

Equis
Ground Floor
36 Esplanade Brighton
Melbourne VIC 3186

S8089C3

Attention: Gerrit Prent

26 June 2024

Dear Gerrit,

**CALALA BESS – ENVIRONMENTAL NOISE ASSESSMENT
RESPONSE TO REQUEST FOR FURTHER INFORMATION**

The request for additional information from the Department of Planning, Housing and Infrastructure has been considered. Each of the requests is repeated below in italics along with the response.

Tonality - Clarify why electrical components that typically display tonality (such as inverters and other electrical componentry that display tonal harmonics of 100Hz and 200Hz) will not be a dominant noise source, or alternately model those specific items with a tonal penalty.

The noise from the proposed battery units is dominated by the noise from cooling fans with electrical noise contributing a negligible amount. The manufacturer's measured noise data displays no potential tonality at 100Hz and 200Hz but rather shows potential tonality at higher frequencies related to an individual fan speed. As the speed of the fan increases, so does the frequency of the potential tones. As the fan speeds of each unit are controlled by the individual temperatures at different locations within the unit (in the batteries and in the power electronics), there will always be a range of fan speeds (when operating) throughout the site as the temperatures vary from unit to unit and at different locations within each unit. This will mask the potential tonality of an individual fan operating at a fixed speed.

Directionality - Noting that a large number of noise sources are present within the BESS, and many of these sources exhibit directive propagation of noise, provide further clarification on why the directionality of these sources tends to mask and cancel each other due to difference in directional alignment, rather than superimpose on each other.

As noted above, electrical noise associated with the battery units is negligible and therefore the directivity and tonality associated with the electrical noise is also negligible. The masking of tonality associated with fans is on the basis of a range of fan speeds on the site at all times.

Cumulative impacts - Consider the cumulative impacts of the existing substation and other potential BESS projects.

The assessment of cumulative impacts is considered as part of the determination of criteria in accordance with the NPfI. The project intrusiveness noise level aims to protect against significant changes in noise levels, whilst the project amenity noise level seeks to protect against cumulative noise impacts from industry and maintain amenity for particular land uses. The amenity levels defined in the NPfI relate to total industry noise levels. The project amenity noise levels for an individual industry are set at a level 5 dB below the recommended amenity levels to provide a margin for cumulative industry noise. The NPfI states that where the project amenity noise level applies and it can be met, no additional consideration of cumulative industrial noise is required.

The predicted noise levels indicate that the project amenity levels will be achieved, even for worst case fan speeds, which occur infrequently (refer below).

Meteorological Effects – Discuss the effects of meteorology in accordance with the NPfI including wind and temperature inversions.

To provide consistency with the method used in the original application, the assessment has been conducted using SoundPlan noise modelling software and the ISO9613-2 noise model. The ISO9613-2 standard defines favourable conditions as downwind propagation where the source blows from the source to the receiver within an angle of +/-45 degrees from a line connecting the source to the receiver, at wind speeds between approximately 1 m/s and 5 m/s, measured at a height of 3 m to 11 m above the ground. Equivalently, the method accounts for average propagation under a well-developed moderate ground based thermal inversion.

Adverse Temperature Concession – Provide a detailed analysis of feasible and reasonable mitigation to meet noise levels generated under increasingly higher temperatures (only those that result in an exceedance of PSNLs). Relate these measures to the risk profile of those temperatures occurring.

Considerable effort has been made to minimise the noise from the BESS facility. A list of the measures implemented during the design phase are listed below.

- Storage capacity reduced from 1,200MWh to 600MWh, and total battery enclosures reduced from 960 to 164 enclosures.
- Battery OEM selection changed (now Tesla) to a market leading technology with reliable and high quality products that can minimise noise.
- The BESS facility is strategically positioned in the south-east site corner to maximise distances to receptors
- 5m tall noise attenuation wall proposed along west interface close to battery units
- 5m tall earth mound proposed along west interface

An analysis of increasing the height of the barriers indicates that there is no further measurable noise reduction achieved by increasing the barrier height by an additional metre.

With these measures in place, the PSNLs will be achieved on almost all occasions and the PSNLs will never be exceeded by more than 5 dB(A). An analysis by Equis has been conducted to determine the percentage of time when the PSNLs are likely to be exceeded as a result of higher fan speeds and a summary is provided in the table below:

Season	Percentage of Time		
	Day	Evening	Night
Summer	8.1%	0.0%	1.6%
Autumn	0.2%	0.0%	0.3%
Winter	0.6%	0.0%	0.0%
Spring	2.4%	0.0%	0.3%
Total	2.8%	0.0%	0.6%

The table indicates that for the most critical periods, there is no exceedance for the evening and exceedance is estimated to be for less than 1% of the night. It is also noted that the predicted noise levels for the night indicate that the exceedance is only 1 dB(A), which is not considered to be noticeable. These percentages are well below the levels considered reasonable for exceedances as a result of meteorological propagation.

If you have any questions or require clarification, please let me know.

Yours faithfully
Sonus Pty Ltd

A handwritten signature in black ink, appearing to read 'Chris Turnbull', written in a cursive style.

Chris Turnbull
Principal

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