

NOISE IMPACT ASSESSMENT

266 KENTWOOD HILL

TILEHURST

RG31 6DR

JULY 2023.

Revised September 2023

by

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EAST GRINSTEAD

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Document Control: Revised 18th September 2023 with party wall details.

ENVIRONMENTAL NOISE SURVEY

AND

NOISE IMPACT ASSESSMENT

1. Introduction.

An application has been made for change of use of rear of ground floor shop at 266 Kentwood Hill from Class E (offices) to C3 (dwelling houses) under the terms of Class MA of the Town and Country (General Permitted Development) (England) Order 2015 as amended.

Developments under Class MA are permitted subject to the condition that before beginning the works the developer must apply to the local planning authority for determination as to whether prior approval of the authority will be required as to ...MA.2 (2) (d) impacts of noise from commercial premises on the intended occupiers of the development.

This report analyses the noise that will arise from nearby commercial premises.

This report is revised in accordance with internal Memorandum by Rebeca Moon Environmental Health Officer for Reading Borough Council dated 29th August 2023.

2. Description of Proposed Development.

The existing building is terraced with frontage towards Kentwood Hill with retail premises at ground floor and residential flats at first floor.

It is proposed that part of the ground floor shop is converted to a flat and the rear outbuild is converted to a second flat.

The proposal is shown on the following floor plans by OPS Chartered Surveyors that are submitted with the application:

2023-266KH-PA-1	Existing and Proposed Floor Plans
2023-266KH-PA-3	Existing and Proposed Garage Conversion
2023-266KH-PA-8	Proposed Elevations
2023-266KH-PA-x	Block Plan

3. Acoustic Requirements of the General Permitted Development Order

The proposed development at 266 is similar to that at the adjacent shop at 264. The application for the shop at 264 Kentwood Hill was granted by Reading Borough Council under application reference 220106.

An internal memorandum dated 1st February 2022 by the Reading Environmental Health Officer recommended that a noise impact assessment be made as follows:

Noise impact on development

A noise assessment should be submitted in support of applications for new residential proposed in noisy areas. Whilst the area in general may not have noisy commercial uses, as the flat will adjoin the shop to the front, an assessment should be submitted to demonstrate that the sound insulation between the two uses will be sufficient to enable the shop to operate without undue restrictions and to enable the occupant of the flat to live without being disturbed by activities in the shop. This is especially important given the layout being a studio and therefore all the living space adjoins the shop directly.

If a condition is required, the below would be suitable.

N7 NOISE ATTENUATION SPECIFIC SOURCE (TO BE SUBMITTED)

No development shall commence on site until a scheme for protecting the occupants of the flat from noise from the adjoining shop has been submitted to and been approved in writing by the Local Planning Authority.

All works which form part of the approved scheme shall be completed before any part of the flat is first used or occupied and the approved measures shall thereafter be retained in effective working order.

REASON: *These details are required due to insufficient information being contained within this submission and in order to safeguard the amenity of occupants in accordance with Policy CC8 of the Reading Borough Local Plan 2019.*

The Order

Developments under Class MA are permitted subject to the condition that before beginning the works the developer must apply to the local planning authority for determination as to whether prior approval of the authority will be required as to ...

MA.2 (2) (d) impacts of noise from commercial premises on the intended occupiers of the development.

It is noted that the Order only refers to noise from commercial premises; in this respect it differs from planning requirements that include other sources of external noise such as railways and roads.

The meaning of condition (d) is not further defined in the Order. For the purpose of this report the standards usually applied in planning applications are used as a basis.

Current Standards.

For planning applications, the guidance of BS 8233-2014 is used; compliance with the recommendations will satisfy the requirements of the Permitted Development Order.

Guidance contained in British Standard BS 8233 2014 includes recommendations for noise levels within domestic accommodation.

Paragraph 7 includes Table 4 that gives the following criteria.

Table 4 Indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB LAeq,16hour	-
Dining	Dining room/area	40 dB LAeq,16hour	—
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16hour	30 dB LAeq,8hour

BS 8233 provides guidance on how to establish noise levels within buildings and BS 4242:2014 gives methods for rating and assessing industrial and commercial sound.

Reading Borough Council Memorandum

Memorandum by Rebeca Moon Environmental Health Officer for Reading Borough Council dated 29th August 2023 recommends that the wall between the proposed flat and the adjoining shop should have a sound resistance of 55 dB (Dntw +Ctr). This exceeds the requirements of Part E of the Building Regulations,

4. Site Observations

Figure 1 of this report is a site plan showing the proposed flat.

Figure 2 is a photograph at the front of the building taken from Google Street View.

The application building is shown as Industrial Air Limited, but they have now vacated the premises and it is now unoccupied. The building to the right is 264 Kentwood Hill, recently converted to a residential flat at the rear under planning consent reference 220106.

There is a Costcutter grocer store to the right of 264 at 260 to 262.

The building to the left is 268 Kentwood Hill, a fish and chip shop.

There are residential flats at first floor for all three buildings. These flats have full planning consent and have been in use as private residences since the construction of the buildings.

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Costcutter at 260 to 262 Kentwood Hill:

Figures 4 and 5 show the rear view from roof above the flat at 264 flat looking towards Costcutter at 260 to 262.

It was not possible to obtain access to the garden area at the rear of the flat but there would have been no sight of any commercial equipment in nearby premises from that location.

Two air conditioning condensing units are shown in Figure 4 at the rear of Costcutter. They are on the roof of a single storey building at a distance of 22 metres from the window of the living room of the proposed flats. The units were not running or were not audible at the time of our inspection. The maximum sound power level from this type of unit will not exceed 65 dBA. The combined noise level for two units would be 68dB SWL.

Noise attenuation by distance is given by $A_{Div} = 20 \log d + 11 \text{ dB} = 38\text{dB}$ at 22 metres. There is further attenuation arising from the barrier of the existing buildings between the subject window and noise source. Sound pressure level arising from the units outside the window of the proposed flats will therefore not exceed $68\text{dBA} - 38\text{dB} = 30\text{dBA}$ and the noise level inside the flat will be less than $30\text{dBA} - 15\text{dB} = 15\text{dBA}$. This is clearly much less than the 30dBa recommended by BS 8233.

Previous Occupant of 266 Industrial Air Ltd

The application building was formerly Industrial Air Ltd 266 Kentwood Hill at ground floor with residential flat at first floors.

There were two Fujitsu Air Conditioning Condensing units in the rear area. These units are to be removed as part of the proposed work of converting the ground floor premises. There is therefore no effect of noise from the units.

268 Kentwood Hill. Fish and chip shop:

Figure 3 is a photograph showing the rear of the shop with a kitchen extract duct. The fan for the extraction is inside a cupboard at ground floor in the shop.

There is no record of the planning consent for this duct in the Planning Documents on the Reading Council web site.

The chip shop closes at 9 pm and does not open before noon.

The effect of noise from the duct is analysed in this report.

5. Calculations of Noise from Chip Shop Duct.

The duct is 300 mm diameter indicating an air flow of about 700 litres per second. A typical fan for this application would be Flakt Woods 56JM/20/4/6/30-1 LCT 2019 at 1420 RPM with characteristic sound power output as $L_w = 74 \text{ dBA re } 2 \times 10^{-12} \text{ w}$.

Noise is emitted at the terminal at roof level, there is a reduction by attenuation in the length of the duct at the rate of 0.15dB per metre. The duct length is 10 metres.

There is a 90-degree bend in the duct which results in reduction of 3dB (CIBSE Guide B5 Table 6.5)

The resulting noise emission sound power at the roof cowl is then:

$$L_w = 74 - 10 \times 0.15 - 3 = 70 \text{ dBA.}$$

5.1.2 Resultant Noise in Proposed Flats.

The noise level outside the windows of the proposed flats is calculated by the procedures in ISO 9613-2

The basic equation (3) from ISO 9613-2 for calculating noise level at a receiver location is.

$$L = L_w + D_c - A$$

Where L_w is sound power at source

D_c is Directivity correction, zero in this case

A is attenuation from source to receiver.

Equation 4 gives $A = A_{div} + A_{atm} + A_{gr} + A_{bar} + A_{misc}$

A_{div} is the attenuation due to distance given by equation 7.

A_{atm} is attenuation due to atmospheric absorption, zero in this case A_{gr} is ground effect, zero in this case.

A_{bar} is attenuation due to barrier calculated by equations 16 and 17

A_{misc} is zero in this case.

Equation 7 gives $A_{div} = 20 \log d + 11$

A_{bar} is 3 allowing for the barrier effect of the roof overhang above the window of the flat behind the shop and 0 for the window to the garage conversion.

BS 8233:2014 provides guidance on the evaluation of noise inside rooms with windows open, Annex G1 recommends that the noise level inside a room is 15dB below the external noise level when windows are open.

For this report 15dB is deducted from the external noise level to give the internal noise when windows are open.

The use of calculated noise levels is sufficient in this case because the results below show that the noise level is better than the BS 8233 recommendations by more than 10dB.

The calculations are as follows:

	For living room window of proposed flats at 266.	Shop	Garage
A	SWL at source dBA re 2×10^{-12} watts.	70dBA	70dBA
B	d metres	8.0 m	15.0 m
C	A_{div} Eqn 7 = $20 \log d + 11$	29dB	34dB
D	A_{bar} Eqn 13&15	3 dB	0 dB
E	L_p outside window A-C-D	38dBA	36dBA
F	Noise reduction with window open by BS8233 Annex (G)	15dB	15dB
G	Resultant noise level inside with window open. F-G	23dBA	21dBA
H	Criterion BS 8233 Table 4 Daytime	35 dBA	35 dBA

Thus, noise from the chip shop extract fan inside the rooms of both flats with windows open will be significantly below the recommendations of the British Standard and usual planning guidance.

6. Sound Reduction of Walls

The Environmental Health Officer at Reading Borough Council has recommended that walls separating the proposed flat should be separated from the adjoining commercial premises by walls with a sound insulation performance of 55 dB (Dntw +Ctr).

There is one wall that separates the proposed flat from the fish and chip shop at 268. This wall is a 9 inch brick wall with plaster both sides. To achieve the recommended 55dB the wall should be acoustically reinforced with a separate plasterboard skin acoustically separated from the existing brick wall. The walls facing the chip shop should be constructed as British Gypsum Code B226003MR1(EN) comprising two layers of British Gypsum SoundBloc plaster board on spacer with rockwool liner. Details are in Figure 6 of this report.

There is also a wall between the proposed flat and the existing front shop. This wall contains an access door. The door should be bricked to match the adjacent wall and the reinforced with plasterboard liner on the side facing the flat. The plasterboard should be as the B226003 construction.

7. Conclusion

The only sources of noise from commercial premises near the proposed flats are the air conditioning condensing units at the rear of Costcutter at 260 to 262 and kitchen extract duct at the rear of the fish and chip shop at 266.

The Costcutter units are more than 22 metres distant and will have no discernible noise at the windows of the proposed flats.

For the proposed flat at the rear of the shop the duct outlet at rear of the fish and chip shop is about 8 metres distant and partially shaded by the roof overhang above the flat window, the duct will give rise to a noise level within the proposed flat with windows open of no more than 23dBA.

The proposed flat conversion from garage is more than 15 metres from the chip shop duct and noise inside the flat arising from the chip shop will not exceed 21dBA.

The fish and chip shop does not operate after 9 pm. The noise level inside the flats is more than 10dB below the criterion recommended in BS 8233.

The air conditioning units associated with Industrial Air Limited, the former occupier of the application premises are no longer required and are to be removed.

There are other existing residential flats at first floor to all the buildings. The proposed flats are at ground floor where any noise from nearby air conditioning units or any other commercial activity is reduced by acoustic shielding by fences or building outlines. The noise arising at the proposed flats will be below that at the existing first floor flats.

A new wall is to be constructed between the proposed flat and the shop that will continue to be in use. The wall will need to be constructed in accordance with the requirements of the Memorandum from Reading Borough Council with a sound reduction of $55\text{dB } D_{nT,w} + C_{tr}$. It should be a solid brick or block wall at least 100 mm thick with plasterboard liner as British Gypsum Code . B226003MR1(EN) as Figure 6 of this report.

The proposed flat behind the shop is separated from adjacent buildings by substantial solid brick walls more than 225mm thick. These walls will produce a sound reduction of at least $45\text{dB } D_{nT,w} + C_{tr}$. The wall towards 264 which is a private residence will require no further modification. The party wall to the chip shop at 266 should be reinforced with a plasterboard construction as British Gypsum Code . B226003MR1(EN) as Figure 6 of this report.

The floor of the flat above the proposed flat will have to be constructed in accordance with Building Regulations Part E. to provide an airborne noise reduction of $45\text{dB } D_{nT,w} + C_{tr}$. This is a very high level of noise reduction and will ensure there is no audible noise within the flats during daytime.

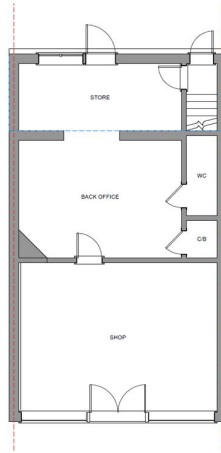
The noise arising from commercial premises is therefore below the recommendations of BS 8233 and the usual planning guidance and accepted practice.

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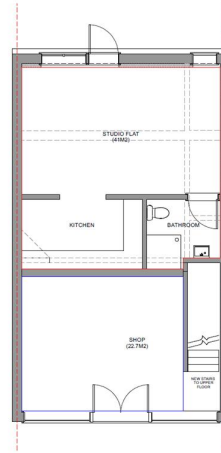
18th September 2023

Figure 1 Plan of Proposed Flats

Shop Conversion

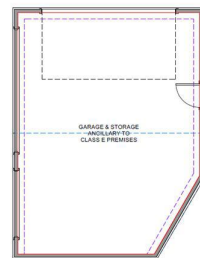


EXISTING G/F (1:100)

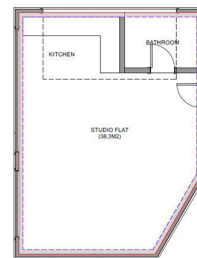


PROPOSED G/F (1:100)

Garage Conversion.



EXISTING G/F (1:100)



PROPOSED G/F (1:100)

Figure 2 Photograph of Front of Proposed Development



Figure 3 Rear 266 Kentwood Hill Fish and Chip Shop



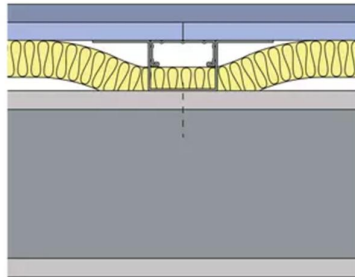
Figure 4 Rear of Costcutter



Figure 5 Rear of Costcutter Continued.



Figure 6. Wall Construction for Reduction of 55 dB (Dntw +Ctr).



B226003 MR1 (EN)

[See full details for this specification](#)

100mm solid block wall of density 1700 kg/m³ with 13mm plaster each side and Gypframe GL1 Lining Channel framework fixed to one side to give 35mm cavity with 25mm Isover Acoustic Partition Roll (APR 1200) in the cavity clad with an inner layer of Gyproc SoundBloc 12.5mm and an outer layer of Gyproc SoundBloc MR 12.5mm to one side.

[Read less](#)

Sound Insulation (Airborne) R _w (dB)	60	Sound Insulation (Airborne) R _w + C _{tr} (dB)	55
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List of products

Bracket type	Gypframe GL2 Bracket
Channel connector	Gypframe GL3 Channel Connector
Fixing method	Gypframe GL11 GypLyner Anchor
Sealant	Gyproc Sealant
Thermal sealant	Gyproc Sealant
Bracket fixing	British Gypsum Wafer Head Drywall Screws 13mm
Screws side 1	Layer 1: British Gypsum Drywall Screws 25mm Layer 2: British Gypsum Drywall Screws 35mm
Fixing strap	Gypframe GFS1 Fixing Strap
Base channel	Gypframe GL8 Track
Head channel	Gypframe GL8 Track
Insulation	Layer 1: 25mm Isover Acoustic Partition Roll (APR 1200)
Stud	Gypframe GL1 Lining Channel
Board side 1	Layer 1: Gyproc SoundBloc 12.5mm Layer 2: Gyproc SoundBloc MR 12.5mm