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11 December 2024

Selwyn District Council
C/ – Tim Hegarty
Jacobs
Level 2
47 Hereford Street
Christchurch Central City
CHRISTCHURCH 8013

Email: tim.hegarty@jacobs.com

Dear Tim,

**Re: Sikh Temple, 517 Hampton Road, Rolleston**
**Peer review of MDA Environmental Noise Assessment**

Acoustic Engineering Services (AES) has been engaged to undertake a peer review of the environmental noise assessment provided by Marshall Day Acoustics (MDA) in support of the SDC application for a proposed Sikh Temple at 517 Hampton Road, Rolleston. The Application relates to the establishment and operation of a Sikh Temple, including morning, evening, and weekend services, and associated vehicle movements.

Our review is based on the following documentation:

- Environmental noise assessment report titled *Sikh Temple*, report number RP 001 20240601, as prepared by Marshall Day Acoustics (MDA), and dated the 5th of December 2024.
- Application for Land Use Consent titled *517 Hamptons Road, Rolleston,* as prepared by Baseline Group and dated the 10th of May 2024.
- Integrated Traffic Assessment prepared for *Deg Tegh Fateh Sikh Society,* as prepared by Novo Group and dated the 29th of July 2024.
- Response to RFI questions memo titled *RC245337 FURTHER INFORMATION*, as prepared by Baseline Group and dated the 13th of November 2024.

Based on our review of the above documents we have the following comments.

## 1.0 ASSESSMENT CRITERIA

MDA have discussed the noise provisions within the Operative Selwyn District Plan (ODP) and Partially Operative Selwyn District Plan (POSDP) as the relevant planning criteria, and have correctly identified the POSDP zoning of the subject site and receiving sites (GRUZ).

An 'Appeals' version of the 'Partially Operative Selwyn District Plan' is now available showing all provisions that have legal effect and identifying the areas under appeal, where the previous ODP rules are still relevant. Based on this, we understand that the general zone noise limits outlined in NOISE-TABLE5 of the POSDP are beyond challenge. We have not considered the ODP rules in our review and note that while they are

mentioned in the MDA assessment, little weight is applied to them. We agree that the POSDP rules are applicable in this instance.

MDA conclude that adverse noise effects associated with the activity will be 'acceptable' however do not discuss any sources of environmental noise guidance outside of the District Plan provisions, nor discuss the actual expected quantum of any adverse noise effects. With regard to relevant environmental noise guidance documents, we have the following comments:

- NZS 6802:2008 *Acoustics – Environmental noise* outlines a guideline daytime limit of 55 dB $L_{Aeq\ (15\ min)}$ and night-time noise limits of 45 dB $L_{Aeq\ (15\ min)}$ / 75 dB $L_{AFmax}$ for "the reasonable protection of health and amenity associated with the use of land for residential purposes".

- *Guidelines for Community Noise*[1], a document produced by the World Health Organisation (WHO) based on extensive international research recommends a guideline limit of 55 dB $L_{Aeq}$ to ensure few people are seriously annoyed in residential situations. A guideline limit of 50 dB $L_{Aeq}$ is recommended to prevent moderate annoyance. Guideline night-time limits of 45 dB $L_{Aeq}$ / 60 dB $L_{AFmax}$ are recommended to allow occupants to sleep with windows open while avoiding sleep disturbance.

- No ambient noise survey has been conducted. However, we note that the subject site and many relevant receivers are in close proximity to NZTA State Highway 76, which contains a high level of traffic flow. There is a noise protection bund located on the southern boundary of the State Highway Designation; however, from some indicative calculations we would expect many relevant neighbouring dwellings (i.e., 861 and 875 Waterholes Road, 544 Hamptons Road) are experiencing ambient traffic noise levels of 50 – 60 dB $L_{Aeq(24h)}$ depending on setback distance.

Considering the above, we expect that where compliance with the POSDP noise limits of 55 dB $L_{Aeq}$ (0700 – 2200 hours) and 45 dB $L_{Aeq}$ / 70 dB $L_{Amax}$ (2200 – 0700 hours) is achieved by a comfortable margin, adverse noise effects will be minimal.

## 2.0 MODELLING ASSUMPTIONS

MDA expect noise breakout from the community hall of the Temple and vehicle movements on the site to be the predominant noise sources associated with the activity.

Noise from the community hall is expected to be associated with morning prayers (night-time period of the POSDP) of up to 20 people, evening prayers (daytime period of the POSDP) of up to 50 people, and the 'Main Service' on Sunday afternoons (daytime period of the POSDP) with up to 290 people. This is consistent with the description of the activity in the Application for Land Use Consent. We have the following additional comments.:

- An internal reverberant sound level within the community hall of 95 dB $L_{Aeq}$ has been assumed during musical performances. Based on our experience with similar projects we expect this is an appropriate, if not conservative assumption. The building façade has been assumed to be 'light-weight' and have a minimum sound transmission loss performance of 35 dB $R_w$. This is an appropriate assumption.

- The vehicle noise level assumptions of 75 dB $L_{AE}$ at 3 metres for a car on the access road and 70 dB $L_{AE}$ at 3 metres for a car parking movement are realistic. MDA have assessed 116 movements in a 15 minute period which we note is four times more conservative than the value provided in the Novo traffic report (up to 116 vehicle movements per hour).

- In accordance with NZS 6802 a +5 dB Special Audible Characteristics (SAC) penalty has been applied to the music noise aspect of the proposed activity. A Duration Adjustment correction (which would provide a reduction in noise level) has not been applied, which is conservative considering it is likely applicable in this case, because noise will only be generated for several hours out of the whole daytime period. We agree with this conservative approach. We note that MDA refers to an outdated

[1] Edited by Berglund, B et al. *Guidelines for community noise.* World Health Organization 1999.

edition of NZS 6802 (1991) however this does not have any material effect on the modelling methodology.

- MDA have assessed noise emissions in accordance with ISO 9613-2:1996 *Attenuation of sound during propagation outdoors – Part 2: General method of calculation*, which is an appropriate assessment Standard.

With regard to modelling and operational assumptions, we requested further information relating to two key aspects:

- An operational scenario where the large areas of glazed sliding doors on the western and southern faces of the building are open. The following RFI response was provided:
    - *'The proposed building will be mechanically ventilated, doors and windows are not opened during activities/services. The applicant is happy to accept a condition of consent to this effect.'*
- The possibility of potential noise produced in the outdoor areas of the site (i.e., community garden, decks) that might be associated with children playing, and large congregations of personnel during events. The following RFI response was provided:
    - *'…the applicant can accept a condition of consent to prepare a Noise Management Plan to manage large scale events. The application can accept a condition of consent to manage the number of people on-site at any one time. There is no outdoor music or outdoor PA system required or proposed.'*

These responses address our concerns on those aspects, and we provide some direction in section 4.0 below on the possible wording of the conditions of consent. Overall, we consider that MDA have reasonably captured the representative noise emissions of the proposed activity, in an appropriately conservative manner.

## 3.0 EXPECTED NOISE LEVELS AND EFFECTS

Based on the above noise modelling assumptions, MDA predict noise levels of:

- Up to 37 dB $L_{Aeq}$ at the notional boundary of the closest receivers (848 Waterholes Road and 544 Hamptons Road) from community hall music break-out (for all services).
- Up to 50 dB $L_{Aeq}$ at the notional boundary of the closest receiver (848 Waterholes Road) from peak traffic noise movements during the Sunday 'Main Service'.
- Up to 41 dB $L_{Aeq}$ at the notional boundary of the closest receiver (848 Waterholes Road) from traffic noise movements during the night-time period from morning services.

We have undertaken validation calculations and can confirm that these predicted noise levels are within a realistic range for described operational scenarios.

Noise from community hall music break-out is expected to be readily compliant with the POSDP noise provisions at all nearby receivers. Music noise would be an 'unusual' element in a typical rural environment, which may more normally typically include vehicular, environmental, and agricultural noise sources. However, considering the noise levels predicted, the conservatisms in the modelling methodology, and the existing ambient environment being elevated due to high traffic flow on State Highway 76, we consider that adverse noise effects will be minimal.

We are aware that there are some ongoing safety discussions relating to the location of the proposed vehicle crossing, with one option being moving the crossing some 100 metres further north. This would increase vehicle noise levels at 875 Waterhole Road and conversely decrease noise levels at 848 / 861 Waterholes

Road. Either way, considering the noise levels predicted, the significant conservatism in the MDA traffic noise modelling, and the existing ambient environment being in close proximity to the heavily trafficked State Highway 76, we consider that adverse noise effects associated with vehicle movements will be minimal.

MDA have not assessed noise and vibration from the construction that would be associated with the establishment of the Sikh Temple and the vehicle access path. However, based on the setback distances to nearby residential properties we expect it would be realistic for construction activity to be managed in accordance with NZS 6803:1999 *Acoustics – Construction Noise,* and generally comply with the noise limits outlined in Table 2 of that Standard (as well as Rule NOISE REQ-2 of the POSDP), and for construction noise and vibration effects to be minimal.

Overall, we consider that that any adverse noise effects associated with the proposed Sikh Temple will be minimal.

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

We have undertaken a peer review of the MDA noise assessment provided in support of the proposed Sikh Temple to be located at 517 Hampton Road, Rolleston.

Overall, we MDA have reasonably captured the representative noise emissions of the proposed activity, in an appropriately conservative manner. We consider that where compliance with the POSDP noise limits is achieved by a comfortable margin, any adverse noise effects will be minimal. The analysis undertaken by MDA adequately demonstrates that noise emissions will comfortably comply with the POSDP noise limits, and noise levels will be modest in the context of the existing ambient environment.

We recommend that the following conditions of consents (or to a similar effect) are adopted to ensure the consistency of the MDA noise assessment and our peer review:

- *Noise from the site (other than construction) shall not exceed the following levels when measured in accordance with NZS 6801:2008 Acoustics – Measurement of environmental sound and assessed in accordance with NZS 6802:2008 Acoustics – Environmental Noise at the notional boundary of any dwelling on a site other than the application site:*
    - *Daytime (0700 – 2200 hours) 55 dB $L_{Aeq}$*
    - *Night-time (2200 – 0700 hours) 45 dB $L_{Aeq}$ / 70 dB $L_{AFmax}$*
- *Construction activities associated with the establishment of the Sikh Temple and associated vehicle access path shall be conducted in accordance with NZS 6803:1999 Acoustics – Construction Noise, shall comply with the "typical duration" noise limits contained within Table 2 of that Standard, and shall be limited to daytime period of that Standard (0730 – 1800 hours).*
- *A cooling and mechanical ventilation system shall be installed for the community hall to ensure an appropriate internal environment is provided when doors and windows are closed during services and any other activities involving amplified speech or music. No use of amplified speech or music shall be played outside of the Sikh Temple.*
- *A Noise Management Plan shall be prepared to manage noise effects from all aspects of the activity, including the Sunday 'Main Service' and other large events, such as Diwali, New Year and Guru Birthdays. The Noise Management Plan will include procedures to manage noise in indoor and outdoor areas, including but not limited to; methods of dealing with noise generated by people such as restricting large congregations of people outside, limitations on the number of people on site, and noise complaint procedures. The Noise Management Plan shall also set out a process by which the detailed design of the building façade is to be reviewed in the context of the anticipated internal noise levels of amplified speech or music, to ensure break-out noise is limited to the levels predicted by MDA.*

Please do not hesitate to contact us further as required.

Kind Regards,

Robin Chen
*BE Hons (Mech)*
Intermediate Acoustic Engineer
**Acoustic Engineering Services Ltd**