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File Ref: AC16218 – 09 – R2

1 February 2023

Tim Harris
c/o- Emma Robertson
Selwyn District Council
PO Box 90
ROLLESTON 7643

Email: emma.robertson@selwyn.govt.nz

Dear Emma,

Re: Noise services for the Selwyn District Council District Plan review
Dunsandel zone amendment - Peer review of acoustic report

As requested, we have undertaken a peer review of an acoustic report and brief of evidence relating to a request to amend the zoning of Lots 1 and 2 DP74807 and Lot 1 DP305456 from General Rural to Large Lot Residential, according to the Proposed Selwyn District Plan (PSDP). The request relates to a proposal to develop the land for residential purposes (the development site). The subject land is bound by existing land uses which may be susceptible to reverse sensitivity risk.

Our review was based on the following documents:

- Acoustic report titled Dunsandel Residential Development, prepared by Altissimo Consulting, dated 3 August 2022.
- Brief of evidence by Michael Smith (of Altissimo Consulting) on behalf of PB and JC Nahkies, dated 3 August 2022.

Please find our comments below.

1.0 DISTRICT PLAN ZONING

Altissimo have correctly identified the zoning according to the PSDP, and correctly reproduced the noise objectives and policies from NOISE - Noise. Altissimo has correctly reproduced the relevant noise limits from NOISE–REQ1 of the PSDP.

2.0 NOISE FROM ELLESMERE TRANSPORT

Altissimo conducted noise monitoring at the common boundary between the development site and Ellesmere Transport to the east, however, they were unable to accurately quantify the level of noise emission from that activity.

Altissimo then used noise modelling to determine the expected level of noise from the activity at Ellesmere Transport. The modelling methodology appears to be reasonable, and the predicted noise levels appear to include some “on-time” assumptions for the modelled noise sources during both the daytime and night-time assessment periods. It was not clear if the predicted noise levels included any corrections for activity duration or any potential special audible characteristics.

Altissimo propose to use a five metre high noise barrier on the development site east boundary to control noise from activity at the Ellesmere Transport site, or any other industrial activity occurring on that site in the future.

Their modelling has shown the noise barrier could provide noise levels which could comply with the existing noise limits under the Operative Selwyn District Plan (ODP) during the daytime and night-time, however, would likely marginally exceed the noise limits according to the PSDP at the more exposed lots at the east end of the development site. As such, the residents at that part of the development site may experience a lower level of amenity than other residential locations where noise levels comply with the PSDP rules.

We note that relying on noise modelling for noise from the Ellesmere Transport activity has created an amount of uncertainty. It is difficult to establish how representative the modelling is of typical operation of Ellesmere Transport Site and whether it is conservative or not. We expect there could be the risk of reverse sensitivity effects (or operational constraints) for the Ellesmere Transport operators for their night-time activity, even with the very tall noise barrier which has been proposed by Altissimo. We therefore support the idea of also using a portion of the land at the east end of the development site as a buffer.

Further, while the road traffic noise from the State Highway could provide some amount of masking of noise from the Ellesmere Transport activity during the night-time, there could also be periods when the noise from road traffic is well below the level of noise from Ellesmere Transport, which has been predicted by Altissimo.

3.0 NOISE FROM THE STATE HIGHWAY AND RAILWAY

Altissimo have correctly identified the requirement to manage the potential for reverse sensitivity effects on the State Highway and Railway from a new noise sensitive development. They have correctly stated that a design report would be required for any residential building which creates a new habitable room, to achieve the requirements of NOISE-R3 of the PSDP. NOISE-R3 intends to ensure that the indoor traffic and rail noise levels within the habitable rooms are appropriate, and that the vibration levels from rail movements would be acceptable.

Altissimo have undertaken road traffic noise modelling to determine the expected level of road traffic noise at the development site. The modelling methodology appears to be reasonable, however it was not clear if the modelled traffic flow (2021 traffic count) included additions to allow for future growth in traffic volumes. A growth in traffic volumes could cause a significant (noticeable) increase in the noise levels received at the development site.

The road traffic noise modelling showed that a three metre high noise barrier along the entire north boundary of the development site could reduce the traffic noise levels to below 57 dB $L_{Aeq\ (24hr)}$ at all but two of the proposed lots. A five metre high noise barrier on that alignment would reduce the noise levels to below 57 dB $L_{Aeq\ (24hr)}$ at all the proposed lots. The noise predictions appear to account for cumulative noise from the State Highway and the Ellesmere Transport activity.

While it should be possible to achieve the PSDP indoor design noise levels inside habitable rooms without the use of the proposed noise barrier, we agree that the use of a noise barrier here would improve the amenity for residents in the outdoor areas of the dwellings. An effective noise barrier would also likely reduce the requirements for building element upgrades at the dwelling design stage. We note that even if a +3 dB was included for the future growth in traffic volume, the outcome would likely be similar.

4.0 VIBRATION FROM THE RAILWAY

Altissimo did not specifically address the potential effects from road and rail vibration to buildings on the development site. The PSDP NOISE-R3 requires that any building within 40 metres of the State Highway and within 60 metres of the rail network be designed, constructed, and maintained to achieve road and rail vibration levels not exceeding 0.3 mm/s (Class C criterion Maximum Weighted Velocity, Vw,95). We note that would mean any building closer than approximately 25 metres (based on the distance to the nearest rail track) from the development site boundary parallel with the State Highway and Railway would be included in this requirement. We note that the lots along the north boundary are all approximately 120 metres long,

so it should be possible to build new homes far enough from the Railway to avoid invoking this technically challenging requirement.

5.0 OTHER MATTERS

Altissimo have recommend a minimum surface density for the "wall" sections of the proposed noise barriers be 10 kg/m^2, which is the minimum specification recommended by Waka Kotahi. If the minimum surface density for any noise barrier used to control noise from the State Highway was increased to 15 kg/m^2, it would provide a better level of performance in screening noise from the rail locomotives, which can have a significant amount of energy at the lower part of the frequency spectrum.

6.0 SUMMARY

Overall, we agree with Altissimo that the subject land should be able to be made suitable for residential use, from a noise perspective, and the PSDP has the appropriate mechanisms to then provide the residents with reasonable acoustic amenity.

The main area of concern is the possibility that the development could create a reverse sensitivity risk for the existing Ellesmere Transport activity and constrain that activity. We therefore support the addition of a buffer area to the east end of the development site (together with the proposed noise barriers) to help mitigate that risk.

Kind Regards,

Dr Jeremy Trevathan
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Principal Acoustic Engineer
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