SUMMARY OF EVIDENCE OF WILLIAM REEVE

ACOUSTICS

DATED: 4 March 2024

My name is William Reeve. I am a Senior Associate at Acoustic Engineering Services and my qualifications and experience are set out in my evidence in chief.

I prepared the Assessment of Environmental Noise Effects that accompanied the Application and have assessed both operational and construction noise from the proposed solar farm.

The primary contributors to any off-site operational noise generated by the solar farm will be the air-cooling systems on inverters and batteries. All equipment will however only operate during the 7 am to 10 pm daytime period defined by the Partially Operative Selwyn District Plan (POSDP).

There will also be daytime construction noise associated with the installation of the solar array and ancillary equipment. I have assessed noise from piling, civil works, panel construction and tree clearing which are expected to be the key stages.

To understand the existing background noise environment in the area, I have undertaken a survey at the Site. This confirmed that there are extended daytime periods where noise levels are between 38 – 48 dB $L_{Aeq(15\ min)}$, punctuated by occasional louder periods. This is typical of a rural area distant from major roads in that it appears to be relatively quiet at times, with higher levels of sound associated with machinery and other rural activities present on a more transient basis.

I have considered the results of this survey alongside the noise levels that the POSDP deems appropriate in this environment, which is a daytime noise limit of 55 dB L_{Aeq} for a steady source, received at the notional boundary of residences.

I have also reviewed other guidance from NZS 6802:2008 and the World Health Organisation (WHO) which outline daytime noise limits of between 50 and 55 dB L_{Aeq} for the reasonable protection of residential amenity.

When considering this, along with the relatively steady state nature of the noise source proposed, I consider that a 50 dB L_{Aeq} daytime limit for operational noise could be

implemented as a reasonable control in this instance. This is 5 dB lower than the POSDP limits and reflects the lower ambient noise environment. For completeness, a complementary night-time noise limit of 40 dB L_{Aeq} is also proposed.

For construction noise I consider it best practice to rely on the guidance outlined in the relevant New Zealand Standard 6803:1999 Acoustics – Construction noise (NZS 6803), which is used widely in New Zealand to control the effects of noise from construction activity and is the relevant standard in the POSDP.

I have predicted operational noise levels expected from the equipment associated with the completed solar farm, including future batteries, under worst case meteorological conditions. In this scenario the notional boundary of the dwelling situated at 324 Branch Drain Road is predicted to receive the highest operational noise level of 47 dB L_{Aeq}. All other dwellings will receive noise levels of 45 dB L_{Aeq} or lower.

Even at these low noise levels, there may be times during the day when noise from the solar farm is clearly audible in the areas outside dwellings, depending on the weather conditions and the presence or absence of other sources of environmental noise, like noise from birds or animals and agricultural activity. However overall, I expect even for 324 Branch Drain Road, the noise will not interfere with typical domestic activities and the noise effects will be minimal.

Construction noise has been designed to comply with noise limits of 70 dB L_{Aeq} and 85 dB L_{AFmax} outlined in NZS 6803 at all the adjacent receiver locations.

Given that construction noise levels will at times be significantly higher than the background noise levels, I recommend implementing a Construction Noise and Vibration Management Plan (CVNMP) for use during the construction phase of the project. The CNVMP should be prepared taking guidance from NZS 6803 and specifically include an element of community relations management and controls for 324 Branch Drain Road.

The acoustic peer review and s42a report record agreement with the methodology and findings of my assessment, subject to the provision of appropriate conditions of consent. I agree that the conditions of consent proposed by the Selwyn District Council acoustic reviewer are appropriate, subject to minor changes regarding operational times.

I note that the operational noise monitoring condition proposed by Mr Farren, by referencing the methodology outlined in 6802:2008 provides an objective mechanism to confirm that the noise received at the closest properties will not contain any special audible characteristics.

With regard to submitters general concerns about noise impacts, the WHO guidance I have referred to in my evidence is concerned with avoiding moderate noise effects on the typical population. I accept that there will be a different individual response to the same level and type of noise due to many factors including personal noise sensitivity, attitude to the noise generator and the like.

However, the noise levels I have predicted, on what I consider to be a conservative basis, are below these thresholds. I consider the proposed noise limits to be a reasonable and conservative control given the ambient noise monitoring I have undertaken at the site, and in the context of the general level of amenity protection signalled by the POSDP limits.