



26-28
Prospect
Street,
Caversham
RG4 8JG

Noise Impact Assessment

October 2023



Ref: 23-11919

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<i>Revision</i>	-
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1. Executive Summary

An assessment has been carried out of the present noise climate at **26-28 Prospect Street, Caversham RG4 8JG** and the impact of that noise on the proposed development. The proposed scheme involves the conversion of the first floor and second floor of the above building from offices to 1 x 2-bed dwelling (C3 Use Class).

The site is located in a mixed residential and commercial area near Caversham Town Centre. The ground floor of the buildings in the area are typically retail or restaurant use with the upper floors of some of the buildings in residential use. The ground floor of 26-28 Prospect Street is a dentist surgery.

The assessment is based on the results of a noise measurement survey that has been carried out over a 7 day period at the proposed development site and has considered the advice of local and national planning policy and best practice guidance.

It has been identified that the requirements of the draft Planning Condition 5 in respect of internal noise levels can only be achieved through careful consideration of the building envelope. We note that this does not necessitate that the windows be sealed shut but requires that an alternate primary means of ventilating the properties is provided (as defined by the Building Regulations Approved Document F). The construction assumptions that have led to this conclusion are:

- **The façade build-up will be a standard brick and block construction (or equivalent) to achieve an R_w of approximately 55 dB.**
- **A typical double-glazing system in a 4/12/4 configuration has been installed within the existing sash window frames, the noise level reduction of which has been measured on site by Syntegra as approximately 28 dB.**
- **For Bedroom 2 on the front façade:**
 - **A secondary glazed panel of 6mm acoustic laminated glass shall be installed with an air gap of at least 100mm from the existing windows.**
 - **An alternative means of ventilation, such as MVHR or equivalent, with cool air bypass, shall be installed as an alternative means of cooling and ventilation.**
 - **Purge ventilation (as defined by ADF) through open windows.**
- **For rear façade:**
 - **Open windows acceptable for ventilation and mitigation of overheating purposes.**

Overall, it has been shown that, through careful consideration of the building envelope construction, the proposed development would achieve the requirements of draft Planning Condition 5.

2. Introduction

This report has been prepared to support the planning application for the proposed development at **26-28 Prospect Street, Caversham RG4 8JG**. The proposed scheme involves the conversion of the first floor and second floor of the above building from offices to 1 x 2-bed dwelling (C3 Use Class).

The report assesses, through on-site noise measurements, the impact of the existing noise climate on the proposed development.

A glossary of acoustic terminology is provided in **Appendix 1**.

The site is located in a mixed residential and commercial area near Caversham Town Centre. The ground floor of the buildings in the area are typically retail or restaurant use with the upper floors of some of the buildings in residential use. The ground floor of 26-28 Prospect Street is a dentist surgery. The location of the proposed development site is provided in **Figure 2.1** and the proposed layout plans for the residential unit are provided in **Figure 2.2**.

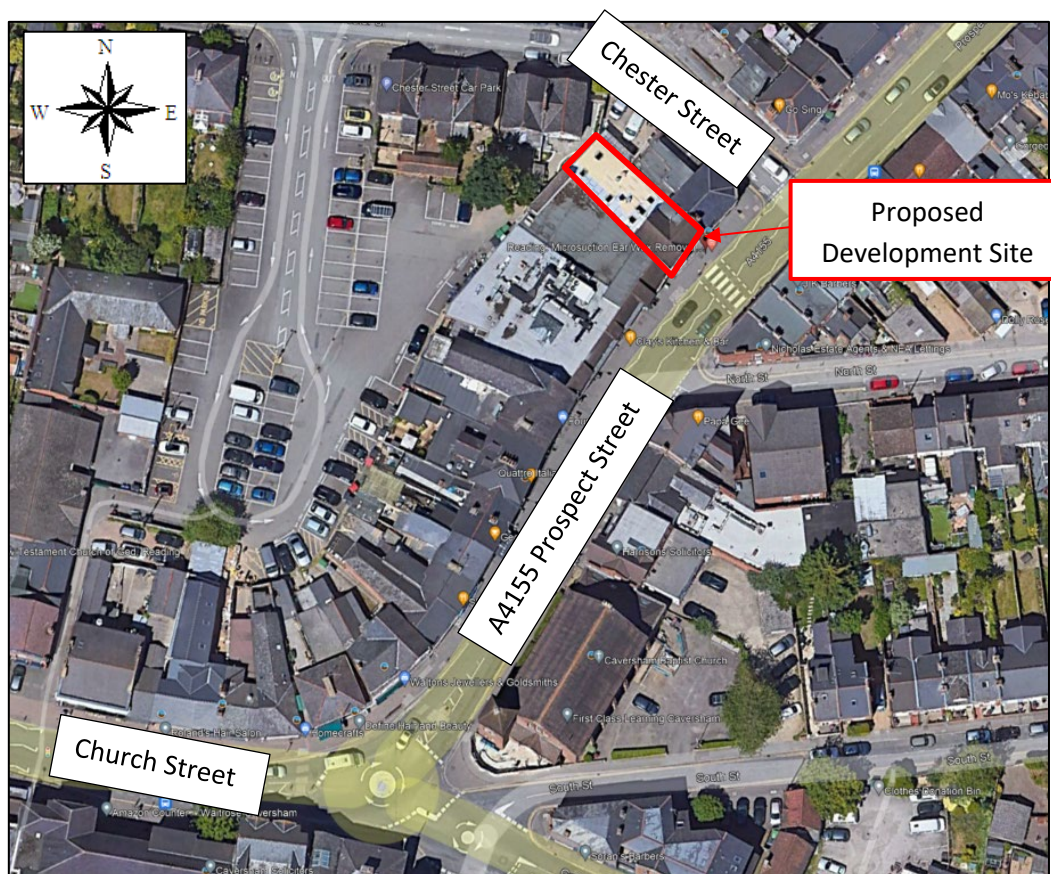


Figure 2.1: Site Location

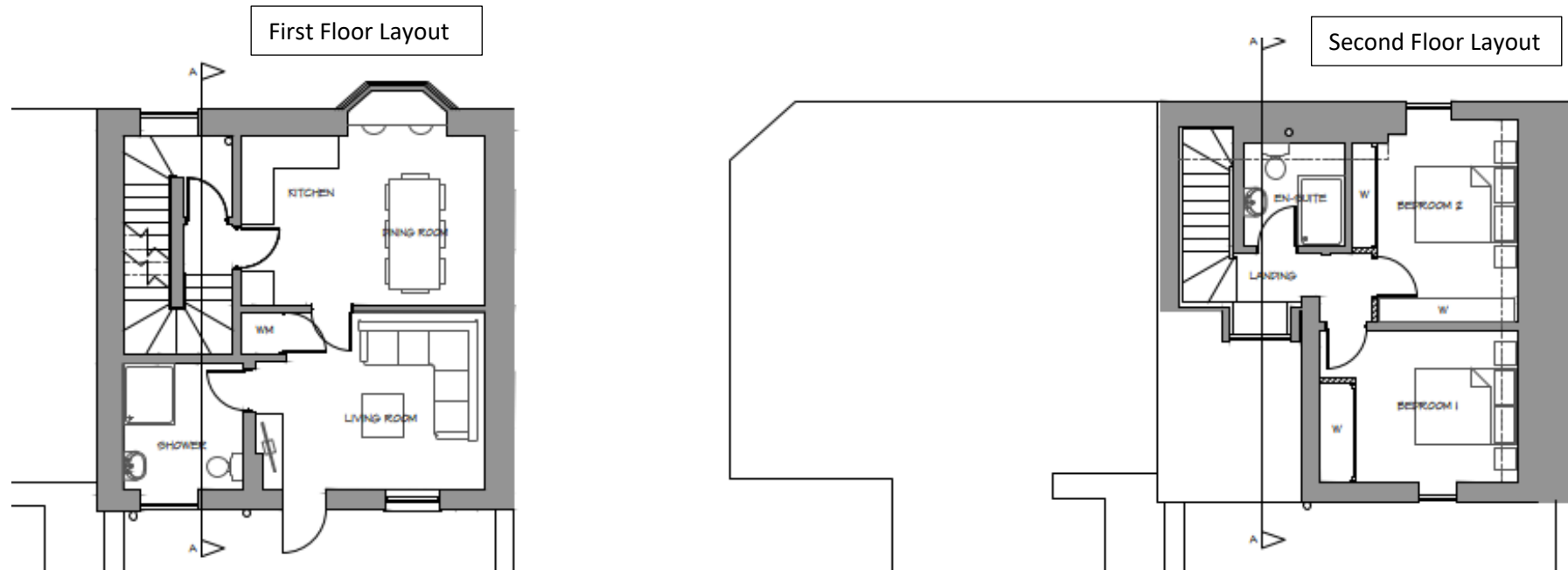


Figure 2.2: Proposed First and Second Floor Layouts

3. Planning Policy

3.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF) was released in March 2012 and last updated in July 2021. The purpose of the planning system is to contribute to the achievement of sustainable development and to encourage good design. There are three dimensions to sustainable development: economic, social and environmental.

Central to the NPPF, paragraph 10 states: *'At the heart of the National Planning Policy Framework is a presumption in favour of [permitting] sustainable development'*. This is expanded upon in paragraph 11, where it is stated:

'...For decision-taking this means:

- *approving development proposals that accord with an up-to-date development plan without delay; or*
- *where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:*
 - *the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or*
 - *any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole'*

Paragraph 174 states *'Planning policies and decisions should contribute to and enhance the natural and local environment by... preventing new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of... noise pollution...'*

Paragraph 185 states: *'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

- *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life (see Explanatory Note to the Noise Policy Statement for England (DEFRA)).*
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- *limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'*

3.2. Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) aims to *'through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*

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

3.3. Local Planning Policy and Conditions

The site is located within the administrative boundary of Reading Borough Council. Syntegra understand that the application is due to be granted planning permission (application ref: 221681), with the following draft planning condition that this report has been prepared to address:

“5. No development shall commence on site until a detailed scheme, informed by an assessment of the current noise environment, for protecting the dwellings from the external noise environment of the area has been submitted to and approved, in writing, by the Local Planning Authority. The scheme itself shall be designed, specified and constructed so that the sound insulation performance of the structure and the layout of the dwellings are such that the indoor ambient noise levels do not exceed the values detailed in Table 4 of BS 8233:2014 and the and that the individual noise events do not exceed 45 dB LA,max,F more than 10 times a night. Where opening windows will lead to an internal noise level increase of 5 dBA or greater above BS 8233:2014 recommended internal levels, the scheme shall include provision of alternative mechanical ventilation with minimum performance equivalent to a mechanical heat recovery (MVHR) system with cool air bypass as an alternative means of cooling and ventilation. Noise from the system should not result in BS8233 internal levels being exceeded.

Thereafter, the development shall not be carried out other than in accordance with the approved scheme which shall be completed before any part of the accommodation hereby approved is occupied, unless the Local Planning Authority otherwise agrees in writing.

REASON: These details are required due to insufficient information being contained within this submission and in order to safeguard the amenity of occupants in accordance with Policy CC8 of the Reading Borough Local Plan 2019.”

4. Guidance Documents

4.1. Planning Practice Guidance for Noise

The Planning Practice Guidance for Noise (PPG-Noise) was published in March 2014 and last updated in July 2019. The PPG provides advice on how to determine the noise impact on development:

'Plan-making and decision making need to 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 of amenity can be achieved.*

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. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.'

The document goes on to provide a definition for the levels of noise exposure at which an effect may occur:

'Significant observed adverse effect level: *this is the level of noise exposure above which significant adverse effects on health and quality of life occur.*

Lowest observed adverse effect level: *this is the level of noise exposure above which adverse effects on health and quality of life can be detected.*

No observed effect level: *this is the level of noise exposure below which no effect at all on health and quality of life can be detected.'*

It is important to understand that as the PPG-Noise does not provide any advice with respect to specific noise levels/ limits for different sources of noise, it is appropriate to consider other sources of advice and guidance documents when considering whether new developments would be sensitive to the prevailing acoustic environment.

4.2. British Standard BS 8233:2014

BS 8233: *Sound Insulation and Noise Reduction for Buildings – Code of Practice* has a number of design criteria and limits for intrusive external noise. The guidelines are designed to achieve reasonable resting/sleeping conditions in bedrooms and good listening conditions in other rooms and the most appropriate to the residential environment are reproduced in **Table 4.1**.

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

Table 4.1: Indoor Ambient Noise Levels for Dwellings

4.3. World Health Organization Guidelines for Community Noise

The World Health Organization (WHO) has developed guidelines designed to minimise the adverse effects of noise. The guidelines relevant to residential noise exposure are detailed in **Table 4.2**. For each specific environment the stated noise levels are the maximum noise levels to avoid the health effect noted.

Specific Environment	Critical health effect(s)	L_{Aeq} dB	Time Base (hours)	L_{Amax} (fast) dB
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedrooms	Sleep disturbance, night-time	30	8	45

Table 4.2: WHO Community Noise Guideline Values

The WHO guidelines state, with respect to the L_{Amax} threshold, that ‘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 and Vernet 1991)’.

4.4. Approved Document F

The Building Regulations Approved Document F (ADF) is concerned with ventilation in dwellings. Three types of ventilation are covered in the document, which are listed below and their interaction with the internal noise level criteria presented in Tables 3.3, 3.4 and 3.6 are presented:

- Whole dwelling (background) ventilation – the internal noise level criteria should be achieved with the ventilation system in operation (e.g. window or trickle vent open, or mechanical ventilation system operational).
- Extract ventilation to remove water vapour and indoor air pollutants where they are produced in significant quantities (e.g. kitchens, utility rooms and bathrooms) – internal noise level criteria are only appropriate for habitable rooms (e.g. living rooms and bedroom) so are not normally applicable.
- Purge ventilation to rapidly dilute air pollutants and water vapour when necessary, in habitable rooms – this is normally only for a very short period of time as required and internal noise level criteria are therefore not applicable.

4.5. Approved Document O

The Building Regulations Approved Document O (ADO) is a new Approved Document (coming into force June 2022) concerned with overheating in dwellings. In terms of noise criteria, the document suggests that when internal noise levels at night would be above a certain level, open windows would not be suitable for mitigating overheating. These levels are:

- 40 dB $L_{Aeq,8hrs}$ (2300 hrs – 0700 hrs)
- 55 dB L_{AFmax} more than 10 times per night (2300 hrs – 0700 hrs).

5. Baseline Noise Levels

In order to determine the extent to which the site is currently affected by noise, a detailed measurement study has been carried out at the site. Measurements have been carried out in order to characterise the existing noise climate over a 7 day period. The noise climate was dominated by road traffic noise and occasional pedestrian noise at the front of the site (overlooking Prospect Street) and by distant road traffic noise and occasional pedestrian noise at the rear of the site.

The noise measurements utilised two Type 1 Precision Sound Level Meters; a Norsonic 140 and a Svantek 958, both with current certificates of calibration. The full list of equipment is detailed in **Appendix 3**. Before and after the measurement period the equipment was calibrated in order to ensure that the equipment had remained within reasonable calibration limits (+/- 0.5 dB). Noise Measurements were carried out in consecutive 5 minutes periods with a 1 second resolution.

Measurements were carried out between 1200 hrs on Thursday 28th September 2023 and 1500 hrs on Wednesday 4th October 2023.

During the noise measurement survey, the temperature was up to 21°C during the daytime dropping to a low of 9°C overnight. There was generally a low to moderate (1-3 m/s) southerly wind throughout the survey period.

Noise measurements were carried out at Measurement Position 1 (MP1) in a façade location at 1st storey level on top of the ground floor roof, which extends out from the upper floors towards Prospect Street. The position was chosen to obtain representative noise levels at the front of the site.

Noise measurements were also carried out at Measurement Position 2 (MP2) in a façade location at 1st storey level on top of the flat roof at the rear. The position was chosen to obtain representative noise levels at the rear of the site.

The noise monitoring positions are shown in **Figure 5.1**.

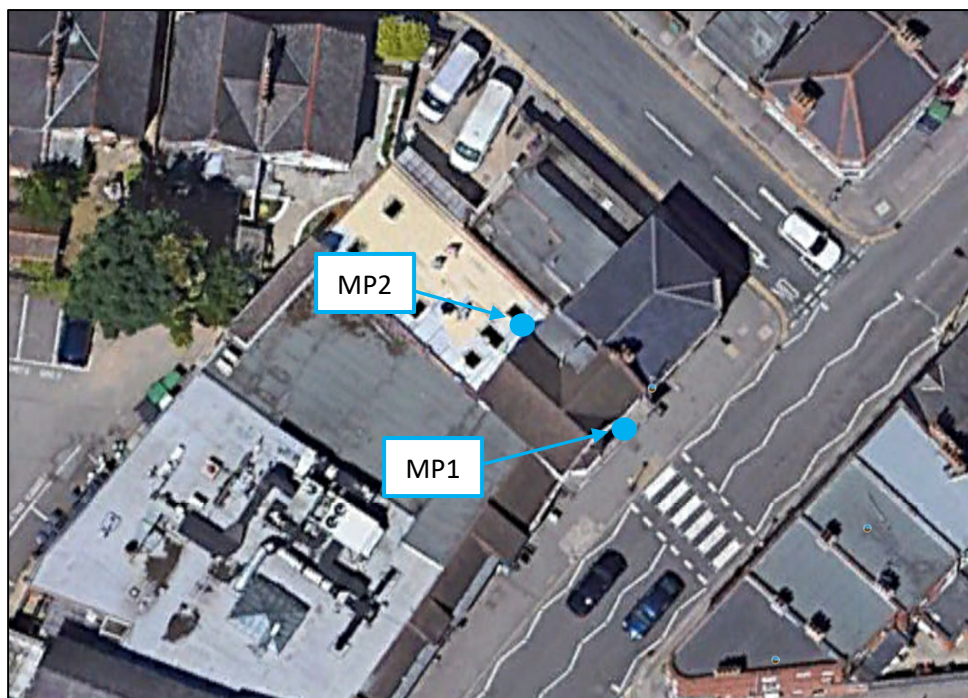


Figure 5.1: Noise Monitoring Location

Table 5.1 below displays a summary of the measured noise levels and detailed measurement results are presented in **Appendix 4**. The noise levels presented in **Table 5.1** have been corrected by -3 dB from the measured noise levels to obtain the equivalent free-field noise levels.

Measurement Position	Period (hours)	$L_{Aeq,T}$ (dB)	L_{Amax} (dB)
MP1	Daytime (0700 – 2300)	68	91
	Night-time (2300 – 0700)	62	81
MP2	Daytime (0700 – 2300)	48	69
	Night-time (2300 – 0700)	42	62

Table 5.1: Summary of Equivalent Free Field Noise Levels

Note: The average noise levels stated are logarithmic for L_{Aeq} . The $L_{Amax,F}$ noise levels stated are the arithmetic average of the hourly noise levels during the daytime (0700 hrs – 2300 hrs) and the 10th highest $L_{Amax,F,5min}$ noise level at night (2300 hrs – 0700 hrs), as noted

6. Internal Noise Level Assessment

6.1. Background Ventilation Conditions

Ideally internal noise levels should be achieved in as many properties as possible with windows open. Due to the relatively high noise levels present at the site, those habitable rooms on the front facade will not be able to achieve the requirement with windows open, and therefore the sound insulation of the building façade will be required to mitigate noise levels. We note that this does not necessitate that the windows be sealed shut but requires that an alternate primary means of ventilating the properties is provided (as defined by the Building Regulations Approved Document F). In carrying out our assessment, Syntegra have therefore made the following assumptions:

- The façade build-up will be a standard brick and block construction (or equivalent) to achieve an R_w of approximately 55 dB.
- A typical double-glazing system in a 4/12/4 configuration has been installed within the existing sash window frames, the noise level reduction of which has been measured on site by Syntegra as approximately 28 dB.

Table 6.1 identifies the likely L_{Aeq} and L_{Amax} internal noise levels, assuming windows closed, utilising the *Simple Calculation Method* described in BS 8233:2014. It can be seen that habitable rooms will achieve the requirements of the ProPG with closed windows.

Assessment Location	Period (hrs)	External Noise Levels (dB) (ref. Table 5.1)	Sound Reduction from Glazing (dBA)	Internal Noise Levels (dB)	Identified Noise Level Criteria	Compliance with Identified Criteria
Front Façade	Daytime $L_{Aeq,16hr}$ (0700 – 2300)	68	28	40	35	X
	Night-time $L_{Aeq,8hr}$ (2300 – 0700)	62		34	30	
	Night-time L_{Amax} (2300 – 0700)	81		53	45	
Rear Façade	Daytime $L_{Aeq,16hr}$ (0700 – 2300)	48	15 ¹	33	40 ²	✓
	Night-time $L_{Aeq,8hr}$ (2300 – 0700)	42		27	35 ²	
	Night-time L_{Amax} (2300 – 0700)	62		47	50 ²	

Table 6.1: Internal Noise Levels – Background Ventilation Conditions

Notes: (1) An open window is expected to provide approximately 15 dB reduction.

(2) A 5 dB uplift to internal noise level criteria has been applied due to open windows to provide ventilation, in line with the requirements of draft Planning Condition 5 (reference **Section 3.3**).

6.2. Overheating Conditions

Table 6.2 identifies the likely night-time L_{Aeq} and L_{Amax} internal noise levels assuming windows open and identifies whether open windows are suitable for the mitigation of overheating.

Assessment Location	Period (hrs)	External Noise Levels (dB) (ref. Table 5.1)	Sound Reduction from Open Window (dBA)	Predicted Internal Noise Levels (dB)	ADO Noise Level Criteria (dB)	Open Windows Suitable for the Mitigation of Overheating
Front Façade	Night-time $L_{Aeq,8hr}$ (2300 – 0700)	62	15	47	40	No
	Night-time L_{Amax} (2300 – 0700)	81		66	55	
Rear Façade	Night-time $L_{Aeq,8hr}$ (2300 – 0700)	42	15	27	40	Yes
	Night-time L_{Amax} (2300 – 0700)	62		47	55	

Table 6.2: Internal Noise Levels – Overheating Conditions

6.3. Mitigation

It is evident, from **Table 6.1**, that the installed windows at the front façade do not provide sufficient sound insulation to achieve the identified noise level criteria. A minimum total sound insulation of 36 dB should be targeted to ensure appropriate internal noise levels. It is noted that the only habitable room on the front façade is Bedroom 2 on the second floor and therefore this requirement on applies to that room.

It is recommended that a secondary glazing system is installed for the second floor bedroom with the following configuration:

- **Minimum 100mm air gap between existing windows and secondary glazing panel.**
- **Secondary glazing panel should be 6mm of acoustic laminated glass.**
- **All joints around frame sealed.**

It is also noted that, in accordance with the requirements of draft Planning Condition 5 the following ventilation system should be installed for Bedroom 2: *the scheme shall include provision of alternative mechanical ventilation with minimum performance equivalent to a mechanical heat recovery (MVHR) system with cool air bypass as an alternative means of cooling and ventilation. Noise from the system should not result in BS8233 internal levels being exceeded.*

7. Conclusion

An assessment has been carried out of the present noise climate at **26-28 Prospect Street, Caversham RG4 8JG** and the impact of that noise on the proposed development.

The assessment is based on the results of a noise measurement survey that has been carried out over a 7 day period at the proposed development site and has considered the advice of local and national planning policy and best practice guidance.

It has been identified that the requirements of draft Planning Condition 5 in respect of internal noise levels can only be achieved through careful consideration of the building envelope. We note that this does not necessitate that the windows be sealed shut but requires that an alternate primary means of ventilating the properties is provided (as defined by the Building Regulations Approved Document F). The construction assumptions that have led to this conclusion are:

- **The façade build-up will be a standard brick and block construction (or equivalent) to achieve an R_w of approximately 55 dB.**
- **A typical double-glazing system in a 4/12/4 configuration has been installed within the existing sash window frames, the noise level reduction of which has been measured on site by Syntegra as approximately 28 dB.**
- **For Bedroom 2 on the front façade:**
 - **A secondary glazed panel of 6mm acoustic laminated glass shall be installed with an air gap of at least 100mm from the existing windows.**
 - **An alternative means of ventilation, such as MVHR or equivalent, with cool air bypass, shall be installed as an alternative means of cooling and ventilation.**
 - **Purge ventilation (as defined by ADF) through open windows.**
- **For rear façade:**
 - **Open windows acceptable for ventilation and mitigation of overheating purposes.**

Overall, it has been shown that, through careful consideration of the building envelope construction, the proposed development would achieve the requirements of draft Planning Condition 5.

8. Appendix 1: Glossary of Acoustic Terminology

Term	Description
'A'-Weighting	<i>This is the main way of adjusting measured sound pressure levels to take into account human hearing, and our uneven frequency response.</i>
Decibel (dB)	<i>This is a tenth (deci) of a bel. The decibel can be a measure of the magnitude of sound, changes in sound level and a measure of sound insulation. Decibels are not an absolute unit of measurement but are an expression of ratio between two quantities expressed in logarithmic form.</i>
$L_{Aeq,T}$	<i>The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. T may be as short as 1 second when used to describe a single event, or as long as 24 hours when used to describe the noise climate at a specified location. $L_{Aeq,T}$ can be measured directly with an integrating sound level meter.</i>
L_{A10}	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 10 per cent of a given time and is the L_{A10T}. The L_{A10} is used to describe the levels of road traffic noise at a particular location.</i>
L_{A50}	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 50 per cent of a given time and is the L_{A50T}.</i>
L_{A90}	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 90 per cent of a given time and is the L_{A90T}. The L_{A90} is used to describe the background noise levels at a particular location.</i>
L_{Amax}	<i>The 'A'-weighted maximum sound pressure level measured over a measurement period.</i>

9. Appendix 2: Professional Statement

David Yates

David Yates is a full member of the Institute of Acoustics (MIOA) and has approximately 15 years' experience in acoustic consultancy. David has particular expertise in environmental noise providing acoustic consultancy for residential and mixed use planning applications, plant noise and vibration, construction noise and the design of acoustic, noise and vibration control. David is also experienced in providing sound insulation testing and design advice. David is familiar with the application of all relevant standards associated with his work, including but not limited to, BS 4142, BS 8233, BS 7445, BS 6472, BS 5228, BS 140 series, BS 16283 series and BS 717 series. David manages the acoustic department and is responsible for maintaining Syntegra's ANC membership.

10. Appendix 3: List of Equipment

Equipment Type	Manufacturer	Serial Number	Calibration Certification Number	Date of Last Calibration Check
Nor-140 Type 1 Sound Level Meter	Norsonic	1406389	TCRT21/1767	November 2021
Nor-1225 Microphone	Norsonic	225519	TCRT21/1767	November 2021
Nor-1209 Preamplifier	Norsonic	20598	TCRT21/1767	November 2021
Nor-1251 Sound Calibrator	Norsonic	35115	TCRT22/1700	November 2022
SV36 Sound Calibrator	Svantek	73463	TCRT22/1680	November 2022
SVAN 958	Svantek	92843	TCRT23/1132	February 2023
MK 255 Microphone	Microtech Gefell	20197	TCRT23/1132	February 2023
SV12L Preamplifier	Svantek	106885	TCRT23/1132	February 2023

11. Appendix 4: Detailed Noise Measurement Results

Measured Noise levels – MP1 – 28.09.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
1200-1300	69	84	70	68
1300-1400	69	85	71	69
1400-1500	69	91	70	68
1500-1600	75	105	79	67
1600-1700	69	93	71	67
1700-1800	68	91	70	66
1800-1900	68	88	69	67
1900-2000	69	88	69	68
2000-2100	69	89	70	67
2100-2200	69	94	70	67
2200-2300	67	92	68	63
2300-0000	64	84	66	62
1200-2300	70	91	71	67
2300-0000	64	84	66	62

Measured Noise levels – MP1 – 29.09.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	60	83	63	56
0100-0200	61	90	62	54
0200-0300	60	79	62	56
0300-0400	60	80	61	56
0400-0500	62	84	63	55
0500-0600	68	99	70	63
0600-0700	75	104	72	68
0700-0800	71	91	72	70
0800-0900	72	97	74	69
0900-1000	73	105	72	69
1000-1100	72	100	71	69
1100-1200	71	102	72	69
1200-1300	71	102	73	68
1300-1400	69	92	71	68
1400-1500	73	103	74	68
1500-1600	69	94	69	68
1600-1700	68	95	69	66
1700-1800	68	91	68	67
1800-1900	69	92	71	67
1900-2000	70	98	73	67
2000-2100	72	102	68	67
2100-2200	68	91	69	66
2200-2300	66	87	66	65
2300-0000	64	91	66	62
0700-2300	71	96	71	68
2300-0700	68	89	65	59

Measured Noise levels – MP1 – 30.09.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	63	81	65	60
0100-0200	61	80	62	59
0200-0300	59	84	62	55
0300-0400	60	87	61	56
0400-0500	60	82	63	57
0500-0600	62	82	63	60
0600-0700	65	82	66	64
0700-0800	68	86	69	67
0800-0900	72	103	71	69
0900-1000	69	87	70	68
1000-1100	71	100	71	68
1100-1200	72	105	68	66

1200-1300	68	89	69	67
1300-1400	68	88	70	67
1400-1500	71	99	72	66
1500-1600	70	94	72	67
1600-1700	69	87	70	68
1700-1800	73	104	73	67
1800-1900	68	92	69	67
1900-2000	69	91	70	67
2000-2100	67	96	69	66
2100-2200	74	108	72	65
2200-2300	65	83	66	65
2300-0000	65	83	66	63
0700-2300	70	94	70	67
2300-0700	63	83	64	59

Measured Noise levels – MP1 – 01.10.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	63	79	64	62
0100-0200	62	87	64	59
0200-0300	66	102	62	55
0300-0400	60	83	63	54
0400-0500	58	80	62	51
0500-0600	59	78	62	56
0600-0700	64	85	66	60
0700-0800	66	88	68	62
0800-0900	70	86	71	69
0900-1000	70	88	71	69
1000-1100	73	109	70	68
1100-1200	68	85	69	67
1200-1300	68	94	69	67
1300-1400	69	89	70	67
1400-1500	74	108	74	66
1500-1600	71	103	70	68
1600-1700	70	85	70	69
1700-1800	70	88	71	69
1800-1900	70	91	70	69
1900-2000	69	90	70	67
2000-2100	68	87	70	66
2100-2200	68	93	69	66
2200-2300	65	82	66	62
2300-0000	66	100	65	59
0700-2300	70	92	70	67
2300-0700	63	87	63	57

Measured Noise levels – MP1 – 02.10.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	60	82	62	56
0100-0200	57	80	59	52
0200-0300	57	83	60	36
0300-0400	58	82	61	32
0400-0500	62	84	63	58
0500-0600	66	84	69	61
0600-0700	70	88	72	68
0700-0800	71	88	72	70
0800-0900	77	114	73	68
0900-1000	70	88	71	69
1000-1100	69	88	70	66
1100-1200	68	91	70	66
1200-1300	74	110	70	67
1300-1400	68	88	69	67
1400-1500	70	100	70	67
1500-1600	69	87	70	67
1600-1700	68	91	68	66
1700-1800	67	90	68	66
1800-1900	69	92	70	67
1900-2000	71	98	71	69
2000-2100	69	85	70	68
2100-2200	69	103	69	68
2200-2300	68	93	69	65
2300-0000	64	80	66	61
0700-2300	71	94	70	67
2300-0700	64	83	64	53

Measured Noise levels – MP1 – 03.10.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	62	83	63	59
0100-0200	58	81	60	33
0200-0300	56	80	59	43
0300-0400	60	81	63	53
0400-0500	61	83	63	55
0500-0600	67	84	70	64
0600-0700	71	95	72	69
0700-0800	79	114	72	67
0800-0900	68	85	69	67
0900-1000	73	106	69	66
1000-1100	69	84	70	67

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
1100-1200	71	98	70	68
1200-1300	69	93	70	67
1300-1400	75	110	70	67
1400-1500	69	91	70	67
1500-1600	70	101	72	67
1600-1700	71	105	70	66
1700-1800	67	90	68	66
1800-1900	68	87	69	66
1900-2000	69	92	70	68
2000-2100	69	84	70	68
2100-2200	68	96	69	66
2200-2300	67	79	68	64
2300-0000	67	97	66	63
0700-2300	72	95	70	67
2300-0700	65	86	64	55

Measured Noise levels – MP1 – 04.10.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	62	86	64	57
0100-0200	57	82	61	36
0200-0300	59	82	62	36
0300-0400	59	82	63	40
0400-0500	60	79	63	57
0500-0600	67	85	69	61
0600-0700	70	90	71	69
0700-0800	72	87	73	71
0800-0900	71	85	72	70
0900-1000	72	97	73	70
1000-1100	71	90	72	70
1100-1200	70	85	71	69
1200-1300	74	110	71	69
1300-1400	72	102	72	69
1400-1500	71	99	74	69
0700-1500	72	94	72	70
0000-0700	65	84	65	51

Measured Noise levels – MP2 – 28.09.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
1200-1300	52	79	54	50
1300-1400	51	72	54	49
1400-1500	51	69	54	49
1500-1600	54	80	58	49
1600-1700	50	70	51	48
1700-1800	50	70	51	48
1800-1900	49	67	50	48
1900-2000	49	65	51	49
2000-2100	49	65	50	48
2100-2200	49	72	52	47
2200-2300	47	73	49	46
2300-0000	45	66	46	43
1200-2300	51	71	52	48
2300-0000	45	66	46	43

Measured Noise levels – MP2 – 29.09.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	42	56	43	40
0100-0200	43	63	44	40
0200-0300	52	72	57	43
0300-0400	44	59	47	40
0400-0500	41	58	43	39
0500-0600	47	74	50	42
0600-0700	53	81	50	47
0700-0800	51	66	51	49
0800-0900	52	73	54	51
0900-1000	55	85	58	51
1000-1100	53	86	54	50
1100-1200	52	74	53	50
1200-1300	52	79	54	51
1300-1400	54	74	57	51
1400-1500	53	77	54	50
1500-1600	52	76	52	50
1600-1700	50	65	52	49
1700-1800	51	68	52	50
1800-1900	52	70	53	50
1900-2000	52	75	54	50
2000-2100	50	72	51	48

2100-2200	50	75	51	48
2200-2300	47	71	49	45
2300-0000	45	63	46	44
0700-2300	52	74	53	50
2300-0700	48	66	47	42

Measured Noise levels – MP2 – 30.09.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	43	60	44	41
0100-0200	43	58	44	41
0200-0300	42	57	44	39
0300-0400	40	61	41	37
0400-0500	40	57	42	38
0500-0600	42	63	43	41
0600-0700	44	57	45	42
0700-0800	46	64	47	45
0800-0900	51	73	54	47
0900-1000	50	70	51	49
1000-1100	51	76	53	49
1100-1200	51	71	53	49
1200-1300	53	76	51	49
1300-1400	50	66	52	48
1400-1500	50	69	52	48
1500-1600	51	74	54	49
1600-1700	51	66	53	48
1700-1800	52	72	52	50
1800-1900	51	69	52	50
1900-2000	51	71	52	50
2000-2100	50	73	51	49
2100-2200	52	79	52	48
2200-2300	48	69	49	47
2300-0000	45	65	46	43
0700-2300	51	71	52	48
2300-0700	43	60	44	40

Measured Noise levels – MP2 – 01.10.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	43	55	44	41
0100-0200	42	65	43	40
0200-0300	43	73	41	37

0300-0400	40	63	41	37
0400-0500	39	54	41	37
0500-0600	44	70	43	39
0600-0700	42	59	44	40
0700-0800	45	60	46	42
0800-0900	48	71	50	47
0900-1000	49	67	50	48
1000-1100	51	75	54	49
1100-1200	49	62	50	48
1200-1300	50	75	51	48
1300-1400	51	73	52	49
1400-1500	52	79	54	49
1500-1600	52	75	54	49
1600-1700	50	67	51	49
1700-1800	51	75	53	49
1800-1900	52	82	55	49
1900-2000	49	68	50	48
2000-2100	48	67	49	47
2100-2200	48	66	49	47
2200-2300	46	59	47	44
2300-0000	46	70	50	42
0700-2300	50	70	51	48
2300-0700	43	64	43	39

Measured Noise levels – MP2 – 02.10.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	40	57	43	35
0100-0200	40	55	41	38
0200-0300	39	55	40	36
0300-0400	39	54	41	37
0400-0500	40	55	41	38
0500-0600	44	60	45	42
0600-0700	47	63	49	45
0700-0800	49	71	50	48
0800-0900	52	82	54	48
0900-1000	49	65	49	48
1000-1100	48	67	51	46
1100-1200	48	69	50	47
1200-1300	52	82	51	47
1300-1400	49	66	50	47
1400-1500	49	77	52	48
1500-1600	52	76	56	48
1600-1700	49	71	50	48

1700-1800	50	76	51	49
1800-1900	51	77	52	49
1900-2000	50	73	51	48
2000-2100	48	65	50	47
2100-2200	48	75	49	45
2200-2300	47	67	48	45
2300-0000	45	66	46	44
0700-2300	50	72	51	47
2300-0700	43	58	43	39

Measured Noise levels – MP2 – 03.10.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	44	71	46	42
0100-0200	38	54	41	36
0200-0300	38	57	40	34
0300-0400	40	62	41	39
0400-0500	40	57	42	38
0500-0600	47	80	50	42
0600-0700	51	72	53	47
0700-0800	53	80	51	49
0800-0900	51	73	51	49
0900-1000	54	75	56	49
1000-1100	54	74	56	50
1100-1200	53	71	55	51
1200-1300	53	72	55	50
1300-1400	53	77	55	51
1400-1500	52	71	54	50
1500-1600	52	75	53	49
1600-1700	51	71	53	50
1700-1800	51	72	53	49
1800-1900	49	63	49	48
1900-2000	49	65	51	48
2000-2100	49	70	50	48
2100-2200	49	76	49	46
2200-2300	46	58	47	45
2300-0000	45	71	45	42
0700-2300	52	72	52	49
2300-0700	45	66	45	40

Measured Noise levels – MP2 – 04.10.2023

Time	L _{Aeq,T} (dB)	L _{AF(max)} (dB)	L _{A10} (dB)	L _{A90} (dB)
0000-0100	43	64	44	40
0100-0200	41	56	43	38
0200-0300	40	56	43	38
0300-0400	41	58	42	39
0400-0500	42	58	45	40
0500-0600	46	58	47	44
0600-0700	48	64	49	47
0700-0800	53	84	55	50
0800-0900	51	67	51	50
0900-1000	51	71	52	50
1000-1100	52	70	53	51
1100-1200	51	68	52	50
1200-1300	53	73	54	51
1300-1400	53	80	55	51
1400-1500	52	78	55	50
0700-2300	52	74	53	50
2300-0700	44	59	45	41

