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Noise Impact Assessment Report to Support a Planning Application for a Proposed Partial Change of Use and Extension of Operating Hours

14-16 Station Road, Hayes, London, UB3 4DY

Report Reference 20620.NIA-RPT.01

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EXECUTIVE SUMMARY

A noise impact assessment has been prepared to assess the likelihood of adverse impact of the proposed 24-hour Adult Gaming Centre (AGC) operation upon the closest noise sensitive receptor at first-floor level, directly above the proposed AGC.

The three key areas of noise assessment are:

- Noise transfer through the floor separating the ground floor AGC from the first-floor residential use;
- Noise breakout from the façade of the premises to the windows directly above;
- Noise associated with customers outside.

A review of National and Local Planning Policy, Legislation and Good Practice Guidance has been undertaken to establish suitable noise emissions criteria for each of the assessment scenarios noted above.

Internal Noise Transfer

Noise measurements have been undertaken within an operational AGC at Wood Green, London, over a three-day period to establish worst-case operational noise levels that would be expected at the proposed site.

The sound insulation performance of the party floor separating the AGC from the first-floor residential use has been established via on site airborne sound insulation tests.

Predicted levels of direct noise transfer via the party floor separating the ground floor AGC from the first-floor residential dwelling would be expected to be well within the set criteria, ensuring the amenity of the occupants of the first-floor flat would not be compromised due to direct noise transfer. However, note that this assumes that the party floor is upgraded, as detailed within Section 4.2.

Noise Breakout from the AGC Façade

Predictions of noise breakout from the front façade of the AGC have been undertaken, taking into account the source noise levels measured within the AGC, the predicted sound reduction of the AGC façade, and the sound reduction provided by the first-floor receptor window being partially open (based on researched literature).

Predicted levels of noise breakout to the external environment via the front façade of the AGC, up to first-floor level, and in through a partially open residential window would be expected to be well within the set criteria, ensuring the amenity of the occupants of the first-floor flat would not be compromised due to noise breakout.

Noise Associated with Customers Outside

Noise associated with customers outside the AGC would be sufficiently below the average ambient noise level of the area such that speech would be non-intrusive to the first-floor residential receptor. Furthermore, as noted by the observations of Mr Butterworth (see Witness Statement submitted with application), customers smoking outside would typically only remain in a group smoking for around 1 minute and are rarely conversing (as they typically would not know one another). It is noted that the potential for speech occurring outside of the building is already present with respect to pedestrians passing by the site. With regards to customers arriving and/or leaving the site, it takes 12 seconds (at an average walking pace) to reach a position 20 metres from the establishment, and therefore the duration of potential impact is objectively very low. The impact of customer noise outside of the building would therefore be insignificant during the proposed extended operating hours.

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LIST OF ATTACHMENTS

1 INTRODUCTION

ES Acoustics Ltd (ESA) have been commissioned by Chongie Entertainment Ltd to prepare a noise impact assessment in support of a planning application which seeks a proposed partial change of use and extension of operating hours for the ground floor commercial unit at 14-16 Station Road, Hayes, London, UB3 4DY.

The ground floor commercial unit currently has planning permission to operate as a bank (Class E(c)(i) financial services), with the proposal seeking to change the use to Sui Generis to allow an adult gaming centre (AGC) operation.

The proposed operating hours of the AGC would be 24-hours, which is understood to be currently permitted at the Admiral AGC to the south of the site.

The three key areas of consideration with regards to the assessment of noise impact are:

- Noise transfer through the party floor separating the ground floor AGC from the first-floor residential use;
- Noise breakout from the façade of the premises to the windows directly above;
- Noise associated with customers outside.

The purpose of this report is to;

- Present the findings of site surveys conducted which included an environmental noise survey to establish current background noise levels within the area, a sound insulation test between the ground and first floors to determine the current level of sound insulation, and an internal noise survey undertaken within an operational Little Vegas AGC to determine typical noise levels generated from the use;
- Review appropriate national and local planning policy and good practice guidance relevant to the proposal;
- Propose appropriate noise emissions criteria for the noise impact assessment based on the site survey data and reviewed guidance;
- Undertake noise propagation calculations and noise impact assessments for the key areas outlined above.

2 SITE CONTEXT AND BACKGROUND INFORMATION

2.1 Site Description

The site is situated in the Hayes area of London within a parade of commercial units across ground floor level with residential/office use on the upper floors. The site in question has permitted residential use directly above the ground floor, although both are currently unoccupied. The closest noise sensitive receptor is therefore understood to be the first-floor flats directly above the AGC.

A site photo showing the proposed site (red) and closest receptors (green) is shown in Figure 1 below:

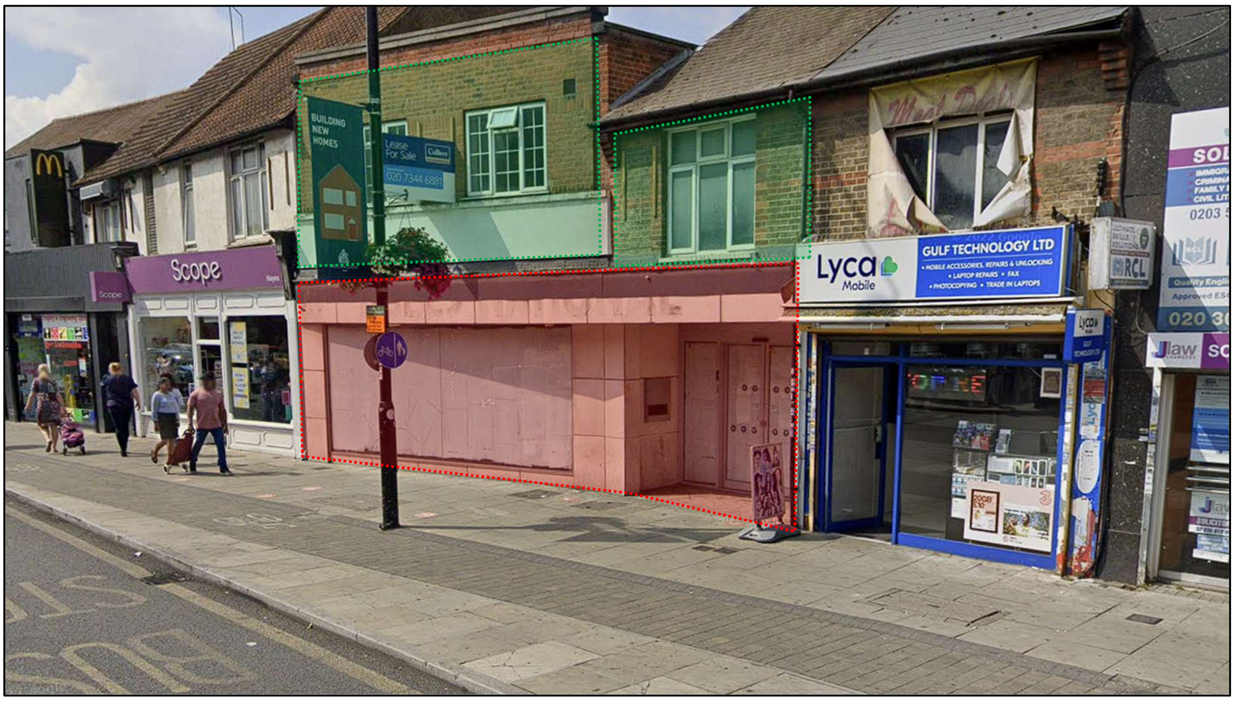

Figure 1 Site plan indicating site (red) and closest noise sensitive receptors (green)

2.2 Adult Gaming Centre Background Information

An AGC offers a comfortable environment for customers to play gaming machines with low level background music and non-alcoholic refreshments available.

The volume output on each gaming machine can be manually adjusted. Chongie management ensure the volume output on each machine to the lowest setting to ensure a comfortable environment for customers and to ensure that excessive noise is not generated within the unit in the case of multiple machines being used simultaneously.

The centre would also have a machine called a ‘cash recycler’ which allows customers to convert either bank notes or coins into a ‘play slip’ which can then be inserted to play a particular machine. While the gaming machines accept coins directly, they are also operated via the ‘play slip’ which is the typical method of most customers. When the customer has finished playing on a particular machine, the machine will print a ‘play slip’ which can then be inserted back into the cash recycler to receive the equivalent cash value. Note that the machines themselves do not deposit cash, and the only method for cash-in is via the cash recycler.

The key noise sources associated with the AGC use would comprise of the following:

- Low level background music;
- Conversation between staff and customers;
- Noise associated with the gaming machines:
    - Sound generated when the buttons are pressed and the real is spun (i.e. the typical noise emitted when a machine is in use);
    - Fanfare style music played upon winning (occurring sporadically depending on winnings);
- Noise associated with the cash recycler:
    - Coins being deposited by customer in the tray which are then tipped into the machine. The customer can then either convert to a play slip or bank notes (sporadic use as required by customers);
    - Customer depositing play slip into the machine which then dispenses the equivalent cash value (sporadic use as required by customers).

After visiting various centres (Wardour Street London, Hammersmith London, Wood Green London, and Crawley), the overall ambient noise climate within the AGC would not be considered subjectively high, as normal conversation is clearly audible without the need for raised voice.

3 PLANNING POLICY, LEGISLATION AND GOOD PRACTICE GUIDANCE

A full review of relevant National Policy, Local Policy, Legislation and Good Practice Guidance has been undertaken, as outlined in Appendix B, to ensure that suitable noise criteria are set.

For ease of reference, the following documentation has been reviewed:

- *National Planning Policy Framework (NPPF)*
- *Noise Policy Statement for England (NPSE)*
- *The London Plan*
- *London Borough of Hillingdon Planning Policy including:*
    - *Local Plan: Part 1, Strategic Policies (Adopted November 2012)*
    - *London Borough of Hillingdon Local Plan Part 2: Development Management Policies (Adopted January 2020)*
    - *London Borough of Hillingdon Third Local Implementation Plan (LIP3) 2019-2041 (Adopted March 2019)*
    - *A joint Supplementary Planning Document prepared by the London Boroughs of Hillingdon, Hounslow and Richmond upon Thames titled Development Control for Noise Generating and Noise Sensitive Development*
- *BS 8233: 2014 'Guidance on sound insulation and noise reduction for buildings'*
- *World Health Organization Night Noise Guidelines for Europe 2009*
- *World Health Organization Guidelines for Community Noise 1999*

It should be noted that there is no specialised guidance in relation to adult gaming centres or similar site uses. However, the policy, legislation and guidance outlined above is sufficient to set robust noise criteria to ensure that the living conditions of occupiers of neighbouring properties is not compromised with respect of noise.

The criteria set for each assessment scenario is provided within the subsequent sections and would ensure that the amenity of the surrounding residential properties is maintained.

4 NOISE IMPACT ASSESSMENT – INTERNAL NOISE TRANSFER

The following section deals solely with potential internal noise impacts with regards to direct noise transfer through the party floor separating the ground floor AGC from the first-floor residential use.

Key aspects of the assessment are:

- The source noise levels within the proposed AGC (Section 4.1);
- The sound insulation performance of the party floor separating the ground floor AGC and first-floor residential dwelling (Section 4.2);
- Establishing a suitable noise criteria based on planning policy and good practice guidance (Section 4.3); and
- The calculated level of direct noise transfer via the separating floor compared against the noise criteria (Section 4.4) to establish the likelihood of adverse impact.

4.1 Operational Noise Levels within an AGC

In order to establish accurate source noise levels of an AGC operation, measurements of internal noise levels were undertaken within an operational AGC in Wood Green, London. The measurements were undertaken over three consecutive days to ensure that worst-case noise levels were captured. Full details of the internal noise survey are presented in Appendix C.

A summary of the highest $L_{Aeq, 1 hour}$ level and $L_{Amax, 5 min}$ individual event level over the course of the survey are shown in Table 1 as single octave band sound pressure levels and an overall level in dB(A):

Day	Octave band centre frequency, dB								dB(A)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
Highest $L_{Aeq, 1 hour}$ level	64	64	63	65	62	52	50	47	66
Highest $L_{Amax, 5 min}$ level	71	75	78	78	79	78	87	85	90

Table 1 Single octave band noise data for the highest $L_{Aeq, 1 hour}$ level and $L_{Amax, 5 min}$ individual event level

In order to ensure veracity of the internal noise measurement results to be fully representative of an internal adult gaming centre environment, data was also collected from publicly available noise impact assessment reports from two other acoustic consultancies, details of which are included in Appendix C. Comparison of the measurement results shows that the L_{Aeq} level was identical across the three surveys (L_{Aeq} 66dB), while L_{Amax} levels were reported as 74dB, 75dB, 85dB and 90dB. The difference in L_{Amax} levels is likely due to the measurement position in relation to the “noise source” generating the L_{Amax} level. Based on additional manual measurements undertaken by ESA within the Wood Green AGC, it is understood that the levels in the range of L_{Amax} 74-75dB were most likely associated with the fanfare from machines, while the levels of L_{Amax} 85-90dB were most likely associated with very short noise events such as coins dropping into the dispenser tray of the cash recycler machine. It should be noted that as the machines are typically operated with a gaming slip or notes, it is very unlikely that a customer would choose to change a note to coins from the machine.

For additional context, 'The Little Red Book of Acoustics: A Practical Guide (Second Edition)', (published by Blue Tree Acoustics) provides examples of typical noise levels within different buildings and spaces. A 'Quiet Restaurant' would generate noise levels in the region of 67dB(A), which would be comparable to the level of L_{Aeq} 66dB measured across the AGCs. By comparison, a 'Busy Restaurant' is reported to generate noise levels of 80dB(A).

In order to ensure a worst-case scenario is assessed, the worst-case internal noise measurements captured by ES Acoustics Ltd would be used for the assessment.

4.2 Sound Insulation Performance of the Separating Floor

Access was sought to the flats directly above the AGC to conduct airborne sound insulation tests to verify the sound insulation performance of the separating floor with regards to direct noise transfer. Full technical details of the sound testing methodology and equipment are presented in Appendix D.

A summary of the test rooms and results are presented in Table 2:

Test Element and No.	Source Room	Receiver Room	Test Area	Test Result
Floor 1	Ground Floor Unit	First Floor Flat Room 1	14m²	$D_{nTw} + C_{tr}$ 37 dB
Floor 2	Ground Floor Unit	First Floor Flat Room 2	16m²	$D_{nTw} + C_{tr}$ 37 dB
Floor 3	Ground Floor Unit	First Floor Flat Room 3	14m²	$D_{nTw} + C_{tr}$ 40 dB

Table 2 Airborne test results

Note that for airborne sound insulation tests, the higher the result the better the performance.

The results of the sound insulation testing show that the results are currently poor and non-compliant with the minimum standard set out in Approved Document E of the Building Regulations, which require a minimum airborne sound insulation performance value of 43 dB $D_{nTw} + C_{tr}$[1]. The *'Development Control for Noise Generating and Noise Sensitive Development'* SPD, co-authored by the London Boroughs of Hounslow, Hillingdon and Richmond upon Thames, notes that sound insulation values for separating floors between commercial and residential dwellings should achieve a standard between 48 - 60 dB $D_{nTw} + C_{tr}$, depending on the use (see Appendix B, p7).

Based on experience of undertaking noise transfer assessment for a number of AGC sites, ESA have found that a level of sound insulation of 48 dB $D_{nTw} + C_{tr}$ would be suitable for such a use. This is based on the fact that source noise levels generated from an AGC are not objectively high, as noted within Section 4.1.

In order to achieve a good quality upgrade to the separating floor, we would recommend that upgrade works are undertaken to both the underfloor soffit side of the floor within the ground floor unit and to the

[1] Note that this is the value between residential uses, and for separating elements between commercial and residential units, a higher level of sound insulation would be required based on the use. See Appendix B pages 6-7 for more information.

walking surface side of the floor within the first-floor flats. It is understood that this can be accommodated due to both flats above the unit being unoccupied and requiring refurbishment.

We would therefore recommend the following upgrade measures:

- Removal of existing walking surfaces and floorboards within the first-floor flats;
- Removal of the existing suspended ceiling system installed within the ground floor unit;
- Upgrade the ceiling within the ground floor unit via the installation of a new MF-type ceiling system unit, comprised of the following elements:
    - Installation of GAH-1 acoustic hangers installed to the underside of the joists to create a ceiling void of at least 250mm;
    - Installation of 100mm mineral wool insulation with a density of 45kg/m^3 within the ceiling void (such as Rockwool RWA45 or similar);
    - Installation of 2x 15mm Fermacell plasterboard, or an equivalent plasterboard product with a total mass per unit area of 35kg/m^2 (or a mass per unit area of 17.3kg/m^2 per board).
- Upgrade the walking surface side of the floor within the first-floor flats, including the following;
    - Clear the existing floor void of debris and unused cabling, wires, etc;
    - Installation of 50mm mineral wool insulation with a density of 45kg/m^3 between the floor joists (such as Rockwool RWA45 or similar);
    - Installation of a new good quality subdeck such as an 22mm cement particle board with a minimum surface mass of 28kg/m^2 **or** a structural floorboard system such as 25mm Cellecta HiDeck Structural 25 whiich has a surface mass of 31kg/m^2;
    - Installation of any new walking surfaces.

The floor upgrade proposed above would be expected to provide a minimum airborne sound insulation value of 48 dB $D_{nTw} + C_{tr}$. This is based on a sound insulation prediction using prediction software Insul, which notes that the expected performance of the upgraded floor would be 55 dB $R_w + C_{tr}$. Additional notes on the referenced sound insulation descriptors, and the Insul prediction are included in Appendix E.

Note that the proposed floor upgrades would be considered as being implemented within the direct transfer assessment presented in Section 4.4.

4.3 Assessment Criteria

There is no industry standard for assessing the impact of businesses such as adult gaming centres. Therefore, suitable criteria must be established based on relevant planning policy, legislation and good practice guidance (see Appendix B).

A key component in preparing a suitably robust noise impact assessment is to compare the overall source noise level (in this case the AGC use) against the existing noise climate at the receptor. Basic acoustic theory states that if one sound is 10dB louder than another, then the louder sound will mask the quieter sound, such that the quieter sound would not be clearly distinguishable.

With regards to the existing noise climate within the rooms of the first-floor residence, a reasonable assumption would be that the existing noise levels within the residence would achieve the recommended levels noted in BS 8233:2014 i.e. noise levels during daytime and night-time hours would be 35dB(A) and 30dB(A) respectively. While this may not be the case and internal noise level could be higher (due to the high external noise levels prevalent in the area due to road traffic noise on Station Road), this assumption would provide a worst-case scenario in terms of establishing the lowest level of possible masking sound that would likely be present.

Therefore, we would propose that the general continuous sound (L_{Aeq}) within the first-floor dwelling as a result of the AGC operation should be 20dB(A) or lower, corresponding to a level 10dB lower than the night-time level of 30dB(A) presented in BS 8233:2014.

With regards to instantaneous noise events (L_{Amax}), World Health Organisation Guidelines state that *"noise events exceeding 45 dBA should be limited if possible"*, and *"noise levels should not exceed 45dB L_{Amax} more than 10-15 times per night"*.

Therefore, we would propose that instantaneous noise events within the first-floor dwelling as a result of the AGC operation should be 35dB(A), corresponding to a level 10dB lower than WHO guideline value of L_{Amax} 45dB(A). It should be noted that due to the existing high levels of traffic and pedestrian noise on Station Road, it would be expected that L_{Amax} noise levels within the first-floor dwellings would regularly exceed 45dB L_{Amax} level without consideration of the AGC use.

In addition to the overall noise level, the frequency content of the noise should be considered.

Noise Rating (NR) curves are a method for rating the acceptability of indoor environments for the purposes of hearing preservation, speech communication and annoyance, based on curves developed by Kosten and van Os (1962). Sound pressure levels measured in octave bands are compared against the curves from which a single figure noise rating (NR) is obtained.

NR levels for different space types are presented in the table below for context:

Noise Rating Curve (NR)	Room Type / Application
NR25	Concert halls, broadcasting and recording studios, churches
NR30	Private dwellings, hospitals, theatres, cinemas, conference rooms
NR35	Libraries, museums, court rooms, schools, hospitals wards, flats, hotels, executive offices
NR40	Halls, corridors, cloakrooms, restaurants, night clubs, offices, shops
NR45	Department stores, supermarkets, canteens, general offices
NR50	Typing pools, offices with business machines

Table 3 Typical NR levels for different room types and applications
Note: The NR Rating Curves above correspond to an L_{Aeq} level.

NR curves are often used by Local Authorities and acoustic practitioners when setting a suitable noise target for a scenario under assessment, particularly when the frequency spectrum of the noise is important.

We would propose to use this method to assess frequency content of the internal noise transfer associated with the AGC use during night-time hours.

Whilst Table 3 notes that NR30 is typical for private dwellings with respect to the L_{Aeq} level, we would propose a more robust criterion of NR20 for continuous. With regards to instantaneous noise (L_{Amax} levels), we would propose a criterion of NR30.

Table 4 presents the full NR octave band frequency levels for both the NR15 and NR30 criterion curves.

Acoustic Descriptor	NR Criterion Curve	Octave band centre frequency, Hz dB							
		63	125	250	500	1k	2k	4k	8k
L_{Aeq}	NR15	47	35	26	19	15	12	9	8
L_{Amax}	NR30	59	48	40	34	30	27	25	23

Table 4 NR Criteria for L_{Aeq} and L_{Amax} noise levels

The criteria above would ensure that the amenity of the residential occupants is not compromised by the 24-hour use of the site. We would consider that the criteria would ensure 'No observed adverse effect level' (NOAEL) with respect to National Planning Policy.

A summary of the noise criteria for continuous and instantaneous noise events is presented below:

Noise Type	Overall Noise Level Criterion (dB)	Frequency Based Noise Criterion NR
Continuous sound (L_{Aeq})	≤ 20 L_{Aeq}	NR15
Instantaneous noise events (L_{Amax})	≤ 35 L_{Amax}	NR30

Table 5 Overall noise level criteria and NR criteria for continuous and instantaneous noise events

4.4 Direct Noise Transfer Assessment via Party Floor

Direct noise transfer calculations of L_{Aeq} and L_{Amax} noise levels via the party floor separating the ground floor AGC and first floor residential use have been undertaken assuming worst case L_{Aeq} and L_{Amax} noise levels as detailed in Section 4.1 and sound insulation performance of the upgraded separating floor as detailed in Section 4.2. Full calculations are presented in Appendix F.

A summary of resultant overall noise levels expected within the first-floor residential residence is presented in Table 6.

Noise Source	Criteria	Predicted Internal Level Within Flat Bedroom
Continuous sound	≤ 20dB $L_{Aeq,}$	13 dB $L_{Aeq,}$
Instantaneous noise events	≤ 35dB L_{Amax}	29 dB L_{Amax}

Table 6 Direct noise transfer assessment with existing party floor

A summary of the predicted L_{Aeq} and L_{Amax} levels within the residential dwelling compared against the appropriate NR curves are shown in Figure 2 and Figure 3 respectively:

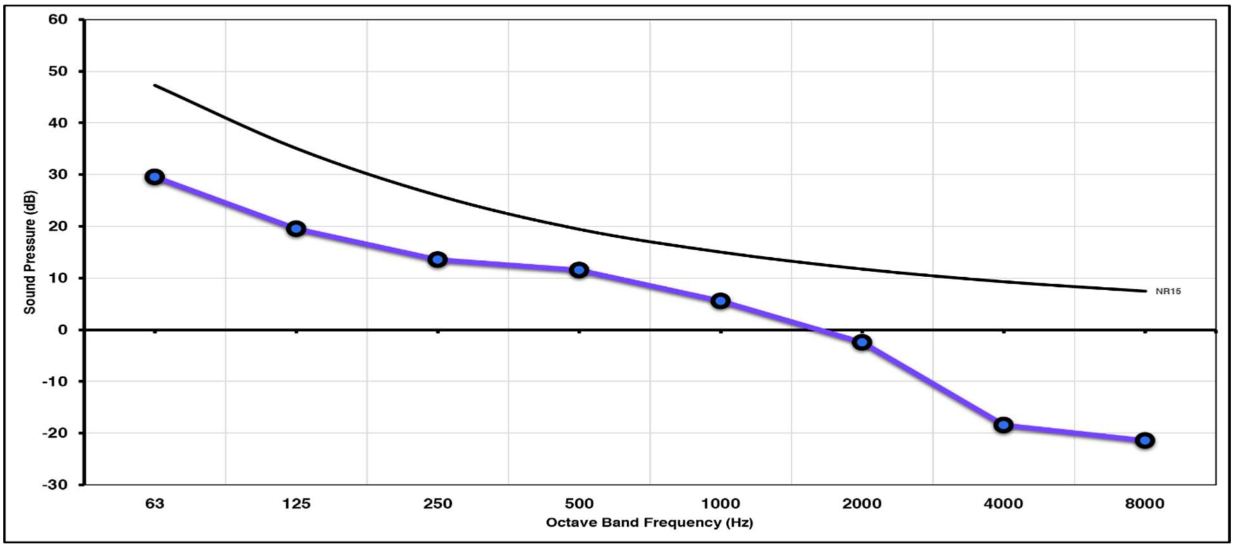

Figure 2 Predicted L_{Aeq} noise transfer from AGC to first floor residential bedroom against NR15 noise rating curve

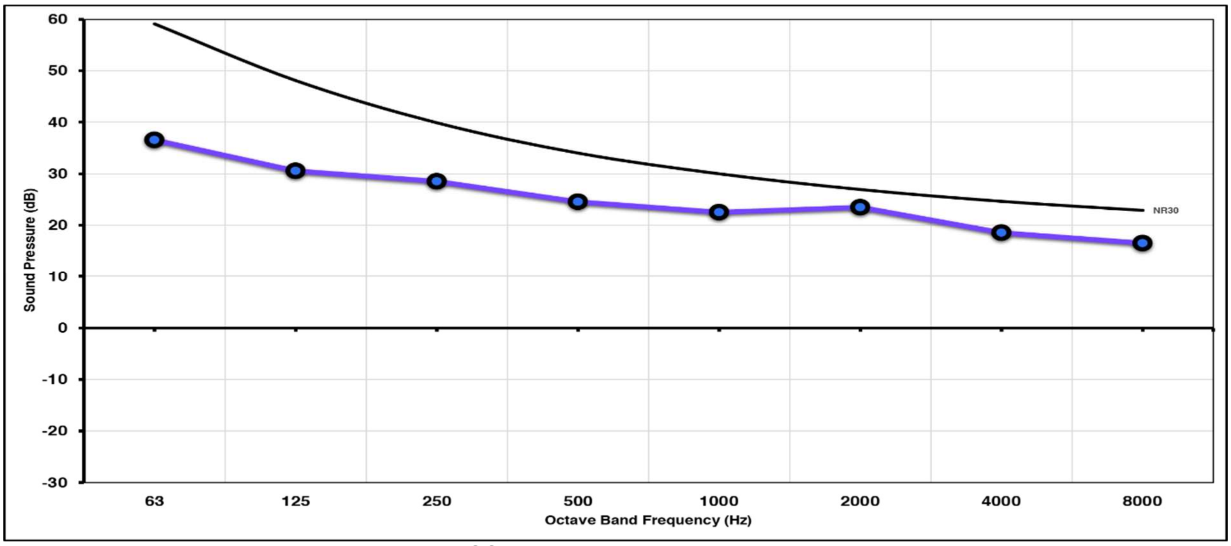

Figure 3 Predicted L_{Amax} noise transfer from AGC to first floor residential bedroom against NR30 noise rating curve

For clarity, predicted noise level values (purple line) below the curve demonstrate compliance with the criterion, while predicted noise level values above the curve would demonstrate a non-compliance.

Therefore, as demonstrated by the summarised results above and the detailed calculations in Appendix F, predicted levels of direct noise transfer via the party floor separating the ground floor AGC from the first-floor residential dwelling would be expected to be well within the set criteria, ensuring the amenity of the occupants of the first-floor flat would not be compromised due to the extended operating hours of the AGC with respect to direct noise transfer.

5 NOISE IMPACT ASSESSMENT – NOISE BREAKOUT FROM THE AGC FAÇADE

The following section deals solely with potential external noise impacts with regards to noise breakout from the façade of the premises to the residential windows directly above.

Key considerations are:

- The source noise levels within the AGC (Section 4.1);
- The sound insulation performance of the front façade of the AGC (Section 5.1);
- The sound reduction of the first-floor receptor window, assuming it is partially open for ventilation as a worst-case scenario (Section 5.2); and
- Suitable noise criteria based on planning policy and good practice guidance (Section 4.3); and
- The calculated level of breakout sound via the façade to the external environment, up to first-floor level, and in through the partially open window of the first-floor receptor, compared against the noise criteria (Section 5.4) to establish the likelihood of adverse impact.

5.1 Sound Insulation Performance of the Front Façade

It is understood that the front façade of the AGC is comprised of 6mm glass. Due to the high levels of external noise, it was not practically possible to accurately measure the performance of the façade in-situ. Therefore, the sound insulation performance of the façade has been predicted using sound insulation prediction software, Insul, as detailed in Table 7.

Element	Octave band centre frequency, dB							Rw (C;Ctr)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	
6mm glass façade	18	21	25	29	33	31	35	31 (-1;-2)

Table 7 Sound insulation performance of the front façade

Note that a performance of R_w 31 dB would generally be considered as a nominal performance. It is likely that toughened / laminated glass is used for a shop frontage, which would result in a greater level of sound attenuation. However, in order to ensure a worst-case scenario is assessed, we propose to use the nominal values shown above.

5.2 Sound Insulation Performance of the Receptor Window

The Building Performance Centre at Napier University published a research paper in April 2007 titled NANR116: 'Open/Closed Window Research - Sound Insulation Through Ventilated Domestic Windows' which detailed the measured sound attenuation which can be achieved by partially open windows of different types (casement, sash, etc) with different opening areas.

The windows of the first-floor residential receptor under consideration are outward opening casement windows.

It is reported that with an opening of 200,000mm^2 (representative of a large opening, and the largest opening tested) a sound reduction value of $D_{n,e,W}$ (C;C_{tr}) 19 (-1;-2) was achieved. Table 8 reproduces the octave band attenuation values for this type of window:

Element	Octave band centre frequency, dB							$D_{n,e,W}$ (C;Ctr)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	
Opening Type A1	19	14	12	19	17	20	21	19 (-1;-2)

Table 8 Sound reduction of a partially open outward opening casement window

5.3 Assessment Criteria

As noise breakout from the façade primarily pertains to noise from the gaming machines as well as customers, the same noise criteria presented in Section 4.3 would be used to ensure a low likelihood of adverse impact.

5.4 Noise Breakout Assessment via Front Façade

Noise breakout calculations of L_{Aeq} and L_{Amax} noise levels via the front façade, up to the first-floor level and in through the partially open first floor window have been undertaken based on the information presented above. Full calculations are presented in Appendix G.

A summary of resultant overall noise levels expected within the first-floor residential residence is presented in Table 9.

Noise Source	Criteria	Predicted Internal Level Within Flat Bedroom
Continuous sound	≤ 20dB $L_{Aeq,\,T}$	7 dB $L_{Aeq,\,T}$
Instantaneous noise events	≤ 35dB L_{Amax}	25 dB L_{Amax}

Table 9 Noise ingress to first-floor residential dwelling due to noise breakout from AGC façade

A summary of the predicted L_{Aeq} and L_{Amax} levels within the residential dwelling due to noise breakout from the front façade are compared against the appropriate NR curve are shown in Figure 4 and Figure 5 respectively:

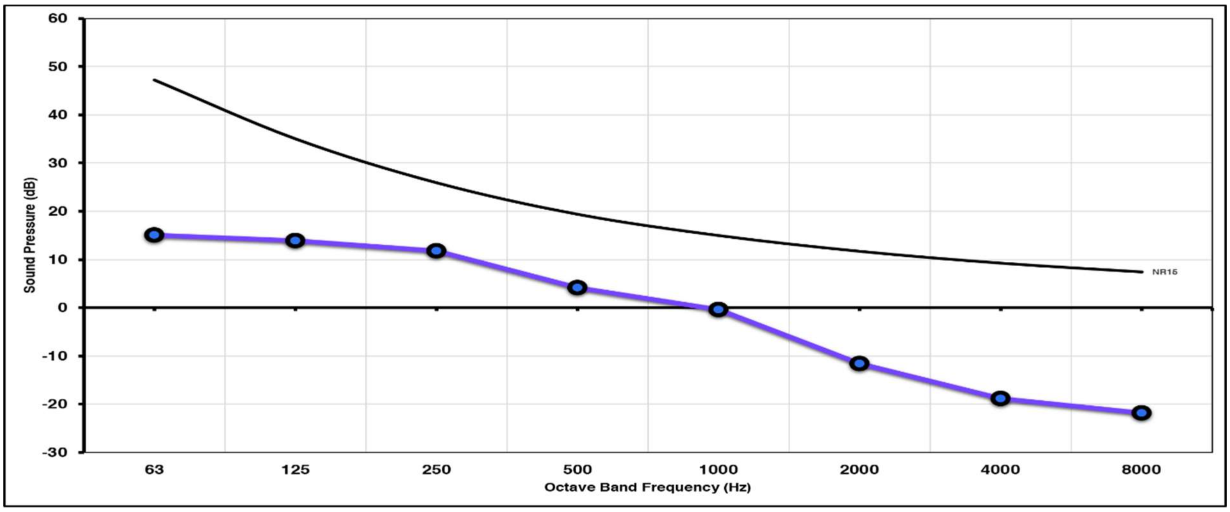

Figure 4 Predicted L_{Aeq} noise breakout from AGC façade to first floor bedroom against NR15 noise rating curve

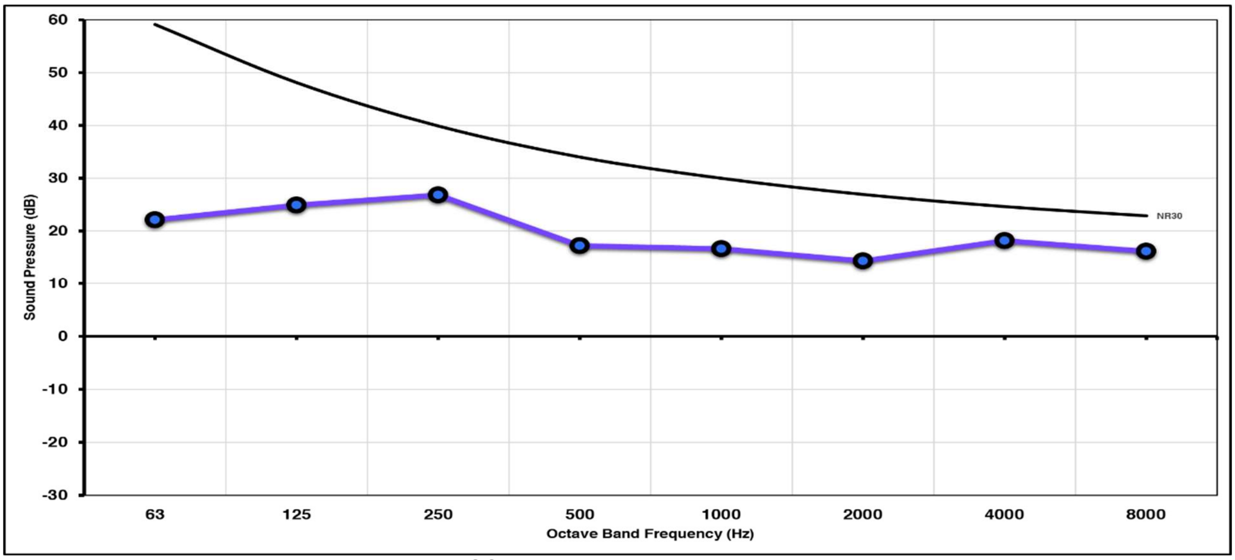

Figure 5 Predicted L_{Amax} noise transfer from AGC to first floor bedroom against NR30 noise rating curve

For clarity, predicted noise level values (purple line) below the curve demonstrate compliance with the criterion, while predicted noise level values above the curve would demonstrate a non-compliance.

Therefore, as demonstrated by the summarised results above and the detailed calculations in Appendix G, predicted levels of noise breakout to the external environment, up to first-floor level and in through a partially open residential window would be expected to be well within the set criteria, ensuring the amenity of the occupants of the first-floor flat would not be compromised due to the extended operating hours of the AGC with respect to noise breakout.

6 NOISE IMPACT ASSESSMENT – EXTERNAL PATRON NOISE

The following section deals solely with potential noise impacts associated with patrons outside the building during the proposed operating hours (24-hour use).

From extensive past experience in assessing noise associated with 24-hour AGC use, it is understood that the main concern of Local Authorities is typically in relation to potential noise and disturbance caused by patrons outside the premises, including general comings and goings and patrons standing outside to smoke.

A robust assessment relating to patron noise outside of the premises is presented below.

6.1 24-Hour Adult Gaming Centre Observations

It is important to understand usual patron behaviour with regards to comings and goings to and from the site, as well as activities such as smoking outside, in order to assess the potential noise impact effectively and accurately.

Observations of patron activity and behaviour has been conducted by Mr D J Butterworth (Licensing and Security Compliance Manager of Edmund Locard Licensing and Security Solutions) within three separate areas (Wood Green, Croydon, and Crawley) on weekday and weekend trading periods between 22:00 and 04:00. The observations centred around AGCs within these locations, owned by both the applicant and other AGC operators. The specific document referenced is included in Appendix H, and also included in the full planning submission documentation.

The reported dated 4th May 2023 documents 36 hours observations over 6 nights, with the units observed being a mixture of Chongie 24-hour operations and other similar gaming venues. A record was made of noise issues, general footfall, customer numbers, method of arrival, method of departure, numbers smoking outside, and other venues open in the area.

The summary Sections of the Witness Statement prepared by Mr Butterworth are presented below for ease of reference:

Wednesday 19th April 2023 (Wood Green)

Observations were conducted between 2100 and 0415 hours. Observations of the general Wood Green area were conducted between 2100 and 2200 hours, with observations being undertaken outside Little Vegas between 2200 and 2300 hours when the Little Vegas closed.

"All but one of the customers observed entering or leaving the gambling venues were male. The largest group observed entering or leaving at the same time was two. Only lone males were observed smoking outside the venue. Throughout the 7-hour period of observations only three customers arrived in vehicles. Most customers arrived and left alone and on foot. None of these customers created any noise nuisance. The largest creators of noise were passing vehicles and street cleaning vehicles."

Thursday 20th April 2023 (Croydon)

Observations were conducted between 2100 and 0415 hours. Observations of the general West Croydon area were conducted between 2130 and 2200 hours, with observations being undertaken outside Little Vegas between 2200 and 0415.

"The venue is located alongside a light railway tramline making parking during access times difficult. No residential accommodation was identified in the immediate area. The venue was frequented by a larger proportion of female customers to those observed on the night's investigation in Wood Green. The largest noise created was by groups of intoxicated pedestrians, street cleaners and passing trams. The gaming venue customers did not create any noise nuisance whilst entering, smoking, or leaving. The largest group observed entering or leaving was two. The largest number observed smoking outside was two."

Friday 21st April 2023 (Croydon)

Observations were conducted between 2100 and 0415 hours, with observations concentrated in Croydon High Street where two AGCs are located (Admiral and Game Nation), as well as revisiting the sites of other gaming venues.

"The Admiral unit on High Street was the busiest venue of this type visited during this series of observations. On this night three males are seen to enter Game Nation at 2328. As they only remained on the premises for six minutes, I formed the opinion that they had entered out of curiosity as opposed to being regular clientele of this type of establishment. This was the only occasion that a group more than two was observed entering a venue. Most people entered alone, with occasional pairs."

Saturday 22nd April 2023 (Wood Green)

Observations were conducted between 2100 and 0415 hours.

"During this period of observations, I concentrated most of my time at the Merkur venue on Wood Green High Road whilst also revisiting other venues in the area. It was immediately notable following my previous night's visit to Croydon the impact the presence of traffic, licensed premises, restaurants, takeaways, and other late-night businesses made to the general environment, and the impact this had on noise levels.

During this evening's observations three customers of Merkur all smoked outside at the same time. This was the largest group of customers smoking observed during this series of observations and only occurred for less than a minute. On all other occasions most of the smoking was by individuals and occasionally two people.

On the evenings observations I noted the largest number of customers exiting a venue at the same time. This was at 2257 hours when five males and a female exited the Little Vegas venue. Ironically, this exodus was generated by the venue closing at 2300 hours as a result of the current planning condition."

Thursday 27th April 2023 (Crawley)

Observations were conducted between 2200 and 0430 hours. Observations were conducted in the Crawley Town Centre area where Admiral, Merkur and Little Vegas all operate 24-hour machine venues.

"During this period, I concentrated my investigation on the Admiral and Merkur operators in Queens Square, whilst also visiting the Little Vegas operation trading on Broadway. Queens Square is a pedestrianised area, so all customers arrived and left on foot. Due to the layout of Queens Square, I was again able to monitor the two venues simultaneously so the results and figures should be read in that context.

Even when taking both premises together this was still the quietest location visited during these observations, in terms of customers entering and leaving Admiral and Merkur, and numbers smoking outside. No noise nuisance was witnessed by any of these customers, with noise in the area being created by other non-gaming customers passing through Queens Square."

Friday 28th April 2023 (Crawley)

Observations were conducted between 2100 and 0415 hours. Observations were again conducted in the Crawley Town Centre.

"On this evening I concentrated my observations and investigation on the Little Vegas situated on Broadway in Crawley town centre. Although this was not the busiest area in terms of pedestrian foot traffic and customers entering and leaving the premises, it was the busiest location visited in terms of customers smoking outside. Although these numbers remained low, and no noise disturbance was created by these smokers who numbered five at one time for less than two minutes.

The constant noise created in the area was from intoxicated revellers passing along Broadway to and from Crawley High Street where most late-night alcohol licensed premises were located. The largest single noise created was by a motorcycle with an adapted exhaust pipe which drove along Broadway past Little Vegas on two separate occasions.

Summary of Noise Considerations

- *The customer use of these premises in all areas during the late evening and early hours of the morning was low. The numbers attending was low in comparison with the numbers of non-gamblers passing through all the areas for other reasons.*
- *In Croydon where the only premises operating late at night are machine premises, no disturbance was created by the presence of the venues. The risk of noise nuisance to residents was greater from passing vehicle traffic, inconsiderate drivers and intoxicated pedestrians in the other areas visited than those created by customers of the gaming establishments.*
- *The number of customers smoking and congregating outside was low. On only one occasion were five customers observed outside a venue for less than two minutes. On most occasions lone individuals and occasionally pairs of customers where outside for short periods of time. Most smokers did not engage with other smokers and appeared anxious to return inside to continue their play.*

With regards to the locale around the application site itself, Mr D J Butterworth conducted observations within the area which commenced at 1500 hours on Saturday 16th December 2023 and concluded at 2200 hours on Sunday 17th December 2023. This is documented within the Witness Statement dated 18th December 2023, submitted as part of the planning application documentation.

A summary of the area is as follows:

- With regards to the area in general, the statement notes that *"Footfall along Station Road was busy during the day and early evening dropping to lower levels in the very late evening and early hours of the morning. Vehicle traffic through the area remained busy throughout the day and early evening period"*
- With regards to other nearby betting shops the statement notes that *"Staff and customers in the gambling establishments acted in a similar manner to that which I have observed in other locations. Most customers entering the Adult Gaming centre (Admiral) did so alone with the largest group observed entering together numbered two"*
- With regards to patrons outside, the statement notes that *"Smoking was rarely observed taking place outside any of the current betting offices and Adult Gaming Centre and did not cause any issues during these observations. No crime, disorder or noise nuisance was seen to be created by these activities."*

6.2 Observation Summary

Based on the extensive observations undertaken by Mr Butterworth, the typical and worst-case scenarios that could be reasonably expected at the proposed AGC are presented below:

Event	Typical / Worst-case	Assessment Scenario
Customers entering and exiting the premises	Typical	2 no. customers as a group
	Worst-case	3 no. customers as a group
Customers smoking outside	Typical	2 no. customers as a group
	Worst-case	5 no. customers as a group
Customer vehicles	n/a	n/a

Table 10 Typical scenarios involving patrons outside of the AGC

6.3 Existing Levels of External Noise

When considering customer noise outside of the building, an important consideration is the existing external noise climate of the surrounding area. An environmental noise survey was conducted on site at a location representative of the first-floor window of the residential unit directly above the AGC, full details of which are presented in Appendix I. A summary of the measurement results is presented in Table 11.

Period	Average Ambient Noise Level $L_{Aeq,T}$ (dB)	Representative Background Noise Level L_{A90} (dB)
Daytime 07:00-23:00	67 – 70	60 – 63
Night-time 23:00-07:00	64 – 66	43 – 51

Table 11 Summary of measured noise levels

The key hours of consideration would be the night-time hours when background noise levels are at their lowest.

6.4 Assessment Factors with Respect to the First-floor Residential Receptor

When assessing the likelihood of adverse impact from customer noise outside of the AGC to the first-floor residence, it is important to note that the occupiers of the flat would be more exposed to existing external noise (traffic, pedestrians passing, etc) when the window is open than when the window is closed, as the window itself would provide significant attenuation.

Considering the sound reduction of the partially open window noted in Section 5.2, approximate internal noise levels within the dwelling based on the external noise levels measured during the proposed extended operating hours would be as shown in Table 12.

Period	External Average Ambient Noise Level $L_{Aeq,\,T}$ (dB)	Sound Reduction of Partially Open Window (dB)	Internal Ambient Noise Level $L_{Aeq,\,T}$ (dB)
Night-time 23:00-07:00	64 – 66	-19	45 – 47

Table 12 Summary of expected internal noise levels based on measured environmental noise levels and a reduction of 19 dB for a partially open casement window

While the receptor window is closed, we would assume that the internal noise levels of 30dB(A) during night-time hours are met, as recommended in BS 8233:2014. As mentioned previously, it is likely that with the windows closed, noise levels within the receptor property exceed the British Standard recommended levels due to high external noise levels. However, if this is the case, then more masking noise would be present due to the contribution of other external noise sources, which in consideration of the existing noise profile would render a level of 30 dB(A) representative of a worst-case scenario. With regards to the sound reduction provided by the closed window, we would assume a nominal performance of 31dB R_w, again to ensure a worst-case scenario.

Each assessment scenario would be considered with the window the first-floor receptor being open and closed in order for the impact to be clearly established.

6.5 Assessment Source Levels

As the site is currently not operating as an AGC, it was impossible to measure noise levels associated with patrons outside of the establishment. In any event, it would be practically impossible to measure human speech directly outside of the AGC due to the contribution of the existing noise environment resulting in accurate levels.

Based on the observations of Mr Butterworth noted above, it is clear that any conversation that could occur between customers would be expected in a normal speaking manner i.e. not shouting or using raised voices. Furthermore, the AGC management and staff would be responsible for ensuring that antisocial behaviour does not occurring outside of the premises (note that Chongie’s operational management plan, which sets out such controls, is submitted with the application).

Sound power levels for human speech have been calculated from the sound pressure levels at 1m presented in ANSI 3.5-1997 American National Standard '*Methods for Calculation of the Speech Intelligibility Index',* which is a recognised source in the United Kingdom for sound levels of human speech:

Unit	Octave band centre frequency sound power levels, dB								Sound Power Level dB(A)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
'Normal' Human Speech	45	55	65	69	63	56	50	45	68

Table 13 Human speech sound power levels

6.6 Assessment Criteria

In order to ensure that the amenity of the receptor is protected at all times, we would propose that noise levels within the first-floor dwelling due to patron activity should be at least 10dB lower than the existing noise levels to which the residents are exposed.

As noted in Section 6.4, separate assessments would be considered with the window of the receptor being open and closed to present a clear assessment of the potential impact.

The criteria with regards to customer noise outside are presented in Table 14.

Receptor Window Condition	Existing Ambient Noise Level Inside the Residential Property $L_{Aeq,T}$ (dB)	Noise Criteria (dB)
Window Open	45	≤ 35
Window Closed	30	≤ 20

Table 14 Noise criteria for customer noise outside the AGC

6.7 External Customer Noise Assessment

Based on the observation summary presented above, 4 no. scenarios would be considered, as follows:

Scenario No.	Event	Typical / Worst-case	Assessment Scenario
1	Customers entering/ exiting the premises	Typical	2 no. customers walking towards/away from the AGC from the entrance of a position 10m away
2		Worst-case	3 no. customers walking towards/away from the AGC from the entrance of a position 10m away
3	Customers smoking outside	Typical	2 no. customers stood as a group outside of the AGC
4		Worst-case	5 no. customers stood as a group outside of the AGC

Table 15 External customer noise assessment scenarios

For each scenario, a suffix of (a) or (b) would be applied for the window of the receptor being open and closed respectively, resulting in a total of 8 no. assessment scenarios.

For each scenario, the sound power levels above would be increased by a factor of the number of customers noted above to reflect a complete worst-case. However, it should be noted that in practice, the customers would not be talking over one another as typical conversation involves back and forth speaking with only one person speaking at a time.

Full calculations of the above Scenarios above are presented in Appendix J, with a summary of the results shown in Table 16.

Scenario No.	Event	Receptor Window Partially Open or Closed	Existing Level of Internal Noise Based on Open/ Closed Window	Predicted Internal Level Inside the Receptor Room Due to Scenario	+/- Compared to Existing Noise Level
1a	2 no. customers walking towards/away from the AGC from the entrance of a position 20m away	Open	45	25	-21
1b		Closed	30	5	-25
2a	3 no. customers walking towards/away from the AGC from the entrance of a position 20m away	Open	45	26	-19
2b		Closed	30	7	-23
3a	2 no. customers stood as a group outside of the AGC smoking	Open	45	33	-12
3b		Closed	30	14	-16
4a	5 no. customers stood as a group outside of the AGC smoking	Open	45	37	-8
4b		Closed	30	18	-12

Table 16 Predicted internal noise levels due to customers outside compared against existing environmental noise levels

As demonstrated by the calculations above, any customers speech which could occur outside would be sufficiently below the average ambient noise level such that speech would be non-intrusive to the first-floor residential receptor.

While the worst-case scenario of 5 no. customers stood as a group outside of the AGC smoking would be 8 dB below background rather than 10 dB below background, a 2 dB difference in sound level would be considered non-significant due to the highly unlikely event that 5 no. patrons would gather outside to smoke. A 2 dB change is sound level would be considered to fall within the range of imperceptible to just barely perceptible, depending on the person.

Furthermore, as noted by the observations by Mr Butterworth, customers smoking outside would typically only remain in a group smoking for around 1 minute and are rarely conversing (as they typically would not know one another). It is noted that the potential for speech occurring outside of the building is already present with respect to pedestrians passing by the site.

With regards to customers arriving and/or leaving the site, it takes 12 seconds (at an average walking pace) to reach a position 20 metres from the establishment, and therefore the duration of potential impact is very low.

The impact of customer noise outside of the building would therefore be insignificant during the proposed extended operating hours.

7 CONCLUSION

ES Acoustics Ltd (ESA) have been commissioned by Chongie Entertainment Ltd to prepare a noise impact assessment in support of a planning application which seeks a proposed partial change of use and extension of operating hours for the ground floor commercial unit at 14-16 Station Road, Hayes, London, UB3 4DY.

The ground floor commercial unit currently has planning permission to operate as a bank (Class E(c)(i) financial services), with the proposal seeking to change the use to Sui Generis to allow an adult gaming centre (AGC) operation.

The proposed operating hours of the AGC would be 24-hours, which is understood to be currently permitted at the Admiral AGC to the south of the site.

The key areas of assessment were:

- Noise transfer through the party floor separating the ground floor unit from the first-floor residential use;
- Noise breakout from the façade of the ground floor premises to the windows directly above;
- Potential noise associated with customers outside.

Predicted levels of direct noise transfer via the party floor separating the ground floor AGC from the first-floor residential dwelling would be expected to be well within the set criteria, ensuring the amenity of the occupants of the first-floor flat would not be compromised due to direct noise transfer. Note that this is providing that party floor is upgraded between the units, as detailed within this report.

Predicted levels of noise breakout to the external environment via the front façade of the AGC, up to first-floor level, and in through a partially open residential window would be expected to be well within the set criteria, ensuring the amenity of the occupants of the first-floor flat would not be compromised due to noise breakout.

Noise associated with customers outside the AGC would be sufficiently below the average ambient noise level such that speech would be non-intrusive to the first-floor residential receptor. Furthermore, as noted by the observations by Mr Butterworth (see Witness Statement attached submitted with the application), customers smoking outside would typically only remain in a group smoking for around 1 minute and are rarely conversing (as they typically would not know one another). It is noted that the potential for speech occurring outside of the building is already present with respect to pedestrians passing by the site. With regards to customers arriving and/or leaving the site, it takes 12 seconds (at an average walking pace) to reach a position 20 metres from the establishment, and therefore the duration of potential impact is objectively considered to be very low.

The impact of customer noise outside of the building would therefore be insignificant during the proposed extended operating hours.

APPENDIX A

ACOUSTIC TERMINOLOGY

Decibel scale - dB

The decibel (dB) is a relative unit of measurement used in acoustics. The dB is a logarithmic ratio between a measured level and a reference level of 0 dB (i.e the threshold of human hearing). Simply put, the decibel compresses the wide range of sounds we hear into more manageable numbers.

Addition of noise from several sources

Sound produced by multiple sound sources are added logarithmically e.g. power ratio of 2 = 3dB, power ratio of 10 = 10dB. Therefore, two equally intense sound sources operating simultaneously produce a sound level which is 3dB higher than a single source e.g. 60dB + 60dB = 63dB.

Subjective impression of noise

Human response to sound is highly individualized and often based on psychological factors such as emotion and expectation. Sensitivity to sound typically depends on the loudness, pitch, duration of the occurrence, and time of occurrence (e.g. a sound source could cause annoyance during the night where it would not during the day). The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level	Change in perceived loudness
1 dB	Imperceptible
3 dB	Just barely perceptible
6 dB	Clearly noticeable
10 dB	About twice as loud

'A' Weighted Frequency Filter - dB(A)

The human ear is not equally sensitive in all frequencies. The A-weighting filter was devised to take this into account when undertaking noise measurements and allows a sound level meter to replicate the human ears response to sound.

$L_{Aeq, T}$

Sound can fluctuate widely over a given period. L_{Aeq} is the A-weighted equivalent continuous sound level, with T denoting the time period over which the fluctuating sound levels were averaged e.g. $L_{Aeq,16h}$ is the equivalent continuous noise level over an 16 hour period.

L_{A90}

A-weighted sound level exceeded for 90% of the measurement period, calculated via statistical analysis. The L_{A90} descriptor is typically used to establish background sound levels for noise impact assessments

L_{A10}

A-weighted sound level exceeded for 10% of the measurement period, calculated via statistical analysis.

L_{AFmax}

A-weighted sound level maximum sound pressure level that has been measured over a given time period

APPENDIX A

ACOUSTIC TERMINOLOGY

Octave Bands

The audio or frequency spectrum of the human ear is in the range of 20Hz to 20 kHz. The spectrum tells how the energy of the sound signal is distributed in frequency. Octave bands divides the audio spectrum into 10 equal parts. The International Standards Organisation defines the centre frequency of these bands as 31.5Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz.

Noise Rating (NR) Curves

A method of rating noise using a set of curves relating octave band sound pressure levels. Typically used for building services systems within offices

Airborne sound

Sound radiated from a source into the surrounding air e.g. musical instruments, tv/radio, machinery/equipment. Airborne sound insulation refers to the reduction or attenuation of airborne sound, usually via a solid partition between a source and receiver.

Impact sound

Sound resulting from the impact between colliding objects, e.g. footfall impact upon a floor. Impact sound insulation refers to the resistance of a floor to the transmission of impact sound, typically via the installation of a ‘resilient layer’

Flanking sound

The transmission of airborne sound between two adjacent rooms by paths other than via the separating partition between the rooms, e.g. the abutment point of a wall and floor.

Structure-borne noise

Noise caused by the vibration of elements of a structure. This can result in reradiated noise, whereby the vibrating element transmits airborne sound into a space e.g. vibration caused by mechanical plant installed within a plant room which is not adequately isolated from the structure, or construction/demolition work in an adjacent building.

Reverberant sound

Sound in an enclosed space (usually a room), which results from repeated reflections at the boundaries. Reverberation time is the time taken for a steady sound level in an enclosed space to decay by 60dB, measured from the moment the sound source is switched off. A example of a typically reverberant space would be a classic church. Absorptive materials can be used to reduce reflections and reverberation times.

APPENDIX B

PLANNING POLICY, LEGISLATION AND GUIDANCE REVIEW

NATIONAL POLICY

National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) superseded and replaced Planning Policy Guidance Note 24 (PPG24), which previously covered issues relating to noise and planning in England.

The paragraphs relating to noise state:

174. 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, taking into account relevant information such as river basin management plans

185. 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;
>
> 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; […]*

187. 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.

Noise Policy Statement for England (NPSE)

The Noise Policy Statement for England (NPSE) was developed by DEFRA and published in March 2010. The long-term vision of the Government noise policy is to 'Promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development.'

The NPSE vision noted above is supported by the following aims:

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PLANNING POLICY, LEGISLATION AND GUIDANCE REVIEW

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.

The NPSE outlines observed effect levels relating to the above, as follows:

No observed effect level (NOEL): this is the level of noise exposure below which no effect at all on health or quality of life can be detected;

- Lowest observed adverse effect level (LOAEL): this is the level of noise exposure above which adverse effects on health and quality of life can be detected;
- Significant observed adverse effect level (SOAEL): This is the level of noise exposure above which significant adverse effects on health and quality of life occur.

Noise effect levels are not set at absolute noise level targets, but instead vary depending on the context and character of the noise and site-specific factors which may impact on the severity of the effect. The NPSE states:

'It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further *evidence and suitable guidance is available.'*

National Planning Practice Guidance (NPPG)

The NPPG provides practical guidance on how the NPPF should be applied as well as and guidance on the factors influencing whether noise may be a concern at the planning stage and how adverse effects can be mitigated. The table below summarises the effect levels presented within the NPSE, as follows:

Response	Examples of Outcomes	Increasing Effect Level	Action
Not present	No Effect	No Observed Effect	No specific measures required
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

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Response	Examples of Outcomes	Increasing Effect Level	Action
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 & reduce to a minimum
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

Table 1 Noise exposure hierachy

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PLANNING POLICY, LEGISLATION AND GUIDANCE REVIEW

LOCAL POLICY

The London Plan

Policy D14 ‘Noise’ of the London Plan states the following regarding planning decisions:

Development proposals should seek to manage noise by:

- Avoiding significant adverse noise impacts on health and quality of life as a result of new development;
- Mitigating and minimising the existing and potential adverse impacts of noise on, from, within as a result of or in the vicinity of new development without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens on existing businesses;
- Improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity);
- Separating new noise sensitive development from major noise sources, such as road, rail, air transport and some types of industrial development) through the use of distance, screening or internal layout – in preference to sole reliance on sound insulation;
- Where it is not possible to achieve separation of noise sensitive development and noise sources, without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through the application of good acoustic design principles;
- Having particular regard to the impact of aviation noise on noise sensitive development;
- Promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.

London Borough of Hillingdon Planning Policy

The site falls within the jurisdiction of the London Borough of Hiillingdon. Planning applications within the borough and considered with reference to the following documents:

- Local Plan: Part 1, Strategic Policies (Adopted November 2012)
- London Borough of Hillingdon Local Plan Part 2: Development Management Policies (Adopted January 2020)
- London Borough of Hillingdon Third Local Implementation Plan (LIP3) 2019-2041 (Adopted March 2019)

In addition, the Council has a joint supplementary planning guidance document prepared by the London Boroughs of Hillingdon, Hounslow and Richmond upon Thames in relation to noise titled ‘Development Control for Noise Generating and Noise Sensitive Development*’* published in July 2014.

Relevant policies and guidance presented in the documents above in relation to noise are presented below:

PLANNING POLICY, LEGISLATION AND GUIDANCE REVIEW

Strategic Objective SO10

Improve and protect air and water quality, reduce adverse impacts from noise including the safeguarding of quiet areas and reduce the impacts of contaminated land.

Policy EM8: Land, Water, Air and Noise

Noise

The Council will investigate Hillingdon's target areas identified in the Defra Noise Action Plans, promote the maximum possible reduction in noise levels and will minimise the number of people potentially affected.

The Council will seek to identify and protect Quiet Areas in accordance with Government Policy on sustainable development and other Local Plan policies.

The Council will seek to ensure that noise sensitive development and noise generating development are only permitted if noise impacts can be adequately controlled and mitigated.

Policy DMTC 3: Maintaining the Viability of Local Centres and Local Parades

Betting shops

3.21 The London Plan Town Centres SPG identifies the need to control the proliferation of betting shops and to address the implications this can have on maintaining the vitality and viability of town centres and protecting amenity and safety. It highlights the issues affecting amenity and the continued success of town centres which justify planning authorities to consider the merits of proposals for betting shops.

3.22 For any planning proposals for betting shops that fall outside permitted development rights, the Council will consider impacts on amenity, concentration of similar uses, security of the locality and proximity to sensitive uses.

Policy DMTC 4: Amenity and Town Centre Uses

Proposals for restaurants and hot food takeaways, drinking establishments, betting shops, night clubs, casinos, amusement centres, minicab offices and other similar uses will only be supported provided that they:

i. would not result in adverse cumulative impacts due to an unacceptable concentration of such uses in one area;
ii. would not cause unacceptable disturbance or loss of amenity to nearby properties by reason of noise, odour, emissions, safety and security, refuse, parking or traffic congestion; and
iii. would not detrimentally affect the character or function of an area by virtue of the proposed use or visual impact.

Development Control for Noise Generating and Noise Sensitive Development' SPD

Section 3 of the 'Development Control for Noise Generating and Noise Sensitive Development' SPD presents a general approach to development controls in consideration of noise:

- Avoid significant adverse effects of noise on people living and working in the Boroughs;
- Mitigate and reduce to a minimum the adverse effects of noise within the context of sustainable development;
- Prevent development which is unacceptable in terms of noise;
- Encourage good acoustic design as far as is reasonably practical;
- Improve living and working conditions where the acoustic environment already has a significant adverse *effect on people's quality of life; and*
- Improve and enhance the acoustic environment and promote soundscapes that are appropriate for the local context, including the promotion of a vibrant acoustic environment where this is appropriate and the protection of relative tranquillity and quietness where such features are valued.

Section 3.6 presents a general approach to noise generating development (NGD), which would relevant in the case of the proposed AGC. The guidance states:

Much of the development which is necessary for the creation of jobs and the construction and improvement of essential infrastructure will generate noise. In some circumstances noise may be an inevitable consequence of an essential or desirable activity. The planning system should not place unjustifiable obstacles in the way of such development.

The LPA will consider carefully in each case whether proposals for new development that may generate noise (including by a change of use) would be incompatible with existing noise sensitive activities and any noise sensitive activities that may reasonably be expected in the foreseeable future. The applicant will be expected to demonstrate, as part of the planning application, that noise has been mitigated and reduced to a minimum and that the principles of good acoustic design have been followed.

For schemes that may generate noise, developers must consider the cumulative noise impact from their proposed scheme and the existing acoustic environment; and where appropriate the future cumulative impact of any already permitted or proposed noise generating development in the vicinity. There will be a general presumption against development which gives rise to significant adverse effects from noise unless it can be demonstrated that the economic and/or social and/or environmental benefits associated with the proposed development outweigh the adverse effects.

Section 6 presents guidance for new noise generating industrial and commercial development, and notes that an assessment of the impact of noise from such developments would be required. The guidance presents a 5 stage noise assessment process, including a background noise assessment, measurement and prediction of the specific noise level in question, the application of SPD external noise requirements, the application of SPD internal noise requirements, and the preparation of a noise report including GAD and mitigation as required.

Section 6.3 provides additional guidance notes on internal noise levels in nearby dwellings, as follows:

APPENDIX B

PLANNING POLICY, LEGISLATION AND GUIDANCE REVIEW

In addition to an assessment of external noise, in some cases it will also be necessary to predict internal noise levels at the closest and/or worse affected noise sensitive premises and to demonstrate the means of achieving suitable internal noise levels within noise sensitive rooms (with windows partially open for ventilation where this is the norm for the building likely to be affected, with windows closed where this is part of the mitigation of the existing noise climate and the potentially affected noise sensitive building is provided with adequate alternative means of ventilation).

In some cases, for steady continuous noise without a specific character, the guidance on suitable internal noise levels found in Table 4 of BS8233 may be relevant. The application should demonstrate that these levels can be complied with. In other cases, it may be necessary to seek to achieve better standards in nearby dwellings, for example where the proposed industrial or commercial development may emit noise with a tonal, impulsive or other discrete characteristics the LPA may consider it appropriate to apply a character correction for internal noise standards.

Finally, Section 8 presents guidance on sound insulation between commercial and residential development, and notes:

The requirements of the Building Regulations are usually deemed to be adequate for the control of sound insulation between dwellings. However, the requirements of the Building Regulations can be inadequate where certain types of commercial use adjoin residential use. The level of sound insulation performance required will be dependent upon the use type, for example a higher level of airborne sound insulation performance will typically be required for a proposed commercial catering unit located below a residential flat than will be required for a small café. A high level of airborne and impact sound insulation, often only achievable by complex design methods that structurally isolate the noise generating and noise sensitive premises, will be required where music and dancing activities adjoin a residential use. Each case will take into account the specific circumstances of the proposed development, however, the examples in Table 6 demonstrate the typically range that may need to be applied dependent on the circumstances (more stringent values may apply in some cases).

Table 6: Sound Insulation Examples - Commercial to Residential

Performance Standards for separating walls, separating floors and stairs that have a separating function		
Commercial to Residential	Airborne Sound Insulation Performance DnTw + Ctr dB	Impact Sound Transmission Performance LnTw + Ctr dB
Walls	48-60	-
Floors and Stairs	48-60	58-53

If, as a result of a planning application, a situation arises where a residential use and a commercial use will share a separating floor or wall then an assessment of the required sound insulation performance of the floor or wall should be submitted together with the construction details proposed to achieve the required standard of sound insulation. A sound insulation test may also be required by the LPA in order to demonstrate that the sound insulation performance standard has been achieved.

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LEGISLATION

Environmental Protection Act 1990 (EPA 1990)

Section 79 of the EPA 1990 defines statutory noise nuisance as 'noise emitted from premises so as to be *prejudicial to health or a nuisance'*, and notes that Local Planning Authorities have a duty to inspect and detect such nuisances in their area. The specifics of noise nuisance are not defined, however, and the law only requires that the investigating officer be of the opinion that the effect of the noise in question on the average reasonable person would cause a nuisance or be prejudicial to health.

Section 80 of the EPA 1990 provides Local Planning Authorities with powers to serve an abatement notice requiring the cessation of a nuisance or requiring works to be undertaken to prevent their occurrence.

It should be noted that annoyance is not necessarily a noise nuisance, with noise nuisance being defined in Common Law as "*an unlawful interference with a person's use or enjoyment of land, or of some right over, or* in connection with it" (Read v Lyons and Co. Ltd, 1945). Noise nuisances are often assessed against the judgment of Mr Justice Luxmoore as "interfering with the ordinary physical comfort of human existence not merely according to elegant or dainty modes of living but according to plain and sober and simple notions obtaining among English people" (Vanderport v the Mayfair Hotel Co Ltd, 1930). Therefore, the interference in question must be unreasonable such that it can be considered a noise nuisance.

It should be noted that businesses have a defence against noise nuisance of 'best practicable means', which is defined in section 79(9) of the Act as follows:

- *'practicable' means reasonably practicable having regard among other things to local conditions and* circumstances, to the current state of technical knowledge and to the financial implications.
- *'the means' to be employed include the design, installation, maintenance and manner and periods of* operation of plant and machinery and the design, construction and maintenance of buildings and structures.
- The test is to apply only so far as is compatible with any duty imposed by law and only so far as is compatible with safety and safe working conditions, and with the exigencies of any emergency or unforeseeable circumstances.

A noise management plan and best practicable means of ensuring noise is minimised on site will be outlined within this report.

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GOOD PRACTICE GUIDANCE

BS 8233: 2014 'Guidance on sound insulation and noise reduction for buildings'

Table 4 of BS 8233:2014 (reproduced below) provides guidance on recommended internal ambient noise levels in residential spaces based on World Health Organisation (WHO) research.

Room	Daytime (07:00-23:00)	Night-time (23:00-07:00)
Living Room	≤ 35 dB $L_{Aeq,16hr}$	N/A
Dining Room	≤ 40 dB $L_{Aeq,16hr}$	N/A
Bedroom	≤ 35 dB $L_{Aeq,16hr}$	≤ 30 dB $L_{Aeq,8hr}$

Table 2 BS 8233:2014 indoor ambient noise levels for dwellings

Whilst it is accepted that the levels presented above are for steady external noise sources without a specific character, the guidance provides useful context as to what acceptable internal noise levels are in an ideal situation.

The standard suggests that lower noise limits might be appropriate in cases where noise sources contain a specific character, however it doesn't not specify how such limits should be applied.

World Health Organization Night Noise Guidelines for Europe 2009

The World Health Organization Night Noise Guidelines for Europe presents noise level guidance as 'recommendations for health protection' in relation to the 'observed effect levels' presented in the NPSE guidance.

The relationship between night noise exposure and health effects have been based on the systematic review of evidence produced by epidemiological and experimental studies, as summarised in the table below:

Average night noise level over a year $L_{night, outside}$	Health effects observed in population
Up to 30 dB	Although individual sensitivities and circumstances may differ, it appears that up to this level no substantial biological effects are observed. $L_{night,outside}$ of 30 dB is equivalent to the no observed effect level (NOEL) for night noise.
30 to 40 dB	A number of effects on sleep are observed from this range: body movements, awakening, self-reported sleep disturbance, arousals. The intensity of the effect depends on the nature of the source and the number of events. Vulnerable groups (for example children, the chronically ill and the elderly) are more susceptible. However, even in the worst cases the effects seem modest. $L_{night,outside}$ of 40 dB is equivalent to the lowest observed adverse effect level (LOAEL) for night noise.
40 to 55 dB	Adverse health effects are observed among the exposed population. Many people have to adapt their lives to cope with the noise at night. Vulnerable groups are more severely affected.
Above 55 dB	The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is highly annoyed and sleep disturbed. There is evidence that the risk of cardiovascular disease increases.

Table 3 Effects of different levels of night noise on the population's health

PLANNING POLICY, LEGISLATION AND GUIDANCE REVIEW

A summary of the study findings including health effects observed and threshold levels are presented below. It should be noted that short-term effects are mainly related to maximum levels per event inside a bedroom $L_{Amax,inside}$, rather than $L_{night,outside}$.

Effect		Indicator	Threshold, dB
Biological effects	EEG[1] awakening	$L_{Amax, inside}$	35
	Motility, onset of motility	$L_{Amax, inside}$	32
	Changes in duration of various stages of sleep, in sleep structure and fragmentation of sleep	$L_{Amax, inside}$	35
Sleep quality	Waking up in the night and/or too early in the morning	$L_{Amax, inside}$	42
	Increased average motility when sleeping	$L_{night, outside}$	42
Wellbeing	Self reported sleep disturbance	$L_{night, outside}$	42
	Use of somnifacient drugs and sedatives	$L_{night, outside}$	40

Table 4 Summary of effects and threshold levels for effects where sufficient evidence is available
[1]***Electroencephalogram, recording of electric activity in the brain. EEG awakening is defined as 'transition from a state of sleep to a state of consciousness, as determined by a sleep EEG'***

With regards to the $L_{night,outside}$ values above, we can assume equivalent $L_{night,inside}$ values by subtracting 15dB to account for the partially open window attenuation. This would result in $L_{night,inside}$ values of 25-27dB(A).

World Health Organization Guidelines for Community Noise 1999

Impact of night-time exposure to noise and sleep disturbance is covered in the 1999 guidelines, as follows:

'If negative effects on sleep are to be avoided the equivalent sound pressure level should not exceed 30 dBA indoors for continuous noise. If the noise is not continuous, sleep disturbance correlates best with L_{Amax} and effects have been observed at 45 dB or less. This is particularly true if the background level is low. Noise events exceeding 45 dBA should therefore be limited if possible. For sensitive people an even lower limit would be preferred. It should be noted that it should be possible to sleep with a bedroom window slightly open (a reduction from outside to inside of 15 dB). To prevent sleep disturbances, one should thus consider the equivalent sound pressure level and the number and level of sound events. Mitigation targeted to the first part of the night is *believed to be effective for the ability to fall asleep.'*

With regards to individual events (L_{Amax}), the guidance recommends that internal noise levels for should not exceed 45dB L_{Amax} more than 10-15 times per night.

APPENDIX C

INTERNAL NOISE MEASUREMENT TECHNICAL INFORMATION

Noise surveys were undertaken within the AGC to measure source noise levels of the proposed use. Automated surveys were undertaken within the Wood Green centre, as follows:

- Friday 19th May between 14:00 and 23:00
- Saturday 20th May between 08:00 and 23:00
- Sunday 21st May between 08:00 and 23:00

Automated surveys ensure that the worst-case noise levels are established; shorter measurement durations can result in the busiest periods are not considered or individual L_{Amax} events being missed.

The $L_{Aeq,\ 1\ hour}$ levels and daily $L_{Aeq,\ T}$ levels are presented in the Tables 1-3 below:

Friday 19th May 2023 – $L_{Aeq,\ T}$ levels							
08:00-09:00	**09:00-10:00**	**10:00-11:00**	**11:00-12:00**	**12:00-13:00**	**13:00-14:00**	**14:00-15:00**	**15:00-16:00**
-	-	-	-	-	-	60	61
16:00-17:00	**17:00-18:00**	**18:00-19:00**	**19:00-20:00**	**20:00-21:00**	**21:00-22:00**	**22:00-23:00**	**$L_{Aeq,\ 9\ hr}$**
62	66	65	62	63	64	65	**64**

Table 1 Hourly noise levels within AGC on Friday 19th May

Saturday 20th May 2023 – $L_{Aeq,\ T}$ levels							
08:00-09:00	**09:00-10:00**	**10:00-11:00**	**11:00-12:00**	**12:00-13:00**	**13:00-14:00**	**14:00-15:00**	**15:00-16:00**
61	61	63	62	63	61	66	65
16:00-17:00	**17:00-18:00**	**18:00-19:00**	**19:00-20:00**	**20:00-21:00**	**21:00-22:00**	**22:00-23:00**	**$L_{Aeq,\ 15\ hr}$**
63	65	62	65	64	57	64	**63**

Table 2 Hourly noise levels within AGC on Saturday 20th May

Sunday 21st May 2023 – $L_{Aeq,\ T}$ levels							
08:00-09:00	**09:00-10:00**	**10:00-11:00**	**11:00-12:00**	**12:00-13:00**	**13:00-14:00**	**14:00-15:00**	**15:00-16:00**
57	59	60	61	63	59	57	58
16:00-17:00	**17:00-18:00**	**18:00-19:00**	**19:00-20:00**	**20:00-21:00**	**21:00-22:00**	**22:00-23:00**	**$L_{Aeq,\ 15\ hr}$**
57	59	62	57	60	55	55	**59**

Table 3 Hourly noise levels within AGC on Sunday 21st May

The highest individual $L_{Amax,\ 5\ min}$ event levels are presented in Tables 4-6 below:

Friday 19th May 2023 – $L_{Amax,\ 5\ min}$ event levels							
08:00-09:00	**09:00-10:00**	**10:00-11:00**	**11:00-12:00**	**12:00-13:00**	**13:00-14:00**	**14:00-15:00**	**15:00-16:00**
-	-	-	-	-	-	81	85
16:00-17:00	**17:00-18:00**	**18:00-19:00**	**19:00-20:00**	**20:00-21:00**	**21:00-22:00**	**22:00-23:00**	**-**
81	88	84	89	84	88	83	**-**

Table 4 Hourly noise levels within AGC on Friday 19th May

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Saturday 20th May 2023 – $L_{Amax, 5 min}$ event levels							
08:00-09:00	**09:00-10:00**	**10:00-11:00**	**11:00-12:00**	**12:00-13:00**	**13:00-14:00**	**14:00-15:00**	**15:00-16:00**
88	80	86	85	86	86	86	83
16:00-17:00	**17:00-18:00**	**18:00-19:00**	**19:00-20:00**	**20:00-21:00**	**21:00-22:00**	**22:00-23:00**	**-**
84	81	83	87	88	82	83	-

Table 5 Hourly noise levels within AGC on Saturday 20th May

Sunday 21st May 2023 – $L_{Amax, 5 min}$ event levels							
08:00-09:00	**09:00-10:00**	**10:00-11:00**	**11:00-12:00**	**12:00-13:00**	**13:00-14:00**	**14:00-15:00**	**15:00-16:00**
85	82	82	83	90	83	80	77
16:00-17:00	**17:00-18:00**	**18:00-19:00**	**19:00-20:00**	**20:00-21:00**	**21:00-22:00**	**22:00-23:00**	**-**
85	79	81	80	85	84	79	-

Table 6 Hourly noise levels within AGC on Sunday 21st May

The highest $L_{Aeq, 1 hour}$ noise level and $L_{Amax, 5 min}$ event level during the survey are summarised in the table below:

Day	Highest $L_{Aeq, 1 hour}$ Level	Highest $L_{Amax, 5 min}$ Level
Friday 19th May 2023	66	89
Saturday 20th May 2023	66	88
Sunday 21st May 2023	63	90

Table 7 Highest $L_{Aeq 1 hour}$ and $L_{Amax, 5 min}$ levels

Single octave band data for the highest $L_{Aeq, 1 hour}$ level and $L_{Amax, 5 min}$ individual event level are shown below:

Day	Octave band centre frequency, dB								dB(A)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
$L_{eq, 1 hour}$ Saturday 20th May 2023	64	64	63	65	62	52	50	47	66
$L_{max, 5 min}$ Sunday 21st May 2023	71	75	78	78	79	78	87	85	90

Table 8 Single octave band noise data for the highest $L_{Aeq, 1 hour}$ level and $L_{Amax, 5 min}$ individual event level

The equipment used for the surveys is detailed below:

Make and Model	Serial Number
Convergence Instruments NSRTW MK3 Type 1 Sound Level Meter and Data Logger	AHN8hfUYW9c9KLNC76rZFD
Svantek SV33 Class 1 Sound Calibrator	125829

Table 9 Equipment

Noise time history graphs of each survey day are presented throughout the following pages.

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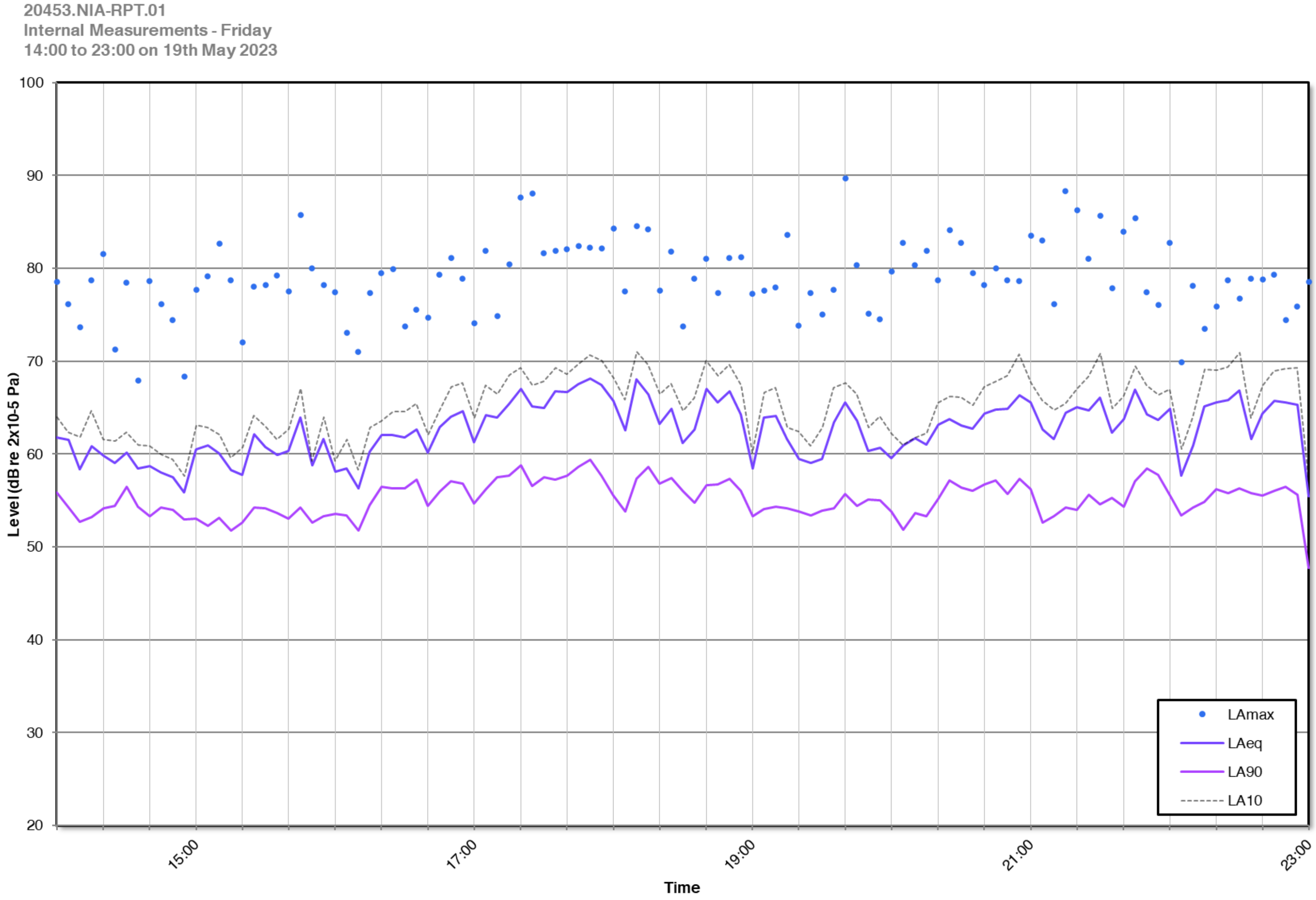
INTERNAL NOISE MEASUREMENT TECHNICAL INFORMATION



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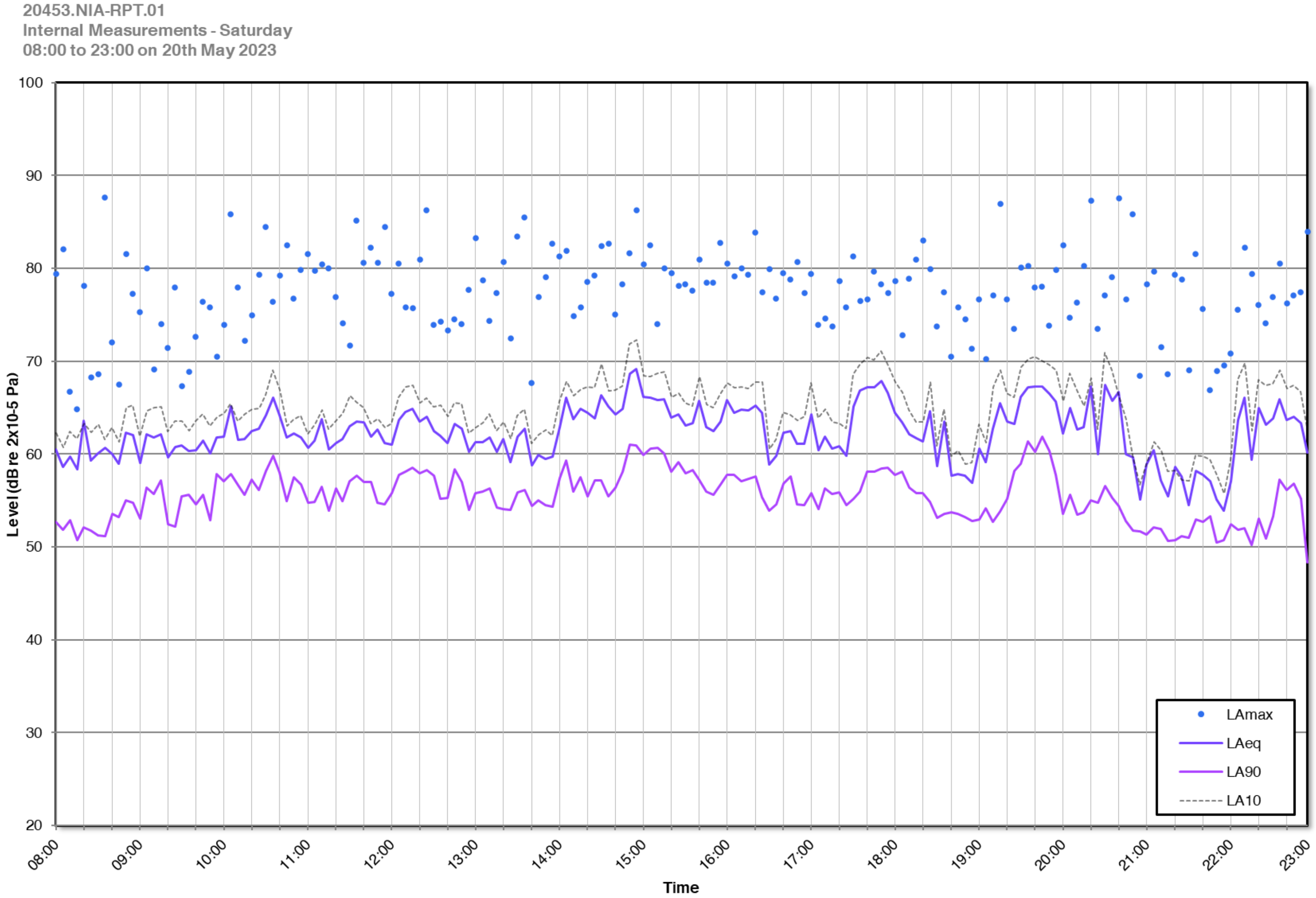
INTERNAL NOISE MEASUREMENT TECHNICAL INFORMATION



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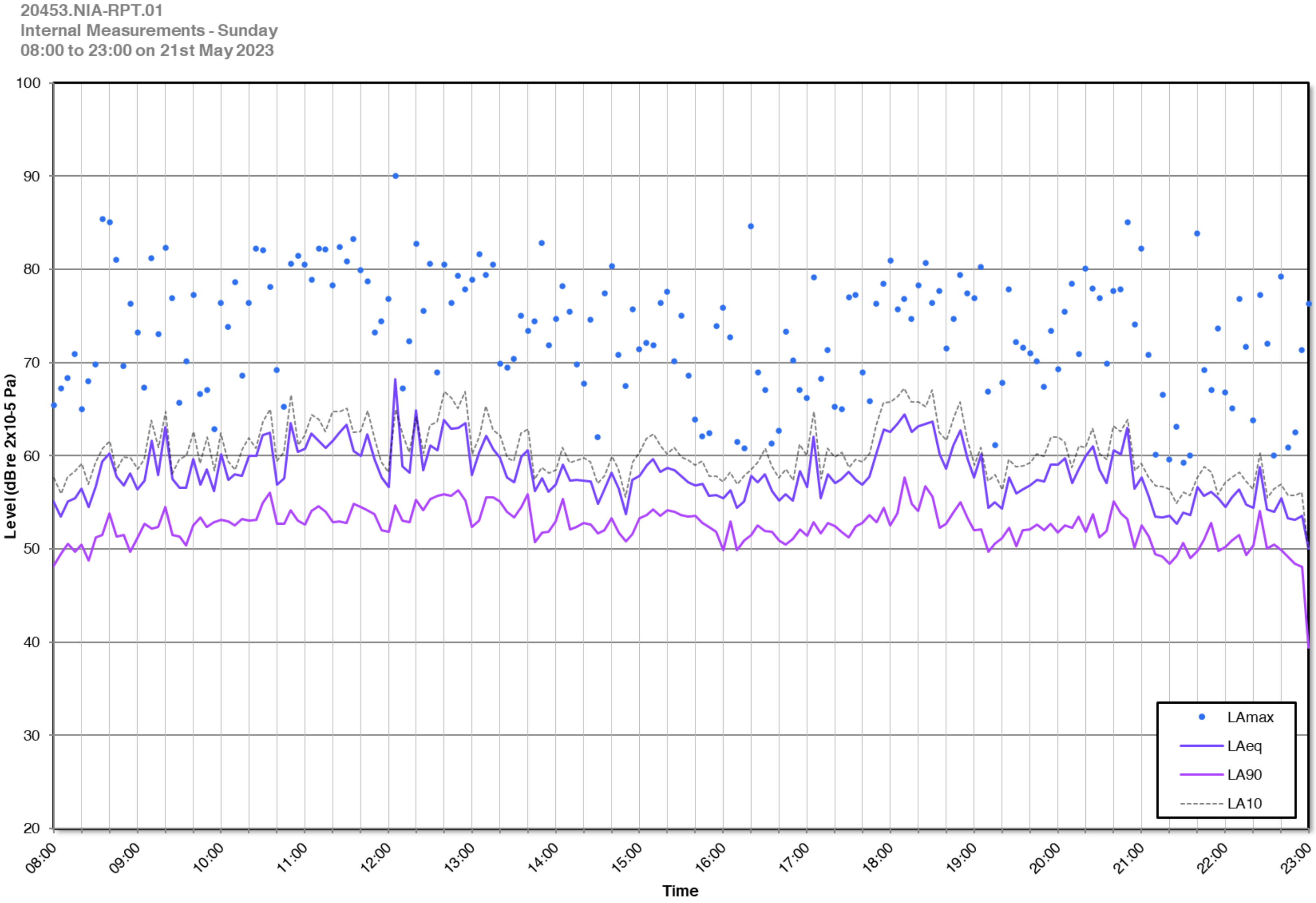

APPENDIX C

INTERNAL NOISE MEASUREMENT TECHNICAL INFORMATION

In order to ensure veracity of the internal noise measurement results to be fully representative of an internal adult gaming centre environment, data was also collected from other publicly available noise impact assessment reports, as follows:

- Hepworth Acoustics Report No. P20-057-R01v1 dated February 2020, prepared on behalf of Luxury Leisure for Admiral, 254 Streatham High Road, London
- Archo Consulting Report No. PR2001_47_FINAL_R1 dated 19th October 2021, prepared on behalf of Cashino Gaming Ltd for Merkur Slots, 40-41 Queens Road, Hastings

An excerpt from the Hepworth Acoustics Report reads as follows:

"3.8 Noise measurements were taken in the existing Admiral venue at 3 Seven Sisters Road, London N7 6AJ from 18.45 to 19.45 on Thursday 29th November 2018. This time was selected following consultation with staff to be representative of a typical busy period. The results are shown in Appendix II and summarised in Table 4."

Table 4: Typical Admiral trading noise levels (dB)

Description	Octave Band Centre Frequency (Hz)								A
	63	125	250	500	1k	2k	4k	8k	
L_{eq}	61	63	65	61	60	58	56	48	66
Typical L_{max}	89	85	83	81	79	74	79	69	85

An excerpt from the Archo Consulting Report reads as follows:

"4.1 Operational Noise Levels in Existing Merkur Cashino

Previous measurements of internal noise levels within an operational Merkur Cashino in Hull located at 106 Newland Avenue and are presented in Table 2 below. These measurements were made in 2 locations inside the Cashino on 17th March 2020 during a particularly busy period when the machines were in operation and noise levels were at the highest. Measurements were made for 5 minutes in each location which were at opposite ends of the Cashino to gain representative operational levels."

Table 2: Source Level Noise Measurements within Operational Merkur Cashino

Measurement	L_{Aeq}	L_{Amax}	Octave Band Levels (dB)							
			63	125	250	500	1kHz	2kHz	4kHz	8kHz
MP1	65.7	73.6	57.6	65.8	66.1	62.8	61.5	56.1	52.0	49.3
MP2	63.1	75.0	60.3	59.9	63.6	61.1	58.3	53.9	46.5	41.0

As shown by the internal measurements above, L_{Aeq} measurements are commensurate across all surveys with L_{Amax} levels ranging from 75-90dB. The difference in L_{Amax} levels is likely due to the measurement position in relation to the noise source generating the L_{Amax} event.

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SOUND INSULATION TESTING TECHNICAL INFORMATION

In order to establish the sound insulation performance of the separating floor between the application site and the first-floor residence, airborne sound insulation tests were undertaken in accordance with the following standards:

- BS EN ISO 16283-1:2014 *'Acoustics* - field measurement of sound insulation in buildings and of building elements. Airborne sound insulation (ISO 16283-*1:2014) (+A1:2017)'*
- BS EN ISO 717-1:2020 *'Acoustics* - rating of sound insulation in buildings and of building elements. *Airborne sound insulation'*

Airborne sound insulation tests require a 'source room' and 'receiver room'. The standard requires that the larger of the two spaces is selected as the 'source room', with the smaller being the 'receiver room'. The loudspeaker would be placed within the source room to generate the test signal, with the receiver room being used to measure a received level for a difference to be calculated across the test element.

ES Acoustics Ltd undertake the measurement process using a single sound source, as follows:

- The loudspeaker with 'pink noise' test signal is positioned within the source room in accordance with the standard, positioned to obtain a diffuse sound field;
- The average sound pressure level in the source and receiving rooms is measured in one-third octave bands using fixed microphone positions. For the source room measurements, the difference between the average sound pressure levels in adjacent one-third octave bands was observed to be no greater than 6dB as required by the standard;
- The loudspeaker with 'pink noise' test signal is then moved to a second position within the source room and the above procedure repeated;
- The level differences obtained from each source position should be arithmetically averaged to determine the level difference, D as defined in BS EN ISO 16283-1:2014;
- Reverberation time measurements are conducted in the 'receiver room'. The loudspeaker with 'pink noise' test signal is triggered and stopped instantaneously in order to measure the reverberation time in each of the one-third octave bands between 100 Hz and 3150 Hz. 8 no. individual measurements are undertaken to derive an average result of the room;
- Background noise measurements are conducted in the 'receiver room' in accordance with BS EN ISO 16283-1:2014;
- The results of the tests are rated in accordance with BS EN ISO 717-1:2020 'Acoustics - rating of sound *insulation in buildings and of building elements. Airborne sound insulation'*

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SOUND INSULATION TESTING TECHNICAL INFORMATION

The equipment used for the sound insulation testing is summarised in the table below:

Equipment	Make and Model	Serial Number	Calibration Date	Certificate No.
Sound Level Meter	Svantek 971A Class 1 SLM	131622	10-11/01/2023	UCRT23/1049
Microphone Capsule	Svantek ACO Pacific Type 7152	82858		
Microphone Preamp	Svantek SV 18A	130607		
Calibrator	Svantek SV33	125829	29/11/2022	183984
Loudspeaker	RCF ART 310-A	VBCC01229	n/a	n/a
Signal Generator	NTi Audio Minirator MR-PRO	G2P-REKRZ-G0	n/a	n/a
Laser Measure	DTAPE Laser Distance Meter	2022103023995	n/a	n/a

Table 1 Equipment used for testing

Tests were undertaken between the following spaces:

- Source Room – Ground Floor AGC to Receiver Room – Flat Room 1
- Source Room – Ground Floor AGC to Receiver Room – Flat Room 2
- Source Room – Ground Floor AGC to Receiver Room – Flat Room 3

The results of the airborne testing are summarised in the table below:

Test Element and No.	Source Room	Receiver Room	Test Area	Test Result
Floor 1	Ground Floor AGC	First Floor Flat Room 1	15m^2	$D_{nTw} + C_{tr}$ 37 dB
Floor 2	Ground Floor AGC	First Floor Flat Room 2	11m^2	$D_{nTw} + C_{tr}$ 37 dB
Floor 3	Ground Floor AGC	First Floor Flat Room 3	11m^2	$D_{nTw} + C_{tr}$ 40 dB

Table 2 Airborne test results

Note that it was only possible to complete sound tests between the ground floor unit and the first floor flat above no. 16 Station Road. The flat above no. 14 Station Road had a temporary stair connecting the ground floor to the first floor, presenting a significant path for the sound to travel, therefore rendering the space unsuitable for testing. However, based on the floor construction seen on site, similar results to those above would be expected for this area.

The full graphs showing the standardised level difference measured in accordance with ISO 140-4 are shown in the following pages.

APPENDIX D

SOUND INSULATION TESTING TECHNICAL INFORMATION

Standardized level difference measured in accordance with ISO 140-4
Field measurements of airborne sound insulation between rooms

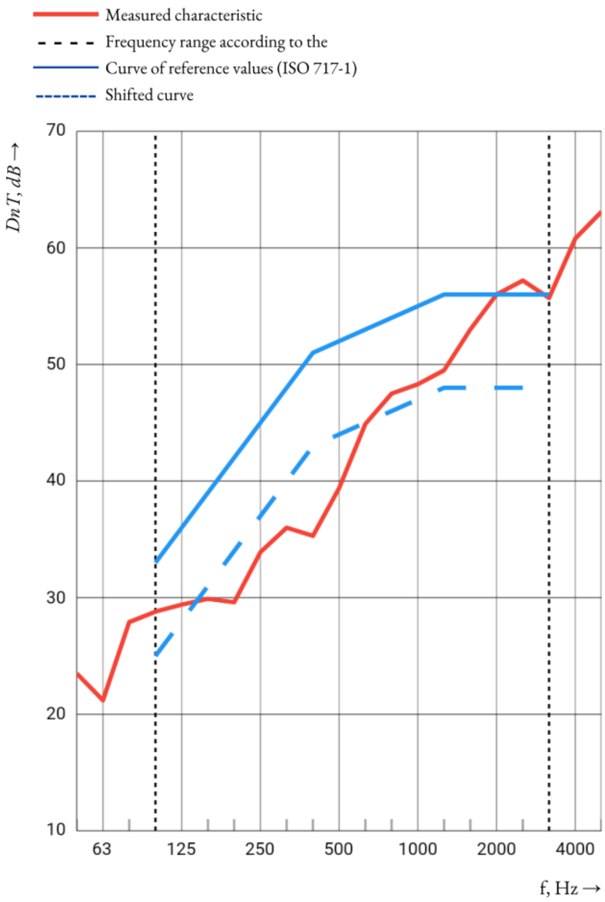
Task: Task 1
Client:
Description:

Object: Test 1

Date of test: 2023-12-08

Area of common partition: 14.0 m^2 Note
Receiving room volume: 30.0 m^3 Name Flat Room 1
Source room volume: 145.0 m^3 Name Ground Floor

Frequency f Hz	*DnT* (1/3 octave) dB
50	21.8
63	19.5
80	26.2
100	27.2
125	27.8
160	28.3
200	28.0
250	32.2
315	34.3
400	33.7
500	37.7
630	43.3
800	45.8
1000	46.7
1250	47.8
1600	51.3
2000	54.3
2500	55.6
3150	54.1
4000	59.2
5000	61.5



Rating according to ISO 717-1

DnTw(C;C$_{tr}$) = **43 (-2 ; -6) dB**

$C_{50\text{-}3150}$= -2 dB
$C_{tr,50\text{-}3150}$= -7 dB

$C_{50\text{-}5000}$= -1 dB
$C_{tr,50\text{-}5000}$= -7 dB

$C_{100\text{-}5000}$= -1 dB
$C_{tr,100\text{-}5000}$= -6 dB

Evaluation based on field measurement results obtained by an engineering method

Name of test institute:

Date: 2023-12-08

Signature:

SOUND INSULATION TESTING TECHNICAL INFORMATION

Standardized level difference measured in accordance with ISO 140-4
Field measurements of airborne sound insulation between rooms

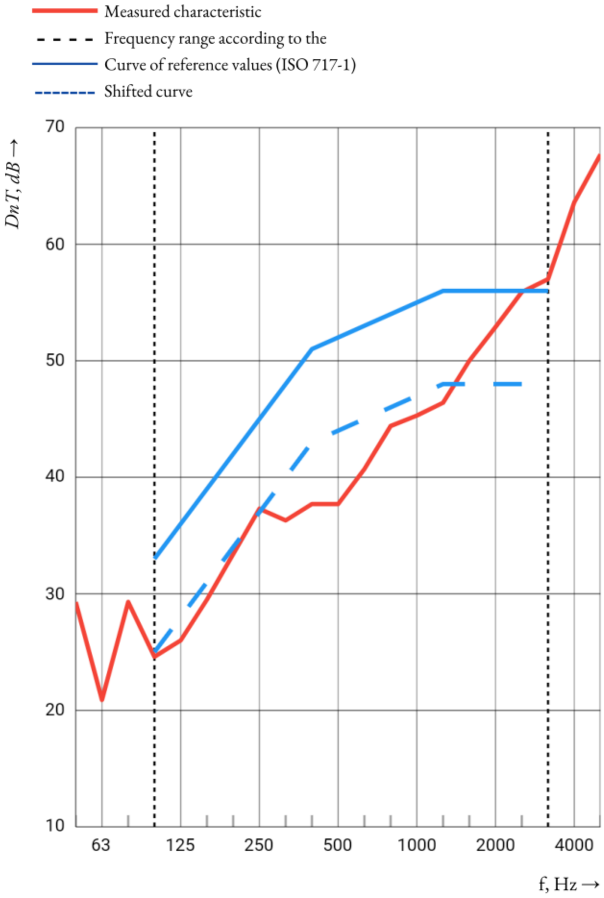
Task: Task 2
Client:
Description:

Object: Test 2

Date of test: 2023-12-09

Area of common partition: 16.0 m² Note
Receiving room volume: 35.0 m³ Name Flat Room 2
Source room volume: 145.0 m³ Name Ground Floor

Frequency f Hz	*DnT* (1/3 octave) dB
50	27.7
63	19.4
80	27.7
100	23.0
125	24.5
160	27.9
200	31.8
250	35.7
315	34.8
400	36.1
500	36.2
630	39.2
800	42.9
1000	43.8
1250	44.8
1600	48.4
2000	51.3
2500	54.4
3150	55.5
4000	62.1
5000	66.2



Rating according to ISO 717-1

$DnTw(C;C_{tr})$ = **42 (-1 ; -5) dB**

$C_{50-3150}$= -1 dB
$C_{tr,50-3150}$= -7 dB

$C_{50-5000}$= 0 dB
$C_{tr,50-5000}$= -7 dB

$C_{100-5000}$= 0 dB
$C_{tr,100-5000}$= -5 dB

Evaluation based on field measurement results obtained by an engineering method

Name of test institute:

Date: 2023-12-09

Signature:

APPENDIX D

SOUND INSULATION TESTING TECHNICAL INFORMATION

Standardized level difference measured in accordance with ISO 140-4
Field measurements of airborne sound insulation between rooms

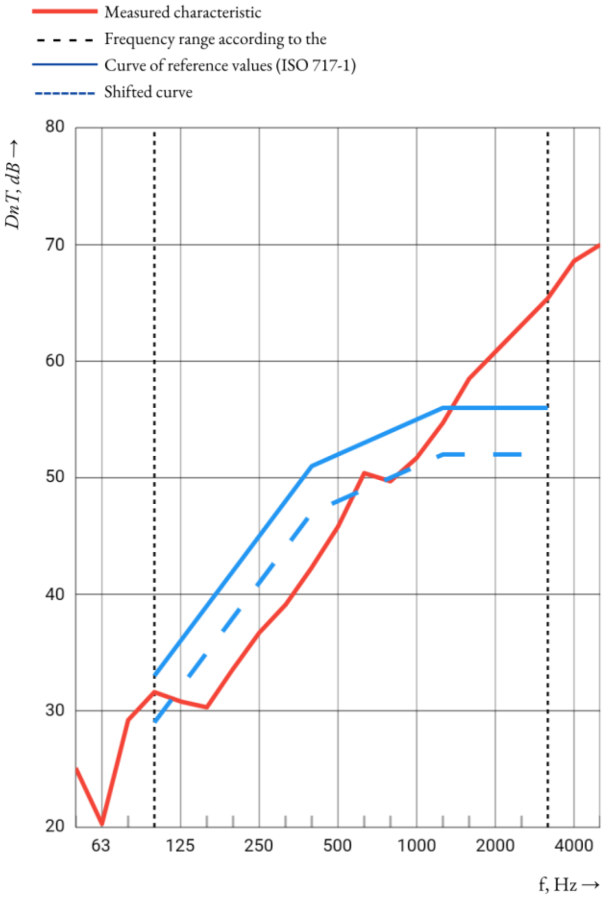
Task: Task 3
Client:
Description:

Object: Test 3

Date of test: 2023-12-08

Area of common partition: 14.0 m^2 Note
Receiving room volume: 25.0 m^3 Name Flat Room 3
Source room volume: 145.0 m^3 Name Ground Floor

Frequency f Hz	*DnT* (1/3 octave) dB
50	22.6
63	17.9
80	26.8
100	29.1
125	28.3
160	27.9
200	31.2
250	34.3
315	36.6
400	39.9
500	43.3
630	48.0
800	47.3
1000	49.3
1250	52.3
1600	56.1
2000	58.4
2500	60.7
3150	63.0
4000	66.2
5000	67.6



Rating according to ISO 717-1

DnTw(C;Ctr) = **46 (-2 ; -6) dB**

$C_{50-3150}$= -3 dB
$C_{tr,50-3150}$= -9 dB

$C_{50-5000}$= -2 dB
$C_{tr,50-5000}$= -9 dB

$C_{100-5000}$= -1 dB
$C_{tr,100-5000}$= -6 dB

Evaluation based on field measurement results obtained by an engineering method

Name of test institute:

Date: 2023-12-08

Signature:

Appendix E

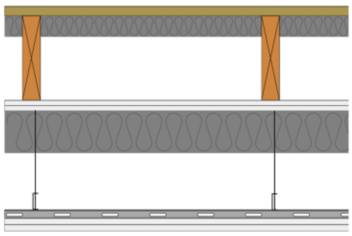
Upgraded Floor Information

The sound insulation prediction of the upgraded floor, as per the calculations undertaken in sound insulation prediction software, Insul, are shown below:

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
- Key No. 6570
Job Name:14-16 Station Road, Hayes
Job No.:20620 Initials:Daniel Green MIOA
Date:09/12/2023
File Name:Proposed Floor.ixl

Notes:



Rw	58 dB
C	-1 dB
Ctr	-3 dB

Mass-air-mass resonant frequency = =23 Hz , 47 Hz

Panel Size = 2.7 m x 4.0 m

Partition surface mass = 89.3 kg/m²

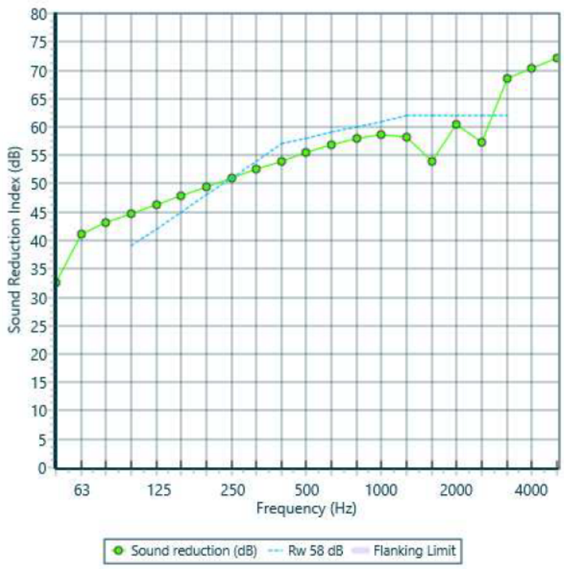
System description

Panel 1 : 1 x 22 mm RCM CemBoard (cement particle board)

Frame: Timber stud (2E2 mm x 45 mm), Stud spacing 600 mm ; Cavity Width 200 mm , 1 x Rockwool (48kg/m3) Thickness 50 mm
Panel 2 : 2 x 12.5 mm Gyproc Fireline 12.5mm

Frame: Suspended Light Steel Grid (2.5E2 mm x 45 mm), Stud spacing 600 mm ; Cavity Width 250 mm , 1 x Rockwool (48kg/m3) Thickness 100 mm ...
Panel 3 : 2 x 15 mm Fermacell 15

freq.(Hz)	R(dB)	R(dB)
50	33	
63	41	36
80	43	
100	45	
125	46	46
160	48	
200	49	
250	51	51
315	52	
400	54	
500	56	55
630	57	
800	58	
1000	59	58
1250	58	
1600	54	
2000	60	56
2500	57	
3150	69	
4000	70	70
5000	72	



APPENDIX E

UPGRADED FLOOR INFORMATION

Designing for On-Site Performance

The acoustic descriptor D_{nTw} is the single figure on-site performance relating to airborne sound insulation. This descriptor considers all channels of sound transmission, including the sound transfer directly through the partition as well as any flanking paths around it such as the junction of the partition with other elements, ceiling voids, ventilation ducts, etc.

R_w is the laboratory equivalent of D_{nTw}. R_w can only be measured in a laboratory as tests are undertaken with the test element in isolation, and therefore, R_w only considers the direct sound transfer and does not consider flanking paths and the other channels of sound transmission. R_w test figures published by product manufacturers are useful to compare one product or range with another, but do not provide a true indication of the potential site performance due to the factors mentioned previously. Sound insulation prediction software packages such as Insul would also calculate an R_w value as they could not possibly consider all potential flanking paths and the workmanship of the site contractor.

The C_{tr} adaptation term is a correction that can be added to either the R_w (laboratory) or D_{nTw} (site) airborne rating and is effectively a measure of how much worse the performance would perform when considering low frequency sound energy (between 100 Hz and 315 Hz).

The difference between D_{nTw} and R_w (or D_{nTw} + C_{tr} and R_w + C_{tr}) is dependent on the room size and absorption, partition size, possible indirect sound paths and junction detailing. Note that lightweight constructions such timber joist systems would expect a greater difference than masonry constructions such as concrete or blockwork.

In this case, based on the room sizes in question, we would expect a difference between the D_{nTw} + C_{tr} and R_w + C_{tr} values to be 4-7 dB. Therefore, the expected sound insulation performance of the proposed floor upgrade would be expected to be between 48-51 dB D_{nTw} + C_{tr}.

APPENDIX F

NOISE TRANSFER CALCULATIONS

The **reverberant sound pressure level** (L_r) in the receiver room is based on the following equation:

$$L_r = L_p - R + 10\log(S) + 10\log\left(\frac{T_r}{0.161 * V_r}\right)$$

where

L_p is the reverberant sound pressure level within the source room, dB

R is the octave band sound reduction Index of the party floor, dB

S is the common area of the separating floor between the source and receiver room

T_r is the reverberation time in the receiver room

V_r is the volume of the receiver room

Calculation of noise via direct transfer L_{Aeq}

Internal Building Fabric Details:									
Element:	Party Floor	**Description:**	Timber joist party floor upgraded as detailed within Section 4.2 of the report and Appendix E.						
Area, m²:	16								
Receiver Room Volume, m³:	35								
Receiver Room Reverberation (*T*) at octave band (Hz):		**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Assessment:									
		Octave Band Centre Frequency							
		63Hz	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
L_p - reverberant sound pressure level within AGC (L_{Aeq})		64	64	63	65	62	52	50	47
R - octave band sound reduction Index of the party floor, dB		-36	-46	-51	-55	-58	-56	-70	-70
S - common area of the separating floor between the source and receiver room		12	12	12	12	12	12	12	12
Correction for room volume and reverberation time		-11	-11	-11	-11	-11	-11	-11	-11
Calculated Internal Sound Pressure Level in Flat:									
Worst-case Level $L_{Aeq(T)}$	**Overall dB(A)**	**Linear dB at Octave Band Centre Frequency**							
		63Hz	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
L_{eq}	13	30	20	14	12	6	-2	-18	-21

The **maximum instantaneous sound pressure level** (L_{mr}) in the receiver room is based on the following equation:

$$L_{mr} = L_{max} - R + 10\log(S) + 10\log\left(\frac{T_r}{0.161 * V_r}\right)$$

where

L_{max} is the maximum instantaneous sound pressure level event within the source room, dB

R is the octave band sound reduction Index of the party floor, dB

S is the common area of the separating floor between the source and receiver room

T_r is the reverberation time in the receiver room

V_r is the volume of the receiver room

Calculation of noise via direct transfer L_{Amax}

Internal Building Fabric Details:									
Element:	Party Floor	**Description:**	Timber joist party floor upgraded as detailed within Section 4.2 of the report and Appendix E.						
Area, m²:	16								
Receiver Room Volume, m³:	35								
Receiver Room Reverberation (s) at octave band (Hz):		**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Assessment:									
		Octave Band Centre Frequency							
		63Hz	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
L_{max} - maximum instantaneous sound pressure level event within AGC		71	75	78	78	79	78	87	85
R - octave band sound reduction Index of the party floor, dB		-36	-46	-51	-55	-58	-56	-70	-70
S - common area of the separating floor between the source and receiver room		12	12	12	12	12	12	12	12
Correction for room volume and reverberation time		-11	-11	-11	-11	-11	-11	-11	-11
Calculated Internal Sound Pressure Level in Flat:									
Worst-case Level L_{max}	**Overall dB(A)**	**Linear dB at Octave Band Centre Frequency**							
		63Hz	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
L_{Amax}	29	37	31	29	25	23	24	19	17

APPENDIX G
NOISE BREAKOUT CALCULATION

The sound pressure level at the receiver façade ($L_{p,out}$) is based on the following equation:

$$L_{p,out} = L_{p,in} + TL + 10\log_{10}(S) - 20\log_{10}(R) - 14$$

where
$L_{p,in}$ is the sound reverberant sound pressure level within the source room, dB
TL is the sound reduction of the façade
S is the surface area of building envelope facing the receiver
R is the distance in metres from the façade to the receiver
-14 occurs due to no reverberant sound field in the open (6dB) + the propagation effect of the wall (8dB)

The calculation above assumes hemispherical radiation and point source, and is therefore only valid for distances greater than 3 times the major source dimension. As the receiver is 10 metres from the source and the major source dimension (façade width) is approx. 3 metres, then 20log(R) = 10log(R) instead

Inside to Outside Calculation of Continous Noise L_{Aeq} Receiver: First-floor residence	*Frequency, Hz* *63*	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	*dB(A)*
$L_{p,in}$ - sound pressure level within AGC (L_{Aeq})	64	64	63	65	62	52	50	47	
TL - sound reduction performance of the façade	-18	-21	-25	-29	-33	-31	-35	-35	
S - surface area of façade = 30m^2	15	15	15	15	15	15	15	15	
R - distance from source to receptor = 2.5m	-4	-4	-4	-4	-4	-4	-4	-4	
-14	-14	-14	-14	-14	-14	-14	-14	-14	
Noise Level at 1m from Receptor Window, dB	**43**	**40**	**35**	**33**	**26**	**18**	**12**	**9**	**33**
TL - sound reduction of partially open receptor window	-19	-14	-12	-19	-17	-20	-21	-21	
A - correction for room volume and absorption	-9	-12	-11	-10	-9	-9	-10	-10	
Reverberant Noise Level within Receptor Room, dB	**15**	**14**	**12**	**4**	**0**	**-12**	**-19**	**-22**	**7**

Inside to Outside Calculation of Instantaneous Noise L_{Amax} Receiver: First-floor residence	*Frequency, Hz* *63*	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	*dB(A)*
$L_{p,in}$ - sound pressure level within AGC (L_{Amax})	71	75	78	78	79	78	87	85	
TL - sound reduction performance of the façade	-18	-21	-25	-29	-33	-31	-35	-35	
S - surface area of façade = 30m^2	15	15	15	15	15	15	15	15	
R - distance from source to receptor = 2.5m	-4	-4	-4	-4	-4	-4	-4	-4	
-14	-14	-14	-14	-14	-14	-14	-14	-14	
Noise Level at 1m from Receptor Window, dB	**50**	**51**	**50**	**46**	**43**	**44**	**49**	**47**	**53**
TL - sound reduction of partially open receptor window	-19	-14	-12	-19	-17	-20	-21	-21	
A - correction for room volume and absorption	-9	-12	-11	-10	-9	-9	-10	-10	
Reverberant Noise Level within Receptor Room, dB	**22**	**25**	**27**	**17**	**17**	**14**	**18**	**16**	**25**

APPENDIX H

WITNESS STATEMENT IN RELATION TO PATRON BEHAVIOUR OUTSIDE EXISTING AGCS

WITNESS STATEMENT
(CJ Act 1967. s. 9, MC Act 1980, s.s.5A (3a) and 5B MC Rules 1981, r70)

Statement of: Darrell John Butterworth

Age if under 18: Over 18 — Occupation: Licensing and Security Compliance Manager

(if over 18 insert "over 18")

This statement (consisting of 8 page(s) each signed by me) is true to the best of my knowledge and belief and I make it knowing that, if it is tendered in evidence, I shall be liable to prosecution if I have wilfully stated in it anything which I know to be false or do not believe to be true.

Dated the 4th May 2023

Signature: D J Butterworth

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1. Chongie Entertainments Limited has commissioned this current investigation. It is a supplementary investigation to my previous report dated the 19th of July 2022 (exhibit reference Letter DJB 1 refers). The current investigation has been requested following a decision of the Planning Inspectorate dated 4th of March 2023. In their reasons for refusing the appeal the Inspector cited a lack of evidence to demonstrate that the extending of the permitted hours beyond 2300 hours would not have a negative impact on resident's peace resulting from a venue operating these extended hours.

2. The Inspector cited noise from groups of more than two customers talking outside, customers arriving and leaving in vehicles, and groups smoking outside as a source of disturbance to residents.

Methodology

3. Chongie Entertainment Limited have requested observations be conducted at three separate areas, (Wood Green, Croydon, and Crawley) similar in social and business demographics in order to test the veracity of the Planning Inspectors findings. The observations would take place on a weekday and weekend trading period at each of the three locations between 2200 hours and 0400 hours. A total period of 36 hours observations over 6 nights. The units observed would be a mixture of Chongie 24-hour operations and other similar gaming venues. It was requested that I maintained a record of noise issues, general footfall, customer numbers, method of arrival, method of departure, numbers smoking outside, and other venues open in the area, which may have an impact on residents.

4. I recorded all my observations onto a notes document from which I have produced record of observations logs and tables so that each venue and period can be easily compared.

5. I do not profess to be an acoustic expert, but I have conducted basic noise level readings within my report to support my own audible perceptions.

Wednesday 19th April 2023 (Wood Green)

6. I have previously conducted investigations in the Wood Green area in relation to Alcohol Licence applications, reviews, and Gaming applications. I am familiar with the Haringey London Borough Council licensing and gambling policies. I have also visited this area in a social capacity.

7. I arrived in the Wood Green area at 1500 hours and commenced my observations at 2100 hours, concluding them at 0415 hours the following morning. The main source of noise disturbance, which I observed from within my hotel, was the passing of motor vehicles with loud exhaust systems, loud stereo from vehicles and Emergency Service vehicles.

8. I recorded my observations into a notes document from which I later produced a record of observations log (exhibit reference letter DJB 2) and a table (table 1) of customers attending the venues. I also recorded non gambling pedestrians passing through the area and examples of noise created.

Summary of 19th April 2023 observations

9. All but one of the customers observed entering or leaving the gambling venues were male. The largest group observed entering or leaving at the same time was two. Only lone males were observed smoking outside the venue. Throughout the 7-hour period of observations only three customers arrived in vehicles. Most customers arrived and left alone and on foot. None of these customers created any noise nuisance. The largest creators of noise were passing vehicles and street cleaning vehicles.

Thursday 20th April 2023 (Croydon)

10. I arrived in the Croydon area of London at 2100 hours and conducted my observation until 0415. I have not conducted licensing or gambling investigations previously in the Croydon but have visited Croydon in a social capacity. The area appeared like those previous visits. I recorded my observations into a notes document from which I later prepared a record of observations log (exhibit reference letter DJB3 refers) and a table of data (table 2 refers).

Summary of 20th April 2023 observations

11. The venue is located alongside a light railway tramline making parking during access times difficult. No residential accommodation was identified in the immediate area. The venue was frequented by a larger proportion of female customers to those observed on the night's investigation in Wood Green. The largest noise created was by groups of intoxicated pedestrians, street cleaners and passing trams. The gaming venue customers did not create any noise nuisance whilst entering, smoking, or leaving. The largest group observed entering or leaving was two. The largest number observed smoking outside was two.

Friday 21st April 2023 (Croydon)

12. I remained in the Croydon area, continuing my observations at 2130 and concluding them at 0415 hours the following morning. I again recorded my observations contemporaneously and have produced these notes in a record of observation log (exhibit reference DJB 4) and a table of statistics (table 3).

13. During this period of observations, I concentrated my findings on Croydon High Street where two machine type premises are located (Admiral and Game Nation), as well as revisiting the sites of other gaming venues in the town. The location of the High Street venues was unique in that the two gaming venues were the only operators open in the late evening and early morning trading periods after the closure of Tesco Express at 2300 hours.

14. It therefore provided an ideal opportunity of assessing what impact these premises had on the locality without the added influence of traffic, local stores, take aways or alcohol licensed premises. I was also able to externally observe both premises simultaneously due to the lack of other distractions and interference. The ability to observe both premises and count the customers entering and leaving should be taken into account when considering the footfall and entry /exit figures in table 3.

Summary of 21st April 2023 observations

15. The Admiral unit on High Street was the busiest venue of this type visited during this series of observations. On this night three males are seen to enter Game Nation at 2328. As they only remained on the premises for six minutes, I formed the opinion that they had entered out of curiosity as opposed to being regular clientele of this type of establishment. This was the only occasion that a group more than two was observed entering a venue. Most people entered alone, with occasional pairs.

Signature *D J Butterworth*

16. At 0101 I witnessed a male customer being ejected from Admiral and refused re-entry. He banged on the front doors, until he was threatened with the police attending, then left. This was the only occasion of disorderly conduct observed during the series of observations.

17. Whilst Admiral was the busiest venue observed in terms of people entering, smoking outside, and leaving I assessed the High Street area of Croydon to be the quietest of the three areas visited. I confirmed my audible perception with a noise level reading which gave a peak of 30dB and an average of 25dB. This was the lowest noise reading I have ever recorded in a town centre location and was more in line with residential areas.

Saturday 22nd April 2023 (Wood Green)

18. I returned to the Wood Green area of London and recommenced my observations at 2100 and concluding them at 0430 hours the following morning. I again recorded my observations contemporaneously and have produced these notes in a record of observation log (exhibit reference DJB 5) and a table of statistics (table 4).

Summary of 22nd April 2023 observations

19. During this period of observations, I concentrated most of my time at the Merkur venue on Wood Green High Road whilst also revisiting other venues in the area. It was immediately notable following my previous night's visit to Croydon the impact the presence of traffic, licensed premises, restaurants, takeaways, and other late-night businesses made to the general environment, and the impact this had on noise levels.

20. During this evening's observations three customers of Merkur all smoked outside at the same time. This was the largest group of customers smoking observed during this series of observations and only occurred for less than a minute. On all other occasions most of the smoking was by individuals and occasionally two people.

21. On the evenings observations I noted the largest number of customers exiting a venue at the same time. This was at 2257 hours when five males and a female exited the Little Vegas venue. Ironically, this exodus was generated by the venue closing at 2300 hours as a result of the current planning condition.

Thursday 27th April 2023 (Crawley)

22. On this evening I took observations in the Crawley Town Centre area where Admiral, Merkur and Little Vegas all operate 24-hour machine venues. I have previously conducted an alcohol licence investigation in Crawley town centre, and I am familiar with the night time economy. The area appeared like my

previous visits. I arrived in Crawley at 2200 hours and my observations ceased at 0430 hours the following morning. I recorded my observations into a notes document from which I have prepared the below summary and record of observation log (exhibit reference letter DJB 6).

Summary of 27th April 2023 Observations

23. During this period, I concentrated my investigation on the Admiral and Merkur operators in Queens Square, whilst also visiting the Little Vegas operation trading on Broadway. Queens Square is a pedestrianised area, so all customers arrived and left on foot. Due to the layout of Queens Square, I was again able to monitor the two venues simultaneously so the results and figures should be read in that context.

24. Even when taking both premises together this was still the quietest location visited during these observations, in terms of customers entering and leaving Admiral and Merkur, and numbers smoking outside. No noise nuisance was witnessed by any of these customers, with noise in the area being created by other non-gaming customers passing through Queens Square.

Friday 28th April 2023 (Crawley)

25. My observations in Crawley town centre on this evening commenced at 2100 hours and my observations ceased at 0415 hours the following day. I recorded my observations into a notes document from which I have prepared the below summary and record of observations log (exhibit reference letter DJB 7 refers.

Summary of 28th April 2023 observations

26. On this evening I concentrated my observations and investigation on the Little Vegas situated on Broadway in Crawley town centre. Although this was not the busiest area in terms of pedestrian foot traffic and customers entering and leaving the premises, it was the busiest location visited in terms of customers smoking outside. Although these numbers remained low, and no noise disturbance was created by these smokers who numbered five at one time for less than two minutes.

27. The constant noise created in the area was from intoxicated revellers passing along Broadway to and from Crawley High Street where most late-night alcohol licensed premises were located. The largest single noise created was by a motorcycle with an adapted exhaust pipe which drove along Broadway past Little Vegas on two separate occasions. I was able to monitor this noise as it passed by my location which had a peak level of 82dB. This was a similar noise reading as passing emergency service sirens recorded on Wood Green High Road the previous week.

Signature *D J Butterworth*

28. Two customers of Little Vegas were seen to leave and walk from the premises before entering vehicles parked in nearby on street parking bays. Due to the distance, they had parked away from the venue I did not note their arrival by vehicle but have assumed for the purpose of my calculations that they would more likely have done so. A security guard was also observed arriving and leaving Little Vegas in a patrol car. It was not clear whether he was a customer or an employee of the company. For completeness he has been included in the recorded figures.

Planning Considerations

29. **Does the presence of machine premises increase disturbances in their neighbourhood?**
From these observations I was able to assess the impact that these venues had on their locations. The customer use of these premises in all areas during the late evening and early hours of the morning was low. The numbers attending was low in comparison with the numbers of non-gamblers passing through all the areas for other reasons.

30. In Croydon where the only premises operating late at night are machine premises, no disturbance was created by the presence of the venues and the lowest noise was noted. The risk of noise nuisance to residents was greater from passing vehicle traffic, inconsiderate drivers and intoxicated pedestrians in the other areas visited than those created by customers of the gaming establishments.

31. Further evidence that the presence of these type of business do not cause a nuisance to local resident comes from the Planning Inspectorate. An interview in Wood Green with residents "*indicated that they have not experienced any negative effect in terms of noise."* This is then clarified by the Inspectorate that the venue did not currently operate after 2300. The fact that a 24-hour machine premises currently operated four doors further along did not appear to have been a consideration.

32. **Did customers congregate outside, talking in large numbers creating a negative noise impact?**
The number of customers smoking and congregating outside was low. On only one occasion were five customers observed outside a venue for less than two minutes. On most occasions lone individuals and occasionally pairs of customers where outside for short periods of time. Most smokers did not engage with other smokers and appeared anxious to return inside to continue their play.

33. **Did customers arrive and depart in vehicles which may create a disturbance?**
In considering this question, I discount the areas where parking is impossible (Croydon High Street and Queens Square, Crawley) or restricted (George Street, Croydon). In the other areas observed only five customers travelled to the premises by car. The remaining 121 customers attended the immediate vicinity on foot. I concluded that most customers to these venues are local. Residents were more at risk of being disturbed by vehicles parking outside to visit nearby cash machines and take aways.

34. A further recent phenomenon not referred to in the Planning Inspectorates decision of the 4th of March 2023 is the existential increase in the number of delivery drivers attending fast food venues in the early hours of the morning. These delivery drivers attend in cars, on pedal bikes but most of them ride mopeds. They then hang around the outside of the takeaway venues awaiting orders to be received or prepared before riding off to make their delivery, often in breach of road traffic regulations and with a complete disregard for pedestrians or the impact on residents.

35. I witnessed this problem in all three locations throughout the late evening and early morning trading periods, with more than ten mopeds and pedal cycles observed outside the more popular takeaway venues (Photograph exhibit reference letters DJB 8 and DJB 9 refers). This issue appears to have increased since the Covid restrictions were in force.

36. **Did customers arrive or depart in groups of more than two?**
On only two occasions did I see three young males enter and leave a venue. As one group only stayed inside for 6 minutes, I formed the view that they had entered out of curiosity rather than being regular customers. On all other occasions, most customers arrived and left the venues alone or occasionally in pairs.

Conclusion

37. This was the most extensive period of observation that I have been requested to undertake in relation to the use of and the impact of machine type gaming venues. A total of 42.25 hours over 6 nights at 12 venues in three separate locations. Each venue differed in respect to residential, mixed use, vehicle access and location. As a result, any application and the relevance of all or part of this report and its finding should be considered on an individual basis.

38. Prior to conducting this recent investigation, I had conducted numerous night-time investigations at alcohol and gaming venues all around the country. I have expressed my opinion on the crime and noise impact of gambling premises in my initial statement of the 19th of July 2022. What I observed and noted during the current investigation has reinforced those views, the accuracy and reasoning for which can now be statistically supported.

39. I am unaware of any machine type premises having their licence reviewed, let alone revoked for breaching the Gambling Act licensing objective for disorder issues created by their operation. I am aware of alcohol licensed premises having their licences challenged in similar circumstances. If gambling premises, particularly venues licenced for machines, are creating a nuisance I would expect to see similar applications for licensing committees to consider an amendment to a licence or impose conditions.

40. Any of these venues, may from time to time suffer an isolated incident such as the one observed outside a venue in Croydon at 0020 on the 22nd of July 2023. It is how an operator responds to such incidents that is important to consider. It may be that barring the individual involved on this occasion would be sufficient to prevent the incident from reoccurring in the future.

41. My findings during this and previous investigations is that these types of gaming venues do not create increases in crime or noise in locations where they are licensed. Customer use is low, and the impact of other factors nearby (vehicles, delivery drivers, inconsiderate motorist, intoxicated pedestrians, and emergency vehicles) create a higher and more realistic cause of disturbance to residents where machine venues operate.

APPENDIX I

ENVIRONMENTAL NOISE SURVEY TECHNICAL INFORMATION

An environmental noise survey was undertaken on site at the window of the closest noise sensitive receptor to establish prevailing background noise levels in the area. The measurement location is shown in Figure 1.

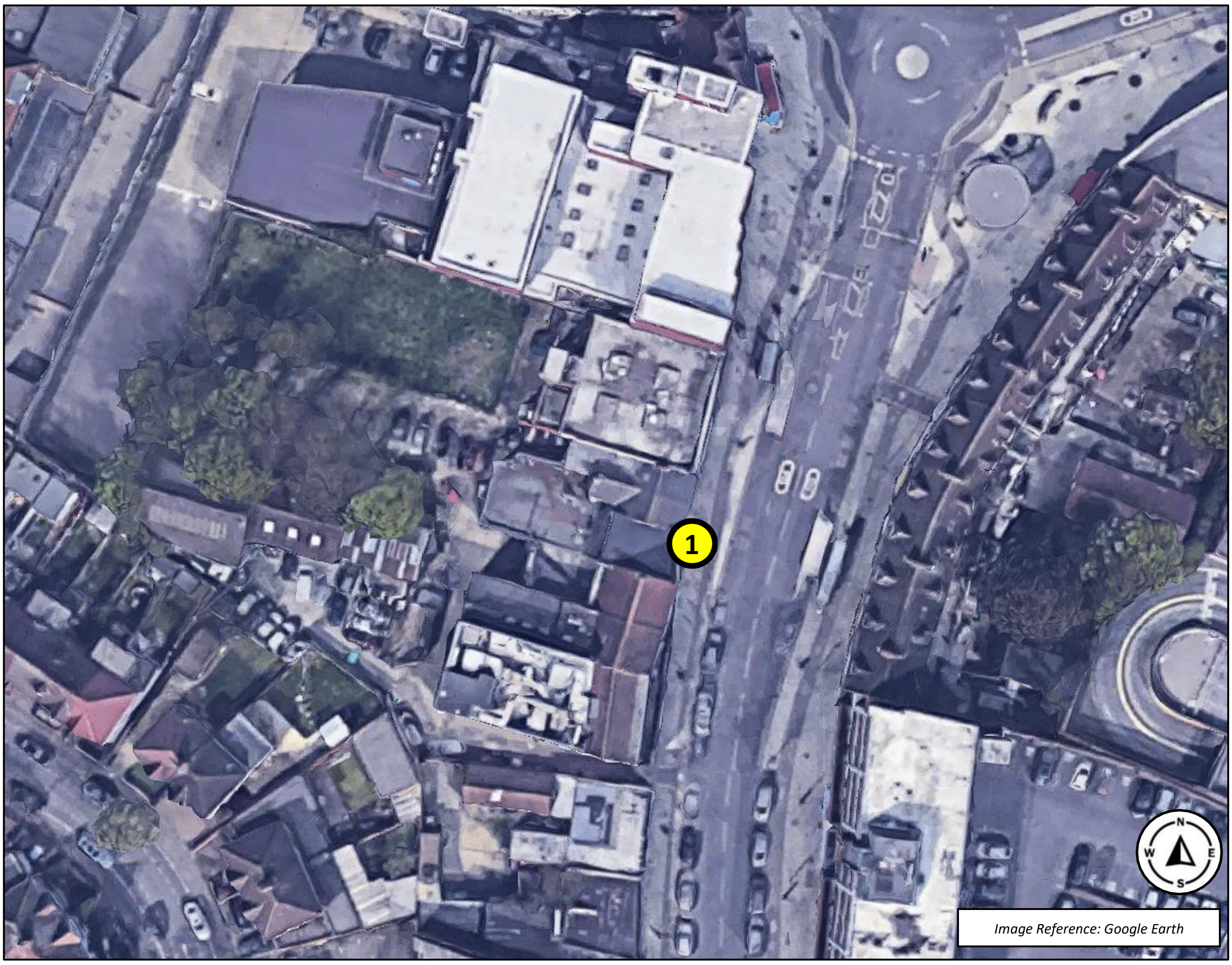


Figure 1 Noise survey measurement location

The monitoring equipment was installed at the first-floor window directly above the proposed AGC entrance.

An initial appraisal of the site determined road traffic noise from Station Road to be the dominant noise source affecting the site.

The measurement procedure complied with ISO 1996-2:2017 Acoustics 'Description, measurement and assessment of environmental noise - *Part 2: Determination of environmental noise levels'*, with automated monitoring undertaken between 11:15 on 08/12/2023 and 13:50 on 11/12/2023.

The key acoustic descriptors measured for this assessment are as follows:

- $L_{Aeq,T}$ (the continuous equivalent A-weighted noise level over a given time period, T);
- $L_{A90,T}$ (the noise level exceeded for 90% of the measurement period T, referred to as the 'background' noise level);

APPENDIX I

ENVIRONMENTAL NOISE SURVEY TECHNICAL INFORMATION

The equipment used for the environmental noise survey is shown in Table 1. The equipment calibration was verified before and after use and no abnormalities were observed.

Equipment	Make and Model	Serial Number
Sound Level Meter	Convergence Instruments NSRT MK3 Type 1 Sound Level Meter and Data Logger	APPUhF062fc1KhlgS2BxHD
Calibrator	Svantek SV33 Class 1 Sound Calibrator	125829

Table 1 Noise survey equipment

Weather conditions during the automated monitoring were generally dry with light winds and therefore suitable for the measurement of environmental noise. Some rainfall was present on 9th December, however it is not expected to have had a detrimental effect on recorded noise levels from a review of the noise levels as shown in time history below.

Wind speeds were under the 5m/s limit for environmental noise measurement, with marginal exceedances through the survey. From a review of data captured, the effect on noise levels captured is negligible.

A summary of the measurement results is presented in Table 2 with a range of levels being shown for daytime and night-time:

Period	Average Ambient Noise Level $L_{Aeq,T}$ (dB)	Representative Background Noise Level L_{A90} (dB)
Daytime 07:00-23:00	67 – 70	60 – 63
Night-time 23:00-07:00	64 – 66	43 – 51

Table 2 Summary of measured noise levels

A further daily breakdown of noise levels measured on each day, night and the proposed extended operating hours (in red) are shown in Table 3:

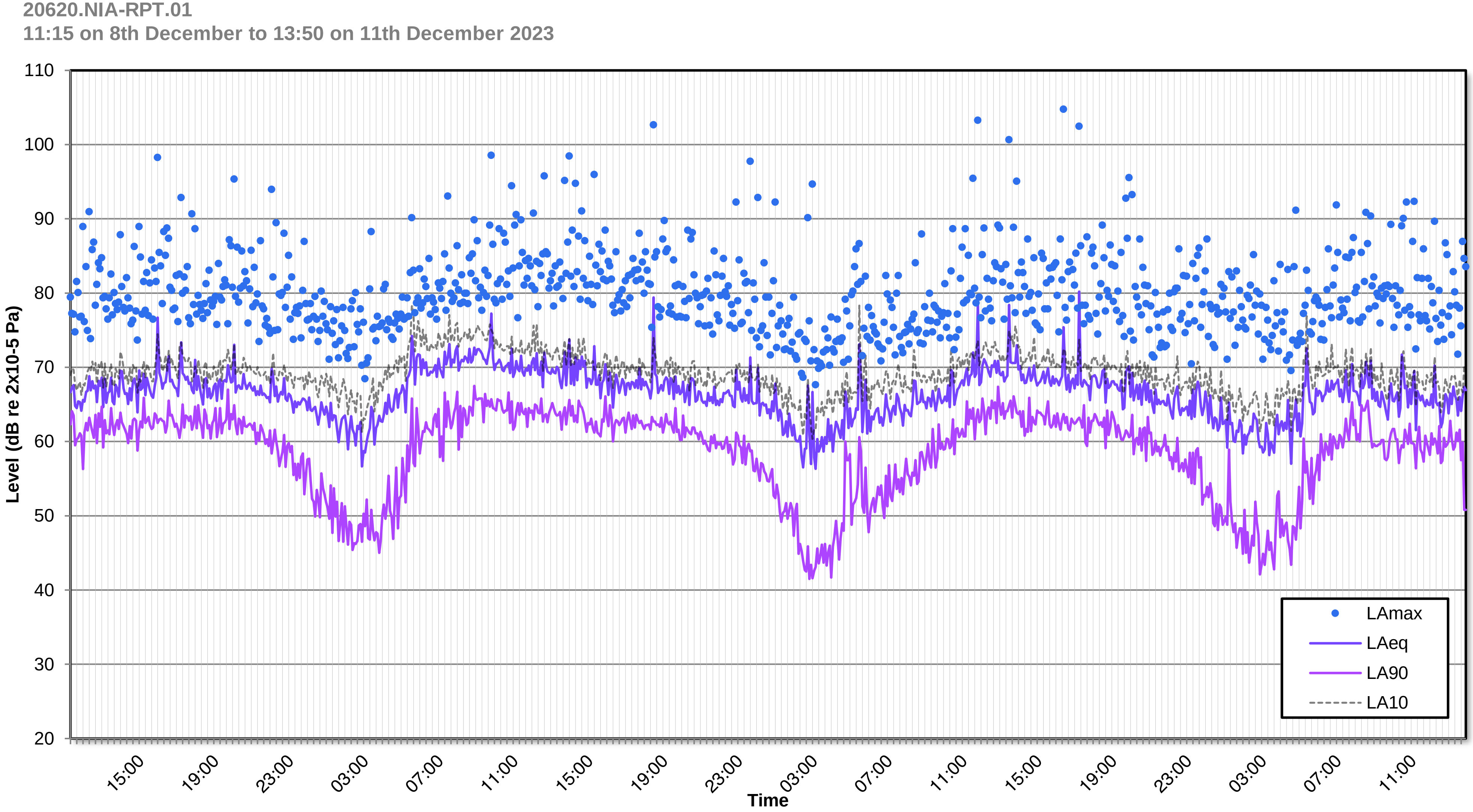
Date	Period	Average Ambient Noise Level $L_{Aeq,T}$ (dB)	Representative Background Noise Level L_{A90} (dB)
08/12/2023	11:15-23:00	68	62
08/12/2023 to 09/12/2023	23:00-07:00	66	47
09/12/2023	07:00-23:00	70	63
09/12/2023 to 10/12/2023	23:00-07:00	64	51
11/12/2023	07:00-23:00	69	62
11/12/2023 to 12/12/2023	23:00-07:00	64	43
12/12/2023	07:00-13:50	67	60

Table 3 Measured noise levels per day and night

A time history of the environmental noise time history data is presented below.

APPENDIX I

ENVIRONMENTAL NOISE SURVEY TECHNICAL INFORMATION



APPENDIX J
CUSTOMER NOISE OUTSIDE

For Scenario's 1 and 2, the customers are considered to be leaving the AGC and walking from the main door to a location 20m to the north or south of the site. Assuming an average walking speed of 3.8mph (1.7m/s), it would take 12 seconds to reach a point 20 metres from the entrance door. An $L_{Aeq, 1 sec}$ level is calculated for each second the customer is walking away from the site, appropriately corrected for the distance to the closest residential window. The 12 no. $L_{Aeq, 1 sec}$ measurements are then logarithmically combined to ascertain an assessment level of $L_{Aeq, 12 sec}$ which is effectively the "event" of the customers either arriving to the site from 20m away, or leaving the site to a distance 20m away

SCENARIO 1									
Source: 2 no. customers talking with normal speech while leaving the AGC **Receiver: First-floor residential window**	*Frequency, Hz*								*dB(A)*
	63	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	
'Normal' Human Speech (Sound Power Level)	45	55	65	69	63	56	50	45	
Correction for number of customers (2)	3	3	3	3	3	3	3	3	
Minimum attenuation provided by distance	-29	-29	-29	-29	-29	-29	-29	-29	
Noise Level at 1m from Receptor Window, dB	**19**	**29**	**39**	**43**	**37**	**30**	**24**	**19**	**42**
Receptor Window Partially Open									
TL - sound reduction of partially open receptor window	-19	-14	-12	-19	-17	-20	-21	-21	
Noise Level within Receptor Room due to Scenario 1 with Window Partially Open, dB	**0**	**15**	**27**	**24**	**20**	**10**	**3**	**-2**	**25**
Internal Noise Level within Dwelling from Existing External Noise Environment with Partially Open Window	-	-	-	-	-	-	-	-	**45**
+/- vs Existing Noise Level with Partially Open Window	-	-	-	-	-	-	-	-	**-21**
Receptor Window Closed									
TL - sound reduction of closed receptor window	-20	-22	-20	-26	-36	-39	-31	-35	
A - correction for room volume and absorption	-9	-12	-11	-10	-9	-9	-10	-10	
Noise Level within Receptor Room due to Scenario 1 with Window Closed, dB	**-10**	**-5**	**8**	**7**	**-9**	**-19**	**-17**	**-26**	**5**
Internal Noise Level within Dwelling from Existing External Noise Environment with Window Closed	-	-	-	-	-	-	-	-	**30**
+/- vs Existing Noise Level with Closed Window	-	-	-	-	-	-	-	-	**-25**

*SEE NOTES BELOW

SCENARIO 2									
Source: 3 no. customers talking with normal speech while leaving the AGC **Receiver: First-floor residential window**	*Frequency, Hz*								*dB(A)*
	63	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	
'Normal' Human Speech (Sound Power Level)	45	55	65	69	63	56	50	45	
Correction for number of customers (3)	5	5	5	5	5	5	5	5	
Minimum attenuation provided by distance	-29	-29	-29	-29	-29	-29	-29	-29	
Noise Level at 1m from Receptor Window, dB	**20**	**30**	**40**	**44**	**38**	**31**	**25**	**20**	**44**
Receptor Window Partially Open									
TL - sound reduction of partially open receptor window	-19	-14	-12	-19	-17	-20	-21	-21	
Noise Level within Receptor Room due to Scenario 1 with Window Partially Open, dB	**1**	**16**	**28**	**25**	**21**	**11**	**4**	**-1**	**26**
Internal Noise Level within Dwelling from Existing External Noise Environment with Partially Open Window	-	-	-	-	-	-	-	-	**45**
+/- vs Existing Noise Level with Partially Open Window	-	-	-	-	-	-	-	-	**-19**
Receptor Window Closed									
TL - sound reduction of closed receptor window	-20	-22	-20	-26	-36	-39	-31	-35	
A - correction for room volume and absorption	-9	-12	-11	-10	-9	-9	-10	-10	
Noise Level within Receptor Room due to Scenario 1 with Window Closed, dB	**-8**	**-4**	**9**	**9**	**-7**	**-17**	**-15**	**-24**	**7**
Internal Noise Level within Dwelling from Existing External Noise Environment with Window Closed	-	-	-	-	-	-	-	-	**30**
+/- vs Existing Noise Level with Closed Window	-	-	-	-	-	-	-	-	**-23**

NOTES:

Note 1: Human speech sound power levels from ANSI 3.5-1997 American National Standard 'Methods for Calculation of the Speech Intelligibility Index'

Note 2: While the correction for the number of customers is applied, it would be highly unlikely that multiple customers would be speaking simultaneously that is not how typical conversation takes place

Note 3: Distance correction applied based on a standard walking pace of 1.7m/s away from the entrance of the AGC to the receptor window. 12 no. steps result in a distance of 20m from the entrance, with attenuation losses ranging from -24dB to -37dB. A logarithmic average of -29dB has been used as a fair representation of the scenario

Note 4: TL of receptor window closed assumes a nominal double glazed window providing 31dB Rw

Note 5: While the window is partially open, the occupant is considered to be near the partially open window. While the window is closed, a correction for the room volume and absorptiion has been applied assuming that the occupant is using the room in a typical manner

APPENDIX J

CUSTOMER NOISE OUTSIDE

es acoustics

For Scenario's 3 and 4, the customers are considered to be standing within 1m of the building façade. At this position, the opening section of the first-floor windows would be partially out of line of sight of the patrons due to the the overhang, as shown in the Figure below. Therefore, a -5dB correction is applied to the screening.

SCENARIO 3									
Source: 2 no. customers talking with normal speech **Receiver: First-floor residential window**	*Frequency, Hz* *63*	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	*dB(A)*
'Normal' Human Speech (Sound Power Level)	45	55	65	69	63	56	50	45	
Correction for number of customers (2)	3	3	3	3	3	3	3	3	
Minimum attenuation provided by distance (2.5m)	-16	-16	-16	-16	-16	-16	-16	-16	
Minimum attenuation provided by partial screening	-5	-5	-5	-5	-5	-5	-5	-5	
Noise Level at 1m from Receptor Window, dB	**27**	**37**	**47**	**51**	**45**	**38**	**32**	**27**	**51**
Receptor Window Partially Open									
TL - sound reduction of partially open receptor window	-19	-14	-12	-19	-17	-20	-21	-21	
Noise Level within Receptor Room due to Scenario 1 with Window Partially Open, dB	**8**	**23**	**35**	**32**	**28**	**18**	**11**	**6**	**33**
Internal Noise Level within Dwelling from Existing External Noise Environment with Partially Open Window	-	-	-	-	-	-	-	-	**45**
+/- vs Existing Noise Level with Partially Open Window	-	-	-	-	-	-	-	-	**-12**
Receptor Window Closed									
TL - sound reduction of closed receptor window	-20	-22	-20	-26	-36	-39	-31	-35	
A - correction for room volume and absorption	-9	-12	-11	-10	-9	-9	-10	-10	
Noise Level within Receptor Room due to Scenario 1 with Window Closed, dB	**-2**	**3**	**16**	**15**	**0**	**-10**	**-9**	**-18**	**14**
Internal Noise Level within Dwelling from Existing External Noise Environment with Window Closed	-	-	-	-	-	-	-	-	**30**
+/- vs Existing Noise Level with Closed Window	-	-	-	-	-	-	-	-	**-16**

*SEE NOTES BELOW

SCENARIO 4									
Source: 5 no. customers talking with normal speech **Receiver: First-floor residential window**	*Frequency, Hz* *63*	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	*dB(A)*
'Normal' Human Speech (Sound Power Level)	45	55	65	69	63	56	50	45	
Correction for number of customers (5)	7	7	7	7	7	7	7	7	
Minimum attenuation provided by distance (2.5m)	-16	-16	-16	-16	-16	-16	-16	-16	
Minimum attenuation provided by partial screening	-5	-5	-5	-5	-5	-5	-5	-5	
Noise Level at 1m from Receptor Window, dB	**31**	**41**	**51**	**55**	**49**	**42**	**36**	**31**	**55**
Receptor Window Partially Open									
TL - sound reduction of partially open receptor window	-19	-14	-12	-19	-17	-20	-21	-21	
Noise Level within Receptor Room due to Scenario 1 with Window Partially Open, dB	**12**	**27**	**39**	**36**	**32**	**22**	**15**	**10**	**37**
Internal Noise Level within Dwelling from Existing External Noise Environment with Partially Open Window	-	-	-	-	-	-	-	-	**45**
+/- vs Existing Noise Level with Partially Open Window	-	-	-	-	-	-	-	-	**-8**
Receptor Window Closed									
TL - sound reduction of closed receptor window	-20	-22	-20	-26	-36	-39	-31	-35	
A - correction for room volume and absorption	-9	-12	-11	-10	-9	-9	-10	-10	
Noise Level within Receptor Room due to Scenario 1 with Window Closed, dB	**2**	**7**	**20**	**19**	**4**	**-6**	**-5**	**-14**	**18**
Internal Noise Level within Dwelling from Existing External Noise Environment with Window Closed	-	-	-	-	-	-	-	-	**30**
+/- vs Existing Noise Level with Closed Window	-	-	-	-	-	-	-	-	**-12**

NOTES:

Note 1: Human speech sound power levels from ANSI 3.5-1997 American National Standard 'Methods for Calculation of the Speech Intelligibility Index'

Note 2: While the correction for the number of customers is applied, it would be highly unlikely that multiple customers would be speaking simultaneously that is not how typical conversation takes place

Note 3: Distance correction considering sound power level $=10*\log(Q/4\pi r^2)$ where Q=2 due to the reflection from the building façade. Assumes average person height of 1.6m above ground, and therefore r=2.5m from speech position to receptor window

Note 4: TL of receptor window closed assumes a nominal double glazed window providing 31dB Rw

Note 5: While the window is partially open, the occupant is considered to be near the partially open window. While the window is closed, a correction for the room volume and absorptiion has been applied assuming that the occupant is using the room in a typical manner