

Technical Note

Noise Conditions for Land off Palk Road, Bedhampton, Havant

Further to discussions between Bellway Homes (Wessex) and the case officer for Havant Borough Council in April 2023 it was advised that the case officer did not want to include any noise related conditions on a permission and requested that Bellway Homes (Wessex) provide the required information regarding acoustic specification and amenity space noise at this stage of the application.

Based on the discussions the information requirements comprise:

- a) Scheme of sound insulation/reduction regarding internal noise levels as per wording in the 'Sound Insulation Condition', as shown below.

Sound Insulation Condition

A scheme of noise insulation/reduction shall be submitted to ensure that the noise level of 35 dBLAeq,16 hour in living rooms and bedrooms during the daytime (0700 to 2300 hours) and 30 dBLAeq,8 hour and 45 dBLAmax during the night-time (measured with F time-weighting and between 2300 and 0700 hours) in bedrooms in accordance with BS8233:2014 shall not be exceeded. Where these levels cannot be met with windows open appropriate acoustic ventilation should be provided so that the room can be sufficiently ventilated. The acoustic performance of any passive vent, variable speed mechanical air supply unit or whole house ventilation must be sufficient to ensure that the noise level standards given above are not compromised.

Reason: To protect future occupiers against noise ingress.

- b) Noise data to demonstrate that levels in the public open area on the southern edge of the development, with the proposed buildings in place would conform with the values outlined in the 'Noise in Amenity Spaces' condition, as shown below.

Noise in Amenity Spaces.

Prior to the commencement of the development hereby approved, a scheme will be provided to demonstrate that the external noise levels within the curtilage of residential units and amenity areas for the site will conform to the "Design criteria for external noise" upper guideline value of 55 dB LAeq,T and preferably with the desired LAeq,T level of 50 dB as specified in section 7.7.3.2 of BS 8233:2014.

Guidance on the noise mitigation works to be provided to ensure noise reduction for the proposed development shall be submitted to and approved in writing by the Local Planning Authority. The work specified in the approved scheme shall then be carried out in accordance with the approved details prior to occupation of the premises and be retained thereafter.

Reason:

To protect the amenity of future residents in accordance with Council Policies.

This Technical Note has therefore considered the above items as required by the case officer.

Scheme of Sound Insulation Measures

The required sound insulation at each elevation of each apartment has been calculated based on the November 2022 site layout plan. For apartments B and C the source noise measurements at Position 1 of the Phlorum October 2022 Noise Report (see Figure 1) have been used for the calculations and at apartments A and D the source noise measurements at Position 2 have been used. The predictions have taken the distance from the railway, screening provided by the buildings, orientation and angle of view to the railway and facade corrections into account.

The highest predicted noise levels are at the elevations of Apartments A and B that face towards the railway lines. At apartment A the required sound insulation is R_w+C_{tr} 24 dB and at Apartment B is R_w+C_{tr} 22 dB due to noise from the railway lines. At both Apartments A and B the required sound insulation for maximum noise levels at night is R_w 25 dB.

To achieve R_w+C_{tr} 24 dB for the daytime railway noise and R_w 25 dB for maximum noise levels at night requires standard thermal double glazing. Glazing with a specification of 6mm/(6-16mm)/4mm provides R_w+C_{tr} 28 dB and R_w 32 dB and provides a 4 dB safety margin for noise from the railway.

On the side and rear elevations of apartments A and B the highest required sound insulation is R_w+C_{tr} 19 dB for the daytime railway noise and this would be achieved by glazing with a specification of 4mm/(6-16mm)/4mm, which provides R_w+C_{tr} 25 dB and R_w 29 dB and provides a 6 dB safety margin for railway noise.

At apartments C and D the highest required sound insulation is R_w+C_{tr} 19 dB based on both the ambient noise levels that were measured at position 3 and railway noise. This would be achieved by glazing with a specification of 4mm/(6-16mm)/4mm, which provides R_w+C_{tr} 25 dB and R_w 29 dB and provides a 6 dB safety margin for railway noise.

Internal noise levels have been considered in the context of room ventilation and overheating requirements. As the sound reduction performance requirements are greater than 10dB, the windows will need to be closed to achieve the internal noise criteria. Therefore, an alternative form of ventilation and/or cooling will be required so that occupants can retain access to fresh air and retain thermal comfort without compromising their noise climate.

The acoustic ventilation specification for the elevations of Apartments A and B overlooking the railway line is $D_{n,e,w} + C_{tr}$ 35dB. This can be achieved by various ventilation options including acoustic trickle vents, mechanical air supply or Mechanical Ventilation Heat Recovery (MVHR). For example, Titon Acoustic Trickle Vents provide up to $D_{n,e,w} + C_{tr}$ 41 dB.

On the other elevation of apartments A and B and at apartments C and D the acoustic ventilation specification is $D_{n,e,w} + C_{tr}$ 29 dB.

Noise in Amenity Space

To discharge the condition relating to noise in the amenity space the case officer for Havant Borough Council has stated that the noise data needs to demonstrate that levels in the public open area on the southern edge of the development, with the proposed buildings in place would conform with the values outlined in the 'Noise in Amenity Spaces' condition.

The measured noise level at the southern edge of the development are represented by the noise measurements at Position 3. The daytime noise level at position 3 is $L_{Aeq,16\text{ hr}}$ 51.4 dB and this is below the upper guideline value of $L_{Aeq,16\text{ hr}}$ 55 dB as required by the Amenity Space condition.

The apartment buildings will partially shield the southern edge of the development from the dominant noise source of railway noise and it is considered that with the apartment buildings in place the noise levels in the amenity area will reduce to below the 'desired' noise level of $L_{Aeq,16\text{ hr}}$ 50 dB as discussed in the Amenity Space condition.

Summary

A scheme of acoustic measures has been provided for Apartments A to D including specifications for glazing and ventilation to comply with the internal noise target provided by the 'Sound Insulation Condition'.

The measured noise level at the southern edge of the development is $L_{Aeq,16\text{ hr}}$ 51.4 dB and this is below the upper guideline value of $L_{Aeq,16\text{ hr}}$ 55 dB as required by the Amenity Space condition. Furthermore, the apartment buildings will partially shield the southern edge of the development from the dominant noise source from the railway and it is considered that with the apartment buildings in place the noise levels at the southern edge of the development in the amenity area will reduce to below the 'desired' noise level of $L_{Aeq,16\text{ hr}}$ 50 dB as discussed in the 'Noise in Amenity Spaces' condition.

Figure 1 – Noise measurement Locations

