

NOISE & POLLUTION ASSESSMENT

Premises Address: 50 Queens Road, Reading, RG1 4AU

Application For: Conversion of Offices to 5 x 1-Bed Self-Contained Flats Involving Replacement of Unsympathetic Ground & First Floor Rear Extensions with Ground Floor Extension, Internal Subdivision & Conversion of Basement.

This assessment by Anthony J Thorpe BA(Hons) MRTPI DipConsHistEnv(RICS) addresses the following Environmental Protection Concerns:-

- Noise impact on development from the A329 Queens Road.
- Air Quality impact – increased exposure & new receptors in AQMA.

NOISE IMPACT ON DEVELOPMENT

The site adjoins an obvious traffic noise source in the form of the westbound and eastbound carriageways of the A329 Queens Road forming part of the Reading IDR.

A noise survey was carried out in March 2016 and accepted in connection with the approved residential conversion of the basement of the adjoining property 52 Queens Road (planning approvals 161066 and 161067). The survey assessed external noise levels impacting on the façade of the adjoining terraced building and from this we identify noise mitigation measures, particularly in terms of glazing and ventilation that will control noise levels sufficiently to provide a good quality living environment for residents.

This will ensure that the conversion of the building from offices to residential, including conversion of the basement, complies with BS 8233:2014 and the WHO guidelines for community noise which provide guidance on acceptable noise levels. We are considering noise levels within bedrooms at night (23:00hrs-07:00hrs) and living rooms during the day (07:00hrs to 23:00hrs). There is no proposed external amenity space to consider. This historic 1832-33 building is being renovated and is also a GV GII listed building. With heritage assets of this nature the 'reasonable' standard will be acceptable if the 'good' standard cannot be met.

The Council applied the following standards:-

Room	Design criteria (good)	Upper limit (reasonable)
Bedrooms	<30dB	<35dB
Living rooms	<30dB	<40dB

We carried out a noise survey at the façade of the building facing the western carriageway of Queens Road at approximately 2m height above local ground level between the hours of 09.00 and 17.00 on Tuesday 1st March 2016 with the following results:-

The average level over the 8 hour period was 70 dB.

The highest level over the 8 hour period was 83 dB.

These levels are consistent with those of 69.9dB – 69.2Db recorded over a longer period at the opposite end of the terrace in 2007 in connection with the approval of four self-contained flats (07/01369/FUL).

Since external noise levels are significantly higher than the required internal standards we consider noise mitigation is essential and this will focus on the weak point in the structure; namely frontage windows. All existing frontage windows already benefit from secondary glazing. This maintains <30db in proposed living rooms and will be replaced as necessary due to wear and tear. In this case we have specified double glazing for the new basement windows which will ensure both a living room and bedroom noise level of <30dB (good).

Since the two proposed basement frontage windows light only the proposed living room and the proposal is a refurbishment of a heritage asset we submit that the 'reasonable' level <40dB is applicable to this room. The single bedroom is at the rear of the building adjoining a private parking area serving this and adjoining residential buildings. Noise levels here are negligible since the principal frontage buildings reflect and absorb traffic noise from Queens Road.

Given that the acoustic integrity would be compromised should the proposed frontage windows be opened, mechanical ventilation may need to be provided since mitigation relies on closed front windows. The proposed ventilation measures do not allow unacceptable noise ingress and provide sufficient ventilation to avoid the need to open windows in hot weather. The windows remain openable by personal preference since non-openable windows are not considered an acceptable solution due to the impact on living standards.

NOISE MITIGATION SCHEME

The proposed frontage basement living room lies below ground level (see section through building on drawing 19/02/04) and under massive external masonry walls to the north and east and a heavy basement wall dividing the property from the adjoining basement at 50 Queens Road. None of these heavy dense structures are a transmission route for noise. Accordingly there are only two realistic noise pathways. These are:-

- 1) Through the two frontage windows via the new frontage light well.
- 2) Indirectly through the floor of the living room of the flat above.

We have assumed that transmission of external noise through the living room floor of the flat above will be negligible since it is already attenuated through the frontage fabric of the building.

Transmission of external noise through the two frontage windows will be limited since the tops of the windows are effectively below ground level.

In similar circumstances in the adjoining basement approved in 2016 we specified 'SGG STADIP SILENCE ® Acoustic PVB laminated safety glass' for the frontage windows and this was considered acceptable. The use of these units will ensure both a living room and bedroom noise level of <30dB (good).

Natural back-to-front ventilation of the upper floors occurs due to the interaction of vertical surfaces with the prevailing wind. However this pressure differential does not occur to the same degree in the basement therefore positive ventilation of the basement by means of a Vent Axia Air Minder Plus is preferred (as approved in the adjoining basement). This unit is a whole-flat heat recovery ventilation system which will draw clean air from the rear of the building through a 90% efficient heat exchanger allowing a high level of heat recovery in Winter and filtered cool fresh air to be drawn into the property during the summer thus avoiding the need to open the frontage windows.

This noise assessment shows that a 'good' standard for internal noise can be met by incorporating the proposed effective glazing and ventilation scheme. We do not consider that any additional measures are reasonably necessary.

AIR QUALITY IMPACT

The proposed development is located within an air quality management area (AQMA) that we are advised is a pollution hot-spot (likely to breach the EU limit value for NO₂). The principal generator is traffic on Queens Road which crosses the frontage of the site. The basement proposal introduces new exposure and receptors to an already occupied building. Accordingly an assessment and mitigation measures are provided as part of the application to protect the residents from the effects of poor air quality.

Reading Borough Council's Air Quality Policy DM19 requires that developments have regard to the need to improve air quality and reduce the effects of poor air quality through design, mitigation and (where required) planning obligations to be used to help improve local air quality. Since internal air quality is easily managed in this case we do not consider a planning obligation to be necessary.

AIR POLLUTION MITIGATION SCHEME

Natural back-to-front ventilation of the upper floors transferring clean air towards Queens Road occurs due to the interaction of vertical surfaces with the prevailing wind. However this pressure differential does not occur to the same degree in the basement. A frontage buffer zone is not an option. Neither is it possible to implement measures to reduce the level at the facade of the property by creating a barrier between the property and the carriageway, such as close boarded fencing or planting vegetation.

The basement habitable rooms are to an extent decoupled from the source of pollution since the basement is situated underground. In these circumstances we submit that the use of mechanical ventilation with the inlet on the clean (south) side of the property will be acceptable.

Positive ventilation by means of a Vent Axia Air Minder Plus is proposed. This unit is a whole-flat heat recovery ventilation system which will draw clean air from the rear (private parking area) of the building through a 90% efficient heat exchanger allowing a high level of heat recovery in Winter and cool fresh air to be drawn into the property during the Summer thus avoiding the need to open the frontage windows.

The windows remain openable by personal preference since non-openable windows are not considered an acceptable solution due to the impact on living standards. If the Council consider it absolutely necessary for us to use non-openable windows then this can be enforced by a condition on the planning permission.

This air quality assessment shows that a good standard for internal clean air can be met by incorporating the proposed effective glazing and ventilation scheme. We do not consider that any additional measures are reasonably necessary.

CONCLUSIONS

The proposed combined noise and pollution mitigation scheme has been informed by on-site investigation and in our submission a 'good' standard for internal noise and clean air can be achieved in accordance with local and national standards.

If you have any queries or require further information please do not hesitate to call.

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AJT/SB/23/05/2019