MARSHALL DAY Acoustics

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1 February 2024

Selwyn District Council
c/o Jacobs
Wynn Williams Building
Level 2/47 Hereford Street
Christchurch 8013

Attention: Andrew Henderson

Dear Andrew

RC245009: CORNERSTONE CHURCH, 999 GOULDS ROAD – NOISE PEER REVIEW

Selwyn District Council has requested that Marshall Day Acoustics carry out a peer review of the noise assessment provided in support of the Cornerstone Proposed New Church, 999 Goulds Road, Rolleston (the site). Our review is based on the following documents:

1. *Assessment of Environmental Effects* – author unknown – undated
2. *Assessment of Environmental Noise Effects* – Acoustic Engineering Services (AES) – 16 November 2023

Below we provide a summary of our comments and recommendations:

The proposed noise limits are appropriate

1. We understand the permitted activity standards in the Partially Operative District Plan (Appeals Version) (PODP) are appropriate to apply to this project. AES has correctly identified the applicable zoning for the site and surrounds (Medium Density Residential Zone – MRZ) and the applicable noise limits from NOISE-REQ1.
2. The church will only operate during daytime hours as defined in the PODP and the applicable permitted activity noise limit is 50 dB L_{Aeq} at the site boundaries. AES has also reviewed published guidance from the World Health Organisation and New Zealand Standard NZS 6802:2008 *Acoustics - Environmental Noise* and refer to this guidance to assess noise effects of the activity at up to 55dB L_{Aeq}. As we discuss further below, we consider their rationale to be appropriate.

Predicted operational noise levels are conservative

3. AES has appropriately assessed the dominant noise sources on site: amplified music noise breakout, vehicle activity and mechanical plant. A +5 dB penalty has been applied to account for the potential special audible characteristics (SAC) in any music breakout noise from the church building, and a -5 dB reduction has been applied to account for the relatively short duration of the activity on site. We confirm both these corrections are permitted by the applicable assessment methodology (NZS 6802) and are appropriate.
4. We note we did not have access to the architectural drawings used by AES in their calculations but have verified their predictions are plausible based on maximum building footprint. We agree the AES assumptions are relatively conservative and noise levels are likely to be lower than predicted in practice.
5. We have sought clarification from AES regarding the roller doors that are located on the west façade – roller doors typically offer relatively low sound insulation performance. AES has confirmed that the external roller doors are separated from the auditorium by a separate

partition and door, which will provide consistency to the overall acoustic integrity of the building envelope.

6. The highest predicted noise levels from both the auditorium break out noise and vehicle activity is 55 dB L_{Aeq} at the site boundary with 995 Goulds Road. This is 5 dB above the permitted activity standard of 50 dB L_{Aeq}. The highest predicted noise level at 1005 Goulds Road is 51 dB L_{Aeq}. We note that the dwellings at both 995 and 1005 Goulds Road are set back from the site boundaries and we expect that the actual noise levels at the dwellings' notional boundaries[1] will be in the order of 50 dB L_{Aeq} or lower, which is consistent with the noise environment anticipated by the PODP for the zone.
7. AES has suggested that the construction of a 1.8 metre high fence could reduce noise emissions by a further 5 dB. Whilst this may be the case at the site boundary immediately in the acoustic shadow of the barrier, 5 dB reduction is unlikely to be achieved across the expanse of the immediately adjacent properties for auditorium breakout noise. In any event, a fence is unlikely to be required to ensure noise effects are acceptable.

Construction noise limits are likely to be achieved

8. AES notes the PODP also provides for construction noise limits in Rule NOISE-R2.1 and NOISE-REQ2. Whilst a detailed construction noise assessment is not supplied, the assessment states that the construction noise limits are likely to be achievable and we agree. To ensure appropriate protection of adjacent neighbours during construction, we recommend a condition of consent that references the noise limits set out in New Zealand Standard NZS 6803:1999 *Acoustics - Construction Noise*.

Adverse noise effects

9. Following our review of the noise report, we consider that adverse noise effects will be less than minor at existing adjacent properties including:
    i. 995 & 1005 Goulds Road
    ii. 54 to 68 Stanford Way
    iii. 628 & 639 East Maddisons Road
10. Our effects assessment follows consideration of the following:
    i. The relative infrequency of activity on the site and duration of amplified music stated in the application.
    ii. The permitted activity noise limits for the zone.
    iii. The existing ambient noise levels.
    iv. Guidance from both the WHO and NZS 6802 on appropriate noise levels for maintaining residential amenity.
    v. The dwelling setback from the site boundary at 995 and 1005 Goulds Road and noise levels at the notional boundary being consistent with the 50 dB L_{Aeq} noise environment anticipated by the District Plan.
11. We understand that 995 & 1005 Goulds Road cannot be subdivided as a permitted activity. If subdivision was to occur in future, any potential adverse effects at dwellings along the site boundaries with 999 Goulds Road could be appropriately mitigated with a 1.8 metre high timber paling fence.

[1] A notional boundary is a line 20 metres from any wall of a residential unit or a building occupied by a sensitive activity, or the site boundary where this is closer to the residential unit or sensitive activity.

We recommend additional noise conditions

12. Should Council decide to grant consent, we recommend that conditions of consent be developed based on the following suggested text

    1. Amplified music and speech shall not generate a sound level greater than 90 dB $L_{Aeq(15mins)}$ when measured in the centre of the auditorium, 1.2 metres above the floor.
    2. Amplified music is only permitted on site between 0900 and 1130 hours on Sundays
    3. The consent holder shall ensure that all activities on the site measured in accordance with *NZS6801:2008 Acoustics - Measurement of environmental sound*, and assessed in accordance with the provisions of *NZS6802:2008 Acoustics - Environmental noise*, shall not exceed the following noise limits at any point within 995 or 1005 Goulds Road:

        (a) 0700 to 2200 hrs 55 dB L_{Aeq}

        (b) 2200 to 0700 hrs 40 dB L_{Aeq} and 75 dB L_{Amax}

    4. Construction activities must be conducted in accordance with NZS 6803:1999 *Acoustics – Construction Noise* and must comply with the applicable noise limits contained within Table 2 of that Standard.

Please contact us with any queries.

Yours faithfully

MARSHALL DAY ACOUSTICS LIMITED

Jon Farren
Principal