5 December 2017

Ref: 171543/7529

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RE: NEWCASTLE EAST PUBLIC SCHOOL – COUNCIL RFI (ACOUSTICS)

This letter report presents acoustic advice relating to the proposed upgrade works at Newcastle East Primary School, the DA for which is currently under assessment by Newcastle City Council.

In their preliminary review, Council included the following in the request for further information (RFI):

"Acoustics

The proposed development has the potential to create adverse noise impacts on neighbouring receivers due to the addition of the proposed raised school building. The RSU notes that the introduction of the new school building above the existing sports area could potentially result in an increase in the transmission of noise due to reverberation along with line of sight to residential receivers.

As such the RSU requires an acoustic assessment to be prepared to support the proposed development. The acoustic assessment is to address but not be limited to potential noise impacts on neighbouring receivers when students are utilising the building and sports area as well as the location of any mechanical pant. The acoustic assessment must be prepared by a qualified acoustic professional and submitted to Council prior to further review of this application."

Removal of the existing roof over the sports area and replacement with a second storey structure could appear to have acoustic implications and Council is justified in requesting quantification of this potential. The project drawing NE09 shows an east-west section of the proposal superimposed on the existing play area. There is an existing roof over the entire play court which would act to increase reverberant noise in the horizontal plane to some degree. It remains to determine whether the proposed structure will increase the existing levels of reverberation in the most sensitive direction, being to the east and west towards residential receivers at approximately 40m from the edge of the play area.

Regarding propagation to the east, Figure 1 shows the eastern end of the section in drawing NE09. The play area is currently approximately 2m below the road surface of Brown Street and tiered seating as proposed, as indicated. The building above the play area will contribute to reverberant noise approximately the same as the existing roof structure, although transverse (horizontal) reflections my theoretically increase noise transmission to the east by 3 dB. This noise increase will be partly mitigated by the new tiered seating structure. Since this situation is not readily able to be modelled accurately, it is recommended that full mitigation of any potential additional reverberant noise propagation to the east will be achieved by extending the existing wall to the north as indicated in Figure 1 to cover the propagation path to the residential receiver.

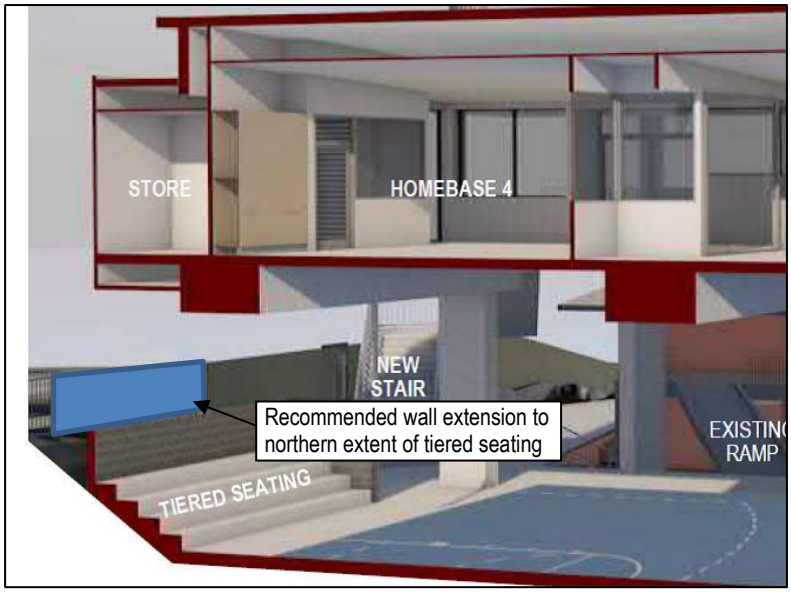

Figure 1. Eastern end of east-west section of proposal.

Figure 2 shows an artist's impression of the western aspect of the proposal. The existing structure over the sports area is completely open to the west. As discussed above, the introduction of partial wall surfaces may theoretically increase the horizontal propagation of reverberant noise by 3 dB. Figure 2 shows stairs to the sports area passing between two proposed masonry storage rooms. These storage rooms will act as noise barriers to the west, covering approximately 50% of the opening area. This will provide a theoretical 3 dB noise reduction in this area, mitigating the theoretical maximum 3 dB reverberant noise increase due to the new structures.

Figure 1. Western end of proposal.

In summary, the proposed structure itself is such that noise propagation to the west will not be increased. There is a theoretical possibility of small noise increase to the east, which would be mitigated by an extension of the existing boundary wall as indicated in Figure 1.

We have been advised advice that the proposal will not include any external mechanical plant, and as such no quantitative assessment is required.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 49542276.

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