

REF: L1424.3 V6

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Mrs Kath Frank
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12th July 2023

**RE: BOORLEY GREEN GATEWAY, BOTLEY
COMMERCIAL TO RESIDENTIAL SOUND INSULATION – PLANNING CONDITION No 14**

Dear Mrs Frank,

I am writing following your request to undertake a review of the acoustic design for the above project.

We understand that the development includes the construction of mixed-use retail and residential units, and that planning has been granted subject to several conditions.

We are writing this letter with reference to Planning Condition No 14, described in the below sections.

The specifications described should be regarded as detailing the minimum construction to achieve suitable acoustic performance. Where products are named, it should be noted that equivalent alternative products may be selected and used.

1.0 DESIGN OBJECTIVES...

1.1 Planning Condition No. 14

Eastleigh Borough Council have provided conditional acceptance to the planning application. Of relevance to this assessment is Planning Condition No. 14, which states the following.

Prior to the development above slab level of any building containing both commercial and residential uses, the constructional details shall be submitted to and approved in writing by the Local Planning Authority together with confirmation from a competent acoustic consultant, that any party wall or floor separating commercial use from residential use should have a sound insulation performance of 60dB Dntw or better. The approved constructional details shall be implemented prior to the first occupation of any part of any building to which they relate.

Reason: In the interests of residential amenity.

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2.0 PROPOSED CONSTRUCTION...

We have been provided with a set of drawings which indicate the separating construction, which is reproduced in Figure 1.

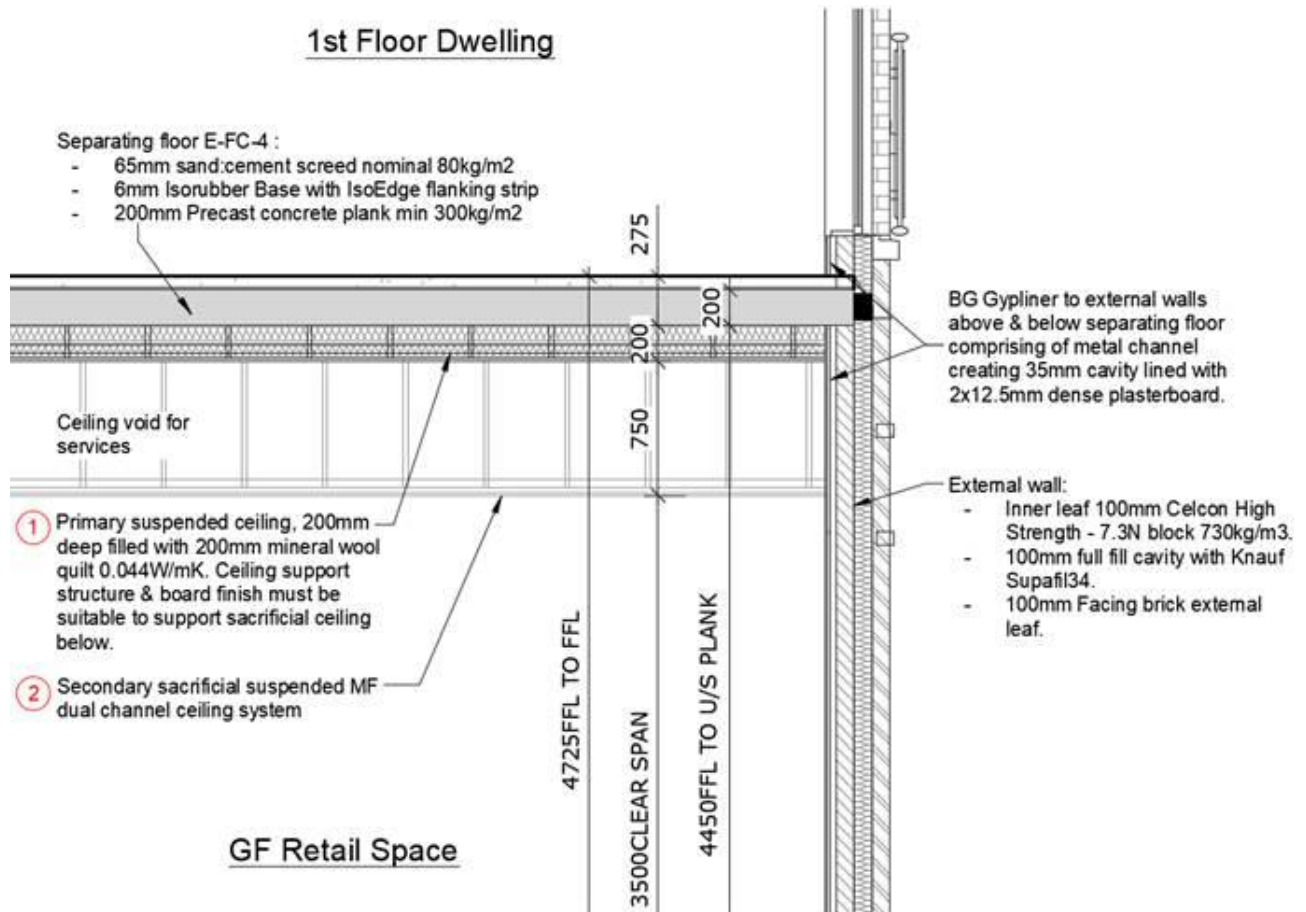


FIGURE 1: TYPICAL SECTION THROUGH FLOOR AND EXTERNAL WALL

The floor build up is understood to be designed as follows,

- 65 mm cement screed,
- 6 mm resilient layer,
- 200 mm precast concrete slab,
- 200 mm ceiling void filled with 200 mm fibrous insulation,
- 2 x 12.5 mm dense plasterboard (min. surface mass 10.3 kg/m²).

A secondary ceiling is understood to be installed by the end user of the retail spaces. This ceiling has been excluded from our calculations.

The external wall build up is understood to be designed as follows,

- 105 mm facing brickwork outer leaf,
- 100 mm cavity fully filled with fibrous insulation,
- 100 mm Celcon High Strength 7.3N (min. density 730 kg/m³),
- Metal frame system forming a 35 mm cavity,
- 2 x 12.5 mm dense plasterboard (min. surface mass 10.3 kg/m²).

We understand that a 5 mm flanking strip is to be installed around the perimeter of the floating floor system, and under the skirting board.

3.0 EXPECTED PERFORMANCE...

Table 1 summarises the predicted on-site level difference between the ground floor retail space and a first floor bedroom. All calculations have been based on BS EN 12354-1:2000.

Separating Floor Element	Airborne Sound Insulation (dB $D_{nT,w}$)	
	Minimum Requirement	Expected
Original Proposal	60	61

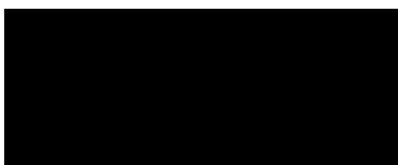
TABLE 1: SUMMARY OF SEPARATING FLOOR EXPECTED PERFORMANCES

The proposed design is expected to meet the design requirements and no further uplifts are considered necessary.

The calculation parameters can be found in the appendix.

I hope this covers all required points at this stage, but please advise if you require anything further.

Yours sincerely,
For Red Twin Limited



Gavyn Bache B.Sc.(Hons) PgD MIOA
Associate

APPENDIX A – CALCULATION OF SOUND INSULATION...



RED TWIN LIMITED

 Consultants in Acoustics

PROJECT TITLE	1424 - Boorley Green Gateway		
CASE	Retail to 2BF2 Bed		
DATE	20/06/2023		
AUTHOR	GB		

Room Dimensions Room 1 X (m) 287 Y (m) 1 Z (m) 4.7 Volume (m ³) 1349 Room 2 X (m) 11.8 Y (m) 1 Z (m) 2.6 Volume (m ³) 31	Wall Dimensions Element 1 Width (m) 11.8 Height (m) 1.0 Area (m ²) 11.8 Element 2 Width (m) Height (m) Area (m ²) 0.0 Total Area (m ²) 11.8	Calculation Parameters Receiving Room (Enter 1 or 2) 2 Receiving Room Volume (m ³) 31 Total Partition Area (m ²) 12 Receiving Room Reverberation Time (s) 0.5 Reference Reverberation Time T ₀ (s) 0.5 Sum of flanking transmission degrade and workmanship 7
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Laboratory Sound Reduction Index (dB R_w) Element 1 (dB) 69 Element 2 (dB)	<table border="0" style="width: 100%;"> <tr> <td style="text-align: right;">Calculated D'_w (dB)</td> <td style="text-align: left;">61</td> </tr> <tr> <td style="text-align: right;">Calculated D'_{nT(0.5)w} (dB)</td> <td style="text-align: left;">61</td> </tr> <tr> <td style="text-align: right;">Calculated R'_w (dB)</td> <td style="text-align: left;">62</td> </tr> </table>	Calculated D' _w (dB)	61	Calculated D' _{nT(0.5)w} (dB)	61	Calculated R' _w (dB)	62
Calculated D' _w (dB)	61						
Calculated D' _{nT(0.5)w} (dB)	61						
Calculated R' _w (dB)	62						

Composite Sound Reduction Index (dB R_w) 69	NOTES The calculations are based on the formulas provided in British and ISO standards
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All calculations have been based on BS EN 12354-1:2000. Calculation variables clarified below.

Metric	Description	Value
R	Weighted Laboratory Sound Reduction Index	69 dB R _w
V	Volume of Receiving Room	31 m ³
T ₀	Reference Reverberation Time	0.5 seconds
S	Surface Area of Separating Structure	12 m ²
∅	Sum of Flanking Transmission and Workmanship	7 dB
D _{nTw}	Weighted Standardised Level Difference (Result)	61 dB D _{nTw}

TABLE 2: BS EN 12354-1:2000 CALCULATION VARIABLES