



Project No. 23761

1 Castle Hill Crescent

Noise Impact Assessment

Buckley Developments Ltd



Revision	Date	Prepared By	Reviewed By	Comments
V1	19/11/25	Bailey Hoare	Jonathon Hill	First Issue

The report has been prepared in good faith by enevo, with all reasonable skill and care, based on information provided or available at the time of its preparation and within the scope of work agreement with the Client. We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above. The report is provided for the sole use of the named Client and is confidential to them and their professional advisors. No responsibility is accepted to other parties

Limitations to this Report

This report entails a physical investigation of the site with a sufficient number of sample measurements to provide quantitative information concerning the type and degree of noise affecting the site. The objectives of the investigation have been limited to establishing sources of noise material to carrying out an appropriate assessment.

The number and duration of noise measurements have been chosen to give reasonably representative information on the environment within the agreed time, and the locations of measurements have been restricted to the areas unoccupied by building(s) that are easily accessible without undue risk to our staff.

As with any sampling, the number of sampling points and the methods of sampling and testing cannot preclude the existence of “hotspots” where noise levels may be significantly higher than those actually measured due to previously unknown or unrecognised noise emitters. Furthermore, noise sources may be intermittent or fluctuate in intensity and consequently may not be present or may not be present in full intensity for some or all of the survey duration.

1.0 Introduction

Details of Instruction

Solid Void has appointed Enevo, on behalf of Buckley Developments Ltd to carry out a noise impact assessment for the residential flats at 1 Castle Hill Crescent, Rochdale.

The noise assessment has been conducted with reference to the National Planning Policy Framework and the appropriate British Standards, recognised guidance & reference documents relevant to this site.

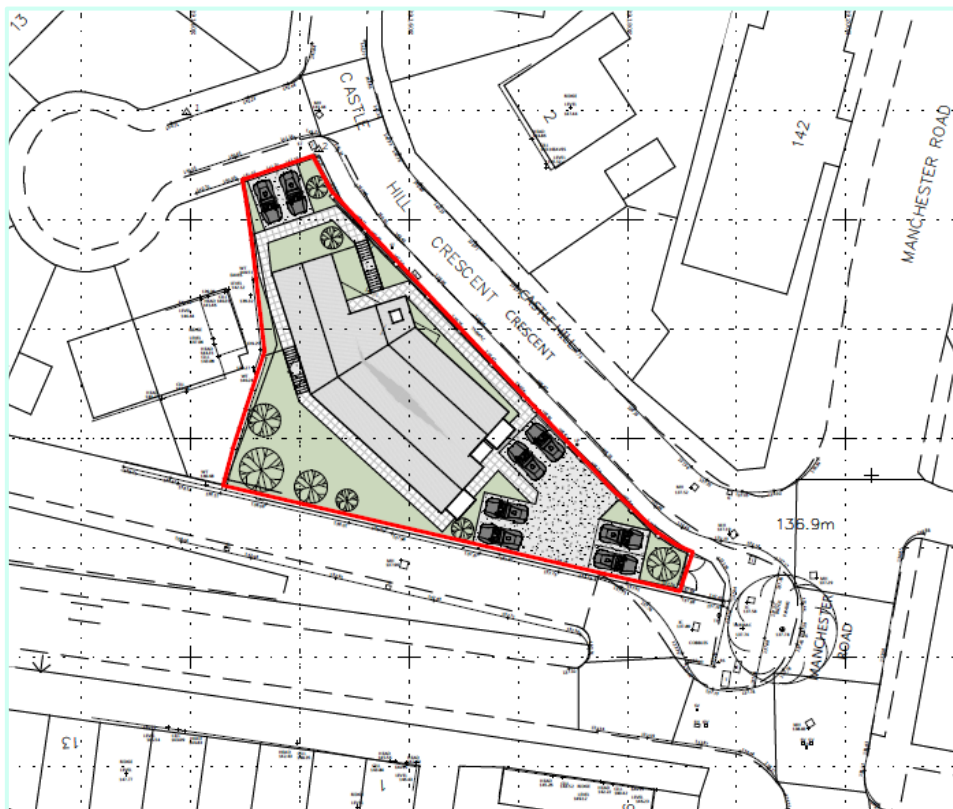
This report describes a noise survey of the site and the subsequent analysis to determine the noise environment of the proposed development. It then compares the results with the adopted criteria and, where applicable, recommendations are made with respect to the design of the development.

To support this document a glossary of technical terminology is included in Appendix A.

Site Conditions

The site is currently a single dwelling at 1 Castle Hill Crescent in Rochdale. The site is bound by a number of residential dwellings and Manchester Road to the east. The proposals are to demolish the single dwelling and construct a 3-storey building that will house 8 flats. These flats will be a mixture of 1-bed, 2-bed and studio flats.

Figure 1
Proposed Site Plan



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2.0 Guidance

National Policy

National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the NPPF is a presumption in favour of sustainable development. It requires Local Plans to be consistent with the principles and policies set out in the NPPF with the objective of contributing to the achievement of sustainable development.

The NPPF states that the planning system has three overarching objectives in achieving sustainable development including a requirement to *"contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

Paragraph 180 of the NPPF states:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

...

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability."

Additionally, Paragraph 191 of the NPPF 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:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life..."

Noise Policy Statement for England

The 'Noise Policy Statement for England' sets out the following vision for ongoing noise policy:

"Promote good health and a quality of life through the effective management of noise within the context of Government policy on sustainable development."

This vision should be achieved through the following Noise Policy Aims:

"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.”

To achieve this vision, the Noise Policy Statement sets 3 noise levels to be defined by the assessor:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms: below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

The Noise Policy Statement considers that noise levels above the SOAEL would be seen to have, by definition, significant adverse effects and would be considered unacceptable. Where the assessed noise levels fall between the LOAEL and the SOAEL noise levels, the Policy Statement requires that:

“...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development... This does not mean that such adverse effects cannot occur.”

Where noise levels are below the LOAEL, it is considered there will be no adverse effect. Once noise levels are below the NOEL, there will be no observable change.

British Standards and Guidance Documents

Approved Document F1 – Means of Ventilation

Whilst not directly related to the acoustic performance and noise impact assessment covered within this report, Table 1.7 of the approved document provides the following guidance with respect to minimum passive ventilator space installed within the external façade of spaces:

Table 1
Minimum Passive Ventilator Space with External Facades

Room	Minimum equivalent area of background ventilators for dwellings with multiple floors	Minimum equivalent area of background ventilators for single-storey dwellings
Habitable Rooms	8000mm ²	10000mm ²
Kitchen	8000mm ²	10000mm ²
Utility Room	No minimum	No minimum
Bathroom	4000mm ²	4000mm ²
Sanitary accommodation	No minimum	No minimum

ANC Green Book: Environmental Noise Measurement Guide

The ANC Green Book provides practical guidance around the measurement and analysis of environmental sound. Areas which are covered include the preparation, execution and reporting of site survey work. It also outlines a number of industry standard practices for the determination of L_{Amax} as a design case.

British Standard (BS) 7445-1:2003 – Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures

This document defines the basic quantities to be used for the description of noise in community environments and describes basic procedures for the determination of these quantities.

The methods and procedures described in this British Standard are intended to be applicable to sounds from all sources, individually and in combination, which contribute to the total noise at a site. This British Standard does not specify limits for environmental noise.

BS 8233:2014 – Guidance of Sound Insulation and Noise Reduction in Buildings

BS 8233:2014 provides a methodology to calculate the noise levels entering a building through facades and façade elements. It also provides details of appropriate measures for sound insulation between dwellings and recommended internal noise levels which are provided for a variety of situations.

ISO 9613 Attenuation of Sound During Propagation Outdoors

ISO 9613 presents a calculation methodology for the determination of the attenuation of sound outdoors. The methodology enables the prediction the levels of environmental noise at a distance from a variety of sources.

3.0 Assessment Methodology

Potential Sources of Environmental Noise

The following sources of noise are considered in the context of this site:

Table 2
Assessment Methodology

Assessment Type	Relevant Assessment Methodology
Amenity on Potential Occupants	BS 8233:2014

Selection of Noise Criteria

With reference to the guidance detailed in Section 2 the following criteria have been selected to determine the threshold of effect levels in the context of the National Planning Policy Framework and Noise Policy Statement for England.

Table 3
Assessment Criteria: BS 8233:2014

Effect Level	Criteria	Justification
LOAEL	Internal Noise Levels within site below 35 dB $L_{Aeq, 16hr}$ / 30 dB $L_{Aeq, 8hr}$ / 45 dB L_{AFMax}	Noise Levels within BS 8233:2014 criteria
SOAEL	Internal Noise Levels within site exceed 40 dB $L_{Aeq, 16hr}$ / 35 dB $L_{Aeq, 8hr}$ / 50 dB L_{AFMax}	None – Planning guidance requires that impacts must be reduced below the SOAEL through mitigation, with adverse impacts above the LOAEL but below the SOAEL being mitigated as far as is reasonable

With reference to the guidance within BS 8233:2014, the ProPG and the 'ANC Green Book: Environmental Noise Measurement Guide' (ANC, 2019), the predicted internal levels have been assessed against the following criteria:

- $L_{Aeq, 16hr}$ (Daytime) – internal levels must not exceed 35dB $L_{Aeq, 16h}$ and external levels must not exceed 50 dB $L_{Aeq, 16h}$;
- $L_{Aeq, 8hr}$ (Night-time) – internal levels must not exceed 30dB $L_{Aeq, 8h}$;
- L_{AFMax} (Typical) – the 95th percentile of all 1min night-time L_{Amax} noise levels must not exceed 45dB L_{AFMax} ;

With regard to the determination of the L_{Amax} design case, the ANC Green Book Notes:

"Only in the most extreme situations would it be appropriate to adopt the highest measured L_{Amax} value... as a descriptor of an appropriate design case. In most situations, an average, typical or modal value, specific to the time period in question, needs to be selected or derived from the survey data. The frequency of occurrence of specific L_{Amax} events is critical in determining their typicality (hence the importance of sample period selection during scoping) ... Some common approaches to selecting the Design Case L_{Amax} , for instance, include ranking events during an assessment period and selecting the n th value (NB sample period is critical), taking a 10th percentile 'high average' level or simply selecting an appropriate looking value 'by eye'."



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As can be seen above, the approach adopted within the assessment is more onerous than recommended within the ANC Green Book. By adopting the 95th percentile as the design case it is considered that the assessment presents a reasonable worst-case approach.

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4.0 Environmental Noise Survey

Noise measurements were undertaken externally during both the daytime and night-time. The measurements were taken from 28th to 30th of October 2025.

Survey Methodology and Locations

The equipment used during this survey is listed below in Table 5 and have been calibrated before and after the measurement duration and no significant drift was found to have occurred ($>0.2\text{dB}$). The noise monitoring equipment has been calibrated to a traceable standard within the 24 months before the survey.

Table 4
Noise Monitoring Equipment

Equipment	Serial Number
Nti XL3 Sound Level Meter	01397
Nti XL3 Sound Level Meter	01405

Two measurement locations have been surveyed in order to establish both the ambient and background noise levels at the site. Location 1 was at a height of 1.8m and Location 2 at 1.8m Figure 2 below shows the measurement locations in relation the proposed site.

Figure 2
Noise Monitoring Locations



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Survey Results

The weather monitoring during the unattended survey was collected from the WOW Met Office data website. Data has been removed for high winds over 5 m/s and any precipitation. Table 6 below, shows the results of the survey. Full survey results are available on request.

Table 5
Summary of Measured Noise Levels – dB

Location	Date	Period	Time (h)	L _{Aeq, T}	L _{A90}	L _{AfMax}
1	28/10/25	Daytime	1820-2300	54.5	48.5	82.3
	28/10/25-29/10/25	Night-time	23:00-0700	52.3	45.7	73.1
	29/10/25	Daytime	0700-2300	64.6	53.3	86.5
	29/10/25-30/10/25	Night-time	2300-0700	50.6	40.2	80.7
	30/10/25	Daytime	0700-1100	59.7	50.8	88.2
2	28/10/25	Daytime	1820-2300	49.9	45.2	77.5
	28/10/25-29/10/25	Night-time	2300-0700	47.8	44.0	71.3
	29/10/25	Daytime	0700-2300	51.4	46.5	75.1
	29/10/25-30/10/25	Night-time	2300-0700	43.6	36.6	70.1
	30/10/25	Daytime	0700-1100	57.0	45.5	74.6

Observations on Site

The existing noise environment is dominated by road traffic noise from Manchester Road.

5.0 Noise Modelling Methodology

Data Sources

A noise model for this assessment has been created using CadnaA modelling suite and the noise model has been based on the spatial settings and data sources identified in the Table below.

Table 6
Noise Model Input Data

Model Parameter	Scenario	Data Source	Assumptions
Site Plans	All	Proposed Plans 01 Drg. Nos. SK01, SK03, SK04, SK05 (DP Architectural Services Ltd December 2024)	Existing Surrounding Buildings assumed at 8.5m (2 Storey)
Ground Heights	All	Environment Agency Open Data LiDAR Digital Terrain Model (2m Resolution)	None
Ground Absorption	All	N/A	Hard ground conditions on and off site (G=0), roads hard ground conditions (G=0)
Reflections	All	N/A	3 rd order reflections

Source Noise Assumptions

Noise Model Validation

The noise models developed to support this assessment have been validated based on the highest measured daytime ($L_{Aeq,16h}$), and night-time ($L_{Aeq,8h}$, L_{AfmMax}) at both locations. This has been completed to allow for an accurate estimation of the noise level impacting upon the facades of the proposed residential development. Tables 8-10 below presents a summary of the validation exercise.

Table 7
Daytime Modelled vs. Monitored Results, dB

Monitoring Period	Monitored L_{Aeq} , dB	Modelled L_{Aeq} , dB	Difference
Location 1	64.5	64.5	0.0
Location 2	51.4	52.4	+1.0

Table 8
Night-time Modelled vs. Monitored Results, dB

Monitoring Period	Monitored L_{Aeq} , dB	Modelled L_{Aeq} , dB	Difference
Location 1	50.5	50.5	0.0
Location 2	43.6	43.6	0.0

Table 9
Night-time Max Modelled vs. Monitored Results, dB

Monitoring Period	Monitored L_{Aeq} , dB	Modelled L_{Aeq} , dB	Difference
Location 1	65.3	65.3	0.0
Location 2	58.1	58.1	0.0

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As can be seen from the tables above the modelled results have been suitably verified being below $\pm 3\text{dB}$ of the monitored noise levels.

6.0 Residential Assessment

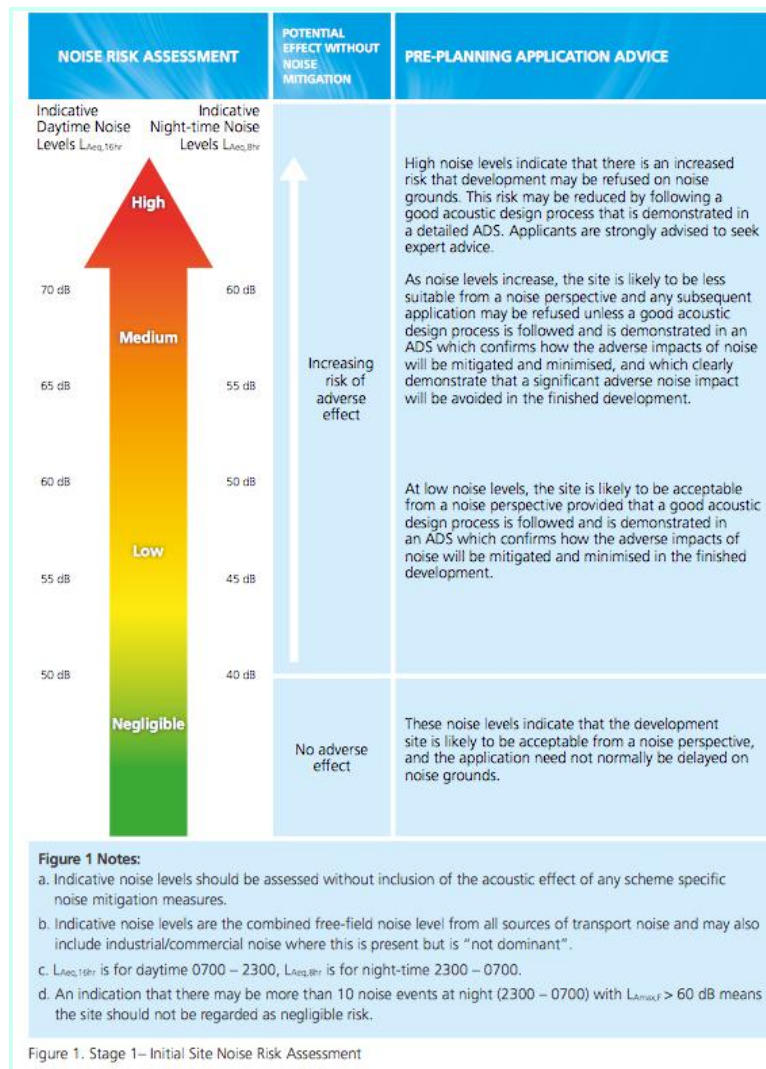
Site Noise Risk Assessment

Following the guidance provided by the ProPG, the site has been through an initial assessment to establish the risk of noise adversely affecting the proposed development on the site. This risk assessment assists in quantifying whether further consideration of noise impact is required. This may lead into mitigation measures required to ensure that the principles of good acoustic design are met.

The noise risk assessment matrix, presented in Figure 3 below, shows that the site is at risk of a medium risk of adverse effect based on the measured noise levels across the site.

Figure 3

Stage 1 – Initial Site Noise Risk Assessment



Predicted Internal Noise Levels – Open Windows

Internal ambient noise levels have been assessed in the most exposed habitable rooms on each façade on each floor with windows open.

A nominal correction has been applied to the measured noise levels to account for a partially open window. The results of the assessment are present in Table 10.

Table 10
Assessment of Noise Break-in Levels – Open Windows

Flat	Room	External Noise Level			Internal Noise Level		
		L _{Aeq} , 16hr	L _{Aeq} , 8hr	L _{Af} Max	L _{Aeq} , 16hr	L _{Aeq} , 8hr	L _{Af} Max
Flat 1	Living Room/Kitchen	57.3	--	--	42.3	--	--
	Bedroom 1	54.9	39.6	58.7	39.4	24.6	43.7
Flat 2	Living Room/Kitchen	56.6	--	--	41.6	--	--
	Bedroom 1	46.0	41.3	57.9	31.0	26.3	42.9
	Bedroom 2	46.0	41.3	57.9	31.0	26.3	42.9
Flat 3	Living Room/Kitchen	58.8	--	--	43.8	--	--
	Bedroom 1	56.0	41.1	60.4	41.0	26.1	45.4
	Bedroom 2	56.0	41.1	60.4	41.0	26.1	45.4
Flat 4	Living Room/Kitchen	58.2	--	--	43.2	--	--
	Bedroom 1	46.7	43.0	58.2	31.7	28.0	43.2
	Bedroom 2	46.7	43.0	58.2	31.7	28.0	43.2
Flat 5	Living Room/Kitchen	47.8	--	--	32.8	--	--
	Bedroom 1	45.9	42.0	57.1	30.9	27.0	42.1
Flat 6	Living Room/Kitchen	59.2	--	--	44.2	--	--
	Bedroom 1	56.4	41.6	60.5	41.4	26.6	45.5
	Bedroom 2	56.4	41.6	60.5	41.4	26.6	45.5
Flat 7	Living Room/Kitchen	58.6	--	--	43.6	--	--
	Bedroom 1	48.2	43.2	58.2	33.2	28.2	43.2
	Bedroom 2	48.2	43.2	58.2	33.2	28.2	43.2
Flat 8	Living Room/Kitchen	49.2	--	--	34.2	--	--
	Bedroom 1	47.4	42.7	57.1	32.4	27.7	42.1

As shown in Table 10 above, the attenuation provided by an open window is not sufficient to meet the internal ambient noise level criteria provided in BS 8233:2014 or the maximum noise criteria set out by Enevo in all flats apart from Flats 5 and 8 where it is sufficient.

In-Façade Mitigation

Based upon the results of the above assessment, an alternative glazing and ventilation strategy will be required to ensure that the internal ambient noise levels fall below the BS 8233:2014 criteria in the proposed dwellings.

Calculations have been undertaken in accordance with the procedure set out in Annex G of BS 8233:2014 to determine suitable solutions for the site.

Site plans have been provided by Solid Void and the client.

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Table 11 presents a summary of suitable proposed specifications. Please note the list below is not exhaustive and other suitable options that meet the proposed octave band performance requirements can be selected.

Table 11
Example Glazing and Ventilation Strategy

Ref	Building Element	Specification	Minimum Recommended Sound Reduction Performance						R _w + C _{tr}	D _{ne,w}
			125	250	500	1000	2000	4000		
1	Glazing	Pilkington 4mm / (6-16mm) / 4mm	21.0	17.0	25.0	35.0	37.0	31.0	29 (-1; -4)	--
	Ventilation	Zehnder Greenwood 5000EAW.AC1	38.9	38.4	30.6	43.7	43.0	40.2	--	39
2	Glazing	Pilkington 8mm / (6-16mm) / 4mm	22.0	21.0	28.0	38.0	40.0	47.0	33 (-1; -4)	--
	Ventilation	Zehnder Greenwood 5000EAW.AC1	38.9	38.4	30.6	43.7	43.0	40.2	--	39

Please note, consideration for the requirements of Part F of the Building Regulations has been given to support the assessment of acoustic suitability only. Part F compliance should be determined through consultation with a qualified ventilation specialist.

Annex G Calculations aren't limited to the impact of proposed glazing and ventilation. The external wall is also included within the calculations. To account for this the calculation, includes the performance afforded by a typical cavity wall and a typical roof construction for the dwellings on the first floor.

Predicted Internal Noise Levels – Closed Windows

Following the incorporation of the glazing and ventilation specification set out in Table 11, Table 12 presents the results of the assessment for any rooms that exceeded the adopted criteria.

Table 12
Assessment of Noise Break-in Levels – Closed Windows

Development	Specification	Room	Internal Noise Level		
			L _{Aeq, 16hr}	L _{Aeq, 8hr}	L _{AfMax}
Flat 1	1	Living Room/Kitchen	30.9	--	--
	1	Bedroom 1	28.1	5.5	31.4
Flat 2	1	Living Room/Kitchen	29.0	--	--
	1	Bedroom 1	19.4	<5.0	30.3
	1	Bedroom 2	17.5	<5.0	28.9
Flat 3	1	Living Room/Kitchen	33.1	--	--
	1	Bedroom 1	25.7	<5.0	29.7
	1	Bedroom 2	31.0	8.5	34.4
Flat 4	1	Living Room/Kitchen	31.4	--	--
	1	Bedroom 1	20.3	<5.0	30.8
	1	Bedroom 2	18.3	<5.0	29.4
Flat 6	1	Living Room/Kitchen	33.9	--	--
	1	Bedroom 1	26.6	5.6	30.2

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Flat 7	1	Bedroom 2	32.0	9.5	35.1
	2	Living Room/Kitchen	34.7	--	--
	2	Bedroom 1	20.2	<5.0	29.6
	2	Bedroom 2	19.4	<5.0	29.2

Table 12 above shows that with the inclusion of the proposed glazing and ventilation strategy, the internal noise levels meet the BS 8233:2014 internal ambient criteria and the maximum noise requirements set out by enevo and therefore, is below the LOAEL for this assessment.

7.0 Conclusion

Solid Void has appointed Enevo, on behalf of Buckley Developments Ltd to carry out a noise impact assessment for the residential flats at 1 Castle Hill Crescent, Rochdale.

The noise assessment has been conducted with reference to the National Planning Policy Framework and the appropriate British Standards, recognised guidance & reference documents relevant to this site.

This report describes a noise survey of the site and the subsequent analysis to determine the noise environment of the proposed development. It then compares the results with the adopted criteria and, where applicable, recommendations are made with respect to the design of the development.

Residential Noise Assessment - Internal

This assessment shows that with the inclusion of the proposed glazing and ventilation strategy, the internal noise levels meet the BS 8233:2014 internal ambient criteria and the maximum noise requirements set out by enevo and therefore, is below the LOAEL for this assessment.

Appendix A

Glossary of Acoustic Terminology

"A" Weighting (dB(A)) – The human ear does not respond uniformly to different frequencies. "A" weighting is commonly used to simulate the frequency response of the ear. It is used in the assessment of the risk of damage to hearing due to noise.

Decibel (dB) – The range of audible sound pressures is approximately 2×10^{-5} Pa to 200 Pa. Using decibel notation presents this range in a more manageable form, 0 dB to 140 dB. Mathematically: Sound Pressure Level (dB) = $20 \log \{p(t) / P_0\}$ where $P_0 = 2 \times 10^{-5}$ Pa

Frequency (Hz) – The number of cycles per second, for sound this is subjectively perceived as pitch.

$L_{eq(T)}$ – The equivalent continuous sound level. It is that steady sound level which would produce the same energy over a given time period T as a specified time varying sound.

$L_{Amax(T)}$ – The maximum RMS A-weighted sound pressure level occurring within a specified time period.

LAE or SEL – A measure of A-weighted sound energy used to describe noise events such as the passing of a train or aircraft; it is the A-weighted sound pressure level which, if occurring over a period of one second, would contain the same amount of A-weighted sound energy as the event.

$L_{A90,T}$ Background noise level – The A-weighted sound pressure level of the residual noise in decibels exceeded for 90% of a given time interval.

Octave Band – A range of frequencies defined by an upper limit which is twice the lower limit. Octave bands are identified by their centre frequency.

RW (dB) – The weighted sound reduction incorporates a correction for the ear's response and has been derived in accordance with BS 5821:1984.

Specific Noise – The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval.

Rating Level – $L_{Ar,T}$ The specific noise level plus any adjustment for the character of the noise.

Ambient Noise – Totally encompassing sound in a given situation at any given time composed of noise from many sources, near and far.

Residual Noise – The ambient noise remaining at a given position in a given situation when the specific noise source is suppressed.