

Technical Memorandum

20230704-0 M1 v1.1

Project	Domino's, 2-3 Botley Road, Fair Oak, Eastleigh
Subject	Planning Condition 6
From	Andy Emery
Date	21 st September 2023

1 Overview

- 1.1 Planning permission has been granted (LPA reference F/22/94393), subject to conditions, for the change of use of 2-3 Botley Road, Fair Oak, Eastleigh to Sui generis (hot food takeaway).
- 1.2 Condition 6 attached to the planning consent relates to internal sound insulation between the store and an existing first floor residence above. It states:

Prior to commencement of the development, details shall be submitted to and approved in writing by the Council, of the sound insulation of the floor/ ceiling/ walls separating the commercial parts of the premises from dwellings and noise sensitive premises. Details shall demonstrate that the sound insulation value $D_{nT,w} + C_{tr}$ [and $L'_{nT,w}$] is enhanced by at least 20 dB above the Building Regulations value and, where necessary, additional mitigation measures are implemented to contain commercial noise within the commercial premises. A post installation noise assessment shall be carried out where required to confirm compliance with the sound criteria and additional steps to mitigate noise shall be taken, as necessary. Approved details shall be implemented prior to occupation of the development and thereafter be permanently retained. Reason: To protect nearby residents from adverse noise impacts in accordance with Policies DM1 and DM8 of the Eastleigh Borough Local Plan (2016-2036).

- 1.3 This memorandum details design recommendations aimed at compliance with the requirements of the planning condition.

ANC ACOUSTICS &
NOISE
CONSULTANTS info@acousticscentral.com [acousticscentral.com](https://www.acousticscentral.com) +44 (0)208 191 0330 [acousticscentrl](https://twitter.com/acousticscentrl) [acousticscentral](https://www.soundcloud.com/acousticscentral) [acoustics-central](https://www.linkedin.com/company/acoustics-central)

2 Acoustic Design Standards

- 2.1 Approved Document E, 'Resistance to the passage of sound', forms part of Building Regulations 2010. The Approved Document sets out the minimum requirements for protection to dwelling-houses and flat against sound from other parts of the building. Separate requirements are defined where the residences are purpose built (new build) or formed by material change of use, as summarised in the tables T1 and T2 below.

Separating Elements	Airborne Sound Insulation $D_{nT,w}$ + C_{tr} (dB) (minimum values)	Impact Sound Insulation $L'_{nT,w}$ (dB) (maximum values)
Walls	45	-
Floors and stairs	45	62

T1 ADE performance standards for separating walls and floors (purpose-built dwelling-houses and flats)

Separating Elements	Airborne Sound Insulation $D_{nT,w}$ + C_{tr} (dB) (minimum values)	Impact Sound Insulation $L'_{nT,w}$ (dB) (maximum values)
Walls	43	-
Floors and stairs	43	64

T2 ADE performance standards for separating walls and floors (dwelling-houses and flats formed by material change of use)

- 2.2 In this case the adjacency between ground floor Domino's store and the existing first-floor residence is coming to be due to a change of use. Our interpretation is therefore that planning condition 6 is referencing the standards outlined in table T2 above.
- 2.3 There are no requirements defined within Approved Document E for impact sound insulation (i.e. footfall noise) into non-residential spaces such as a retail unit.
- 2.4 Taking the above into account, the relevant sound insulation requirements defined by the planning condition are set out in table T3 below.

Separating Elements	Airborne Sound Insulation $D_{nT,w}$ + C_{tr} (dB) (minimum values)
Floor	≥ 63

T3 Planning condition 6 requirement

3 Separating Floor

3.1 Existing Floor

- 3.1.1 The existing separating floor between ground and first floor level is understood to comprise a solid concrete slab. The fit out for the previous use as a betting shop included a suspended mineral fibre tile ceiling below this.
- 3.1.2 An airborne sound insulation test was undertaken between the ground floor and the living room of the flat above by *Mayer Brown* as detailed in report "*Noise Assessment*" ver. 1.0 dated February 2023. The mineral fibre suspended ceiling from previous use was still in place when the test was undertaken.
- 3.1.3 The result of the test was 57dB $D_{nT,w} + C_{tr}$. This is already a good performance, comfortably achieving the ADE standards applicable for new residences, both purpose built and formed by material change of use (12-14dB margin), but is short of the standard outlined by planning condition 6.

3.2 Recommendations

Sound insulating ceiling

- 3.2.1 We recommend installation of the following sound insulating ceiling configuration to fulfil the requirements of planning condition 6:
- Two layers of 15mm sound grade plasterboard (e.g. British Gypsum SoundBloc), supported on suitable suspended grid incorporating KSCH spring hangers¹. 100mm unfaced mineral wool / fibreglass insulation laid above ceiling (material density $\geq 10\text{kg/m}^3$). Overall ceiling zone depth $\geq 240\text{mm}$
- 3.2.2 Ceiling perimeter tape should be adhered to walls around the perimeter prior to mounting of ceiling plasterboard linings in accordance with spring hanger manufacturer guidance.
- 3.2.3 Board joints should be staggered between the two layers. All board joints should be taped and jointed.
- 3.2.4 After the ceiling plasterboard linings are mounted, non-hardening sealant should be applied to all small gaps (e.g. around perimeter).
- 3.2.5 There should be no penetrations or access panels in the sound insulating ceiling. The only permissible exception is small holes for drop rods where necessary for support of mechanical services etc, as discussed in paragraphs 3.2.8 onwards.

Wall linings

- 3.2.6 In order to minimise the effects of flanking, sound insulating wall linings should be fitted to all existing masonry walls within the ground floor as part of the fit-out. The following lining is recommended:

¹ <https://www.cmsdanskin.co.uk/ksch-low-profile-deck-suspended-ceiling-hanger/>

- 1x15mm dense plasterboard on semi-independent wall lining system (e.g. GypLyner Single), mounted to form minimum 35mm deep cavity containing 25mm acoustic insulation
Overall wall lining zone depth $\geq 50\text{mm}$

3.2.7 These wall linings should extend from ground floor level to the underside of the sound insulating ceiling. All board joints should be taped and jointed. Non-hardening sealant should be applied to all small gaps (e.g. around perimeter).

Mechanical services supports

- 3.2.8 No new mechanical services for the store are to be installed within the void between concrete slab and sound insulating plasterboard ceiling, they should instead be installed below the plasterboard ceiling.
- 3.2.9 The secondary lay in grid ceiling and lightweight services (e.g. light fittings) should be supported from the grid of the 2x15mm plasterboard ceiling. Loading information for all items to be supported in this manner must be passed to the spring hanger supplier so it can be accounted for in determining appropriate spacing of springs hangers and individual spring hanger load capacities.
- 3.2.10 Heavier items such as plant and associated plant support framework may be suspended from the underside of the concrete slab using drop rods. Drop rod soffit fixings must be carefully positioned to ensure rods are vertical once loaded, and to avoid contact between rod and plasterboard ceiling. Resilient top hat grommets or non-hardening sealant should be utilised where rods pass through the plasterboard ceiling to form an effective seal; subject to suitable fire stopping requirements.
- 3.2.11 If necessary, a structural sub-grid could be installed below the sound insulating ceiling via rigidly connected drop rods installed into the slab, providing all relevant items (e.g. fans) fixed to the grid are via acoustic hangers. The same requirements for drop rods passing through the ceiling as noted above must be adopted.
- 3.2.12 The mechanical services themselves must be suspended on suitable anti-vibration hangers. We recommend the following AV hanger specifications:
- Supply fan (Elta Jetflow SJMF 315): $\geq 10\text{mm}$ static deflection neoprene hangers
 - Extract fan (Systemair MUB T 042 400 EC): $\geq 10\text{mm}$ static deflection neoprene hangers
- 3.2.13 It is important that the hangers are specified to meet the stated static deflection under the load each will be subjected to as per the final installed system.
- 3.2.14 Flexible connections should be used between fans and rigid ductwork. Providing a suitable flexible connection is used between fans and ductwork that allows the potential maximum movement (deflection) of the acoustic hanger then the ductwork supports can be a simple resilient fixing, such as a rubber collar clamp.
- 3.2.15 If for any reason a dedicated acoustic hanger is to be used to support ductwork (rather than simple resilient fixing) then it should be specified to provide a static deflection of $\geq 2\text{mm}$ under the load of the ductwork (including any lagging and ancillaries) as per the final system installation.

Slab penetrations

- 3.2.16 Should any existing domestic services (e.g. rain water or soil pipes) penetrate the slab between ground and first floor, these penetrations will need to be treated to maintain the acoustic integrity of the floor/ceiling.
- 3.2.17 Gaps around the pipe should be tightly packed with mineral wool / fibreglass insulation through the depth of the slab (suitably secured in place) and sealed with non-hardening mastic. Where gaps around pipes are greater than 10mm, after packing around with insulation, 15mm dense plasterboard pattresses should be fitted to the underside of the concrete soffit to cover the gaps, the plasterboard being sealed to the soffit and the pipe with non-hardening mastic.
- 3.2.18 Pipes should then be boxed in within the ground floor ceiling void with two layers 12.5mm standard plasterboard (or wrapped with 10kg/m² acoustic lagging e.g. MufitLag). The pipe and boxing in must not come into contact with any part of the sound insulating ceiling or supports.