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Dear Alistair

ASI2063 LAND AT FAIRWAYS, BOORLEY GREEN**Discharge of Condition 14 & 18 (Section 73 Application X/22/93511)**

As part of the Section 73 Application X/22/93511 the existing buildings at the Land to the Rear of Fairways & Homefield Winchester Road, Boorley Green SO32 2DH (the Site) are to be demolished and 7 no. residential dwellings are to be erected.

Planning conditions 14 and 18 of the consent set out the requirements as follows:

14 The development shall not be occupied until details of noise insulation and mechanical ventilation have been submitted to and approved in writing by the Local Planning Authority and installed on the site.

Reason: To protect the dwellings occupiers from noise from the nearby trainline.

18 The development shall not be occupied until details of vibration peak particle velocity and vibration dose value have been submitted to and approved in writing by the Local Planning Authority. The development shall then accord with the approved details.

Reason: To protect the occupiers of the development from vibrations from the nearby train track.

Clarke Saunders Acoustics has been commissioned by Doswell Projects to undertake an assessment of noise ingress into the dwellings as well as an assessment of vibration within the proposed dwellings to discharge the planning conditions.

A site suitability assessment has previously been undertaken for the Site in our report ref ASI2063.210311.ADS.1.1 including details of the noise and vibration survey methodologies, results, and assessment.

Condition 14

It has been confirmed by Doswell Projects that the building construction will consist of:

- A building envelope comprising of an inner leaf comprising of 100mm aircrete blockwork, a 125mm cavity fully filled with Knauf Supafil34 block insulation and an outer leaf to be either 102.5mm FL quality facing brickwork or horizontal cladding on 100mm medium dense blockwork.

- A roof comprising of plain concrete tiles laid to gauge on 50x25mm treated timber tiling battens over breathable non tear-able roofing felt including an eavesguard to prevent UV degradation of the underlay. 150mm Celotex XR4000 insulation between rafters or equivalent, allow 50mm clear air gap. 75mm Celotex GA4000 insulation below rafters or equivalent. VCL either 1000 gauge polythene membrane or insulation board joists taped and sealed. Finished with 15mm plasterboard fixed to the underside of insulation.

Which can both be expected to provide an acoustic performance in excess of R_w 40 dB.

The selected glazing in the dwellings are Linar 70mm double glazed windows, 4/20/4 configuration to the windows and 6.8/18/4 configuration to the French doors. It has been confirmed by the manufacturer that these units have an associated acoustic performance rating of R_w 33 and R_w 36 respectively. The dwellings will all be naturally ventilated with Titon Standard Vent + Standard SF Canopy (2500EA) ventilators. It has been confirmed by the manufacturer that these ventilators are rated to achieve an acoustic performance of $D_{n,ew}$ 32dB whilst open. These glazing and ventilation elements comply with the glazing specification in section 3.6.1 in our report ref AS12063.210311.ADS.1.1.

The acoustic performance of these elements has been verified as being suitable to control environmental noise ingress into the dwellings to the aspirational target criteria presented in ProPG. It should be noted that ProPG brings together relevant guidance from several sources including a British Standard (BS8233: 2014 Guidance on sound insulation and noise reduction for buildings) and internationally published guidance in the form of World Health Organisation Guidelines for Community Noise (1999). For reference the aspirational target criteria are summarised in Table 1.

ACTIVITY	LOCATION	07:00 TO 23:00	23:00 TO 07:00
Resting	Living Room	35 dB $L_{Aeq,16\text{ hour}}$	-
Dining	Dining Room	40 dB $L_{Aeq,16\text{ hour}}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16\text{ hour}}$	30 dB $L_{Aeq,8\text{ hour}}$

Table 1: Aspirational target criteria cited in ProPG:2017

Condition 18

Vibration amplification can occur within buildings due to the dynamic response of the building itself. It has been confirmed by Doswell Projects that the construction of the buildings will consist of:

- A foundation comprising mass trench fill concrete footings to suit ground conditions. Suspended prestressed concrete beam and block floor using 150mm deep concrete deems with 100mm block infill, min. 1200-gauge DPM, laid over prepared floor with min. 150mm overlapping joists bonded with double sided jointing tape and secured using girth jointing tape and also sealed with DPC to provide a continuous barrier. 25mm Celotex TB4000 or equivalent insulation upstand to perimeter of floor. 150mm Celotex XR4000 or equivalent laid directly over DPM with all joints tightly butted. Min, 500-gauge polythene separation laid over insulation. Min. 75mm thick screed.
- A building envelope comprising of an inner leaf comprising of 100mm aircrete blockwork, a 125mm cavity fully filled with Knauf Supafil34 block insulation and an outer leaf to be either 102.5mm FL quality facing brickwork or horizontal cladding on 100mm medium dense blockwork..

An appropriate amplification factor for the type of buildings proposed is included in the analysis presented in Table 2.

CALCULATION STEP	DAYTIME	NIGHT-TIME
Measured VDV	0.13 m/s ^{1.75}	0.09 m/s ^{1.75}
Conversion to acceleration decibels	102 dB	99 dB
Amplification Factor <i>Small Masonry Buildings</i>	3 dB	3 dB
Floor to Floor Attenuation to First Floor	-2 dB	-2 dB
Predicted VDV at Ground Floor Level in acceleration decibels	105 dB	102 dB
Predicted VDV at First Floor Level in acceleration decibels	103 dB	100 dB
Predicted VDV at Ground Floor Level in m/s^{1.75}	0.18 m/s^{1.75}	0.13 m/s^{1.75}
Predicted VDV at First Floor Level in m/s^{1.75}	0.15 m/s^{1.75}	0.10 m/s^{1.75}

Table 2: predicted VDV within the proposed dwellings

BS6472-1: 2008 *Guide to evaluation of human exposure to vibration in buildings*. *Vibration sources other than blasting* specifies building vibration with respect to human response to be measured and assessed in the form of a vibration dose value (VDV). The VDV defines a relationship that yields a consistent assessment of continuous, intermittent, occasional and impulsive vibration and correlates well with subjective response. The vibration is to be evaluated for the axis in which the magnitude of weighted acceleration is greatest, against the values in Table 3.

TIME	LOW PROBABILITY OF ADVERSE COMMENT	ADVERSE COMMENT POSSIBLE	ADVERSE COMMENT PROBABLE
07:00 to 23:00	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
23:00 to 07:00	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

Table 3: VDV values as presented in BS 6472-1:2008

The VDV within the new development should, therefore, be at a level expected to give rise to a 'low probability of adverse comment', or lower.

Further analysis and comparison between BS6472 (which defines VDV response, for human reaction to vibration) and BS5228 (which deals in PPV, for building damage) provided further reassurance that, although vibration might occasionally be detectable in the completed dwellings, it can be expected to lie comfortably within the accepted British Standard assessment criteria for human comfort, and orders of magnitude below any level that would even be considered against cosmetic building damage criteria.

Summary

Compliance with condition 14 and 18 requirements have been demonstrated, and no further details of the proposed development as they relate to noise and vibration are understood to be required.

We trust the above is of assistance. Please do not hesitate to contact us with any queries you may have.

Yours sincerely
for CLARKE SAUNDERS ACOUSTICS

Alec Korchev