

Site: Units 2 &3, Botley Road, Fair Oak

Subject: Eastleigh Borough Council Planning Ref: F/22/94393
Proposed Change of Use from Betting Shop to Hot Food Takeaway

Date: 23 February 2023

Title: Response to Pollution Control Team Comments

1 Introduction

- 1.1 A planning application is currently being determined for the proposed change of use of Units 2 and 3, Botley Road, Fair Oak from use as a betting shop (sui generis) to hot foot takeaway (sui generis). An acoustic report prepared by Mayer Brown Limited was submitted to address consultation comments received from EBC's Pollution Control Team.
- 1.2 Following a review of this report, the Pollution Control Team have provided the following additional comments:
- (1) *Please demonstrate how it will comply with the Council's premises noise limit of a Rating Level being at least ten decibels lower than the lowest Background Sound Level.*
 - (2) *Can the ceiling and floor provide adequate sound insulation to prevent audible premises noise transmitting into the dwellings above?*
 - (3) *Noted the assessment says there will only be car deliveries. How can the premises prevent the use of motorcycles ? It seems this is not possible (nor reasonably enforceable) , whereas motorcycle noise is more likely to disturb dwelling occupants and motorcycles as commonly associated with meal collection and delivery.*
 - (4) *What is the impact of 'people' and front door activity noise to a dwelling open window above ?*
- 1.3 This Technical Note seeks to address these residual comments.

Plant Noise Emissions

- 1.4 A detailed plant noise assessment (including manufacturer's data for plant, the identification of noise sensitive receptors, determination of typical background noise levels, assessment of plant noise emissions and proposed noise control) is presented in Section 6 of our report. This concludes that noise emissions from the plant should have no observed adverse effect on the amenity of existing residents. This is achieved through:
- The inclusion of attenuators (silencers) on the over extract system and fresh air supply air handling unit (both of these pieces of equipment are located internally within the building and ducted to external louvres which exhaust/intake over the car par/ and service area to the rear.
 - The positioning of external condenser units adjacent to the rear wall of the unit to benefit from the inherent screening afforded by the set back to the first floor flats created by the walkway and also minimisation of reflections through the installation of an acoustically absorptive wall lining; and
 - Installing all equipment on appropriately selected anti-vibration mountings.
- 1.5 With this mitigation in place, the proposed plant complies fully with paragraph 185 of the NPPF which imposes a requirement to *"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 quality of life"*. Our report clearly sets out how compliance with this policy will be delivered.
- 1.6 The Pollution Control Team's comment *"Please demonstrate how it will comply with the Council's premises noise limit of a Rating Level being at least ten decibels lower than the lowest Background Sound Level"* actually raises some technical anomalies – in that the design standard being recommended does not accord with contemporary good practice guidance in relation to the assessment of commercial and industrial noise.
- 1.7 To help further explain this, the Pollution Control Teams initial consultation response required the assessment of plant noise to be undertaken in accordance with "BS 4142: 2014". As highlighted at paragraph 4.10 of our report, this standard was superseded in 2019 and we have therefore aligned our assessment with the requirements of the current version of the standard (BS 4142: 2014 + A1:2019).
- 1.8 The Pollution Control Team require noise levels to be assessed against the "minimum" background noise level. This does not accord with the approach advocated in BS 4142. To amplify on this, we would draw specific attention to section 8.1 of the standard which states:

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*“In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that the values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, **the objective is not simply to ascertain a lowest measured background sound level**, but rather to quantify what is typical during particular time periods”. (My emphasis added).*

1.9 Furthermore, Section 8.1.4 advises:

“The monitoring duration should reflect the range of background sound levels for the period being assessed. In practice, there is no “single” background sound level as this is a fluctuating parameter.

However, the background sound level used for the assessment should be representative of the period being assessed.

*NOTE 1 To obtain a representative background sound level a series of either sequential or disaggregated measurements should be carried out for the period(s) of interest, possibly on more than one occasion. A representative level should account for the range of background sound levels and **should not automatically be assumed to be either the minimum** or modal value.*

(My emphasis added).

1.10 Our noise assessment directly follows the above guidance with representative background noise levels established through continuous automated noise monitoring of the site over a notional 8 day period (to ensure that any diurnal fluctuations were established robustly) and a statistical analysis of the measurement data is presented to demonstrate the range and distribution of measured values. This separately considers the daytime and night-time period given that different plant may be operational 24/7 accounted for.

1.11 Notwithstanding the above, it is also important to note that whilst the assessment approach of BS 4142 initially requires a “relative” assessment to be made (i.e. how the rated level of plant noise compare with the representative background level), it is also critical that consideration is given to the “context” of the assessment. Matters of context include:

- The absolute level of the sound;
- Whether background sound levels are “low”;
- The character and level of the residual sound; and
- The likely sensitivity of any receptor.

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- 1.12 It is therefore clear that the Pollution Control Team's suggested quantitative requirement (i.e. a demonstration that the rating level of plant is at least 10dB(A) below the minimum background noise level), fails to take on board a fundamental part of the BS 4142 approach to assessment (i.e. the consideration of context).
- 1.13 As highlighted in our report, the results of the noise monitoring show an interesting statistical distribution of measurement results. For most of the night-time period (85% of the time), the measurement data shows a typical background sound level of 48dB(A). If this was taken as the representative background level, the predicted level of plant noise (33dB $L_{Ar,T}$) would be readily compliant with the suggested 10dB(A) below background requirement suggested by EBC's Pollution Control Team.
- 1.14 However, the statistical distribution also shows a small percentage of much lower background noise levels, with a minimum value of 23dB $L_{A90,T}$ being recorded. If this value was to be adopted (as intimated by Pollution Control's response), it follows that a rated sound level of 13dB(A) would be required to satisfy their stated requirement. Such a requirement is, respectfully both unnecessary and unreasonable, in terms of its consistency with national planning policy objectives (and indeed the appropriate use of BS 4142 as an assessment methodology). The reasons for asserting this are:
- First, a sound level of 13dB(A) is an exceptionally low level of noise, in real terms below the threshold of hearing for an individual with a "normal" hearing acuity. So this begs the question: Why would noise levels need to be rendered inaudible **outside** of a receptor location? Indeed, such a requirement becomes even more questionable when the guidance of BS 8233: 2014 is considered which recommends that **internal** noise levels in bedrooms at night will provide acceptable amenity at a level of 30dB $L_{Aeq,8hour}$ (i.e. 17dB(A), or subjectively three times louder than EBC's implied external noise limit). It follows that the implementation of a quantitative design target that is unnecessarily stringent is not consistent with NPPF requirements.
 - Second, BS 4142 clearly identifies that caution should be applied when background noise levels are low. In that regard, the guidance in Section 11 of the standard cautions "*Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background level. This is especially true at night*". In light of the above, our report makes reference to the World Health Organisation's "*Night Noise Guidelines for Europe*" which outlines a "*Lowest Observed Adverse Effect Level*" for night-time noise. Our report concludes that night-time noise emissions

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would be below this value, and noise should therefore have no observed adverse effect.

- Third, as noted earlier, the actual background noise levels characterising the site are around 48dB $L_{A90,T}$ for over 85% of the time due to the operation of existing plant in the locality. The operation of the proposed plant will not have any cumulative effect on such noise (and as noted earlier would actually be 15dB(A) below the existing noise level when the other plant is operational). In that regard, our report actually provides a precautionary approach - some additional safeguarding that should existing plant in the locality cease operation at some point in the future and background sound levels reduce, noise levels from the proposed plant should continue to remain acceptable.

1.15 As summarised in the report, the impact assessment guidance of BS 4142 advises:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

1.16 The daytime assessment we have presented concludes that noise levels will be controlled to a level that is 7dB(A) below the representative background noise level. Noise emissions would therefore have “less” than a **low** impact. It is also considered material to note that Units 2 and 3 historically had 2 condenser units installed in a similar location to that proposed. The change of use application will provide a betterment to that scenario in that it is also proposed to installed an acoustically absorptive wall lining to further reduce noise emissions to a minimum in line with paragraph 185 of the NPPF.

1.17 The night-time noise assessment indicates that noise levels will be 15dB(A) below the background level characterising the site for 85% of the time. During the remaining 15% noise levels will be controlled to a value (33dB) that is 7dB(A) below the night-time LOAEL that can be inferred from the WHO “Night Noise Guidelines for Europe”.

1.18 In light of the above, it is concluded that controlling noise levels to a design target set to be 10dB(A) lower than the minimum values is unnecessarily stringent and unreasonable given the noise climate and context of this site. Notwithstanding this, it has been

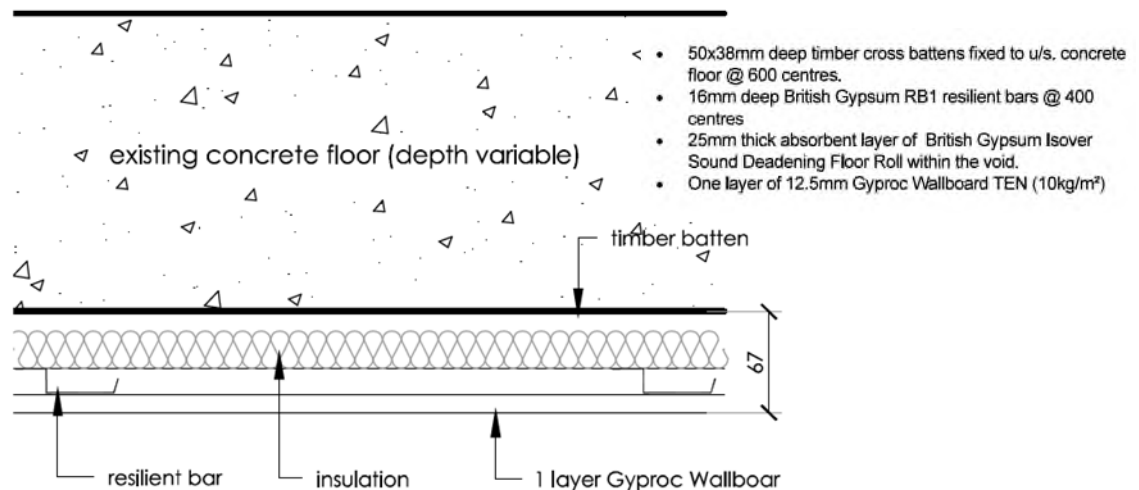
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demonstrated that noise emissions will be satisfactorily controlled to protect the amenity of residents above the proposed takeaway, in line with national planning policy objectives and good practice guidance.

Separating Floor

- 1.19 There is not a simple answer to the Pollution Control team's query *"Can the ceiling and floor provide adequate sound insulation to prevent audible premises noise transmitting into the dwellings above?"*. The main difficulty relates to the use of the term "audible". Audibility is not simply a matter of the absolute magnitude of noise, but how such noise is perceived in the context of existing ambient noise levels and, indeed, the hearing acuity of the listener making that judgement.
- 1.20 Notwithstanding this, it is our professional opinion that adequate control should be provided over sound transference from the proposed takeaway to the flat, as explained in Section 7 of our report. To amplify on this, we would highlight the following:
- 1.21 First, the sound insulation testing undertaken between the existing ground floor unit and first floor flat demonstrates that the separating construction provides an intrinsically higher sound reduction performance – subjectively more than twice as good as the minimum standard required by Approved Document E of the Building Regulations 2010, as amended.
- 1.22 Second, our report demonstrates that actual levels of sound transmission using operational noise source data for a similar store) will be controlled to a "low" level of noise, i.e. around 25dB(A). To add some context and as highlighted in our report, this value is 5dB(A) lower than the ambient noise level recommended in BS 8233 for bedrooms and night and 10dB(A) lower than the ambient noise level recommended for habitable rooms during the daytime. However, perhaps more critically, ambient noise levels measured in the upstairs flat during the sound insulation testing, show that typical ambient noise levels are actually in the order of 40dB L_{Aeq,T}.
- 1.23 In light of the above, it is concluded that levels of sound transference from the takeaway should be comfortably controlled and should not prejudice the existing amenity of the upstairs neighbours.
- 1.24 Notwithstanding the above, we can also clarify that the fit-out proposals for the proposed unit will remove the existing lay-in grid ceiling within the unit and replace this and an additional plasterboard ceiling underdrawn below the existing structure with quilt to the cavity as per detail overleaf.

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- 1.25 This construction will then be underdrawn with a further suspended mineral fibre type ceiling.
- 1.26 These proposals should therefore further optimise the sound insulation of the separating structure and sound transference.

Use of Motorcycles

- 1.27 The submitted noise assessment considered that all deliveries would be made by passenger vehicle as this would normally constitute a worst case assessment in noise terms (e.g. cars require doors to be opened/closed in addition to general movement noise). This also aligns with the operators preferred mode of delivery.
- 1.28 However, it is fair to say the exact modal split for deliveries can vary from location to location and subject to specific operational characteristics of the store, can involve the use of other forms for delivery (e.g. bicycles and mopeds). Notwithstanding this, an assumption that all deliveries will be made by car is normally an appropriate pessimistic starting point.
- 1.29 However, in order to provide additional certainty relating to the proposed unit, additional information has been obtained from the Client and Mayer Brown's Transport Planning Team. Based on this information it is estimated that the expected modal deliver profile for this unit will comprise:

Bicycle:	40%
Car:	20%
Moped:	20%

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- 1.30 As highlighted in Table 8.1 of our report, peak trading associated with the takeaway occurs in the early evening with an estimated 49 deliveries/collection between 18.00 to 19.00 hours. This further breaks down to 33 deliveries and 16 collections. It is assumed that all collections will be made by cars. Therefore, applying the above modal split to deliveries gives the following break-down of expected movements for the worst case hour:

Time	Deliveries			Collections
	Cycles	Cars	Mopeds	Cars
18:00-19:00	13	10	10	16

Table 1: Proposed Vehicle Numbers

- 1.31 Table 2 overleaf adds source noise data for mopeds to the car data used to estimate noise levels associated with delivery and collections.

Activity	Measured Sound Level @ 3m L _A E
Car engine start / pulling away	64
Car door open/close	71
Moped start / pull away	73

Table 1: Proposed Vehicle Numbers

- 1.32 Based on the above, the total worst case sound level from all delivery and collection related activity incident on Flat 2 Botley Road is calculated to be 53.7 dB L_{Aeq,1hour}. This is 1.3 dB(A) less than assessed in our original assessment.
- 1.33 As highlighted in our noise assessment the ambient noise level incident on the flat during peak hours of trading is 63dB L_{Aeq,1hour} (free-field). It follows that activity associated with the operation of Dominos should give rise to just an imperceptible level of additional activity.
- 1.34 The conclusion set out in our Noise Assessment therefore continue to remain valid.
- 1.35 The Pollution Control Team's comments appear to imply that mopeds may be driven in such a way that they are likely to increase disturbance *"as commonly associated with meal collection and delivery"*. Whilst any vehicle can be driven in an anti-social manner, such practices are not condoned by responsible delivery operators such as Dominos and appropriately well maintained and driven mopeds are not considered to have any particular noise characteristics that would make them obtrusive in the context of general traffic flows.

People and Front Door Activity Noise

- 1.36 The Pollution Control Team have queried: *“What is the impact of ‘people’ and front door activity noise to a dwelling open window above?”*
- 1.37 Delivery drivers operate alone and therefore there should be no speech associated with the majority of vehicular movements associated with the operation of the proposed takeaway. It follows that speech related activity will be primarily associated with pizza collections by members of the public.
- 1.38 Based on observations of operational pizza takeaways, most collections involve individuals picking up orders which, again, should not create any additional speech activity.
- 1.39 Notwithstanding this, it is possible that pizzas could be collected by more than one individual, who may converse whilst approaching/entering or existing/leaving the store. In order to assess the potential significance of such noise reference can be made to Table A.1 of BS ISO 9920-1:2003: *“Ergonomics – Assessment of Speech Communication”*, as reproduced below which sets out typical speech sound levels consistent with a variety of vocal efforts.

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

- 1.40 The above table therefore indicates that “normal” speech is the vocal level at a distance of 1m is 60dB(A). Extrapolating this to the window of the first floor flat would give an incident level of the façade of the building of 50dB(A). It is generally accepted that an open windows will provide an outside to inside sound reduction of around 13dB(A). It follows that speech from passing customers would be reduced to around a level of 37dB(A). As noted previously, the ambient noise level incident on the flat above the shop is around 63dB $L_{Aeq,1hour}$ during the peak hour of trading. Applying an outside to inside sound reduction of 13dB(A) to this value would given an internal sound level of 50dB $L_{Aeq,1hour}$. It can therefore be concluded that noise levels associated with customer

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speech would be around 13dB(A) **lower** than the road traffic noise levels that would be experienced in the property.

- 1.41 It is important to note that this assumes that speech is directed “on axis” to the window. In reality, this will not be the case and lower noise levels would be experienced if directivity effects are taken into account.
- 1.42 It is also material to note that the proposed store includes a customer waiting area which will minimise the risk of customers “loitering” outside of the unit and which can be prevented and be enforced through appropriate management control and supervision.
- 1.43 Whilst the opening and closing of doors can potentially be a source of structureborne and airborne sound transmission, any impacts can be avoided through the appropriate specification of door closers (to prevent doors “thudding”) and routine maintenance.
- 1.44 As such, the operation of the store should not have any unacceptable adverse impact on those residing above the unit.
- 1.45 If these matters are considered to be a residual concern for the Council’s Pollution Control Team, it is understood that Dominos would be happy to accept a condition which requires the submission and approval of a Noise Management Plan which includes the detailed management controls that will be implemented at the store to ensure that all staff are respectful of the site neighbours; the operational policies to minimise noise associated with customer comings and goings and general engineering measures (e.g. door closers) that will be used.

Author: Paul Gray BSc (Hons), MIOA

Position: Technical Director

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