

**Proposed Sound
Insulation Measures**

**51 Belmont Road, Uxbridge,
UB8 1RZ.**

Insulation Recommendations

January 2020

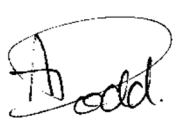
Report Author: Andy Dodd B.Sc., MIOA

APL Doc Ref: 103945.ad.Issue1



Proposed Sound Insulation Measures	
Project Address:	51 Belmont Road, Uxbridge, UB8 1RZ
Project Reference:	103945

Issue/Revision Record			
Issue:	Date:	Remarks:	Author:
1	24/01/2020	First Issue	Andy Dodd

	Signature:	Print:	Title:	Date:
Author:		Andy Dodd	Consultant	24/01/2020
Reviewer:		Phil Huffer	Principal Consultant	24/01/2020

1. INTRODUCTION

- 1.1 Acoustics Plus Ltd (APL) is an independent firm of multi-disciplinary acoustic engineers. APL is engaged by both private and public sector clients. APL is a registered member of The Association of Noise Consultants (ANC) and the author is a corporate member of The Institute of Acoustics (IOA).
- 1.2 APL have been instructed Westcombe Homes (WH), to consider and advise upon sound insulation measures at the proposed development at 51 Belmont Road, Uxbridge, UB8 1RZ.
- 1.3 It is understood that planning permission has been granted for the removal of undercroft parking, single storey third floor level extension, and rearrangement of lower and upper ground floor levels to provide 16 residential units and external alterations including landscaping that will require pre-completion sound insulation testing under Approved Document E 2015 of The Building Regulations 2010.
- 1.4 It is also understood that a specific planning condition has been applied to the consent, the relevant condition is reproduced verbatim below:

Condition 11

"The development shall not begin until a scheme for the control of noise transmission between adjoining units has been submitted to and approved in writing by the Local Planning Authority. The scheme shall include such combination of sound insulation and other measures as may be approved by the LPA. Thereafter, the scheme shall be implemented and maintained in full compliance with the approved measures".

REASON: To safeguard the amenity of the occupants of surrounding properties in accordance with policy OE1 Hillingdon Local Plan: Part Two Saved UDP Policies (November 2012) and policy DMHB 11 Local Plan Part 2 - Development Management Policies (March 2019).

- 1.5 This report provides the response to Westcombe Homes.

2. BASELINE SITUATION

- 2.1 This brief outline specification relates to removal of undercroft parking, single storey third floor level extension, and rearrangement of lower and upper ground floor levels to provide 16 residential units, the acoustic performance of separating floors and walls shall meet the current Building Regulation requirements.
- 2.2 When assessing the site, the lower ground and ground floor levels can be categorised as a material change of use under The Building Regulations 2010. In this instance the meaning of material change of use is: *"the building contains a flat, where previously it did not"*. While the the new third floor extension would be categorised as new build *"purpose built dwelling - houses and flats"* under Approved Document E 2015 of the Building Regulations 2010.
- 2.3 These specification notes are to assist Westcombe Homes in achieving compliance with the current requirements of Approved Document E.
- 2.4 It is understood the proposed new party wall construction between the units will consist of the following:
- *Construction based on British Gypsums Quiet SF system.*
- 2.5 It is understood the proposed new party floor construction between the units will consist of the following:
- *Isolated screed with acoustic mat laid over concrete deck.*
- 2.6 It is understood that new internal metal stud partitions are to be erected to sub divide the units.
- 2.7 It is understood that there are a number of areas that require sound insulation consideration:
- (a) *Party wall construction separating new dwellings;*
 - (b) *Party floor construction separating new dwellings;*
 - (c) *Internal wall constructions.*

3. RECOMMENDATIONS

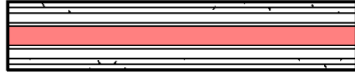
Party wall construction separating new dwellings

- 3.1 Based on information received from Westcombe Homes (WH). It is understood that the proposed party wall separating the new dwellings will be formed with a metal frame construction with resilient bars to mount the plasterboard layers.
- 3.2 Any party wall construction system should meet the required performance criteria detailed within Table 0.1a of Approved Document E 2015 of The Building Regulations 2010 and achieve a rating of $D_{nt,w} + C_{tr}$ 45 dB (new build) and $D_{nt,w} + C_{tr}$ 43 dB (material change of use). Table 0.1a of Approved Document E is shown below:

Table 0.1a Dwelling-houses and flats – performance standards for separating walls, separating floors, and stairs that have a separating function		
	Airborne sound insulation sound insulation $D_{nt,w} + C_{tr}$ dB (Minimum values)	Impact sound insulation $L'_{nt,w}$ dB (Maximum values)
Purpose built dwelling-houses and flats		
Walls	45	-
Floors and stairs	45	62
Dwelling-houses and flats formed by material change of use		
Walls	43	-
Floors and stairs	43	64

3.3 It is understood that the following system is to be used:

Wall Type 3 - Party Wall



Wall Type 3 - Internal Metal Stud Partition

70mm C Section metal stud partition adhered to resilient bars @ 600cc with x2 15mm layer of Gyproc Soundbloc either side with plaster skim finish. Infill between studs to be 50mm Acoustic Insulation. Minimum 30 minute fire resistance to BS476:1987. Moisture resistant plasterboard to be used in all bathrooms. Full specifications and installation to be in strict accordance with manufacturer's written details and instructions.

3.4 This construction is detailed within British Gypsum's Quiet SF system which is reproduced below:

GypWall QUIET SF performance

70mm, 92mm and 146mm Gypframe 'C' Stud

For details of when to specify fire resistance using EN Refer to C02, S01, P05



Table 1a — Solutions to satisfy the requirements of BS EN 1364-1

①

②

③

Two layers of board each side of Gyproframe 'C'
 Studs at 600mm centres with Gyproframe RB1
 Resilient Bar at 600mm centres to one side. 50mm
 Isover Acoustic Partition Roll (APR 1200)
 in the cavity. Linings as in table.

Two layers of board each side of Gyproframe 'C'
 Studs at 600mm centres with Gyproframe RB1
 Resilient Bar at 600mm centres to both sides.
 50mm Isover Acoustic Partition Roll (APR 1200)
 in the cavity. Linings as in table.

Two layers of board each side of Gyproframe 'C'
 Studs at 600mm centres with Gyproframe RB1
 Resilient Bar at 600mm centres to one side. 50mm
 Isover Acoustic Partition Roll (APR 1200)
 in the cavity. Linings as in table.

Detail	Partition thickness mm	Board type ¹	Lining thickness mm	Stud size mm	Max. partition height ² mm	Sound insulation $R_w (R_w + C_v)$ dB ³		Duty rating	Approx. weight kg/m ²	System reference	
						Any ⁴ finish	Skim ⁴ only			Any ² finish	Skim ⁴ only

60 minutes fire resistance (EN)

①	137	Gyproc SoundBloc	2 x 12.5	70	4000	61 (53)	-	Severe	43	A316008
②	152	Gyproc SoundBloc	2 x 12.5	70	3200	62 (55)	-	Severe	43	A316012
①	159	Gyproc SoundBloc	2 x 12.5	92	5000	61 (53)	-	Severe	43	A316014
②	174	Gyproc SoundBloc	2 x 12.5	92	4000	63 (55)	-	Severe	43	A316015
①	213	Gyproc SoundBloc	2 x 12.5	146	6800	62 (56)	-	Severe	43	A316016
②	228	Gyproc SoundBloc	2 x 12.5	146	5700	64 (58)	-	Severe	43	A316018

90 minutes fire resistance (EN)

①	147	Gyproc SoundBloc	2 x 15	70	4200	62 (54)	-	Severe	51	A316009
③	150	Gyproc Plank + Gyproc SoundBloc	1 x 19 + 1 x 12.5	70	3800	63 (54)	-	Severe	54	A316011
②	162	Gyproc SoundBloc	2 x 15	70	3200	65 (57)	+	Severe	51	A316013

- 3.5 The typical advice within the Quiet SF datasheet regarding performance requirements is shown below:

Table 1 — Sound insulation performance for residential specification

Approved Document E (England and Wales)	On-site	Laboratory ²	
	$D_{nT,w} + C_{tr}$ dB	Minimum solution ($R_w + C_{w1}$) dB	Recommended solution ($R_w + C_{w2}$) dB
Separating walls between new homes	45	(49)	(54)
Separating walls between purpose-built rooms for residential purposes and rooms created by a change of use or conversion	43	(47)	(52)

- 3.6 The proposed party wall construction is rated at $R_w + C_{tr}$ 57dB with the British Gypsum recommended minimum performance for a wall between new dwellings being $R_w + C_{tr}$ 54dB and for a wall between dwellings formed by a material change of use being $R_w + C_{tr}$ 52dB.
- 3.7 The proposed party wall performance is acceptable to enable the construction to meet new build and conversion minimum Approved Document E acoustic test requirements.
- 3.8 Notwithstanding the above it should be ensured that:

Installation guidelines to be followed to ensure partition is formed correctly with approved junction details and compliance with advice regarding deflection heads, screw length and services etc. (see Gypwall Quiet SF databook for guidance <https://www.british-gypsum.com/white-book-system-selector/systems-overview/partitions/gypwall-quiet-sf?tab0=0>);

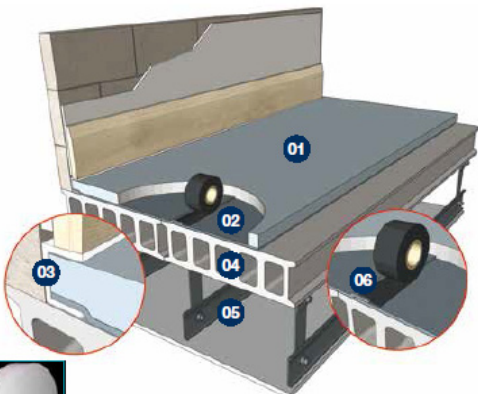
- 3.9 Based on information provided above and assuming the installations are made in a professional and workmanlike manner, it is our opinion that this construction should readily meet with the minimum Pre Completion Test requirements of Approved Document E 2015 of The Building Regulations 2010.

Party floor construction separating new dwellings

- 3.10 Based on information received from WH. It is understood that the proposed party floor separating the new dwellings will be formed with a concrete construction with an isolated screed.
- 3.11 Any party floor construction system should meet the required performance criteria detailed within Table 0.1a of Approved Document E 2015 of The Building Regulations 2010 and achieve an airborne rating of $D_{nt,w} + C_{tr}$ 45 dB (new build) and $D_{nt,w} + C_{tr}$ 43 dB (material change of use) and an impact rating $L_{nT,w}$ 62 dB (new build) and $L_{nT,w}$ 64 dB (material change of use).
- 3.12 APL notes that the proposed construction will utilise the material below:

Acoustic Impacta Rubber

CONCRETE FLOOR UNDER SCREED RESILIENT LAYER




JCW White Edging Strip



Detailsheet 29



- 01 65mm sand & cement screed can be laid directly on top of Impacta Rubber. 40mm proprietary screeds (min 80kg/m²) require a Polythene layer above the Impacta Rubber covering the whole floor area with overlapped & taped joints
- 02 JCW Acoustic Impacta Rubber
- 03 JCW Acoustic Impacta Rubber perimeter edge detail.
- 04 150mm (min) Density 300kg/m² Concrete Floor
- 05 Metal Ceiling System with 150mm (min) void and 1 layer of 8kgs/m² gypsum based board
- 06 Overlap a minimum of 50mm and tape all joints

CAUTION
TWO PERSON LIFT

Product Code: 1153	
Under screed resilient Impact layer for all floor types shown when Pre-completion Sound Testing is required.	
Bonded recycled rubber granulate	
Concrete Floor Types - Impacta Rubber can be used on all pre-cast concrete plank/beam & block floors that have a minimum mass of 300 kg/m² and a metal framed ceiling type as illustrated above - Suitable for underfloor heating - Impacta Rubber is economical and easy to install - Accessories needed: 150mm (h), Flanking Strip, Black Cloth Jointing tape	PCT & PT Scotland - Acoustic Impacta Rubber under screed Impact layer for beneath sand & cement or proprietary screeds - Verified independent UKAS accredited laboratory test data is based on the floor structure illustrated above - It is essential all components are correctly installed and detailed to meet the requirements for PCT and PT (Scotland) where Pre-completion Sound Testing is required
Roll Size: 5mm x 1050mm x 10m (10.5 m ²) Roll Weight: 40.5 kgs Other Sizes Available: 10mm/15mm	
Typical Acoustic Performance of Floor Construction shown above. Impact: L _{nt,w} 54 dB Airborne: D _{nt,w} + C _{tr} 49 dB	

- 3.13 The proposed party floor construction is rated with an airborne performance of $D_{nT,w} + C_{tr}$ 49 and an impact performance of $L_{nT,w}$ 54 dB.
- 3.14 The quoted proposed party floor performance is acceptable to enable the construction to meet new build and material change of use minimum Approved Document E acoustic test requirements.
- 3.15 Notwithstanding the above it should be ensured that:

Installation guidelines to be followed to ensure partition is formed correctly with approved details and compliance with advice regarding jointing, screed depth and ceiling treatment etc. (see JCW Impacta rubber datasheet for guidance <https://www.acoustic-supplies.com/wp-content/uploads/2015/05/Impacta-Rubber-Sales-DS-29.pdf>);

- 3.16 Based on information provided above and assuming the installations are made in a professional and workmanlike manner, it is our opinion that this construction should readily meet with the minimum Pre Completion Test requirements of Approved Document E 2015 of The Building Regulations 2010.

Internal wall construction

Based on information received from WH. It is understood that the proposed internal walls sub-dividing the new dwellings will be formed with a metal stud partitions.

Wall Type 2



Wall Type 2 - Internal Metal Stud Partition

70mm C Section metal stud partition with single 15mm layer of Gyproc Soundbloc either side with plaster skim finish. Infill between studs to be 50mm Acoustic Insulation. Minimum 30 minute fire resistance to BS476:1987. Moisture resistant plasterboard to be used in all bathrooms. Full specifications and installation to be in strict accordance with manufacturer's written details and instructions.

- 3.17 Any internal wall construction system should meet the required $R_w40\text{dB}$ performance criteria detailed within Table 0.2 of Approved Document E 2015 of The Building Regulations 2010.
- 3.18 APL notes that the construction is similar to an approved British Gypsum system detailed within the HomeSpec Residential Specification Guide:

157

GypWall classic (Internal wall type B)

Overall construction nominal width 75mm

Maximum height 2500mm (at 600mm centres)

2700mm (at 400mm centres)

Gypframe 48 S 50°C Studs at 400mm or 600mm centres

25mm Isover Acoustic Partition (APR 1200) in the stud cavity

Board options:
Single layer of 12.5mm Gyproc WallBoard ~~ten~~ each side **or** Single layer of 12.5mm Gyproc SoundBloc each side

Guidance Construction
England and Wales

PSR A206184

Replace plasterboard lining with 12.5mm Gyproc Habitato for enhanced robustness and fixing capability

NB The fire resistance and sound insulation performance are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, or skimmed according to British Gypsum's recommendations. The quoted performances are achieved only if British Gypsum components are used throughout, and the company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with British Gypsum.

- 3.19 Based on information provided above (taken from British Gypsum's The White Book), it is apparent that this constructions will comply with the minimum R_w 40dB requirement of Approved Document E 2015 of The Building Regulations 2010 for an internal wall construction.
- 3.20 If alternative materials or system are to be utilised please check prior to installation that the system meets the required R_w 40dB performance criteria detailed within Table 0.2 of Approved Document E 2015 of The Building Regulations 2010.

4. CONCLUSION

- 4.1 The foregoing assessment indicates that the proposed partitions will enable the constructions to meet the acoustic test requirements of Approved Document E. Further mitigation measures, other than those identified, will not be required.
- 4.2 This assessment supports the discharge of Condition 11 and provides evidence of the proposed sound insulation measures to afford the future occupiers of the building with a suitable level of amenity.