

Agenda Item No.5

Additional Information from the Applicant

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From: Sarah Smith <
Sent: 12 January 2023 11:34
To: Yvonne Raine
Subject: [EXTERNAL]:STACK Durham - additional documentation in support of the application [SINTONS-LLP-LIVE.FID285955]

Dear Yvonne

Please see attached additional documentation to be relied on by the applicant at the hearing on 19th January. This consists of an updated operating schedule, in which we have added additional conditions to meet concerns raised by the objectors, and a noise report from Apex Acoustics. As you are aware the EHO is not a party to the hearing but as noise has been raised as a potential concern by the objectors we thought it might be helpful to have this report available. We have also asked the author of the report, J Hill, to attend the hearing so that he is available to answer any questions that the Committee may have.

I would be grateful if you could circulate these additional documents to the objectors. I will write to the Parish Council to make them aware of these changes, as a matter of courtesy, as my client has had pre-application consultation with that body.

Kind regards
Sarah

Sarah Smith
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STACK, 2-6 SILVER STREET, DURHAM DH1 3RB

OPERATING SCHEDULE - Rev B

1. The premises shall operate as a box park style event space with food, drink and retail outlets with external seating and plaza area.
2. There will be no change to this operating style without proper written notice to the Licensing Authority, which shall include details of the operating style proposed. The Licensing Authority shall advise within 21 days whether a formal application for full or minor variation or a new licence is required, and the licence holder shall comply with the direction.
3. The operator shall ensure that at all times when the premises are open for any licensable activity there is sufficient, competent staff on duty at the premises for the purpose of fulfilling the terms and conditions of the licence and for preventing crime and disorder.
4. The operator and designated premises supervisor shall conduct a risk assessment for the general operation of the premises and in the case of individual bespoke events. Such risk assessments should include the provision of door staff.
5. There will be on site a drugs policy and search policy. All public facing staff shall be trained in these policies every 12 months and will sign to confirm they have been trained.
6. There will be on site a vulnerable people policy and child sexual exploitation policy. All staff will be trained in these policies every twelve months and will sign to confirm that they have been trained.
7. There will be a minimum of 5 SIA registered door staff on duty at the premises from 18.00 hours to close on Fridays and from 16.00 hours to close on Saturdays and Bank Holidays Sundays
8. The maximum number of persons permitted on the premises at any one time shall not exceed a figure prescribed by the risk assessment carried out by the premises licence holder in accordance with fire safety legislation.
9. The designated premises supervisor shall ensure that there are effective management arrangements in place to enable him/her to know how many people there are in the premises at times prescribed within the management risk assessment.
10. A CCTV system shall be designed, installed and maintained in proper working order, to the satisfaction of the Licensing Authority and in consultation with Durham Police. Such a system shall:-
 - i) Be operated by properly trained staff;
 - ii) Be in operation at all times that the premises are being used for a licensable activity;
 - iii) Ensure coverage of all entrances and exits to the licensed premises internally and externally;
 - iv) Ensure coverage of such other areas as may be required by the Licensing Authority and Durham Police;
 - v) Provide continuous recording facilities for each camera to a good standard of clarity. Such recordings shall be retained on paper or otherwise may be put on

- tape or otherwise (for a period of 28 days), and shall be supplied to the Licensing Authority or Police Officer on request,
- vi) During times licensable activities are provided, a member of management or staff will be contactable and trained in the retrieval of CCTV footage, with the ability to download relevant footage within 24 hours of any request from Durham Police to do so.
11. There will be a radio link between each bar that retails alcohol and the main security staff at the premises. The radio shall be kept in good working order, operated by a responsible member of staff and used to report incidents of crime and disorder to the security team and other users.
12. Patrons will not be permitted to enter the premises with alcohol in an open container or vessel, save for with the agreement of Durham Police.
13. Patrons will not be permitted to remove alcohol in open containers or vessels from the premises, save for with the agreement of Durham Police.
14. There will be no supply of late-night refreshment from the premises after 23:00 hours.
15. Staff tasked with monitoring the entrance and the site generally will be trained in how to identify, deal with and refuse access to, and remove from the site, street drinkers. Such training will be documented and include:
- i) what to look for in identifying street drinkers;
 - ii) identifying known street drinkers and associates using intelligence kept and collected at the premises and in association with partner agencies;
 - iii) the law;
 - iv) how to refuse entry;
 - v) conflict situations and management support, and
 - vi) a scenario based questionnaire.
16. The premises will operate and retain a record of persons banned from entering or purchasing alcohol from the premises, which will form part of staff training and shall include those persons considered to be street drinkers or known associates. Such information shall be supplied from partner agencies and through the site's own records, including CCTV and staff knowledge.
17. All staff responsible for selling age restricted goods to be trained to implement the age verification policy. Staff training to include the risk from proxy sales. (This is alcohol purchased or obtained for young people by relatives or older friends). Training records for staff to be maintained and refresher training to be provided annually.
18. Noise from the licensed premises, including noise from patrons or amplified regulated entertainment, shall not be audible beyond the boundary of the premises so as to cause nuisance to nearby residents.
19. There will be a noise management plan in place on the premises which should include regular noise monitoring during times when regulated entertainment is taking place. The premises licence shall not become operational until the noise management plan has been submitted to and approved by Environmental Health.
20. No regulated entertainment in the form of live or recorded music will be permitted in the outside seating area after 23.00 hours.

21. During all hours that the premises are open to the public the entrance(s) to the site will be monitored by a member of staff.
22. The premises licence holder shall implement a suitable and sufficient queue management, pass-out and dispersal policy to minimise the risk of unacceptable large crowds gathering in the vicinity of the premises. When requested to do so, the premises licence holder shall engage with and participate in any schemes to support improved management of the area surrounding the premises. Such policy shall be made available to Responsible Authorities upon request.
23. If the general public congregating outside the premises are causing anti-social behaviour, the management shall request that they leave, and if the problem persists the Police shall be called to support.
24. All members of staff at the premises including door supervisors shall seek "credible photographic proof of age evidence" from any person who appears to be under the age of 25 years and who is seeking to purchase or consume alcohol on the premises. Such credible evidence, which shall include a photograph of the customer, will either be a passport, photographic driving licence, proof of age card carrying a "PASS" logo or a military ID card.

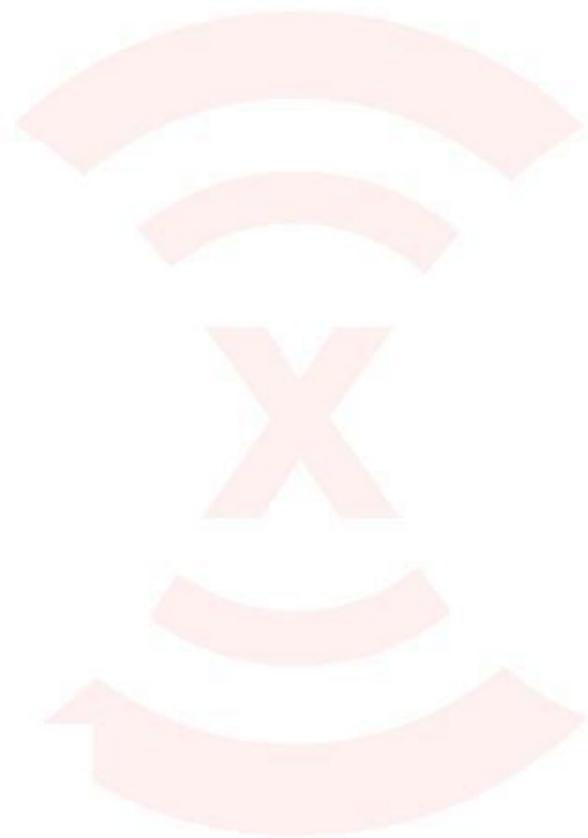


Former M&S, 2-6 Silver Street, Durham
Noise impact assessment

10070.1

14th October 2022

Revision A



Former M&S, 2-6 Silver Street, Durham

Noise impact assessment

10070.1

Revision	Description	Issued by	Date
A	First issue	JH	14 th October 22

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2 Summary

- 2.1 This report has been prepared in support of a planning application for the development of an entertainment venue at the former Marks & Spencer at 2-6 Silver Street, Durham.
- 2.2 The proposals include for a central entertainment plaza with stage, food and drink outlets, internal gaming area and rooftop outdoor seating area.
- 2.3 Noise sources considered in the assessment are entertainment noise associated with the central plaza, patron noise on the rooftop seating area, and background music at the rooftop seating area.
- 2.4 Noise sensitive receptors are identified as the future residential dwellings at Silver Street to the North of the development, and a 4-bed HMO to the east of the development, associated with planning applications DM/21/02271/FPA and DM/22/00139/FPA respectively.
- 2.5 Following discussion with the Local Authority Public Protection Officer, a noise criterion of NR 20 internally is proposed at the noise sensitive receptors.
- 2.6 Precise details of plant associated with the development are not known at this stage, and plant noise limits are proposed following the Local Authority Technical Advice Note on Noise.
- 2.7 Source noise levels have been estimated for patron noise following calculations of human speech levels from the relevant standard.
- 2.8 The client has provided desired entertainment noise levels in the plaza area.
- 2.9 Noise breakout calculations have been carried out based on proposed glazing performance, as described in the Summary Table.
- 2.10 Noise transmission and propagation is modelled with proprietary software, Cadna/A.
- 2.11 Based on the proposals in the Summary Table, the NR 20 criteria is achieved at the NSRs, without a need for further mitigation.

Source	Requirement
Breakout noise through silver street façade glazing	Glazing should meet R' values given in Table 6, based on 8/16/12.8 double glazing
Breakout noise through roof lantern	Glazing should meet R' values given in Table 7, based on 6.4 mm single glazing
Patron noise on roof terrace	Calculated based on a 246 person capacity
Background music on roof terrace	Total sound power 88 dB L _{WA} from speakers
Fixed plant (daytime)	57 dB L _s , cumulative limit of all plant assessed following BS 4142.
Fixed plant (night-time)	37 dB L _s , cumulative limit of all plant assessed following BS 4142.

Table 1: Proposed music noise levels, glazing specifications and plant noise limits

3 Introduction

3.1 This report has been prepared in support of a planning application for an Entertainment complex at the location of the Former Marks & Spencer at 2-6 Silver Street, Durham. The proposal includes for a central entertainment plaza with stage, food and drink outlets, internal gaming area (darts and shuffleboard) and rooftop outdoor seating area.

3.2 The site location is shown in Figure 1, along with the identified noise sensitive receptors (NSRs).

3.3 Existing residential dwellings are located to the first floor on Silver Street. Following discussions with Environmental Health, further potential future receptors have been identified as:

- NSR1: DM/21/02271/FPA for upper floor 4-bedroom dwelling (C4 HMO) at 37-38 Silver Street
- NSR2: DM/22/00139/FPA for 4 bed HMO

NSR1 and NSR2 are considered to be the closest to the proposed development for the purposes of the assessment.

3.4 The scope of our instruction includes:

- Determine the background sound environment
- Assume representative spectral levels associated with live or recorded music
- Use proprietary environmental sound modelling software, Cadna/A, to calculate noise propagation from the site
- Liaise with Environmental Health to determine appropriate limits at the nearest noise sensitive receptors
- Advise on music noise level limits and/or façade mitigation requirements to comply with determined limits
- Propose noise limits for future fixed mechanical plant and building services associated with the development



Figure 1: Site location (red), Measurement position (green) and Noise sensitive receptors (blue)

4 Planning policy and noise criteria

4.1 National Planning Policy Framework (NPPF)

4.2 The National Planning Policy Framework (NPPF), Reference 1, sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced in respect of noise, Paragraph 174, 185 and 187 of the NPPF state the following:

4.3 Paragraph 174:

"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..."

4.4 Paragraph 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 life⁶⁵ [See Explanatory Note to the Noise Policy Statement for England],

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;

4.5 Paragraph 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. "

4.6 Noise Policy Statement for England (NPSE)

4.7 The Noise Policy Statement for England, Reference 2, states three policy aims as follows:

"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."

4.8 The NPSE defines adverse noise impact as follows:

- No Observed Effect Level (NOEL)

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

- Lowest Observed Adverse Effect Level (LOAEL)

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

- Significant Observed Adverse Effect Level (SOAEL)

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

4.9 The first two aims of the NPSE require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

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

4.10 Local Planning Policy

4.11 John Hayes, Principal Public Protection Officer of Durham County Council was consulted with regards to the noise sensitive receptors, survey data and assessment methodology. The nearest noise sensitive receptors were identified as stated in Section 3.

4.12 A previous survey measurement taken in June 2019 at 34 Saddler Street was identified as being suitable for use in determination of representative background noise levels in order to propose limits for fixed plant associated with the development. Typical criteria of NR 20 indoors for entertainment noise was identified. It was noted that 10 dB below the background noise level may be appropriate in the daytime, where existing noise levels may be high.

4.13 Durham County Council Technical Advice Note, Reference 3, provides threshold levels above which planning applications should normally be refused. For situations where BS 4142 applies these are:

- + 5 dB or more difference from background noise levels during the day
- 0 dB above background noise levels during the night

5 Existing acoustic environment

- 5.1 Apex Acoustics has previously carried out measurements of the noise environment close to the development over a weekend period from the afternoon of Friday 14th June until the morning of Monday 17th June 2019. It has been agreed with the Local Authority Environmental Health Office to use these measurements to establish representative background noise levels to inform future plant noise limits.
- 5.2 The equipment used is listed in Table 2.

Equipment	Model	Serial no.
Sound Level Meter	NTi XL2	A2A-12479-E0
Calibrator	Larson Davis CAL 200	13405

Table 2: Equipment used

- 5.3 The measurement location is shown in Figure 1. The microphone was located out of a second storey window at the building façade, such that a 3 dB correction has been applied to the measured noise levels to determine free-field noise levels.
- 5.4 The most significant noise source during the daytime was people noise on Saddler Street. The most significant source during the evening period is attributed to the restaurants and bars located on Saddler Street. Amplified music is also just audible during some periods. Other noise sources observed include delivery noise and other general vehicle noise.
- 5.5 The existing acoustic environment measured during the survey is taken to be the Residual sound level, L_r .
- 5.6 The background sound level, $L_{A90, T}$ is calculated from the L_r , $L_{Aeq, T}$ and statistical analysis is undertaken following the guidance of BS 4142, Reference 5, to determine a background sound level considered to be representative of the assessment period. Results of the statistical analysis are shown in Figure 2 and Figure 3.
- 5.7 Based on the statistical analysis results, the background sound level considered representative of the daytime and night time assessment periods are shown in Table 3.

Assessment period	L_{A90} (dB)
Daytime (07:00 – 23:00 hrs)	52
Night time (23:00 – 07:00 hrs)	37

Table 3: Background sound levels representative of the assessment periods

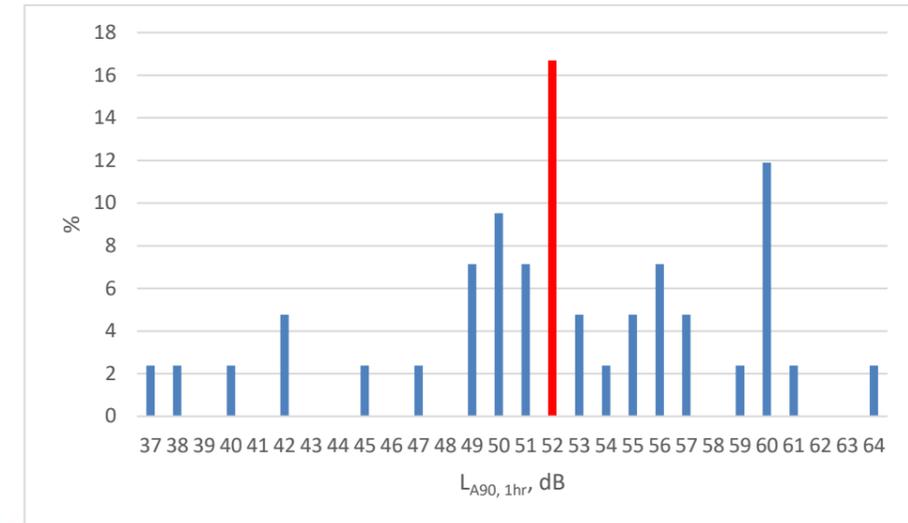


Figure 2: Analysis of daytime background levels, $L_{A90, 1-hr}$

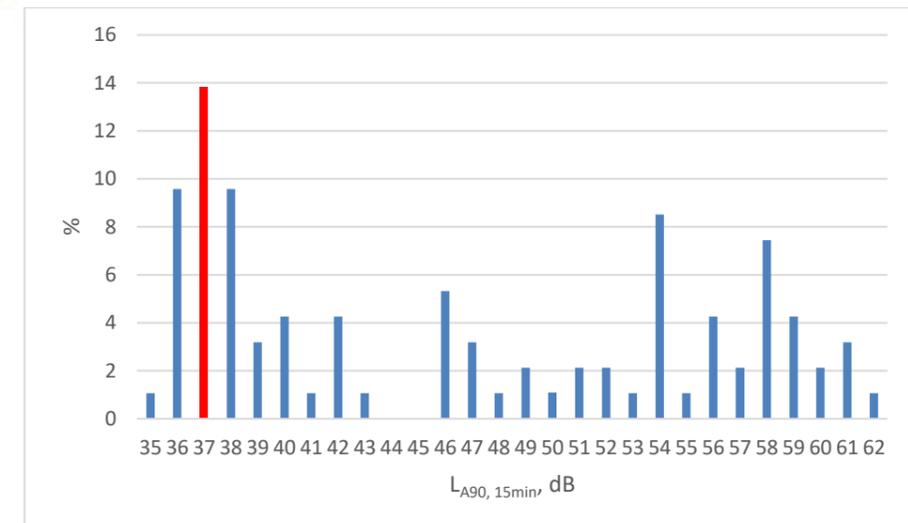


Figure 3: Analysis of night time background levels, $L_{A90, 15-min}$

6 Noise sources

6.1 Entertainment noise breakout

6.2 It is understood the desired operating noise levels are as shown in Table 4.

Area	Sound Pressure Level, dBA
Stage	100
Plaza	95
Bars	90

Table 4: Desired operating noise levels

6.3 The Little Red Book of Acoustics, Reference 10, provides example noise spectra for various situations, as shown in Figure 4.

	Octave Band Centre Frequency (Hz)							dB(A)
	63	125	250	500	1k	2k	4k	
Busy 'A' Road @20m	75	70	65	65	65	60	55	69
Quiet Restaurant	60	60	60	65	65	55	50	67
Busy Restaurant	60	70	75	75	75	75	70	80
Busy Pub/Bar	80	85	85	85	85	80	70	88
Music Bar/Nightclub	110	110	100	100	95	90	85	101
Classroom	55	55	55	60	60	60	55	65

Figure 4: Little Red Book of Acoustics example noise levels

6.4 The spectrum for a Music Bar / Nightclub is used for the Stage and Plaza and the spectrum for a Busy Pub / Bar is used for the Bars. The spectrum is adjusted to meet the clients desired operating A-weighted noise levels as shown in Table 5.

6.5 Based on previous experience of Apex Acoustics, the 63 Hz level for the busy pub/bar spectra shape is increased by 5 dB, allowing for a flatter bass response.

Area	L _{Aeq} , dB	Single-octave band centre frequency (Hz) Sound Pressure Level, L _{Zeq, 1-hour} (dB)						
		63	125	250	500	1000	2000	4000
Stage	100	109	109	99	99	94	89	84
Plaza	95	104	104	94	94	89	84	79
Bars	90	87	87	87	87	87	82	72
2 nd Floor	88	85	85	85	85	85	80	70

Table 5: Source noise levels adopted for entertainment noise

6.6 Breakout noise from the entertainment sources is calculated following the guidance of BS 12354-4, Reference 6, using the formula:

$$L_w = L_{p.in} + C_d - R' + 10 \log S$$

Where, C_d is the diffusivity term, taken as -6 dB; R' is the apparent sound reduction index for the segment and S is the surface area of the segment.

6.7 The existing building drawings, Reference 7, indicate the North West Elevation to Silver Street consists of large glazed areas, particularly at Ground Floor Area. It is understood all windows are to be replaced with double glazed units. 8/16/12.8 mm double glazing is considered for the assessment.

6.8 Bar 1, 3 and 5 are located at this façade for the Ground, First and Second floors respectively and breakout from these areas through the glazing are considered the most significant areas for noise break-out from the bars. The ground floor entrance at this façade is lobbied, and is considered as a single, closed, glazed façade element.

6.9 The resulting sound power level for the total window area (taken as 51 m²) is calculated as shown in Table 6.

Parameter	L _{Aeq} , dB	Single-octave band centre frequency (Hz) (dB)						
		63	125	250	500	1000	2000	4000
L _{p,in}	90	87	87	87	87	87	82	72
C _d	-	-6	-6	-6	-6	-6	-6	-6
R'	-	32	25	32	41	46	46	59
10LogS	-	17	17	17	17	17	17	17
L _w	62	66	73	66	57	52	47	24

Table 6: Break-out level from front glazing to Silver Street.

- 6.10 The proposed building drawings, Reference 8, indicate a large glass roof lantern above the plaza area in the middle of the outdoor seating area. This is considered the most significant area for noise break-out from the plaza.
- 6.11 The resulting sound power level for the total roof lantern area is calculated as shown in Table 7, considering a minimum of 6.5 mm single glazing.

Parameter	L _{Aeq} , dB	Single-octave band centre frequency (Hz) (dB)						
		63	125	250	500	1000	2000	4000
L _{p,in}	95	104	104	94	94	89	84	79
C _d	-	-6	-6	-6	-6	-6	-6	-6
R'	-	18	20	22	28	33	34	28
10LogS	-	25	30	33	37	40	41	50
L _w	71	88	84	71	67	59	53	39

Table 7: Break-out level from glass roof lantern

- 6.12 **Patron noise on roof terrace**
- 6.13 To determine potential noise levels from patrons using the outdoor area, modelling has been carried out based on human speech levels from relevant standards.
- 6.14 BS EN ISO 9921, Reference 9, gives A-weighted sound pressure levels at a distance of 1 m in front of a male speaker, as shown in Figure 5.

Table A.1 — Vocal effort of a male speaker and related A-weighted speech level (dB re 20 µPa) at 1 m in front of the mouth

Vocal effort	L _{S, A, 1 m} dB
Very loud	78
Loud	72
Raised	66
Normal	60
Relaxed	54

Figure 5: Excerpt from BS EN ISO 9921

- 6.15 BS EN ISO 3382-3, Reference 10, gives octave band sound power and sound pressure levels for speech, as shown in Figure 3.

Table 1 — The linear sound pressure levels of speech at a distance of 1 m in free field from the speaker and the A-weighting of octave bands

Band No.	Frequency Hz	Sound power level L _{W,S} dB re 1 pW	Sound pressure level L _{p,S,1 m}		A-weighting A dB
			Directional source dB re 20 µPa	Omnidirectional source dB re 20 µPa	
1	125	60,9	51,2	49,9	-16,1
2	250	65,3	57,2	54,3	-8,6
3	500	69,0	59,8	58,0	-3,2
4	1 000	63,0	53,5	52,0	0,0
5	2 000	55,8	48,8	44,8	1,2
6	4 000	49,8	43,8	38,8	1,0
7	8 000	44,5	38,6	33,5	-1,1
A-weighted		68,4	59,5	57,4	

Figure 6: Excerpt from BS EN ISO 3382-3

- 6.16 Research undertaken by Rindel, Reference 11, investigated the Lombard effect within spaces, whereby a high ambient noise level from other persons speaking means that everyone raises their voice, which in turn leads to a higher ambient noise level.
- 6.17 In an outdoor space, as considered here, the calculation method developed by Rindel for indoor restaurant spaces is adopted.
- 6.18 With consideration of the size and the space and the likely ambient noise levels it is considered that a 'Raised' vocal effort is appropriate to estimate noise levels.
- 6.19 Based on the 'Raised' vocal effort from BS EN ISO 9921, the octave band sound power levels can be determined by correcting those given in BS EN ISO 3382-3.
- 6.20 Hence, the sound power level of a single person talking with a raised voice is derived as shown in Table 8.
- 6.21 Rindel proposes the concept of 'acoustical group size', whereby for a given crowd size the number of individuals vocalising at once is determined from the average group size, considering one person per group talking at once.

6.22 Based on the area of the rooftop terrace and considering a space factor of 0.7 m² per person, a capacity of 246 people for the rooftop terrace is used for the assessment. Considering an average group size of 3.5 people, the resulting calculated sound power level is shown in Table 8.

Source	L _{WA} , dB	Octave band centre frequency, Hz Linear sound power levels, dB					
		125	250	500	1k	2k	4k
Single person talking with 'raised' vocal effort	77	69	74	77	72	65	58
71 people talking with 'raised' vocal effort	96	88	93	96	91	84	77

Table 8: 'Raised' vocal effort sound power levels

6.23 Background music on roof terrace

6.24 It is understood the intention is to play background music to the roof top terrace.

6.25 Speech noise levels calculated in Section 6.12 are based on a relatively worst case of full capacity with 71 people simultaneously taking with 'raised' vocal effort.

6.26 In order to not increase the background noise levels significantly, and thus further increase the vocal effort required for speech, music background noise levels are considered to be at least 5 dB below the calculated speech noise level at full capacity.

6.27 This corresponds to a total sound power level of 88 dB L_{WA} from all speakers.

6.28 Where possible, speakers playing background music to the rooftop terrace should be placed on the façade of the gaming room, facing away from the Silver Street NSR.

6.29 Sound transmission and propagation

6.30 Noise transmission and propagation is modelled to the NSRs based on the noise source data detailed, using proprietary software, CadnaA, Reference 12.

6.31 This models noise propagation outdoors according to ISO 9613, Reference 13.

6.32 The model parameters and assumptions are summarised in Appendix A.

7 Assessment – current proposals

7.1 Noise contour plots are shown in Appendix B. Calculated free field L_{Aeq} noise levels at the noise sensitive receptors are shown in Table 9, considering the cumulative total of noise breakout from the venue, patron noise on the roof-top terrace, and background music on the roof-top terrace.

Source	NSR	dBA	External free-field noise levels, L_{ZFmax} , (dB) Single-octave band centre frequency (Hz)						
			63	125	250	500	1000	2000	4000
Entertainment noise breakout & External terrace	NSR1	38	13	27	31	34	33	27	16
	NSR2	32	6	15	21	28	27	22	13

Table 9: Calculated free-field external L_{Aeq} noise levels

7.2 Considering a 15 dB level difference through an open window, the calculated internal noise levels are shown in Table 10.

7.3 The Local Authority criteria of 20 NR is met at both NSR1 and NSR2 based on the current proposals.

Source	NSR	Internal L_{Aeq} , dB	Internal NR	Criteria, Internal NR	Exceeds Criteria
Entertainment noise breakout & External terrace	NSR1	23	18	20	No
	NSR2	17	12	20	No

Table 10: Calculated internal noise levels

7.4 Precise details of building services plant and associated noise is not currently known, proposed plant noise level limits following the Local Authority TAN, Reference 3, are shown in Table 11, and should be applied to the cumulative contribution of all plant.

Assessment period	L_s (dB)
Daytime (07:00 – 23:00 hrs)	57
Night time (23:00 – 07:00 hrs)	37

Table 11: Plant noise level limits

7.5 As described in Para. 5.4, the survey of the existing acoustic environment indicated audible music noise from existing bars in the area, such that the proposed development is not likely to significantly alter the acoustic character of the area.

8 Conclusion

8.1 Following engagement with the Local Authority, noise limits of NR 20 internally have been identified at the nearest noise sensitive receptors.

8.2 Source noise levels have been calculated, and propagation modelled.

8.3 Based on the current proposals, the criteria is met without the need for further mitigation.

8.4 Precise details of fixed plant associated with the development are not yet known, and limits are proposed following the Local Authority guidance.

9 References

- 1 National Planning Policy Framework, Ministry of Housing, Communities & Local Government, July 2021.
- 2 Noise Policy Statement for England, Department for Environment, Food and Rural Affairs, March 2010.
- 3 Technical Advice Note – Noise, Durham County Council.
- 4 The Little Red Book of Acoustics: A Practical Guide, Watson & Downey.
- 5 BS 4142 2014: A1+2019, Method for rating and assessing industrial and commercial sound.
- 6 BS EN ISO 12354-4: 2017, Building acoustics – Estimation of acoustic performance of buildings from the performance of elements.
- 7 Dunwoodie Architects, 1049-DURHAM EXISTING DRGs – 2022-02-02.
- 8 Dunwoodie Architects, 1049-DURHAM WIP PLANS – 2022-02-08.
- 9 BS EN ISO 9921: 2003, Ergonomics – Assessment of speech communication
- 10 BS EN ISO 3382-3: 2012, Acoustics – Measurement of room acoustic parameters.
- 11 Acoustical capacity as a means of noise control in eating establishments, Jens Holger Rindel, BNAM 2012, Joint Baltic-Nordic Acoustics Meeting, Odense, Denmark, 2012.
- 12 CandaA environmental noise modelling software, Version 2022, Datakustic GmbH.
- 13 ISO 9613: Acoustics – Attenuation of sound during propagation outdoors.

Appendix A Noise transmission and propagation.

A.1 Noise transmission and propagation is modelled using proprietary software, CadnaA. This models noise propagation outdoors according to ISO 9613. The parameters used, source of data and details are described in Table 12.

Parameter	Source	Details
Model dimensions	Google Earth	British Transverse Mercator coordinates
Site location and layout	Architects' drawings	Architects' drawings, Reference 8
Topography	DEFRA	2020 DTM 1 m x 1 m
Building heights – proposed buildings	Drawings	Architects' drawings
Building heights – outside of site	Site observations and Google Street view	3 m per storey + 3 m roof
Receptor positions	Site observations and Google Street view	On the NSR façade closest to the source at a height of 4 m and 6.5 m to represent first and second floor window heights respectively
Building and barrier absorption coefficient	ISO 9613-2	0.21 to represent a reflection loss of 1 dB
G, Ground factor	ISO 9613-2	Hard ground, G = 0
Max. order of reflections	Apex Acoustics	Three

Table 12: Modelling parameters and assumptions

- A.2 A plan view and a 3D perspective of the CadnaA model are shown in Figure 7 and Figure 8 respectively.
- A.3 NSR receivers are positioned as shown by the black and white circles in Figure 7.
- A.4 The total sound power for breakout through glazing to the Silver Street façade of the development is evenly distributed over a vertical area source. The total sound power for the patron noise on the roof terrace and breakout from the roof lantern is evenly distributed over an area source.
- A.5 The total sound power for background music at the roof terrace is assigned to a point source.



Figure 7: Plan view of the CadnaA model



Figure 8: 3D view of the CadnaA model

Appendix B Noise contour map



Figure 9: Sound contours at 6.5 m, $L_{Aeq,T}$ based on current proposals