MARSHALL DAY Acoustics

Level 3 69 Cambridge Terrace
PO Box 4071
Christchurch 8140 New Zealand
T: +64 3 365 8455 F: +64 3 365 8477
www.marshallday.com

20 September 2022

Selwyn District Council
2 Norman Kirk Drive
Rolleston 7643

Attention: Charlotte Scotchbrook

Dear Charlotte

RC225180: BROOKSIDE SOLAR FARM – 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 Brookside Solar Farm Project at 150 and 151 Buckleys Road, and 821 Hanmer Road, Brookside, Selwyn (the site). Our review is based on the following documents:

1. *Application for Resource Consent and Assessment of Environmental Effects (AEE)* – Boffa Miskell – 9 March 2022
2. *Assessment of Environmental Noise Effects* – Acoustic Engineering Services (AES) – 12 August 2022

Rather than provide a line-by-line assessment of the AES report, we have focussed on those aspects that have a bearing on our review. Should consent be granted, we have provided outline conditions of consent for consideration in Appendix A.

Key points of this assessment

1. AES has reviewed the operative and proposed District Plans and propose a daytime noise limit of 55 dB L_{Aeq} at the notional boundary of the nearest dwelling. For the reasons we discuss below, we consider 50 dB L_{Aeq} to be more appropriate to ensure effects are acceptable. Whilst we note that the activity is not intended to operate at night, for completeness, we recommend a night-time noise limit of 40 dB L_{Aeq} should also be adopted.
2. Compliance with the proposed daytime noise limit will also mean compliance with the operative District Plan permitted activity standard.
3. As the activity status of the application is *discretionary* it is appropriate to consider adverse noise effects in the context of the receiving environment, and not just whether the activity will comply with the permitted activity noise standards. AES has not conducted any ambient noise monitoring of the existing environment. We estimate that existing daytime (residual) noise levels in the area are in the range of 40 to 50 dB L_{Aeq}.
4. AES has considered potential construction noise effects with reference to New Zealand Standard *NZS 6803: 1999 Acoustics - Construction Noise* and we consider this to be appropriate. Whilst we do not agree with some of the assumptions made by AES in their construction noise assessment, we agree with their overall conclusions – that some construction activities have the potential to exceed the appropriate limits. As a result, potential adverse effects should be managed by a construction noise and vibration management plan (CNVMP). We don't consider that a draft CNVMP is required in advance as part of the application documents - CNVMPs are most useful once consent is granted and the Applicant's actual construction methodology is confirmed.
5. You have asked us to comment on the definition of "temporary activity" in Rule 9.16.6.3 to include construction works not exceeding 12 months. Whilst we acknowledge there is a planning matter to address within this definition and what is being sought by the Applicant, in respect of noise, we consider that NZS 6803 remains the appropriate mechanism for managing

construction noise. Construction work conducted in accordance with NZS 6803 will result in acceptable construction noise effects.

6. Vibration effects are discussed but not evaluated in detail owing to the lack of information available at this stage of the project. We consider that any construction vibration effects can be effectively managed with a CNVMP and will largely be determined by the piling methodology used. Vibration effects during the operational phase are likely to be negligible.
7. During the operational phase, we understand the dominant noise sources will be the inverters, batteries and transformers which are distributed across the site. Whilst AES has provided assumed noise source levels and predicted levels at nearest dwellings, neither the location of the noise sources nor the calculation methodology has been provided in their report. The source sound power levels used are reasonably conservative. Assuming AES has used the same "skid" locations as set out in the AEE, the predicted levels are plausible.
8. AES consider that a 5 dB penalty for special audible characteristics is not appropriate for some of the noise sources. We consider that, if consent is granted, this should be verified through compliance monitoring.
9. The highest predicted noise levels during the operational phase are 48 and 47 dB L_{Aeq} at 324 Branch Drain Road and 870 Hanmer Road respectively. AES notes the proposed activity may be clearly audible at times, but without ambient noise monitoring information, we are not able to reliably comment on how audible the activity will be.
10. You have asked us to consider potentially affected persons. Taking into account the AES predicted noise levels and estimated ambient daytime noise environment, we consider that 50 dB L_{Aeq} will be the threshold up to which noise effects can be considered less than minor. If noise emissions were to reach the 55 dB L_{Aeq} noise limit proposed by AES, there could be a notable change in noise environment for adjacent residents and we consider noise effects would be considered minor or more than minor. On this basis, we propose a 50 dB L_{Aeq} daytime noise limit is adopted as a condition of consent. AES predictions indicate that a level of 50 dB L_{Aeq} can be met by the Applicant.
11. With the provision of appropriate conditions of consent, we agree with AES that noise and vibration effects during the operational phase will be minimal. During the construction phase AES predict a potential non-compliance at 324 Branch Drain Road and noise effects will potentially be minor or more than minor at this dwelling. However, the magnitude of adverse effect can be mitigated with provision of a CNVMP.
12. In Appendix A, we have proposed wording to be formulated into conditions of consent.

Please contact us with any queries.

Yours faithfully

MARSHALL DAY ACOUSTICS LIMITED

Jon Farren
Principal

APPENDIX A PROPOSED CONDITIONS OF CONSENT

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

1. 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 any residential site, during the following timeframes:

   (a) 0730 to 2000 hrs 50 dB L_{Aeq}

   (b) 2000 to 0730 hrs 40 dB L_{Aeq} and 75 dB L_{Amax}

2. Within 6 weeks of commissioning of Stage 1 as described in the AEE, a suitably qualified and experienced acoustic consultant shall perform measurements to confirm compliance with both the daytime and night-time noise limits in Condition 1. The assessment shall include an objective analysis of any special audible characteristics during the day and at night in accordance with Appendix B4 of NZS 6802:2008 *Acoustics - Environmental Noise.*

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

4. At least 20 working days prior to any construction occurring on site, a Construction Noise and Vibration Management Plan be prepared and submitted to Council for certification that addresses, as a minimum, the measures identified in Annex E3 of NZS 6803: 1999 "Acoustics – Construction Noise".