This Technical Appendix document outlines the protocols and methodologies employed within the scope of the 3D acoustic modelling of the Solar Farm.

Prediction Protocols

The facility is neither in situ or operational at the current time therefore, noise associated with the plant/ equipment has been assessed by means of a 3D noise model, constructed using the IMMI software.

Within the modelling exercise informing this study, acoustic propagation has been calculated in accordance with ISO9613-2: Acoustics – Attenuation of sound during propagation outdoors: Part 2: General method of calculation. The Immi software implements this methodology in full.

The prediction methodology of the ISO Standard takes account of wind and meteorological conditions in the following ways:

- Wind Direction – The software assumes a positive wind vector in all directions from the source to receptor.
- Humidity – 70%
- Temperature – 10°C

In addition, ground conditions are considered to be mixed (G = 0.5) between the site and receiver locations.

Foundation of the Noise Model

The noise model was constructed utilising the following information:

- OS Open data mapping (TIFF format);
- Digital Terrain Mapping obtained from OS Open Data (DWG format);
- Site layout plan supplied by Engena Ltd; and,
- Noise levels for the proposed plant and equipment provided by Engena Ltd.

Modelling Assumptions

Within the construction of the noise model the following assumptions have been made:

- All predictions are made to a free field receptor location at a height of 1.5m above local;
- Screening effect of hedgerows and perimeter fences etc is assumed to be negligible;
- All off site buildings are assumed to be 8m high from local ground height.

To confirm, the following noise sources were used within the noise modelling assessment:

MV Power Station

The site will accommodate 20no power transformer / inverter units. The information provided indicates that the units will be from the SMA MV Power Station Range fitted with appropriate dampeners to reduce overall noise emissions.

Information available for the units used in this assessment is summarised in the Table below. This presents the sound power level used in the noise modelling assessment.

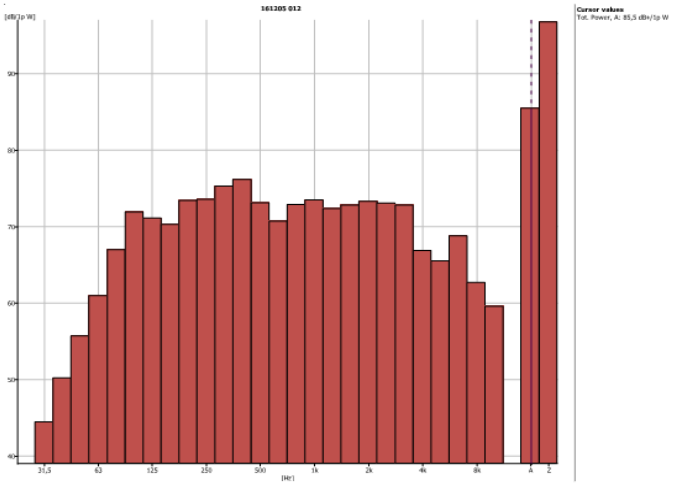
Table 13.2.1: Power Transformer / Inverter Linear Sound Power Level Spectrum

Noise Source	Sound Power Levels in Octave Bands, Hz dB							L_{WA}, dB
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	
Assumed Mitigated SMA	96.7	92.1	87.6	81.9	77.7	76.6	73.4	85.5

The information available includes 1/3rd octave band noise levels and is copied below for reference.

2 **PRELIMINARY** RESULTS - VIBRATION DAMPER

- Tonality is nearly eliminated
- The overall noise level is the same, i.e. -8dB(A) reduction but with reduced tonality at the switching frequencies.



Frequency	Tot.Pwr,A
25 Hz	39,02
31,5 Hz	44,5
40 Hz	50,24
50 Hz	55,71
63 Hz	60,98
80 Hz	67,02
100 Hz	71,93
125 Hz	71,13
160 Hz	70,33
200 Hz	73,42
250 Hz	73,56
315 Hz	75,3
400 Hz	76,17
500 Hz	73,12
630 Hz	70,74
800 Hz	72,9
1 kHz	73,49
1,25 kHz	72,38
1,6 kHz	72,83
2 kHz	73,29
2,5 kHz	73,09
3,15 kHz	72,84
4 kHz	66,89
5 kHz	65,54
6,3 kHz	68,8
8 kHz	62,71
10 kHz	59,59
A	85,48
Z	96,77

Analysis of the 1/3rd octave band information indicates no tonal content in the noise emissions.