

12th December 2024

your reference

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our reference

23-111-TN01-v2

Re: 23-111 Kirkby BESS. Envision Layout Noise Assessment – Technical Note v2

Overview

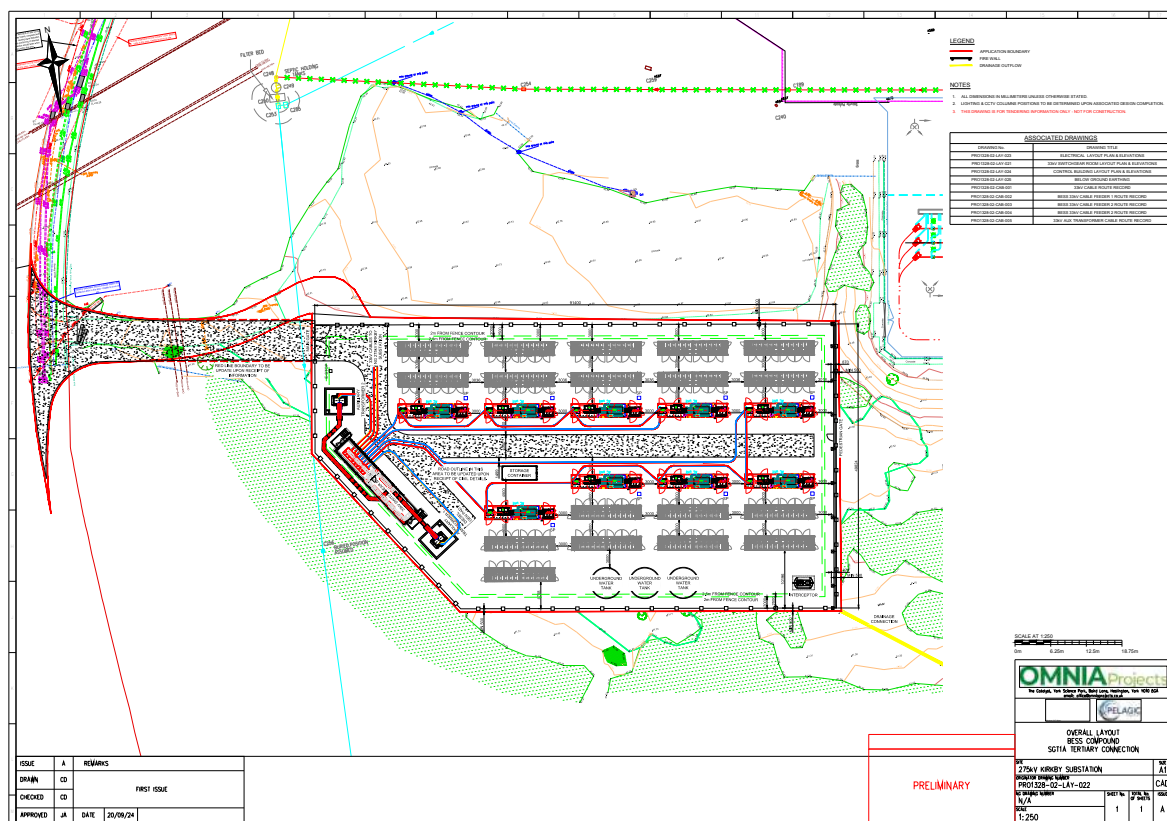
The nearest Noise-Sensitive Receptors (NSR) considered in the assessment can be seen below.

FIGURE 1: SITE, NOISE-SENSITIVE RECEPTORS (NSRs) AND SURROUNDING AREA



An overview of the proposed Envision layout (PRO1328-02-LAY-022_1_A Overall Layout BESS Compound BINDED) can be seen below in Figure 2.

FIGURE 2: PROPOSED SITE LAYOUT



Assessment Criteria

Inacoustic is not aware of any relevant noise-related planning conditions. As such, the assessment is undertaken in line with British Standard 4142:2014+A1:2019 '*Methods for Rating and Assessing Industrial and Commercial Sound*' as good practice.

Baseline Noise Information

The results of a baseline noise monitoring exercise are presented within Inacoustic report 23-111 v5, dated 13th March 2024 and are referenced within this assessment.

Noise Modelling

The following noise reports from the plant manufacturer, Envision, have been used for this assessment:

- Noise Test Report for the Air-Cooled Chiller of Envision's Liquid-Cooled DC Container Model: EMW600HCNC1B (file 'EE - DC Container Noise Test Report v1.0.0 (2)'), dated 28th June 2024.
- Noise Test Report of Envision's 6900 kVA AC Twinskid (Low Noise Version) ENMVS-6900 dated 22nd September 2024.

The table below summarises the sound source data used in the noise model, based on the above reports and proposed Envision layout.

TABLE 1: SOUND SOURCE DATA

Plant	Qty.	Sound Power Level per unit, L _{WA} (dB) Daytime	Sound Power Level per unit, L _{WA} (dB) Night-time
DC container (40% cooling load daytime and 30% cooling load night-time)	36	82	78
Aux Tx	2	71	71
AC 6900 twin-skid Low Noise at 51% fan speed during the day and 32% fan speed at night* (Total Sound Power Level L _{WA} 88 dB and 78 dB for daytime and night-time respectively)			
AC 6900twin-skid FRONT	9	82	72
AC 6900twin-skid BACK	9	82	72
AC 6900twin-skid LEFT	9	77	68
AC 6900twin-skid RIGHT	9	70	60
AC 6900twin-skid ROOF	9	83	74
* 51% fan speed during the day (up to 45°C) and 32% fan speed during the night (up to 31°C)			

The fan speeds/cooling loads presented in **Error! Reference source not found.** have been confirmed by Envision as sufficient to provide the necessary cooling to the systems without power de-rating, based on the ambient temperature profile of the area.

The DC Cooling systems have been modelled as point sources at 2m high on one end of each DC container, to represent a centralised cooling unit, as described in the Envision report for their containerised units. The AC units have been modelled as one vertical area source on each side and one area source on the roof, with the individual sound power levels presented above. The plant have been modelled on a 300mm plinth.

The sound map at 4m above ground, showing the specific sound level emissions from the Proposed Development can be seen in Figure 3 and Figure 4 overleaf, for the daytime and night-time respectively.

FIGURE 3: SPECIFIC SOUND LEVEL MAP - DAYTIME

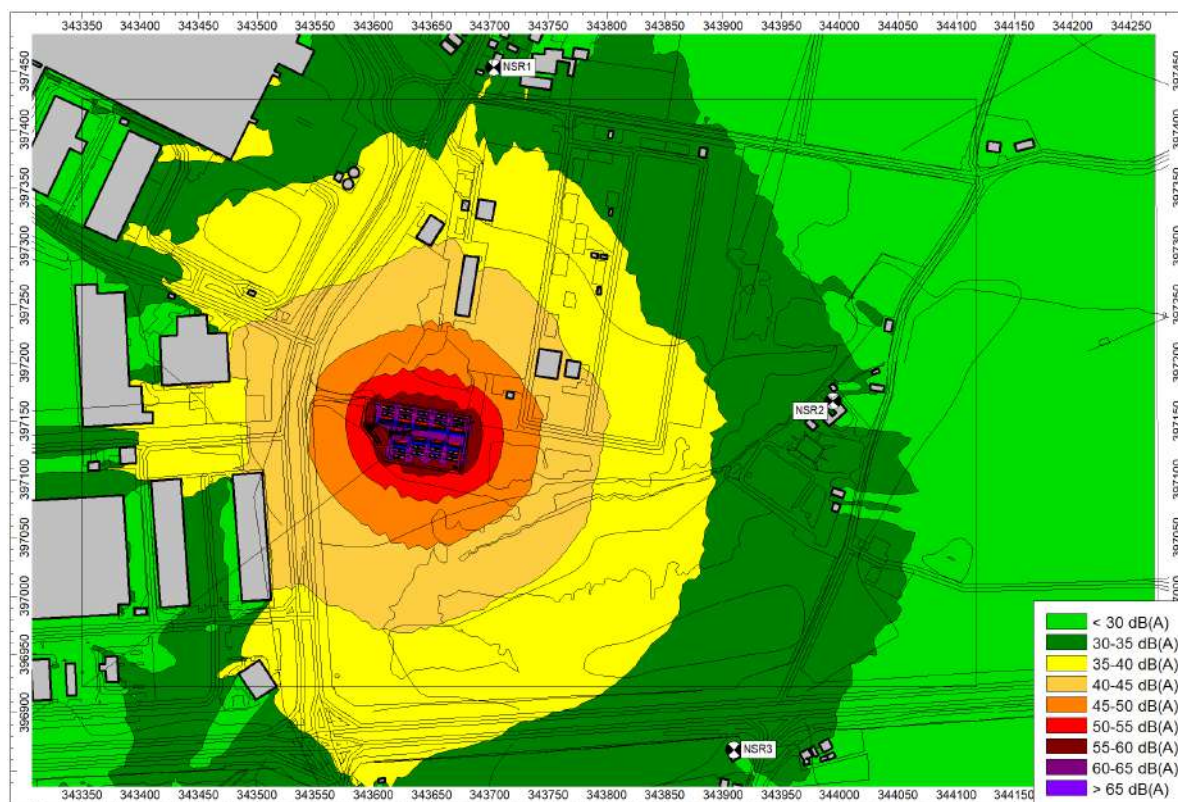
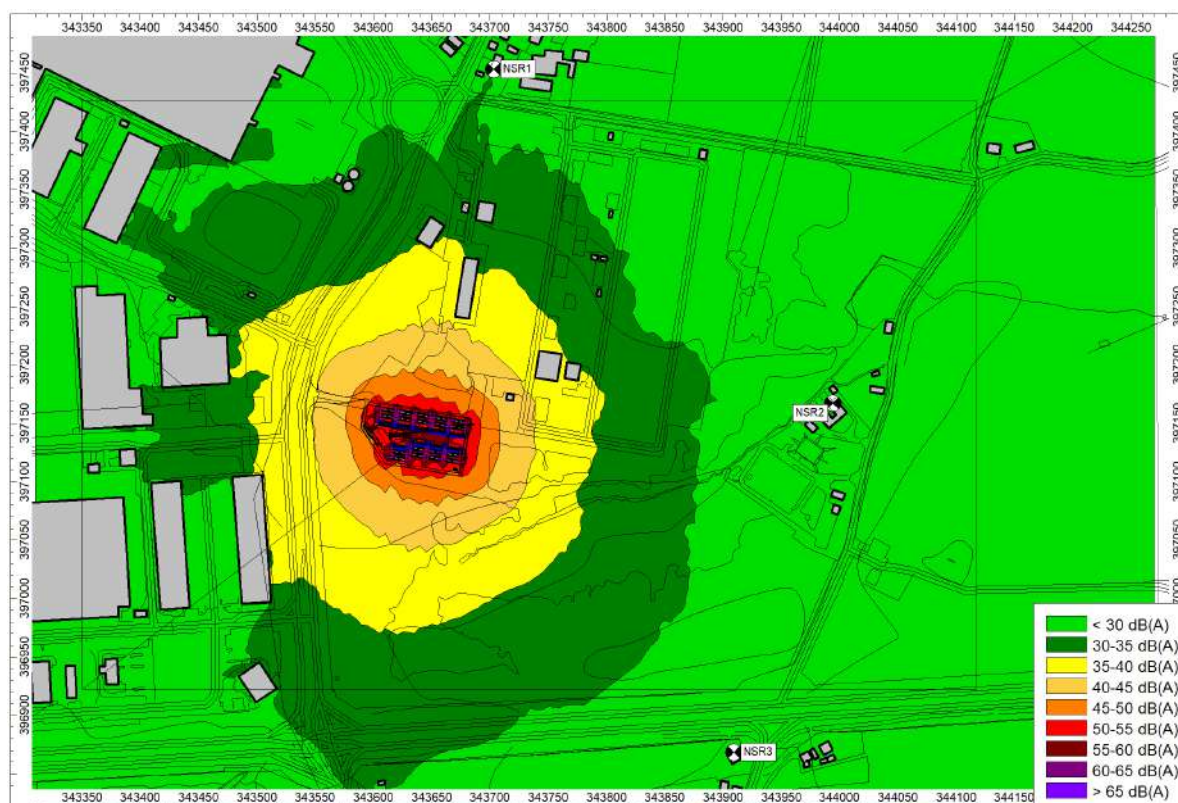


FIGURE 4: SPECIFIC SOUND LEVEL MAP - NIGHT-TIME



A summary of the predicted specific sound levels at the closest NSRs can be seen below in Table 2 and Table 3, for the daytime and night-time respectively. No penalty is included for tonality, based on our analysis of 1/3 octave data from Envision.

TABLE 2: BS 4142:2014+A1:2019 ASSESSMENT – DAYTIME (07:00-23:00)

NSR	Rating Sound Level, dB $L_{Ar,Tr}$	Daytime Background Sound Level, dB $L_{A90,T}$	Excess of Rating over Background Sound Level (dB)
1	33	46	-13
2	32	48	-16
3	31	52	-21

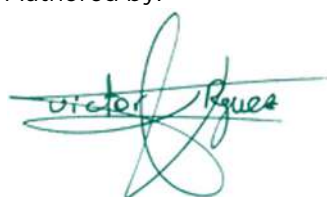
TABLE 3: BS 4142:2014+A1:2019 ASSESSMENT – NIGHT-TIME (23:00-07:00)

NSR	Rating Sound Level, dB $L_{Ar,Tr}$	Night-time Background Sound Level, dB $L_{A90,T}$	Excess of Rating over Background Sound Level (dB)
1	28	41	-13
2	26	43	-17
3	27	45	-18

As can be seen in Table 2 and Table 3, with the noise emission levels provided by Envision, the rating sound levels at the nearest Noise-Sensitive Receptors are predicted to be well below the prevailing background sound levels, which is deemed to be a 'Low Impact' in BS4142 terms.

No additional noise mitigations are required to prevent any adverse noise impacts, other than ensuring that the plant operates within the parameters specified in Table 1.

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