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23-111-E-TN01-v8

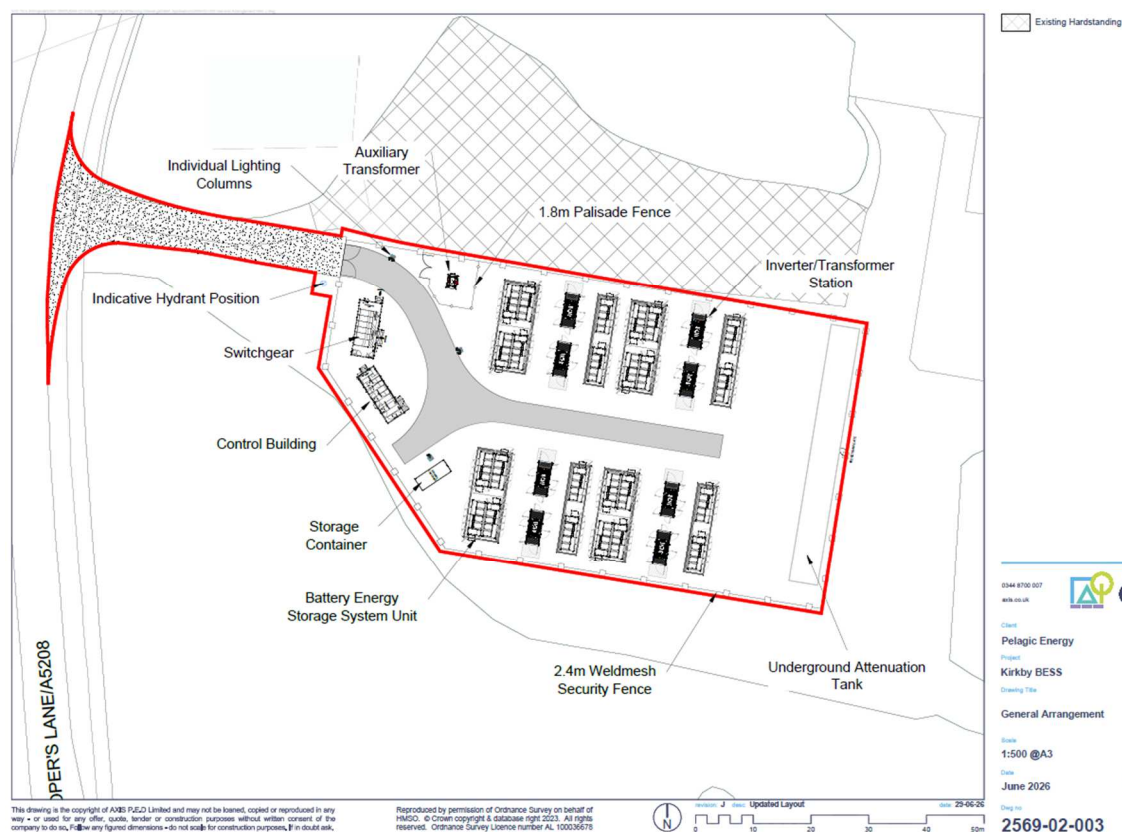
Overview

FIGURE 1: SITE, NSRs AND SURROUNDING AREA



An overview of the proposed Power Titan 3.0 layout can be seen below in Figure 2.

FIGURE 2: PROPOSED SITE LAYOUT



It is understood that the scheme will be based on Sungrow Power Titan 3.0 battery units, with Sungrow MVS stations.

Assessment Criteria

Planning permission was recently granted on 1st July 2026 (under a Section 73 submission) to secure several amendments to the BESS site layout (under Knowsley Council ref. 25/00285/FUL). The planning condition (11) prescribing the noise level limits for the Site was also amended under this permission. This changed the rating level of sound associated with plant on the Site to be at least 3 dB(A) below background levels (down from at least 5 dB(A) previously). For clarity, Condition 11 reads:

"Fixed plant and machinery associated with the development shall be designed to have a rating level that is at least 3 dB(A) below the L_{A90} background noise level, during the relevant time period, as measured and assessed in accordance with BS4142: 2014."

As such, the assessment is undertaken in line with British Standard 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS 4142:2014+A1:2019)¹.

¹ British Standards Institute, British Standard 4142:2014+A1:2019. *Methods for rating and assessing industrial and commercial sound*, 2019.

Baseline Sound Information

The results of a baseline sound monitoring exercise are presented within [inacoustic](#) report 23-111 v5, dated 13th March 2024 and are referenced within this assessment.

Noise Modelling

Table 1 below summarises the sound source data used in the noise model, based on Sungrow Noise Tests and the proposed layout. It should be noted that sound power levels for the Sungrow Power Titan 3.0 have been based on spectral data for the Sungrow Power Titan 2.0 uplifted to achieve an overall broadband sound level per unit as provided by Sungrow, in the absence of any spectral data being available at this time. An assumed uplift has also been applied to the sound power level of the MVS stations to account for a higher MW rating.

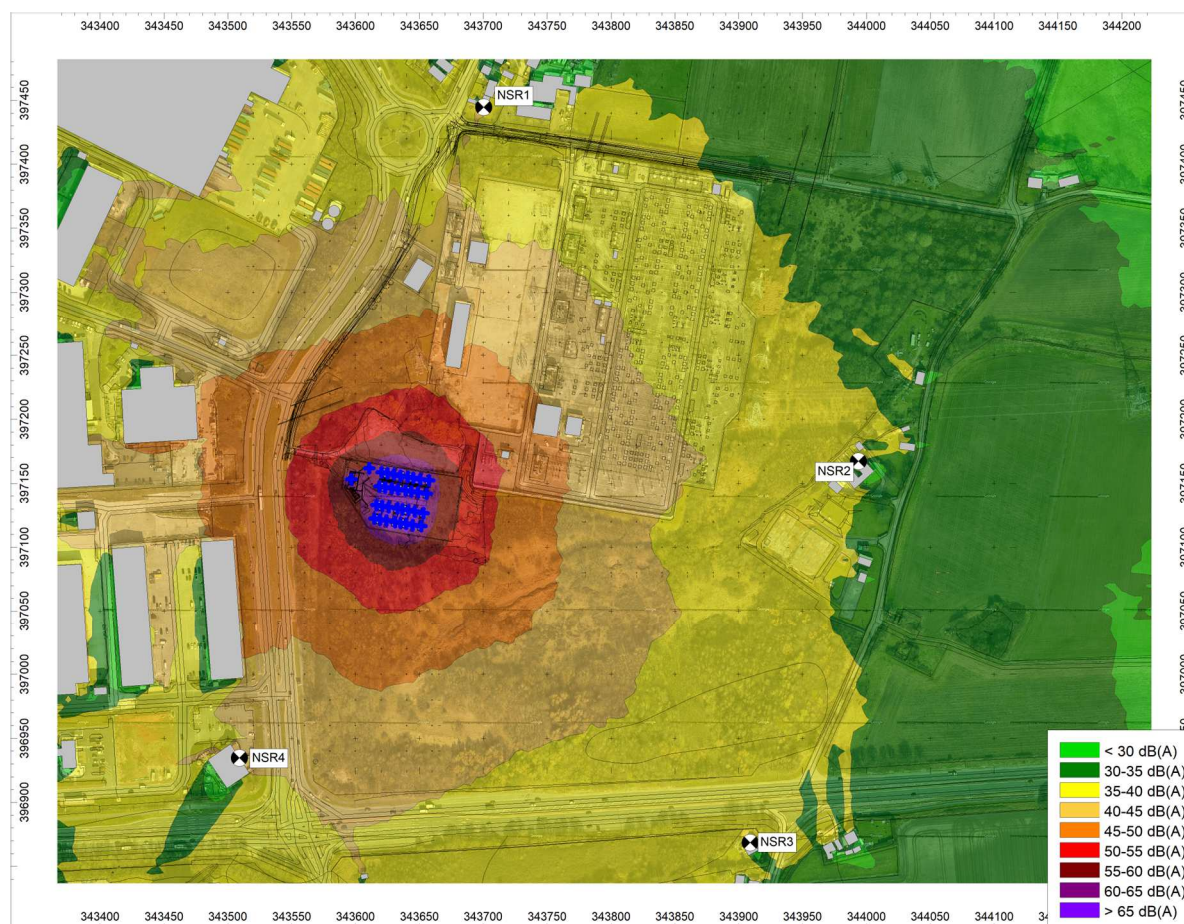
TABLE 1: SOUND SOURCE DATA

Plant	Qty.	Sound Power Level per unit, L _{WA} (dB) Daytime	Sound Power Level per unit, L _{WA} (dB) Night-time
MVS Station ¹	8	87	87
Battery Cooling System ² (100% cooling load)	24	88	88
Aux Tx	1	71	71
33kV Switchroom	1	84	84

- 1) Sound power levels as reported by Sungrow in document 'TI_20240306_MVS_Noise Test Report_V1_EN' Plus +3 dB uplift assumption for higher MW rating.
- 2) Sound Power Levels (PT2.0 spectrum) as reported by Sungrow in document 'TR_20241202_ST5015UX-4H-LN&ST5015UX-4H-US-LN_Noise Test Report_V2' 80 dB SWL for working condition '0.25C_35°C Ambient Temperature_100% Power', uplifted to a broadband level of 88 dBA assumption for PT3.0 as indicated by Sungrow for '0.37C_25°C_55% fan cycle' including 100% PCS power. Valid up to ambient temperatures of 25°C.

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

FIGURE 3: SPECIFIC SOUND LEVEL MAP – DAYTIME AND NIGHT-TIME, $L_{Aeq,T}$



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.

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

NSR	Rating Level, dB $L_{A,r,Tr}$	Daytime Background Sound Level, dB $L_{A90,T}$	Excess of Rating over Background Sound Level (dB)
1	38	46	-8
2	36	48	-12
3	36	52	-16
4	39	52	-13

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

NSR	Rating Level, dB $L_{A,T,r}$	Night-time Background Sound Level, dB $L_{A90,T}$	Excess of Rating over Background Sound Level (dB)
1	38	41	-3
2	36	43	-7
3	36	45	-9
4	39	45	-6

The results set out above identify that the operation of the scheme, as proposed, can occur without affecting the amenity of the closest residential receptors to the site, on the basis of a worst-case operational scenario.

BS 4142:2014+A1:2019, however, recognises the importance of the context in which a sound occurs when assessing impacts.

It is noted that the assessment considers a worst-case scenario, with all batteries charging/discharging at the same time. It also considers cooling fans operating at full duty during the day and night. Since the climate in the UK is temperate, it is unlikely that the fans would normally reach a 100% duty cycle. At night, when cooling demand is lower, inverters and battery unit fans typically operate at lower duty; however, this assessment considers a worst-case operating scenario with no night-time reduction in duty.

BS 4142:2014+A1:2019 states that *“The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.”*

As all predicted rating levels are below the measured background sound levels, this is an indication of a low impact.

Predicted rating levels are all more than 10 dB below the measured ambient ($L_{Aeq,T}$) therefore no change in ambient noise level is likely to occur at the nearest receptors due to operation of the Proposed Development. Operation of the Proposed Development would therefore be considered of negligible significance and would not be likely to result in a perceptible change.

The assessment has shown that operation of the scheme, as proposed is predicted to achieve the requirements of Planning Condition 11, as rating levels are at least 3 dB(A) below the background sound levels at all NSRs.

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