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201900205.1/2706/R1/TT

27th June 2019

Bloompark

Attention: Byron Williams

Loreto School, Innovation Centre – 4.55 Application to Modify Building Shell Design – Acoustic Advice

This letter has been prepared to provide an assessment of the changes to the building shell made in response to an acoustic requirement in the Construction Certificate condition B6. Condition B6 states the following:

Prior to the issue of a Construction Certificate, the Applicant must demonstrate to the Principal Certifying Authority that the design of the mechanical plant rooms, the connectors, new learning hub building meet the Site-Specific Noise Criteria identified in the Stage 1 DA operation and Construction Noise and Vibration Report (TJ415-01F05) prepared by Renzo Tonin and Associates dated 17 August 2017.

The primary changes relating to acoustics involve the enclosure of outdoor learning areas on the proposed northern façade of the Innovation Centre.

In order to meet the acoustic criteria of Condition of Consent, the conversion of outdoor learning space to indoor learning space is required. This rationale behind this decision is outlined as follows:

- At present, Condition of Consent F.12 requires that operational noise from the school comply with the document *DA Operation and Construction Noise and Vibration Report* by Renzo Tonin and Associates, dated 17 August 2017 (the DA Acoustic Assessment).
- A critical noise receiver location identified in the DA Acoustic Assessment was a residential apartment building on the western boundary of the school, and approximately 8m from the proposed Innovation Centre.
- In the DA Acoustic Assessment, allowable noise emissions were determined at the apartments to the west of the school. The allowable noise emissions for the daytime and evening periods was calculated to be 50dB(A)_{Leq(15min)} in the daytime and 50dB(A)_{Leq(15min)} in the evening. This

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noise limit applied to all operational noise, including plant and equipment and noise from students.

- Given the distance between the previously proposed outdoor learning areas and the residences to the west, it would take only 2 people speaking (moderate/raised voice) in an external balcony area before the noise emission limit of 50dB(A) would be exceeded.
- This effectively makes the outdoor learning areas unusable for any activity other than reading, which does not meet the educational requirement of the school.

The façade changes the subject of the 4.55 application involves the conversion of the external learning spaces to internal learning spaces. The resultant new façade includes operable and fixed windows making a slightly larger internal learning space.

With respect to the proposed changes, we note:

- Even if the louvres are left open (say, 5% of the floor area of the room to allow for natural ventilation of the classroom), a sound pressure level of approximately 75dB(A) can be accommodated while the windows remain open.
- Typically, a 75dB(A) sound pressure level within a classroom will only be exceeded in the event of an activity such as group singing (approximately 80dB(A) L_{eq}) or music (80-95dB(A) L_{eq} , depending on the instrument's used). If the space is used for group singing, single glazing (6mm) will be sufficient to ensure a suitable noise level at the adjacent residence. If loud music is proposed (amplified electric, brass or drums), the windows would need to be kept closed and a glass thickness of approximately 10.38mm would be required (DGU may be required to meet Section J in some areas, which will be acoustically acceptable).

In school development, it is common that noise emission limits are not imposed on student noise in external areas. Condition F.12 however imposes a noise limit for the outdoor learning spaces that is out of keeping with what is imposed on many schools, and effectively make the spaces unusable for anything other than reading.

By enclosing the outdoor learning space to an indoor learning space with operable windows:

- Most typical classroom activities will be viable, even when the windows/louvres are open to allow for natural ventilation of the class rooms. It is only activities such as singing and music practice that would require the façade to be closed.
- If louder activities such as singing, or music are proposed, appropriately selected glazing (when closed) will also make these activities viable without excessive noise impact on adjacent development. It should be noted that although flexibility is not anticipated that the Innovation Centre is a Music Practice Facility.
- The proposed change will lessen the impact of the development on the nearby residence to the west.

Please contact us should you have any further queries.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'T. Taylor', with a stylized flourish at the end.

Acoustic Logic Consultancy Pty Ltd
Thomas Taylor