AIRTIGHT & NOISECHECK LIMITED

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NOISE IMPACT ASSESSMENT FOR

JNP DEVELOPMENTS LTD
ENDEAVOUR BUSINESS PARK
PENNER ROAD
HAVANT
HAMPSHIRE
PO9 1QN

SITE ADDRESS

1 EAST STREET
HAVANT
HAMPSHIRE
PO9 1AA

ASSESSMENT DATE: 7TH – 8TH MAY 2024

REPORT DATE: 14TH MAY 2024

Acoustic Engineer: [redacted] Testing Date: 7th – 8th May 2024

Michael Vine

AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

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Customer Name:

Testing Date: 7th - 8th May 2024
Report Date: 14th May 2024

JNP Developments Ltd
Endeavour Business Park
Penner Road
Havant
Hampshire
PO9 1QN

Site Address:

Former Slots Casino
Ground Floor
1 East Street
Havant
Hampshire
PO9 1AA

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Norsonic Environmental Analyser 140 BS EN IEC 61672-1 2013 Class 1 – Associated frequency analyser to BS EN IEC 61260: 1996 Class 1 – serial 1407126 – calibration due March 2026

Measurement Microphone (Nor 1225) – Serial Number 305215 – calibration due March 2026

Acoustic Calibrator - (Type 1251) – Serial No 31652, Calibration due November 2024

Measurement Procedure:

An unattended assessment measuring the current acoustic climate over a 24hour period was undertaken to determine the ambient noise levels at the front façade of the proposed development site, to the front of 1 East Street, Havant. The 24hour assessment took place between 1230hrs on Tuesday 7th & Wednesday 8th May 2024, with the road network operating at typical levels.

The proposed scheme will have some facades facing the road network (where the microphone was positioned) and some screened facades to the rear, which will be exposed to much lower noise levels due to orientation of dwellings, windows (roof window only to bedrooms) and the screening offered by existing building structure.

The microphone was positioned 1m from the building façade so the necessary reductions will be applied to the values to account for reflection.

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Assessment Criteria:

The National Planning Policy Framework (NPPF) came into effect in March 2012 and was updated published in December 2023. It replaced other documents such as PPG24. The NPPF and provides a number of objectives and aims that are directed towards avoiding significant adverse impacts and reducing others on quality of life and health. This document states that:

Paragraph 180 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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, considering relevant information such as river basin management plans.

Paragraph 191 Planning policies and decisions should also ensure that new development is appropriate for its location considering 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 [65];
(b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

193. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

The Planning Practice Guidance has guidance on noise, date 22nd July 2019 and also has the noise hierarchy table as shown below. Paragraphs 009 & 011 are refenced later in this report.

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Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

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 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 NPSE (Noise Policy Statement for England) states the following aims with respect to noise policy:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of the 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.

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PROPG: PLANNING & NOISE (2017) NEW RESIDENTIAL DEVELOPMENT [PROPG 2017]
The ProPG Planning & Noise document was published in 2017, its development supported by the Institute of Acoustics, the Association of Noise Consultants, and the Chartered Institute of Environmental Health. The aim of the document is to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England.

ProPG advocates a systematic, proportionate risk-based, 2 stage approach which:

1. Encourages early consideration of noise issues;
2. Facilitates straightforward accelerated decision making for lower risk sites;
3. Assists proper consideration of noise issues where the acoustic environment is challenging.

A summary of the overall ProPG approach is included in Appendix B. The two sequential stages of the overall approach are:

1. Stage 1 – an initial noise risk assessment of the proposed development site; and
2. Stage 2 – a systematic consideration of four key elements.

The four key elements to be undertaken in parallel during Stage 2 are:

1. Element 1 – demonstrating a "Good Acoustic Design Process";
2. Element 2 – observing internal "Noise Level Guidelines";
3. Element 3 – undertaking an "External Amenity Area Noise Assessment"; and
4. Element 4 – consideration of "Other Relevant Issues".

The approach is underpinned by the preparation and delivery of an "Acoustic Design Statement" [ADS]. The ADS is intended to conclude in the provision of one of the following four recommendations to the decision maker:

1. Planning consent may be granted without any need for noise conditions;
2. Planning consent may be granted subject to the inclusion of suitable noise conditions;
3. Planning consent should be refused on noise grounds in order to avoid significant adverse effects ("avoid"); or
4. Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects ("prevent").

The overall ProPG 2017 approach is intended for implementation with projects at an earlier stage than the subject of this report. This report provides a full noise mitigation strategy for the site, rather than an initial recommendation to the decision maker.

ProPG 2017 contains the most up to date guidance available on industry-wide adopted best-practise interpretation of relevant guidance regarding acceptable internal and external noise levels i.e. BS8233:2014 and WHO Guidelines.

WHO GUIDELINES FOR COMMUNITY NOISE (1999)
The guidance in this document recommends design criteria for internal noise levels within residential and commercial buildings. A summary of the recommended guidance is shown in Table 2.1. Table 2.1 – Excerpt from WHO [dB ref. 20μPa]

Criterion	Environment	Design range LAeq,T dB
Maintain speech intelligibility, avoid moderate annoyance, daytime & evening	Living Rooms	35
Prevent sleep disturbance, night time	Bedrooms	30

This guidance also states:

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

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For outdoor living areas, it is stated that:

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50dB L_{Aeq}. Where it is practical and feasible, the lower outdoor sound level should be considered the maximum desirable sound level for new development

BS8233:2014 GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

The guidance in this document indicates acceptable noise levels for various activities within residential dwellings. A summary of the recommended guidance is shown in the following table as listed in BS8233: 2014

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Room	35 dB LAeq, 16 hour	-
Dining	Dining Room	40 dB LAeq, 16 hour	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq, 16 hour	30 dB LAeq, 8 hour

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Executive Summary:

Airtight & Noisecheck Ltd were instructed by JNP Developments Ltd to undertake a Noise Impact Assessment (NIA) at 1 East Street, Havant, Hampshire. A planning application is to be made to convert the former slots casino into 4 x supported living dwellings. The dwellings will be located in the former public house at ground floor level, with plots 3&4 facing East Street and built at ground floor level only, with plots 1&2 built over two floors at the rear of the building and screened from the road noise. The building has Grade II listed status. The microphone location was used to determine the impact of the following noise sources on the proposed dwellings:

1. Noise associated with the local road network

The proposed dwellings should not be adversely affected by the noise associated with the road traffic. The measured noise levels are consistent with a local road network and the screened facades to the rear, along with suitable mitigation measures applied to the development indicate that the future residents should not be adversely affected. By assessing the above noise sources, it is anticipated that a detailed approach to the proposals has been undertaken. The report clearly shows the required sound reductions needed for the scheme & these measures can be implemented to the residential dwellings to ensure the necessary criteria is achieved.

The conclusions of this report illustrate that the noise associated with the immediate area will not have an adverse impact on the proposed residential dwellings, providing that suitable mitigation measures are implemented to the proposed scheme. It is recommended that alternative ventilation (MVHR, Acoustic wall ventilation etc) be installed to dwellings (3&4) to avoid overheating and assist with ventilation when windows are closed. However, to strike a balance between noise, overheating & ventilation it is anticipated that future residents of the dwellings should be able to ventilate the dwellings naturally by opening windows on various elevations throughout the day time and night time period. The assumed levels at the front (and especially the rear) indicate a generally low impact on the proposed dwellings with long periods whereby the dwelling can be naturally ventilated via open windows. The rear dwellings (1&2) will be screened from the noise sources and thus be exposed to lower noise levels and therefore can be naturally ventilated with open windows. The measures to be taken by the client should ensure a satisfactory acoustic climate for the future residents of the proposed dwellings.

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Acoustic Design Statement:

The site is situated in a residential/ mixed use area, with High Street to the West, South Street to the South and North Street to the North. There are existing dwellings to the East & South of the site, and a number of purpose-built dwellings being built immediately to the Northeast & East of the site. The necessary noise criteria should be achieved by suitable mitigation measures to the building façade & glazing. The client will take steps and implement mitigation measures to ensure the impact of the external & internal noise should not have an adverse impact on the future residential dwelling. These steps include:

1 Careful configuration of dwellings – some dwellings located away and screened from the road noise
2 Measures applied to the dwellings to improve overheating & ventilation
3 Install a robust secondary glazing system to the dwelling to protect the residents from the external noise emissions when closed
4 Alternative ventilation installed to dwellings 3&4 to ensure ventilation when windows closed
5 Careful orientation of dwellings and windows to rear dwellings (roof lights only serving 1st floor bedrooms)

The initial risk assessment has indicated that the day time noise levels for the proposed dwellings fall into the low to medium category for the day time and the night time. Pro PG states that for the low category ‘At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.’. Sites falling into the medium category state that noise needs to be considered and a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development. It is clear to see that the client has taken measures to reduce the impact of the noise on the dwellings and therefore considered the acoustic elements as part of the design. Therefore, based on the average noise levels, the impact should be low.

The proposed alternative ventilation system is not designed to ensure BS8233: 2014 compliance but offer suitable levels of ventilation during periods when windows maybe closed, but it is anticipated that the dwellings can be naturally ventilated with open windows for long periods of the day time and night time periods, and it is essential that a balance is struck between noise, ventilation and overheating as there will clearly be long periods of the day time and night time that the dwelling will not be adversely affected by the public house.

1 Objective:

1.1 To demonstrate that the noise associated with the road traffic noise will not have an adverse impact on the proposed residential scheme to be located to the North of East Street in the former golden slots building. A planning application has been made to convert the ground floor (and ground & 1st at the rear) into 4 x supported living residential dwellings. The elevations of units 3 & 4 will face east Street, with plots 1 & 2 located further away and screened from the noise sources by the current buildings.

2 Calibration:

2.1 The measurement microphone was calibrated before and after testing in the measurement location and there were no drifts recorded during the assessments.

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3 Site Layout & Microphone Position:

3.1 Havant is a town in the south-east corner of Hampshire, England between Portsmouth and Chichester. Its borough comprises the town and its suburbs including the resort of Hayling Island as well as Rowland's Castle, the larger town of Waterlooville and Langstone Harbour.

3.2 The proposed site is located in a residential / mixed use area close to the Town Centre, with The High Street located to the West. The grade II listed building is located on the corner of East Street (South) and North Street (West) of the building. It is a large building built over two floors with existing dwellings located at the front of the building at 1st floor level.

3.3 The dwellings will comprise of a 4-x supported living dwellings built over 2 floors at the rear and ground floor only at the front (existing dwellings above). Plots 3 & 4 will face East Street with units 1 & 2 located to the rear and screened from the road noise.

3.4 The measurement microphone was located:

1- At the building façade, at a distance of approximately 6m from the centre of East Street. It was positioned 1m from the building façade so an acoustic feature correction will be applied to the figures to account for reflection.

4 Weather Conditions:

4.1 The weather was dry & hot during the measurement procedure; the temperature ranged between 9-21 degrees on Tuesday 7th & 10-19degrees on Wednesday 8th May 2024. There was little to no cloud or wind over the weekend with some light rain on Friday.

5 Measurement Duration:

5.1 The continuous measurement was taken for 24hour period. The road traffic using the local road network was at normal levels and thus offer a fair reflection of the noise associated with the road network.

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6 Results:

6.1 The purpose of this measurement was to establish the levels associated with the road traffic noise and noise associated with the public house, both located to the West of the proposed dwellings. The levels will be compared to the necessary British Standards & relevant documents, also some bespoke measurements will be adopted.

$L_{Aeq\ 16hour\ \&\ 8hour}$ Noise Levels:

Mic Location	$L_{Aeq\ 16hour}$ Value	Reduction needed for BS8233 compliance	$L_{Aeq\ 8hour}$ Value	Reduction for BS8233 compliance	L_{Amax} Value	Reduction for compliance
ML 1	65dBA	30dB	56dBA	26dB	77dBA	32dB

7 Results Conclusion:

7.1 The tables listed above clearly indicate the required sound reduction values at the proposed site. It is clear to see that the measured night time levels are within the low to medium category of the Pro PG document for the day time and night time periods. Providing suitable mitigation measures are applied to the necessary facades the required internal criteria can be achieved. The rear dwellings will be screened from the road noise and thus, the noise levels will fall into the negligible - low category and for the majority of the time it is anticipated that these dwellings can be naturally ventilated with open windows during the day time and night time period, to achieve a balance between noise, ventilation, and overheating.

7.2 Based on the measured noise levels, the proposed mitigation measures, the location of the development and the type of noise apparent it is anticipated that the noise will fall at The NOEL value (No adverse effect level) and maybe towards the LOAEL (Lowest observed adverse effect level) and as such the noise should not have a detrimental effect on the future residents providing adequate measures are implemented to the building fabric & elements. For noise sources at the LOAEL, it is anticipated that the noise will be noticeable but not intrusive if suitable mitigation measures are implemented to the development.

7.3 Based on the measured levels and assuming a secondary glazing specification offering a sound reduction of 38dBA (meets the levels required above) is installed the following internal levels would be achieved:

Room	External Level	Sound Reduction of windows	Internal Level	Criteria Met
Lounge	65dBA	38dB	27dBA	Yes
Bedroom – L_{Aeq}	56dBA	38dB	18dBA	Yes
Bedroom - L_{Amax}	77dBA	38dB	39dBA	Yes

7.4 The levels above indicate that the internal levels can be achieved with the windows closed. Further table shown on the following page (section 7.11 indicate predicted levels with windows open). Section 2.30 and Figure 2 of the Pro PG document states that the internal guidelines of BS8233: 2014 can be relaxed by 5dBA (40dBA $L_{Aeq\ 16hour}$ and 35dBA $L_{Aeq\ 8hour}$) when the dwellings are necessary or desirable and also that residents will accept a slight increase in noise levels to ensure natural ventilation. A relaxation of 5dBA will still ensure a reasonable standard of living. It is clear that this approach could be implemented to the development for the day time levels and the night time levels.

7.5 Some of the noise sensitive windows will be screened from the noise sources and therefore the facades will be exposed to lower levels. This would ensure that there are quieter facades and noise levels for the future residents for the dwellings.

7.6 The levels shown in the table above indicate that a reasonable standard of living can be achieved with open windows (to rear facades in particular). Even if this is for short periods of time, it will ensure a balance is struck between noise, overheating & ventilation for the new dwellings.

7.7 Table 3.3 – Guidance for level 2 assessment of noise from transport services in the ANC AVO guide states that 'Noise causes a material change in behaviour e.g., having to keep windows closed most of the time' if the following levels are exceeded for longer periods of time:

Internal ambient noise levels

$L_{Aeq\ 16hour}$ 0700-2300	$L_{Aeq\ 8hour}$ 2300-0700	Individual noise events 2300-0700
>50dB	>42dB	Normally exceeds 65dB L_{AmaxT}

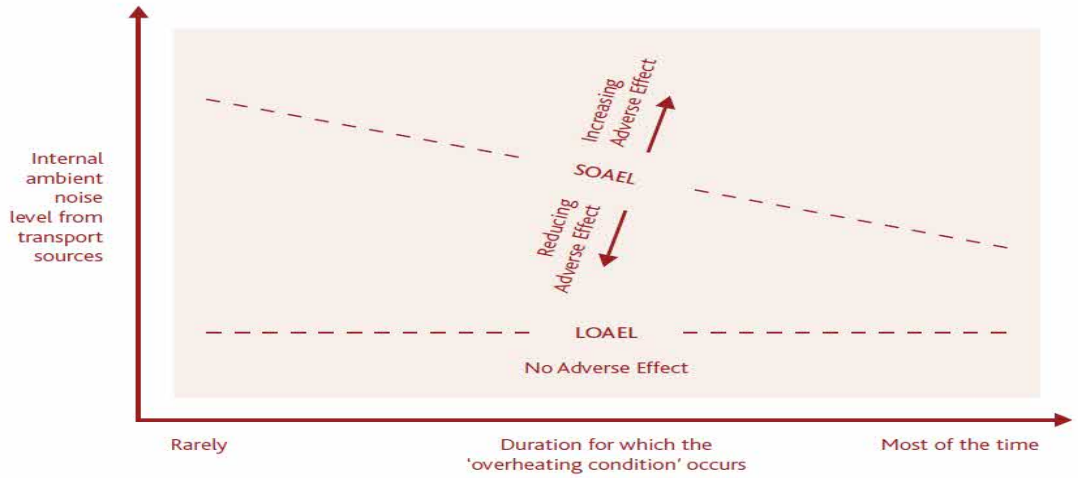
7.8 Using the above guidance (sliding scale as shown in the diagram below) the calculated internal levels at all facades with the windows open are also shown below. It is anticipated that the future occupants will accept an increase in the noise levels for periods of time to ensure good thermal comfort for the dwellings. The levels at the front façades of plots 3&4 are only just above these values for the L_{Aeq} values, so the period of time these windows are opened may be less, but then the MVHR/alternative ventilation units can ensure suitable levels of ventilation for the dwellings. The future residents will be able to open and close the windows at their own discretion at the rear elevations can be open as they wish.

Front Facade	External Level	Sound Reduction of open windows	Internal Level
Lounge	65dBA	-17 to -24dB	41-48dBA
Bedroom – L_{Aeq}	56dBA	-17 to -24dB	32-39dBA
Bedroom - L_{Amax}	77dBA	-17 to -24dB	53-60dBA

Rear Facades	External Level	Reduction offered by screening	Sound Reduction of open windows	Internal Level
Lounge	65dBA	-15dB	-17 to -24dB	26-33dBA
Bedroom – L_{Aeq}	56dBA	-15dB	-17 to -24dB	17-24dBA
Bedroom - L_{Amax}	77dBA	-15dB	-17 to -24dB	38-45dBA

The actual level of sound reduction apparent for the rear dwellings may in fact be higher than that shown above due to the orientation of the dwellings and the screening offered so the actual levels may be even less, in addition the windows serving the bedrooms are located in the roof.

Figure 3-2 Qualitative guidance on combined effect of internal ambient noise level and duration for the overheating situation



7.9 Based on the measured levels and anticipated internal levels, it is recommended that for long periods of the day the dwellings can be naturally ventilated, but to ensure suitable internal ventilation levels over busy periods then it is recommended that an alternative ventilation system be incorporated the scheme, even though it is anticipated that the dwellings will be exposed to lower noise levels for extended periods of time. A system such as an MVHR with summer bypass or acoustic wall ventilation (or similar) is required when natural ventilation may not be possible for periods of the day and night, therefore the implementation of the alternative ventilation system (along with the thermal mass and other design measures) will help to ensure that the dwellings can be ventilated when the windows are closed. These measures combined with the quieter facades should ensure a reasonable standard of living can be achieved for the proposed dwellings.

7.10 It can be seen (using the measured levels) that the internal levels will be adequate for the residents with windows open but it is also accepted that certain noise may be audible, so during these periods the dwellings will be ventilated via the alternative system. The purpose of the alternative ventilation system is to ensure the rooms can be ventilated for the period of time when the windows are closed, but a balance must be struck between noise, overheating and ventilation. It is anticipated that future residents will accept this slightly higher level for periods of time to be able to naturally ventilate their homes and the measured levels should not be intrusive, especially with the higher levels of sound attenuation offered by secondary glazing.

7.11 The above is based on the average values, with the following calculations based on specific noise levels and mitigation. It must be reinforced that the noise levels are lower when there is not an event in operation, indicating that the levels will be reduced for the majority of the time as events are not in operation on a daily basis etc.

7.12 The proposed measures indicate that the development follows the approach recommended in the PPG Guidance (Paragraph 009) regarding the closure of windows which states: *"The agent of change will also need to define clearly the mitigation being proposed to address any potential significant adverse effects that are identified. Adopting this approach may not prevent all complaints from the new residents/users about noise or other effects but can help to achieve a satisfactory living or working environment and help to mitigate the risk of a statutory nuisance being found if the new development is used as designed (for example, keeping windows closed and using alternative ventilation systems when the noise or other effects are occurring)."*

7.13 Paragraph 011 of the same guidance states: Noise impacts may be partially offset if residents have access to one or more of:

- a relatively quiet facade (containing windows to habitable rooms) as part of their dwelling.
- a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced if this area is exposed to noise levels that result in significant adverse effects.
- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or
- a relatively quiet, protected, external publicly accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5-minute walking distance).

7.14 The proposed scheme ensures that some of the bullet points shown above have been implemented as part of the application. There are both quieter facades and amenity space as part of the application that are careened from the noise sources. In addition to the orientation of the dwellings, further measures also include installing alternative ventilation to units 3&4 to ensure suitable levels of ventilation when the windows are closed, but all residents will have the ability to open their windows at their own discretion.

7.15 It is clear to see that secondary glazing offer a higher level of sound reduction when open compared to a standard double-glazed unit and thus the calculated internal levels will be lower.

8 Required Levels of Mitigation:

Elevation	Noise Source	Level of Sound Reduction
Front Facade	Road traffic	32dBA Will be lower for majority of time & at the facade but assume the same level of mitigation – using various levels of calculations

9 Building Specifications:

9.1 It is recommended that the dwellings are ventilated with an alternative ventilation system similar to those listed below. The client will have the final choice of method to adopt depending on the building constraints etc. These will ensure the dwellings can be ventilated when the windows are closed.

Make	Model	Type
Vent-Axia	Sentinel Kinetic Plus	Whole House Ventilation
Titon	HRV1.25 Q Plus with Trimbox NO2 Filter®	Whole House Ventilation

Another option may be something similar to a wall mounted ventilator, such as:

Make	Model	Type
Titon Direct	Sonair F+	Wall mounted acoustic Ventilation
Greenwood	Acoustic Airbrick	AAB – 46dBA $D_{n,e,w}$
Greenwood	Acoustic wall ventilator	AWV39 – 39dBA $D_{n,e,w}$

9.2 Façade Detail – The proposed façade is believed to be something similar to: - Aggregate block cavity wall, minimum 100mm blocks (minimum density 1350kg/m3), minimum 75mm cavity between leaves, finished with 13mm plaster. This system should achieve a sound reduction of between 50-52dB DnT,w + Ctr 'Code of Practice BS8233: 2014, Page 60 – Table E.1B – Airborne sound insulation of walls and partitions'. Also, a cavity wall system comprising of 7N concrete blocks (two separate frames), have a sound reduction of approximately 53dB (predicted weighted sound reduction index values of Celcon Blockwork – from H&H Celcon).

9.3 Roof Detail – The proposed roof detail is believed to be similar to: Tiles on felt, pitched roof with 100mm mineral wool on plasterboard ceiling. This system should achieve a sound reduction of 43dB R_w 'BS8233: 2014, page 41 - Table 8 - The sound insulation of roofs'.

9.4 Windows - The proposed windows to be used is unknown but secondary glazing systems will offer in excess of 35dBA. A level of 32dBA has been determined from the various calculations and thus the specifications listed below will offer this level of reduction.

Possible Units	Thickness	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	Overall reduction
Pilkingtons 6-100-4	110mm	26	34	44	56	53	52	45-7=38dB
Pilkingtons 6-150-4	160mm	29	35	45	56	52	50	47-7=40dB

9.5 There are many other suitable products, and the client will have to show compliance for the windows before installation, the manufacturer will have the acoustic data for the windows.

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10 Results Summary:

10.1 The findings of this survey indicate that the noise associated with the road traffic will not have an adverse impact on the residential dwellings, providing the necessary mitigation measures are applied to the site.

10.2 The results of the various detailed calculations indicate that the noise emissions associated with the road noise will not have an adverse impact on the proposed residential dwellings. The levels of sound reduction required for the proposed dwellings is clearly listed and can easily be achieved.

10.3 The mitigation measures listed within this report offer suitable sound reduction for the necessary building elements and if they are implemented throughout the site then the future residents should be able to enjoy a reasonable standard of living. Upon implementation of the mitigation measures, the internal & external criteria of BS8233: 2014 should be met within the noise sensitive bedrooms at the proposed development.

10.4 Planning ProPG states that a good acoustic design process is a vital part of new developments. The client has taken steps to ensure that the future occupants are protected from the noise source, these steps include:

1 Careful configuration of dwellings – some dwellings located away and screened from the road noise
2 Measures applied to the dwellings to improve overheating & ventilation
3 Install a robust secondary glazing system to the dwelling to protect the residents from the external noise emissions when closed
4 Alternative ventilation installed to dwellings 3&4 to ensure ventilation when windows closed
5 Careful orientation of dwellings and windows to rear dwellings (roof lights only serving 1st floor bedrooms)

10.5 The measures taken by the client, should ensure the future residents will not be adversely affected by the noise sources associated with the local area.

10.6 Whilst this report offers alternative ventilation systems for the scheme, this is not meant to ensure the dwellings are solely reliant on such. There are facades on all dwellings that will be able to be naturally ventilated for long periods of the day time and night time via open windows, the purpose of the alternative ventilation system is to ensure suitable levels of ventilation inside the dwellings during the periods when the windows are closed. It is essential to strike balance between noise, overheating & ventilation and this report offers such measures. Other ways that overheating will be treated are shading areas of the dwellings, open windows and doors and thermal mass used as part of the construction methods. The measures listed in this report will form part of the overall acoustic design aspects of the scheme and are not designed to be the only method of controlling noise. Ventilation and overheating.

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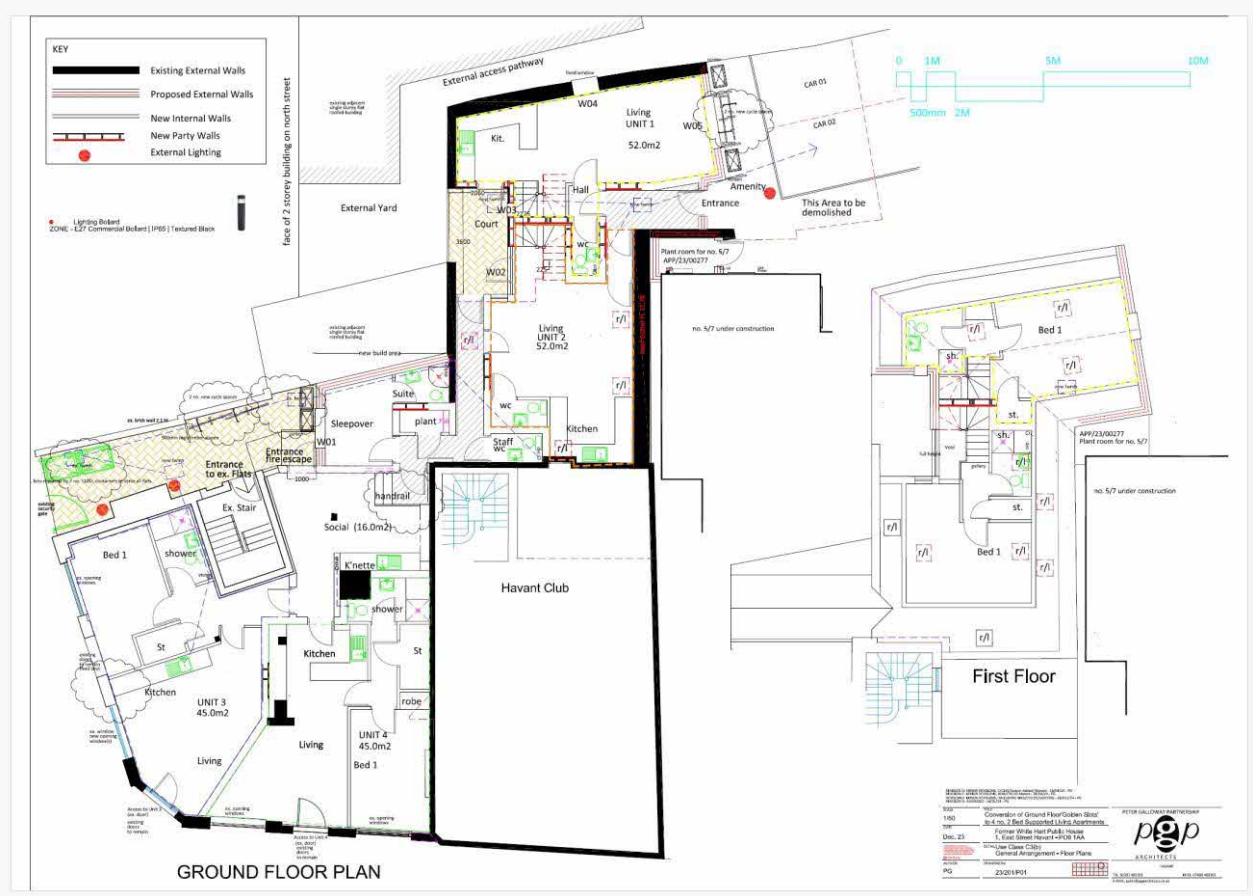
11 Proposed Site Plan:



12 APPENDIX

Continuous equivalent noise level, LAeq — The steady noise level (usually in dBA) which, over the period of time under consideration, contains the same amount of sound energy as the time varying noise.

LAmax - The maximum value that the A-weighted sound pressure level reaches during a measurement period.

dB (A) — The A-weighted sound pressure level.

Decibel (dB) — A unit used for many acoustic qualities to indicate the level of sound with respect to a reference level.

A-weighting — A frequency weighting that relates to the response of the human ear.

Background noise level — Prevailing noise level in a specified environment measured in the absence of the noise being studied.

Habitable Room – A room used for sleeping or recreation/relaxation

Dne,w Weighted element normalised level difference – A single-number quantity which characterises the airborne sound insulation of a small building elements.

EPU – Environmental Protection Unit

Rw Weighted sound reduction index – A single-number quantity which characterises the airborne sound insulation of a material or building element measured in the laboratory.

LA10 – The A-weighted noise level exceeded for 10% of the measurement duration.

LA90 - The A-weighted noise level exceeded for 90% of the measurement duration.

British Standards & associated documents:

Code of Practice: BS8233: 2014 - Sound Insulation and noise reduction for buildings.

World Health Organization (WHO) - Guidelines for Community Noise.

Pro PG – Planning & Noise, Residential Development – 2017

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13 Google Earth:

Table B-5 Examples of passive ventilation solutions providing enhanced sound insulation

Design option	Description and references	Approximate Level Difference (external free field level – internal reverberant level)	Improvement relative to a window providing a similar amount of ventilation
Standard opening windows	Window(s) open sufficiently to provide a ventilation free-area equivalent to 2% of the floor area. [42]	13 dB	0 dB
Open windows with sound attenuating balconies	Window(s) as above. Balconies may have a solid balustrade or be enclosed to a further degree (maintaining an open area for ventilation). Absorption may be provided to the balcony soffit or potentially to other surfaces. [49, 50, 51]	17 – 23 dB	4 – 10 dB
Attenuated or plenum windows	Dual windows (spaced by around 200mm) with staggered openings and absorptive linings to the cavity reveals. Various other configurations also possible in principle. [52, 53]	17 – 24 dB	4 – 11 dB
Attenuated vents/ louvres	Ventilation openings with integral means of attenuating sound. Typically this may be acoustic louvres or acoustically lined ducts/plena. [54, 55]	17 – 29 dB	4 – 16 dB
Attenuated windows or vents/ louvres with sound attenuating balconies	Combined use of balconies to provide screening and acoustically attenuated windows or vents. Refer to above for description of each element.	21 – 39 dB	8 – 26 dB

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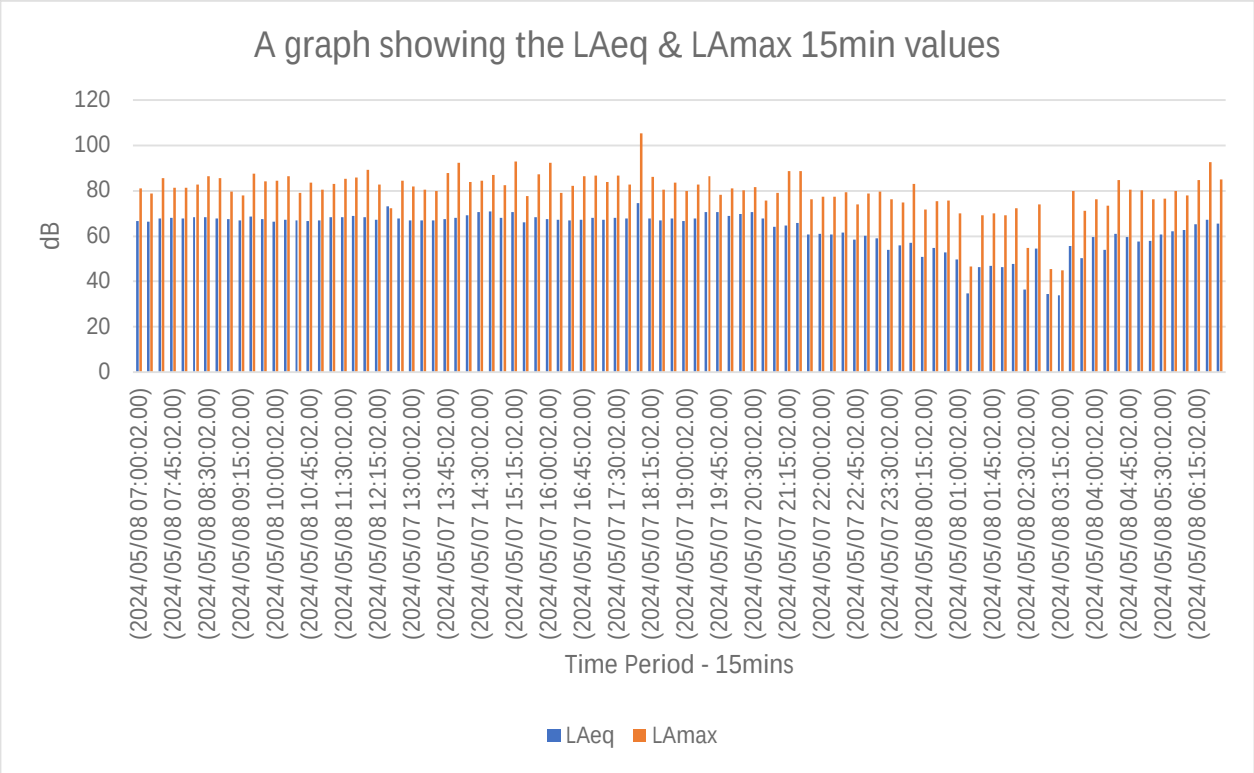
Tim e Period	LAeq	LAmax
(2024/05/08 07:00:02.00)	66.7	81
(2024/05/08 07:15:02.00)	66.3	78.9
(2024/05/08 07:30:02.00)	67.9	85.5
(2024/05/08 07:45:02.00)	68.1	81.2
(2024/05/08 08:00:02.00)	67.9	81.4
(2024/05/08 08:15:02.00)	68.4	82.6
(2024/05/08 08:30:02.00)	68.4	86.4
(2024/05/08 08:45:02.00)	67.9	85.6
(2024/05/08 09:00:02.00)	67.6	79.6
(2024/05/08 09:15:02.00)	66.8	77.9
(2024/05/08 09:30:02.00)	68.5	87.4
(2024/05/08 09:45:02.00)	67.6	84
(2024/05/08 10:00:02.00)	66.3	84.5
(2024/05/08 10:15:02.00)	67.1	86.5
(2024/05/08 10:30:02.00)	67	79.1
(2024/05/08 10:45:02.00)	66.6	83.7
(2024/05/08 11:00:02.00)	66.8	80.5
(2024/05/08 11:15:02.00)	68.3	83.1
(2024/05/08 11:30:02.00)	68.4	85.2
(2024/05/08 11:45:02.00)	68.9	85.9
(2024/05/08 12:00:02.00)	68.4	89.1
(2024/05/08 12:15:02.00)	67.2	82.6
(2024/05/07 12:30:03.00)	73.1	72.4
(2024/05/07 12:45:02.00)	67.9	84.5
(2024/05/07 13:00:02.00)	67	81.9
(2024/05/07 13:15:02.00)	66.9	80.4
(2024/05/07 13:30:02.00)	67	79.8
(2024/05/07 13:45:02.00)	67.6	87.9
(2024/05/07 14:00:02.00)	68.1	92.2
(2024/05/07 14:15:02.00)	69.1	83.8
(2024/05/07 14:30:02.00)	70.7	84.4
(2024/05/07 14:45:02.00)	70.8	87
(2024/05/07 15:00:02.00)	68.1	82.3
(2024/05/07 15:15:02.00)	70.5	92.9
(2024/05/07 15:30:02.00)	66.1	77.5
(2024/05/07 15:45:02.00)	68.3	87.1
(2024/05/07 16:00:02.00)	67.5	92.4
(2024/05/07 16:15:02.00)	67.3	79
(2024/05/07 16:30:02.00)	66.8	82.2
(2024/05/07 16:45:02.00)	67.2	86.4
(2024/05/07 17:00:02.00)	68	86.7
(2024/05/07 17:15:02.00)	67.3	83.8

(2024/05/07 17:30:02.00)	68	86.6
(2024/05/07 17:45:02.00)	67.9	82.8
(2024/05/07 18:00:02.00)	74.6	105.3
(2024/05/07 18:15:02.00)	67.9	86.2
(2024/05/07 18:30:02.00)	66.8	80.5
(2024/05/07 18:45:02.00)	67.7	83.6
(2024/05/07 19:00:02.00)	66.6	79.8
(2024/05/07 19:15:02.00)	67.8	82.7
(2024/05/07 19:30:02.00)	70.7	86.4
(2024/05/07 19:45:02.00)	70.6	78.1
(2024/05/07 20:00:02.00)	68.8	81.1
(2024/05/07 20:15:02.00)	69.6	80.2
(2024/05/07 20:30:02.00)	70.7	81.6
(2024/05/07 20:45:02.00)	67.8	75.8
(2024/05/07 21:00:02.00)	64.1	79.1
(2024/05/07 21:15:02.00)	64.7	88.7
(2024/05/07 21:30:02.00)	65.8	88.6
(2024/05/07 21:45:02.00)	60.6	76.3
(2024/05/07 22:00:02.00)	61	77.3
(2024/05/07 22:15:02.00)	60.7	77.4
(2024/05/07 22:30:02.00)	61.5	79.2
(2024/05/07 22:45:02.00)	58.5	73.9
(2024/05/07 23:00:02.00)	60.1	78.7
(2024/05/07 23:15:02.00)	59	79.5
(2024/05/07 23:30:02.00)	53.8	76.3
(2024/05/07 23:45:02.00)	55.8	74.7
(2024/05/08 00:00:03.00)	57.1	83.1
(2024/05/08 00:15:02.00)	50.7	71.8
(2024/05/08 00:30:02.00)	54.7	75.4
(2024/05/08 00:45:02.00)	52.7	75.6
(2024/05/08 01:00:02.00)	49.8	70
(2024/05/08 01:15:02.00)	34.8	46.5
(2024/05/08 01:30:02.00)	46.4	69.3
(2024/05/08 01:45:02.00)	46.8	70.1
(2024/05/08 02:00:02.00)	46.4	69.1
(2024/05/08 02:15:02.00)	47.7	72.2
(2024/05/08 02:30:02.00)	36.3	54.9
(2024/05/08 02:45:02.00)	54.5	74.1
(2024/05/08 03:00:02.00)	34.4	45.6
(2024/05/08 03:15:02.00)	33.9	44.8
(2024/05/08 03:30:02.00)	55.6	79.8
(2024/05/08 03:45:02.00)	50.3	71.2
(2024/05/08 04:00:02.00)	59.6	76.2
(2024/05/08 04:15:02.00)	54	73.5
(2024/05/08 04:30:02.00)	61.1	84.7
(2024/05/08 04:45:02.00)	59.6	80.5

(2024/05/08 05:00:02.00)	57.6	80.1
(2024/05/08 05:15:02.00)	57.8	76.1
(2024/05/08 05:30:02.00)	60.8	76.6
(2024/05/08 05:45:02.00)	62.1	79.8
(2024/05/08 06:00:02.00)	62.6	77.8
(2024/05/08 06:15:02.00)	65.1	84.8
(2024/05/08 06:30:02.00)	67.3	92.7
(2024/05/08 06:45:02.00)	65.6	85.1