www.aeservices.co.nz
office@aeservices.co.nz
Auckland +64 9 917 0369
Wellington +64 4 890 0122
Christchurch +64 3 377 8952

File Ref: AC24316 – 01 – R1

3 October 2024

Selwyn District Council

C/O – Tim Hegarty
Jacobs
Level 2
47 Hereford Street
CHRISTCHURCH 8013

Email: tim.hegarty@jacobs.com

Dear Tim,

Re: Selwyn District Council RC245639 – Lifestyle Chickens Broiler Sheds
Peer review of environmental noise assessment

As requested, we have undertaken a review of the environmental noise assessment provided in support of an application for Resource Consent for the proposed chicken broiler sheds to be located at 227 Hunters Road, Dunsandel.

Our review is based on the following documentation:

- Report titled *Dunsandel Chicken Broiler Sheds,* as prepared by Marshall Day Acoustics (MDA) and dated the 1st of August 2024.
- Assessment of Environmental Effects document titled *Eight Shed Poultry Breeder Application* as prepared by Kinetic Environmental Consulting Limited and dated the 6th of September 2024.

1.0 ACOUSTIC CRITERIA

The subject site is in a General Rural Zone, and MDA have correctly identified the relevant noise provisions that apply to the site under the Partially Operative Selwyn District Plan (POSDP), which are beyond challenge.

We have the following additional comments:

- Although there is mention of noise effects in the summary '*…Noise effects will be acceptable…*' MDA primarily appear to rely on compliance with the POSDP limits in making that judgement. The POSDP noise limits for rural zones of 55 dB $L_{Aeq(15min)}$ during the daytime period and 45 dB $L_{Aeq(15min)}$ / 70 dB L_{AFmax} are consistent with the upper range of guidance for the protection of residential amenity outlined in NZS 6802:2008 and the World Health Organization Guidelines for community noise.
- In quieter environments, compliance with the POSDP limits could still represent a distinct change from the current situation which is also relevant when considering noise effects. An ambient noise survey was undertaken by MDA at locations representative of what the dwellings at 319 and 391 Sharlands Road may currently experience. The measured noise levels of 32 – 35 dB $L_{Aeq(15min)}$ are well below the night-time noise limit in the POSDP for this zone; however, are

consistent with what we would expect for a rural environment some distance from major roads. Daytime levels are not provided, although are also likely to also be below the POSDP daytime standards, especially at dwellings setback from roads.

- MDA have correctly identified the applicable construction noise limits in the POSDP, and we agree that the 'long-term' construction noise limits are appropriate in this case.

2.0 MODELLING METHODOLOGY

MDA have identified the primary sources of noise from the site to be from the large ventilation fans attached to the sheds, a single forklift operating on the site, and vehicle movements associated with staff.

- MDA have assessed up to 26 vehicle movements during the peak hour, translating to 7 vehicles within a 15-minute period, in accordance with the assessment duration required by the Plan and NZS 6802:2008. Up to 1 truck / heavy vehicle movement in a 15 minute period has been assessed. Light vehicles have been assessed with a sound power of 69 dB L_{AE} at 6 metres, and heavy vehicles at 84 dB L_{AE} at 10 metres, which are generally appropriate.

- A single forklift has been modelled on-site, assumed to operate continuously for the 15 minute assessment period, and assigned a sound power of 55 dB L_{Aeq} at 28 meters. This is a realistic sound power value for a forklift.

- The ventilation fans have been modelled based on noise data provided by the manufacturer, which state a sound level of 74 – 79 dB LAeq at 2 metres for the 'BF 50LPS VAR / ON/OFF' and 'BF 55 LPC' fan models, which we expect is within a realistic range. We note that the fan data appears to be based on a measurement position 2 metres from the exhaust, at 45 degrees. The noise level measured directly in front of the exhaust may be slightly louder. Calculations have been based on 100% capacity operation during the daytime period, and 50% capacity during the night-time period, corresponding to an 8 dB drop in noise level which doesn't appear to have been based on any manufacturer data. This may lead to more uncertainty in the predicted night-time noise levels. However we note that a 1 - 2 dB variation in fan noise level would still result in compliance with the POSDP noise limits by some margin as discussed further below. We note that the majority of the fans are 'VAR' - which we assume to mean variable speed. If a 100% operating capacity is not constantly maintained over the entire daytime period this may also provide some relief to noise levels as the average noise level will be slightly lower.

- No Special Audible Characteristics (SAC) penalty has been applied in accordance with NZS 6802:2008. We agree that it is unlikely for these types of noise sources to have a SAC penalty applied. Regardless as discussed further below compliance with the POSDP noise limits would be achieved even if a SAC penalty was applied.

- We expect the daytime and night-time operating scenarios / parameters assessed by MDA to be appropriate in representing typical noise emissions of the proposed activity.

- NZS 6802:2008 allows up to a –5 dB adjustment in noise levels if the assessed activity only occurs for a portion of the daytime period. No Duration Adjustment has been mentioned in this case, and we therefore assume that no such adjustment has been made. We expect this is an appropriate approach given that the broiler sheds are expected to operate continuously throughout the day; however, it may be conservative if the operating capacity of the fans varies throughout the day as discussed above.

- Noise levels from vehicles on public roads have not been discussed in the MDA assessment. If it is a relevant consideration (depending on the overall activity status), we expect minimal noise effects given the relatively low traffic volumes described in the AEE.

3.0 PREDICTED NOISE LEVELS

MDA predicts compliance with the POSDP limits at all nearby dwellings, with the highest noise level of 46 dB L_{Aeq} predicted at the notional boundary of the dwelling at 375 Sharlands Road. During the night-time period up to 38 dB L_{Aeq} may be received at 375 Sharlands Road. We have undertaken verification calculations and agree that these predictions are realistic based on the level of activity described.

In this background environment, there may be times of the day when noise levels of this order represent a noticeable change at the closest dwellings – particularly for steady mechanical sources such as fans. Whether this is the case will depend on environmental conditions and other activity in the area. However, since predicted levels are well below the acceptable levels in the zone and have generally been predicted on a conservative basis, we consider that noise effects are likely to be minimal. Since the MDA predicted noise levels are based on fans operating at 50% capacity during the night-time period, there may be some value in an operational control / or condition which requires this to provide certainty that noise levels will be consistent with what has been predicted.

MDA have undertaken a high level assessment of construction noise associated with the development of the site, considering noise from sources like mobile plant and hand tools. The worse-case construction noise level is predicted to be up to 60 dB L_{Aeq} and compliant with the provisions of NZS 6803 and POSDP Rule NOISE-R2. Based on our verification calculations we agree that it will be realistic for compliance with the construction noise and vibration provisions to be readily achieved.

We agree with MDA that the maximum L_{Amax} noise level will be readily achieved given the nature of the activity.

4.0 SUMMARY

We have undertaken a peer review of the MDA noise assessment provided in support of the proposed chicken broiler farms to be located at 227 Hunters Road, Dunsandel.

Overall, we agree that full compliance with the POSDP noise limits is realistic, during both the daytime and night-time periods. Although noise emissions may be noticeable above the ambient environment at times, since noise levels remain relatively low at the closest dwellings, we expect noise effects will be minimal.

Because the MDA predicted night-time noise levels are based on fans operating at 50% capacity, there may be some value in a condition which requires this. This would provide certainty that noise levels will be consistent with the predictions.

A Condition of Consent which requires noise levels to be consistent with the predicted levels in the assessment (and therefore the anticipated level of effect), could also be considered. We note that the L_{Aeq} limits in the proposed condition below are 5 dB more stringent than the general zone limits, although should be readily achievable given the predicted noise levels.

- *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)	*50 dB $L_{Aeq(15min)}$*
Night-time (2200 – 0700 hours)	*40 dB $L_{Aeq(15min)}$ / 70 dB L_{AFmax}*

Please do not hesitate to contact us further as required.

Kind Regards,

Robin Chen
BE Hons (Mech)
Acoustic Engineer
Acoustic Engineering Services