

Design Note.

To: Kirklees Council

Cc: .

From: Ruivo, Luis, Principal Acoustics Engineer

Date: 26 May 2023

Project: Field House

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A3 commercial unit noise assessment.

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	26/05/23	Initial issue	LR	AP	PM

Summary.

The present document summarises the requirements of the Local Authority in relation to the control of noise transfer from the proposed commercial unit to the residential apartments located directly above on the first floor of Field House in Dewsbury.

Maximum permissible internal sound pressure levels have been set which are commensurate with typical worst-case A3 commercial use.

A summary is provided of the acoustic design measures implemented to date to control commercial unit noise transfer to the proposed residential units directly above.

Based on these measures, the proposed refurbishment design of Field House is deemed compliant with A3 use of the ground floor commercial unit, with spatial allowances made to inform future tenant fit-out works, should higher operational noise levels be desired by future operators.

1. Summary of Local Authority requirements.

1.1 Kirklees Council planning condition 15.

Kirklees Council (KC) planning condition 15 states the following:

"Prior to internal works commencing (other than demolition and soft strip-out works) a noise assessment report shall be submitted to and approved in writing by the Local Planning Authority. The report shall include:-

- a) an assessment of all of the likely noise emissions from the A3 use hereby approved; and*
- b) a written scheme detailing how occupants of the noise-sensitive residential use hereby approved would be protected from noise from the A3 use hereby approved including details of all necessary noise attenuation measures.*

The A3 use hereby approved shall not commence until all works included within the measures specified in the approved report have been carried out in full and such works shall be thereafter retained."

1.2 Consultation with Local Authority.

An initial planning discharge statement to satisfy the requirements of planning condition 15 was issued in Hoare Lea document *LET-1013359-5A-LR-20220628-Statement on planning condition 15*, dated 28 June 2022.

Feedback from the KC Environmental Health department to this original statement was received on 3 November 2022 as follows:

"The applicant has submitted a Statement from Hoare Lea dated 28 June 2022 Ref LET-1013359-5A-LR-20220628 which states that the exact nature of the future commercial unit operation is not known at this stage. As such, '...it shall be incumbent upon future tenant fit-out teams to provide enhancement works to the landlord constructions so as to ensure noise from the operation of the commercial unit (inclusive of front of house and back of house areas such as kitchens etc) does not adversely impact residential amenity above. It goes on to say 'given the shell and core only fit-out of the unit (as part of the proposed base-build landlord works), this condition is not considered dischargeable until such a time as specific tenant requirements are known. Final discharge of the planning condition requirements would therefore fall under the remit of future tenant fit-out works, and we understand this will be included within the future retail tenant's lease documentation'.

This position is acknowledged and the applicant is advised to refer to the West Yorkshire Planning Consultation Guidance (Noise & Vibration) 2016 document which states that where proposed commercial and residential share a party structure (floor/ceiling/wall etc), the developer shall provide written evidence to the Local Planning Authority to demonstrate that the airborne sound insulation performance of the party floor/ceiling/wall of the development is of a minimum $55\text{dB } D_{ntw} + C_{tr}$."

A response was to KC Environmental Health was issued on 3 November 2022 as follows:

"The Local Planning requirement to achieve $D_{ntw} + C_{tr}$ 55 dB is understood by Hoare Lea as incumbent on the Landlord fit-out, with any subsequent enhancements upon this incumbent on future tenant fit-out works to suit their proposed operational levels under a separate application?

The proposed acoustic design is deemed capable of achieving this following completion of works on site.

Clarification is requested as to what would consist sufficient written evidence to the Council to demonstrate compliance."

The latest technical response from KC Environmental Health to date was received on 28 April 2023, as follows:

"The wording of condition 15 requires the submission of a noise assessment report that includes an assessment of all of the likely noise emissions from the A3 use, and a written scheme detailing how occupants of the noise-sensitive residential use above would be protected from noise from the A3 use (including details of all necessary noise attenuation measures).

I appreciate that a tenant for the A3 unit may not have been found yet, and that the precise noise emissions from the A3 use won't yet be known. In such a scenario, we'd recommend you assess a worst case scenario based on the noisiest possible tenant (that may occupy the A3 unit), and devise noise attenuation proposals accordingly."

The following sections set out the results of an assessment carried out by Hoare Lea to satisfy the requirements of KC Environmental Health as clarified above.

2. A3 unit operational noise transfer assessment.

2.1 Proposed worst case scenario considered.

2.1.1 Note on typical anticipated operational noise within commercial unit.

The proposals for the refurbishment of Field House include an A3 use commercial unit at ground floor. Typical operations associated with A3 premises include the following:

- Sale of food or drink for consumption on the premises or of hot food for consumption off the premises.
- Premises where the primary purpose is the sale and consumption of food and light refreshments on the premises.

The above uses are associated predominantly with café, restaurant or snack bar tenancies, and exclude potentially high noise generating uses such as drinking establishments (Class A4) and night clubs / entertainment venues (classified as Sui Generis).

Note: reference is made above to the old Planning Usage classes as applicable at the time of the planning submission.

2.1.2 Operational noise levels used in assessment.

While the exact nature of the future commercial unit operation is not known at this stage, it is reasonable to assume it could comprise a restaurant or café with amplified music for ambience. As such, noise levels in the region of L_{Aeq} 80 dB could be expected within the premises from both music and patron noise during busier periods.

The maximum permissible octave band sound pressure levels used in the assessment are presented in Table 1, which would enable the use of reproduced amplified music but exclude loud DJ sessions or live band amplified performance by tenants on the basis of the currently proposed landlord refurbishment works.

Table 1 Maximum permissible sound pressure levels

Maximum permissible sound pressure levels from A3 use with amplified music, L_{eq} (dB)								L_{eq} , (dBA)
63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
73	75	75	77	76	73	68	61	80

2.2 Design summary.

2.2.1 Proposed separating floor construction.

The proposed floor build-up between the ground floor commercial unit and the first floor residential units is presented in Figure 1, extracted from proposed floor build-up drawing 2018-051_0311, dated 18/08/2021.

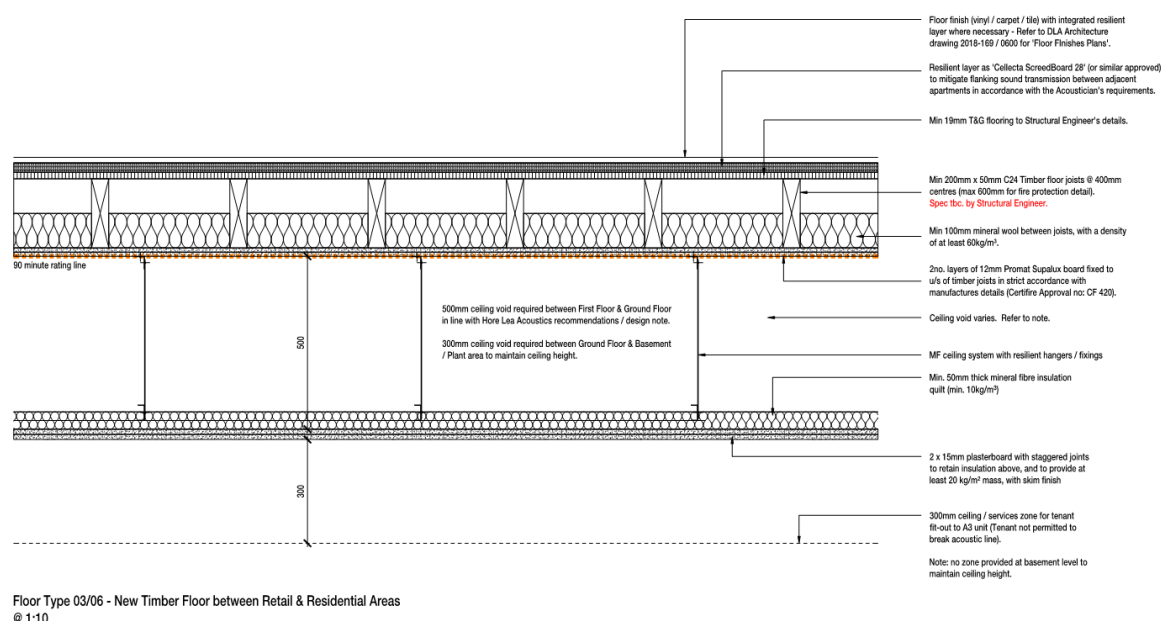


Figure 1 Proposed new-build timber floor build-up between apartment units and A3 commercial unit below

Conservative theoretical calculations show the proposed floor build-up is capable of achieving a sound insulation performance of $D_{nTw}+C_{tr}$ 57 dB, however it is likely that the final in-situ performance will exceed this subject to careful installation and workmanship during the refurbishment works.

The proposed floor build-up is therefore deemed compliant with the minimum $D_{nTw}+C_{tr}$ 55 dB requirement set by Kirklees Council Environmental Health department.

2.2.2 Internal wall constructions.

Existing structural masonry walls are understood to be retained as part of the proposed refurbishment works running the vertical length of the building.

While it has not been possible to test the current sound insulation performance of these walls and the exact performance of these elements could not be determined, these are understood to comprise a minimum of 300mm thick solid masonry construction from discussions with the Architect. As part of the proposed refurbishment works the current architectural design currently comprises the following measures:

Ground floor: Independent wall linings, to be provided by tenant fit-out works as part of landlord requirements prior to future tenant operations.

Upper floor residential units: Partial independent wall linings to retained masonry walls, partial standard drylinings to external walls.

While the design is still subject to further refinement as the scheme progresses, the above strategy is considered a robust design principle to control vertical noise flanking through the internal and external retained structural walls.

2.3 Internal noise transfer assessment.

2.3.1 Summary of results.

On the basis of the worst case operational noise levels assumed in Section 2.1, and the proposed separating floor construction and flanking control strategy set out in Section 2.2, a desktop assessment has been carried out to predict internal noise transfer between the commercial unit and the residential spaces above. The results of the assessment are presented in Table 2, with a marked-up floor plan presented in Figure 2 for added clarity on the spaces assessed.

Table 2 Internal noise transfer assessment results.

Habitable space see Figure 2	Calculated residual noise transfer levels within habitable space	Specified internal noise levels within habitable space
Small bedrooms	L_{Aeq} 21 dB / NR 15	Day: L_{Aeq} 35 dB / NR 30 Night: L_{Aeq} 30 dB / NR 25
Large bedrooms	L_{Aeq} 21 dB / NR 15	Day: L_{Aeq} 35 dB / NR 30 Night: L_{Aeq} 30 dB / NR 25
Living rooms	L_{Aeq} 21 dB / NR 15	Day only: L_{Aeq} 35 dB / NR 30

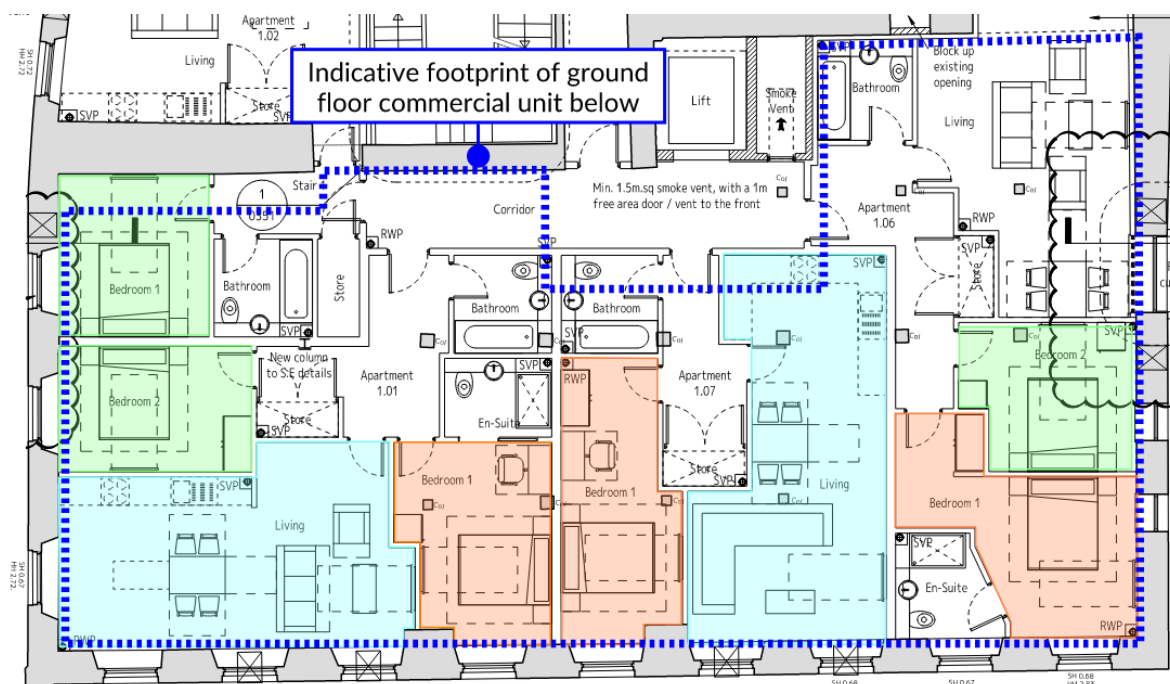


Figure 2 Annotated excerpt of proposed first floor layout drawing 2018-051_0223_RevF dated 10/09/2021

2.3.2 Discussion of assessment results.

The conservative assessment carried out indicates that operational noise transfer from the A3 commercial unit to the habitable spaces immediately above would be considerably below the specified internal noise limits. This is based on the proposed separating constructions and maximum sound pressure levels assumed in the ground floor commercial unit as discussed above.

To provide a benchmark of specific internal noise criteria for entertainment noise, reference has been made to other Local Authorities that provide specific low frequency internal noise limits. These are summarised in Table 3

Table 3 Local Authority entertainment noise criteria review

Local Authority	Internal noise limit due to entertainment noise
Manchester City Council ¹	L _{eq} 47 dB at 63 Hz; L _{eq} 41 dB at 125 Hz These limits are not time specific.
Leeds City Council	Bedrooms at night (23:00 - 07:00): – NR 15 (equivalent to L _{eq} 47 dB at 63 Hz and 35 dB at 125 Hz) All habitable rooms in the daytime (07:00 - 23:00): – NR 25 (equivalent to L _{eq} 55 dB at 63 Hz and 44 dB at 125 Hz)
Sheffield City Council	Bedrooms at night (23:00 - 07:00): – NR 20 (equivalent to L _{eq} 51 dB at 63 Hz and 39 dB at 125 Hz) Bedrooms in the daytime (07:00 - 23:00): – NR 25 (equivalent to L _{eq} 55 dB at 63 Hz and 44 dB at 125 Hz)

¹ These limits are derived in line with guidance paper *Procedure for the assessment of low frequency noise complaints – Revision 1* by Moorhouse et al (2011).

From a review of the assessment results against the reference requirements set out above, compliance is achieved against all of them from the proposed acoustic design, inclusive of NR curve and octave band specific compliance.

As such, it is considered that the proposed landlord refurbishment works in addition to the imposed tenant fit-out obligations to provide internal independent wall linings would be sufficient to enable A3 use of the ground floor commercial unit up to the internal ambient noise levels set in Table 1.

Should higher operational sound levels than those set out within this document be desired by future tenant operators of the A3 unit, it shall be incumbent upon future fit-out teams to provide enhancement works to the landlord constructions so as to ensure noise from the operation of the commercial unit does not adversely impact residential amenity above.

The present refurbishment design proposals include a 300mm deep spatial zonal allowance for possible future mass-barrier ceiling as a starting point to any such future tenant enhancement works.

2.4 Note on operational noise break-in via building envelope.

On the basis of the maximum permissible internal sound pressure levels set for commercial unit operational noise, noise transfer from noise break-out to the exterior and break-in through the proposed residential window facades is considered to be negligible during the day and night periods.

Should higher operational sound levels than those set out within this document be desired by future tenant operators of the A3 unit, it shall be incumbent upon future fit-out teams to demonstrate that noise transfer via this path would be suitably controlled.



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