Project	**Howard Kent Yard**
Client	Cayuga Developments
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Ref	1214.001.TM.JP
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Subject	Commercial to Residential Separating Floor : Acoustic Advice

Overview

Cayuga Developments has commissioned 7th Wave Acoustics (7wa) to review and comment on the proposed floor/ceiling construction separating the ground floor commercial space and the first floor residential dwellings at the Howard Kent Yard Development located at 5 Brighton Road, Shoreham by Sea, BN43 6RN.

A review of the floor/ceiling construction has been undertaken by 7wa and any relevant comments are presented below.

Planning Condition 17

Planning Condition 17 detailing the sound insulation criteria between the commercial and residential space is reproduced below:

Commercial space – Noise insulation: *Construction work (with the exception of any demolition or stripping out), shall not commence until an insulation scheme for protecting the first-floor flats from noise from the commercial space has been submitted to and approved by the Local Planning Authority. All works, which form part of the scheme, shall be completed before any part of the noise sensitive development is occupied. The scheme shall achieve a minimum airborne sound insulation value of 50dB (D_{nTw} + C_{tr} dB) for all floors.*

Before the residential units are occupied a test shall be undertaken to demonstrate compliance with this level and submitted to and approved in writing by the Local Planning authority.

Separating Floor between Ground Floor Commercial and First Floor Residential

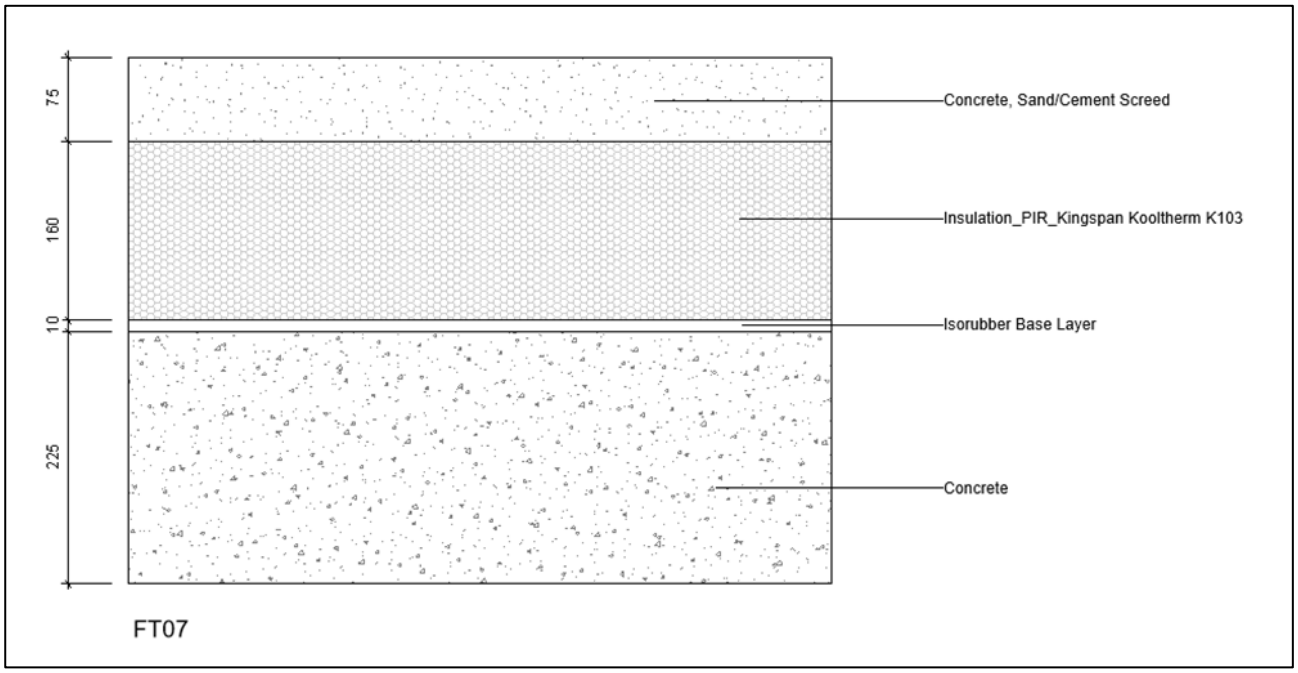
The current design proposals indicate the following intermediate floor build-up between the ground floor commercial space and residential dwellings:

- 225mm concrete slab;
- 10mm Isorubber base layer;
- 160mm K103 Kingspan insulation; and
- 75mm concrete, sand/cement screed.

It is understood that the occupier of the commercial space will also install a lightweight suspended ceiling, however, these final details are not yet known.

The current detail is displayed in **Figure 1** below.

Figure 1: Proposed Floor/Ceiling Detail Between Ground Floor Commercial Space and First Floor Residential



In order to provide an indication of the likely sound insulation performance that can be expected on site, the proposed system was modelled in a proprietary sound insulation modelling software INSUL V9. The calculation predicts R_w+C_{tr} 58dB (+/- 3dB) (R_w 63dB, C_{tr} -5dB). This equates to a D_{nTw} + C_{tr} *dB* value of approximately 50 dB. As such, this proposed floor system (without the lightweight suspended ceiling) is a suitable construction to achieve the required levels of sound insulation specified in Planning Condition 17.

With a lightweight suspended ceiling and 200mm cavity, the sound insulation performance could increase by around 3 dB. If the cavity was filled with 60 mm mineral wool, the sound insulation performance could increase by up to a further 9 dB.