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SUBJECT **AMERESCO SCHEMES – EAST MANCHESTER LEISURE CENTRE, BESWICK**
Plant noise commissioning measurements - Revision A

We are writing to summarise the results of our external plant noise commissioning measurements undertaken at East Manchester Leisure Centre, Beswick. The measured plant noise levels have been used to calculate the plant noise levels at the location of the closest noise sensitive receptors (NSR) properties in order to review compliance with the local authority planning noise limits.

1. Noise criteria

LPA criteria relating to the proposed equipment states that the following requirements must be achieved:

“The noise assessment should be based on BS 4142: 2014 and any application for fixed plant, equipment or machinery must demonstrate that: ‘Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location’.”

The nearest / most exposed NSR properties to the proposed equipment location at the site are identified to be residential properties on the corner of Bosworth Street and Grey Mare Lane, approximately 30m, 36m, and 40m to the south-west of the 3no. ASHP units’ location.

An environmental noise survey has been undertaken by BDP Acoustics on 24/06/2021 at the nearest / most exposed NSR properties to the proposed plant equipment location on the site to determine the typical background level (L_{A90}). Full details and results of the noise survey can be found in the BDP Acoustics report reference ‘P3001965/(REP)U004 Rev B’ dated December 2021.

2. Plant details

This noise assessment considers the following newly installed mechanical plant equipment:

- 3no. Air Source Heat Pump (ASHP) units incorporating attenuation packs

The location of the newly installed plant equipment and the closest NSR properties is illustrated in Figure 1 below.

Figure 1: Location of installed ASHPs highlighted in red and closest NSR properties highlighted in white



3. Predicted noise levels at NSR properties

When on-site, at the NSR position the specific noise associated with the new equipment was not perceptible against the residual ambient noise climate. In order to demonstrate compliance with the criteria a series of nearfield measurements have been undertaken at the installed external plant on 27/07/2022. The nearfield measurement results have been used to determine the worst case noise levels expected at the NSR properties based on simple noise propagation calculations taking account of distance attenuation and screening effects where appropriate. The

nearfield measured L_{A90} source data has been used to inform the calculations in order to omit potential non-representative contributions during the survey measurements (i.e. constant traffic passbys).

The nearfield measurements were taken at a distance of 1m from the noise sources associated with the 3 no. ASHPS, the measured results are outlined in Table 1. In the table, measurements taken of the equipment noise sources during operation are referred to by number (1-3 AHSP units) and suffixed with inlet location (E/W/S) located on the sides of the equipment. Discharge (D) noise levels relating to the top/lid of the equipment have been derived from the ground level measurements.

For the low level inlets a conservative acoustic screening correction of -5 dB has been applied, accounting for the close-boarded timber fence partially breaking line of sight between source and NSR receiver positions – in reality the screening provided by the compound perimeter fence is likely to provide a greater level of attenuation to inlet noise, resulting in a lower cumulative noise level than that predicted below.

Table 1: Summary of source measurements and simple noise propagation corrections to derive external plant noise levels at 1 m from façade of the closest NSR

Source	L_{A90} dB	Measurement distance (m)	Source – NSR distance (m)	Distance attenuation (dB)	Screening attenuation (dB)	Noise level at NSR (dB)
3W	55	1	36	31	5	19
1W	59	1	40	32	5	22
3E	59	1	36	31	5	23
1E	57	1	40	32	5	20
3S	57	1	36	31	5	21
2E	57	1	35	31	5	21
1S	56	1	40	32	5	19
2S	56	1	35	31	5	20
1D	56*	1	40	32	0	24
2D	54*	1	35	31	0	23
3D	56*	1	36	31	0	25
Cumulative noise level at NSR						32

*Determined from ground level measurements.

Table 2 provides a summary of the predicted external plant noise levels at the NSR along with the proposed external plant noise limits for comparison.

Table 2: Summary of predicted free field external plant noise levels at 1 m from façade of the closest NSR

Noise Sensitive Receptor	Lowest measured background noise (dB $L_{A90,5min}$)	Proposed noise limit at NSR (dB $L_{Ar,Tr}$)	Predicted noise level at NSR (dB $L_{Ar,Tr}$)
Residential properties on the corner of Bosworth St and Grey Mare Ln	38	33	32

4. Summary

Nearfield noise measurements of the newly installed external plant equipment have been undertaken by BDP Acoustics and have been used to predict the worst case external plant noise levels at the closest NSR properties. The predicted external plant noise levels at the closest NSR properties indicate that the newly installed plant complies with the LPA plant noise criteria.

Please do not hesitate to contact us should you have any queries.

Yours sincerely
for BDP Acoustics

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