likely impact on the proposed development.

5.2 Weather

Throughout the existing noise climate surveys, the weather conditions were as follows:

Sunday 11th October 2026

All surfaces were dry, cloud cover was 4/8, the temperature was approximately 8-15°C, the wind speed was light and variable.

Monday 12th October 2026

Mild conditions with light rain, cloud cover was 6/8, the temperature was between14 and 18°C, the wind speed was light and variable.

Tuesday 13th October 2026

Mild conditions with light rain, cloud cover was 6/8, the temperature was between 14 and 18°C, the wind speed was light and variable.

Friday 6th November 2026

Cool conditions with light rain, cloud cover was 6/8, the temperature was between 3 and 11°C, the wind speed was light and variable.

Saturday 7th November 2026

Cool conditions with light rain, cloud cover was 8/8, the temperature was between 5 and 12°C, the wind speed was light and variable.

5.3 Equipment

All the noise surveys and measurements were conducted using the equipment detailed in table 4 below. The sound level meter was field calibrated before and after the survey. No significant deviation in the calibrated level was observed.

Table 4. Equipment used during the existing noise climate surveys

Equipment description	Manufacturer	Model number	Serial number
Acoustic calibrator	Larson Davis	CAL200	31522
Sound level meter	Norsonic	NOR140	A2A-10232-E
Microphone	Norsonic	NOR-1209	8636

5.4 Measurement Procedure

An initial walk-over assessment of the site confirmed that the principal contributor to the existing noise climate was road traffic on King Street along with the industrial unit to the North and East of the property.

In the measurement positions the sound level meter microphone was mounted on a tripod which was itself located in the proposed flat 2 lounge on the ground floor approximately 2 metres from the windows as well as approximately 1.5 metres above floor level and at least 1.6m from all internal walls and surfaces. During all surveying the measurement time interval was 15 minutes, all measurements were made with the 'fast' time weighting engaged. These have then been logarithmically averaged per hour which is displayed below.
Windows were left ajar for the duration of the survey in order to allow what could be deemed as an appropriate quantity of ventilation through the plot.

The additional noise survey undertaken in November was recorded close to the party wall between the proposed plots and the non-domestic unit where proposed flat 3 kitchen will be.

6.0 Noise Survey Results

The measured noise levels from the measurement position are presented in tables 5 - 9 below and overleaf. The tables also contain an indication of any significant noise events that may have affected the measured levels during each measurement period.

Table 5. Daytime Internal noise levels – proposed flat 2 lounge – 11.10.26 – 11.00-23.00

Location	Start time	dB $L_{Aeq,}$ (60 minutes)
Proposed flat 2 lounge	11:00	34
Proposed flat 2 lounge	12:00	31
Proposed flat 2 lounge	13:00	28
Proposed flat 2 lounge	14:00	30
Proposed flat 2 lounge	15:00	31
Proposed flat 2 lounge	16:00	28
Proposed flat 2 lounge	17:00	31
Proposed flat 2 lounge	18:00	29
Proposed flat 2 lounge	19:00	26
Proposed flat 2 lounge	20:00	25
Proposed flat 2 lounge	21:00	24
Proposed flat 2 lounge	22:00	23
Mean noise level $L_{Aeq\ 16\ hour}$		**28**

Table 6. Night-time Internal noise levels - proposed flat 2 lounge – 11.10.26-12.10.26 – 23.00-07.00

Location	Start time	dB $L_{Aeq,}$ (60 minutes)	dB $L_{Amax,}$ (60 minutes)
Proposed flat 2 lounge	23:00	21	42
Proposed flat 2 lounge	00:00	19	31
Proposed flat 2 lounge	01:00	18	47
Proposed flat 2 lounge	02:00	21	45
Proposed flat 2 lounge	03:00	23	45
Proposed flat 2 lounge	04:00	21	42
Proposed flat 2 lounge	05:00	27	41
Proposed flat 2 lounge	06:00	28	44
Mean noise level $L_{Aeq\ 8\ hour}$ / $L_{Amax\ 8\ hour}$		**24**	**44**

Table 7. Daytime Internal noise levels – proposed flat 2 lounge – 12.10.26 – 07.00-23.00

Location	Start time	dB $L_{Aeq,}$ (60 minutes)
Proposed flat 2 lounge	07:00	33
Proposed flat 2 lounge	08:00	33
Proposed flat 2 lounge	09:00	31
Proposed flat 2 lounge	10:00	33
Proposed flat 2 lounge	11:00	30
Proposed flat 2 lounge	12:00	34
Proposed flat 2 lounge	13:00	31
Proposed flat 2 lounge	14:00	33
Proposed flat 2 lounge	15:00	32
Proposed flat 2 lounge	16:00	30
Proposed flat 2 lounge	17:00	32
Proposed flat 2 lounge	18:00	29
Proposed flat 2 lounge	19:00	32
Proposed flat 2 lounge	20:00	25
Proposed flat 2 lounge	21:00	24
Proposed flat 2 lounge	22:00	24
Mean noise level $L_{Aeq\ 16\ hour}$		**31**

Table 8. Night-time Internal noise levels - proposed flat 2 lounge – 12.10.26-13.10.26– 23.00-07.00

Location	Start time	dB $L_{Aeq,}$ (60 minutes)	dB $L_{Amax,}$ (60 minutes)
Proposed flat 2 lounge	23:00	22	43
Proposed flat 2 lounge	00:00	24	48
Proposed flat 2 lounge	01:00	30	56
Proposed flat 2 lounge	02:00	24	46
Proposed flat 2 lounge	03:00	23	48
Proposed flat 2 lounge	04:00	26	49
Proposed flat 2 lounge	05:00	27	48
Proposed flat 2 lounge	06:00	32	56
Mean noise level $L_{Aeq\ 8\ hour}$ / $L_{Amax\ 8\ hour}$		**28**	**51**

Table 9. Daytime Internal noise levels – proposed flat 2 lounge – 13.10.26 – 07.00-11.00

Location	Start time	dB $L_{Aeq,}$ (60 minutes)
Proposed flat 2 lounge	07:00	33
Proposed flat 2 lounge	08:00	35
Proposed flat 2 lounge	09:00	31
Proposed flat 2 lounge	10:00	31
Mean noise level $L_{Aeq\ 4\ hour}$		**33**

7.0 Noise Transmission Calculations

Using the measured noise levels from the existing noise climate surveys, calculations have been performed to assess the likely internal noise levels within the permitted flats. All the assessments have been conducted with reference to the design guidance detailed in sections above.

The subsequent assessment of the potential internal noise levels within the permitted flats have been undertaken using the highest measured levels from the noise surveys. Consequently, the following assessments may be regarded as worst case situations which are unlikely to persist for all but short periods of time.

Table 10. Highest measured noise levels

OBCF, Hz*	63	125	250	500	1k	2k	4k	8k	Overall, dB(A)
Day time, L_{Aeq}, (12:15 – 12:30 hours) 12.10.26	46	39	33	31	30	31	30	18	**37**
Night time, $L_{Aeq,}$ (06:45 - 07:00 hours) 13.10.26	46	41	35	34	31	27	23	17	**36**

The sound insulation provided by the building envelope is calculated from the sound insulation provided by the various façade elements, such as the glazing, external walls etc. and the areas they cover. In the majority of cases, it is the glazing that can be considered as the 'weak' link acoustically, therefore increasing the sound insulation of the glazing will improve the overall sound insulation of the façade. The result of the calculations is a composite sound insulation value for the whole façade.

The assessments contained within the subsequent sections of this assessment report have been undertaken according to drawings issued by Volta Designs Architects. To facilitate the calculations to be made the following assumptions have been used:

- The reverberation times within the habitable rooms will be 0.5 seconds.
- The floor to ceiling height will be between approximately 2.1 - 2.4 metres.

For the purposes of the subsequent assessments a ventilation strategy adopting a 'passive' type system incorporating background ventilators, similar to a system 1 ventilation strategy, with intermittent local mechanical extract ventilation (MEV) being provided in areas of potentially high humidity, will be employed. In all cases the assessments have been undertaken assuming the windows were closed but the ventilation openings were open, as per the guidance contained within the ProPG document.

7.1 Construction Specification

The building envelope constructional details described below and overleaf have been assumed for the purposes of the subsequent calculations.

External Walls

The external walls of the existing building are of solid masonry construction around 250 - 275mm thick. Test results for a similar construction suggest that external walls of this type should provide an overall sound insulation of around R_w 50dB, with the octave band sound insulation values being as detailed in table 11.

Table 11. External Solid Masonry Wall, Octave Band Sound Insulation Values

OBCF, Hz*	125	250	500	1k	2k	4k	Overall, R_w dB
Sound Insulation, dB	36	41	45	49	57	61	50

* Octave Band Centre Frequency

Party walls between proposed plots and commercial unit

Approved Document E – Resistance to the passage of sound should be used to ensure the party walls between plots and commercial space are achieved. On completion acoustic testing will be required to demonstrate compliance.

Glazing

The proposed glazing to the flats will be of the sealed unit type and will be of the following nominal specifications: 4mm pane - 16/20mm cavity - 4mm pane and 6mm pane - 16/20mm cavity - 6.8mm pane (SS specification). Laboratory test data obtained from Pilkington and Saint Gobain Glass indicate that these configurations should provide sound insulation values of 31 and 39dB R_w. The octave band sound insulation values are as detailed in table 12 below.

Alternative glazing configurations would be acceptable providing the sound insulation performances are at least equivalent to the specifications detailed in the table below.

Table 12. Glazing, octave band sound insulation values

OBCF, Hz*	125	250	500	1k	2k	4k	Overall, R_w (+ C_{tr}) dB
4mm, 6 - 20mm, 4mm	24	20	25	35	38	35	**31 (- 6)**
6mm - 16/20mm - 6.8mm SS.	23	25	36	46	49	56	**39 (- 6)**

* Octave Band Centre Frequency

Ventilation

As previously stated, a passive ventilation strategy has been adopted for the proposed rooms. In this respect background ventilation provision in compliance with the requirements of Approved Document F, will be provided by window frame mounted ventilators of the Titan V75/C50 and V75/C75 types. Units offering equivalent sound insulation performance would be acceptable. It is also anticipated that local mechanical extract ventilation (MEV) is provided in areas of high humidity and wet rooms.

Laboratory test data indicates that the specified window frame mounted ventilators should provide sound insulation values of 42 and 44dB $D_{n,e,w}$ respectively in their open positions. The octave band sound insulation values for the selected window frame mounted ventilators are detailed in table 13 below. Alternative ventilator configurations would be acceptable providing the sound insulation performance is at least equivalent to the specification detailed in table 13 below.

Table 13. Background ventilation, octave band sound insulation values

OBCF, Hz*	125	250	500	1k	2k	4k	Overall, $D_{n,e,w}$ dB
Titan V75/C50	40	37	34	43	50	53	**42**
Titan V75/C75	37	37	36	47	49	55	**44**

* Octave Band Centre Frequency

7.2 Calculation Results

For the purposes of the calculations the highest measured noise levels detailed in table 10 were used. As appropriate the obtained noise levels were distance corrected to account for any variations in distance between the primary noise source, King Street, and the various façades of the flats.

The results of the break-in noise calculations for the windows closed but ventilators open condition are presented, with reference to the design guidance contained within section 4.0 above, in table 14 below. With respect to the presentation of the results the calculations relating to the night time L_{Aeq} and L_{Amax} results are presented in the same columns with the L_{Amax} results being contained in brackets.

Table 14. Calculated internal noise levels, flat 2

Location	Design target, daytime, dB L_{Aeq}	Calculated level, daytime, dB L_{Aeq}	Design target, night time, dB L_{Aeq}	Calculated levels, night time, dB L_{Aeq} and (L_{Amax})
Flat 2 lounge/bedroom	35	**25**	30 (45)	**22 (43)**

* 6mm - 16/20mm - 6.8mm SS glazing/Titan V75/C75 ventilation

As can be seen from table 14 the calculated internal noise levels within the permitted flats, resulting from external noise break-in, would not exceed the design guidance contained within section 4 above. Consequently, it is contended that the proposed glazing and ventilation provisions detailed above, would be sufficient to ensure the establishment of acceptable internal acoustic conditions within the proposed flats.

8.0 Noise impact assessment

Table 15. Internal noise levels – proposed flat 3 kitchen – 06.11.26 – 04.00-24.00

Location	Start time	dB L_{Aeq}, (60 minutes)	dB L_{90}, (60 minutes)
Proposed flat 3 Kitchen	04:00	24	20
Proposed flat 3 Kitchen	05:00	26	20
Proposed flat 3 Kitchen	06:00	28	24
Proposed flat 3 Kitchen	07:00	31	26
Proposed flat 3 Kitchen	08:00	32	28
Proposed flat 3 Kitchen	09:00	30	27
Proposed flat 3 Kitchen	10:00	30	26
Proposed flat 3 Kitchen	11:00	29	26
Proposed flat 3 Kitchen	**12:00**	**32**	**29**
Proposed flat 3 Kitchen	13:00	30	25
Proposed flat 3 Kitchen	14:00	31	27
Proposed flat 3 Kitchen	15:00	30	26
Proposed flat 3 Kitchen	16:00	28	25
Proposed flat 3 Kitchen	17:00	31	27
Proposed flat 3 Kitchen	18:00	28	25
Proposed flat 3 Kitchen	19:00	27	25
Proposed flat 3 Kitchen	20:00	25	22
Proposed flat 3 Kitchen	21:00	26	22
Proposed flat 3 Kitchen	**22:00**	**25**	**21**
Proposed flat 3 Kitchen	23:00	24	21

Table 16. Internal noise levels – proposed flat 3 kitchen – 07.11.26 – 00.00-12.00

Location	Start time	dB $L_{Aeq,}$ (60 minutes)	dB $L_{90,}$ (60 minutes)
Proposed flat 3 Kitchen	00:00	23	20
Proposed flat 3 Kitchen	01:00	25	22
Proposed flat 3 Kitchen	**02:00**	**23**	**20**
Proposed flat 3 Kitchen	03:00	24	21
Proposed flat 3 Kitchen	04:00	24	21
Proposed flat 3 Kitchen	05:00	27	23
Proposed flat 3 Kitchen	**06:00**	**29**	**26**
Proposed flat 3 Kitchen	07:00	33	27
Proposed flat 3 Kitchen	08:00	33	26
Proposed flat 3 Kitchen	09:00	34	28
Proposed flat 3 Kitchen	10:00	34	29
Proposed flat 3 Kitchen	11:00	34	29

Based on the obtained data from the additional survey the following results are to be used as they represent the extremes for day and night assessment detailed below.

Measurement type	Recording time	Recorded $L_{Aeq,T}$ (dB)	Recorded L_{A90} (dB)
Day time – peak	6/11/26 – 12:00-13:00	32	29
Day time – lowest	6/11/26 – 22:00-23:00	25	21
Night time – peak	7/11/26 – 06:00-07:00	29	26
Night time - lowest	7/11/26 – 02:00-03:00	23	20

Measurement Assessments

Results- Day time (0700-2300)	Measurement	Comment
Measured Ambient Sound (L_a)	$L_{Aeq,60min}$ = 32dB	Units operational
Residual sound level (L_r)	$L_{Aeq,60min}$ = 25dB	Units assumed to be non-operational to determine the correction to be made to the ambient sound level and minimal traffic volume
Background sound level	$L_{A90,60min}$ = 21dB	Background sound measured with units assumed to be non-operational.
Specific Sound level	$L_{Aeq,60min}$ = 31dB	Correction calculated using $10\log(10^{La/10}\text{-}10^{Lr/10})$
Acoustic feature correction	0 dB	Noise consistent – no hums or knocking was audible
Rating level	31 + 0 dB = 31 dB	Concluded peak rating level
Excess of rating over Background sound level	**31 – 21 dB = 10dB**	**Day time – Significant adverse impact as excess is 10dB above background**

Results- Night time (2300-0700)	Measurement	Comment
Measured Ambient Sound (L_a)	$L_{Aeq,60min}$ = 29dB	Units operational
Residual sound level (L_r)	$L_{Aeq,60min}$ = 23dB	Units assumed to be non-operational to determine the correction to be made to the ambient sound level and minimal traffic volume
Background sound level	$L_{A90,60min}$ = 20dB	Background sound measured with units assumed to be non-operational.
Specific Sound level	$L_{Aeq,60min}$ = 28dB	Correction calculated using $10\log(10^{La/10}\text{-}10^{Lr/10})$
Acoustic feature correction	0 dB	Noise consistent – no hums or knocking was audible
Rating level	28 + 0 dB = 28 dB	Concluded peak rating level
Excess of rating over Background sound level	**28 – 20 dB = 8dB**	**Night time –Adverse impact as excess 8dB above background**

The existing build up is likely to present 'Significant Adverse impact' from the adjacent commercial units. Rating levels for both day and night time periods have been completed and demonstrate 10dB and 8dB respectively for noise levels above background levels.

As previously mentioned in section 7.1 above, the proposals for the site are to replace and upgrade all external elements including replacing the single glazed windows with double glazing, removing the roller shutter door for a cavity wall (this was noticeably a big weakness in allowing sound to transfer in to the stripped building) and upgrading ventilation with an appropriate strategy. The party wall will also be upgraded and a suitable build up to satisfy the requirements of Approved Document E should be used therefore ensuring a minimum Dntw + Ctr value of 43dB between the premises.

The previously completed break in calculations in table 14 demonstrate a minimum of a 10dB reduction to daytime noise levels and 8dB to night time noise levels. The validity of this assessment demonstrates a greater sound level based on location of that sound level meter data set and therefore should be deemed representative of the worst case.

This reduction will reduce the peak noise levels in line with the current lowest noise levels during both day and night periods as at present the difference between daytime peak and low levels was recorded at a disparity of 7dB and night time measurements were 6dB difference.

Once the proposed works have been completed the peak measured ambient sound should be equivalent to the residual sound levels and therefore be of 'low impact' on the proposed plots from commercial and industrial noise.

9.0 Conclusion

On review of the measurements recorded from tables 5-9, we can see that the existing noise climate is low. All measurements recorded demonstrate compliance with the planning conditions will be achieved once the proposed upgrades have been completed. The existing day and night LAeq, t values meet the requirements already. Improvements to the glazing and external walls will only improve this further.

Night time noise levels fell well below the maximum bedroom levels of 30dB on all bar one of the night time measurements.

Notably the L_{Amax} levels are above the requirements for night time measurements during the week (Monday night) exceeding the limit by 11dB on multiple occasions. The proposed build ups will reduce the number of excessive peaks sufficiently to meet the relevant requirements.

The proposed glazing and ventilation strategy should also ensure noise from the adjacent non-domestic properties will have a low impact on the new plots.

The ventilation systems to be used will be located in wet rooms only so therefore should not increase the noise levels within living rooms and bedrooms. Trickle ventilators noted above are assumed as open permanently to allow for sufficient air through flow. The window during testing was also slightly open to allow for through flow of air.

10.0 Recommendations:

Confirmation of the internal sound levels and an assessment of the industrial impact noise are recommended to be completed once the project is nearing completion and prior to occupancy. This is to conclusively assess that the predicted assessments above are valid. It is recommended a 24hour weekday survey would be sufficient and most appropriate to conclude industrial noise levels.