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FROM **Alex Taylor**

DATE 20 September 2022
FILE REF P3001965(COR)U009A

SUBJECT **AMERESCO SCHEMES – HOUGH END LEISURE CENTRE, MANCHESTER**
Plant noise commissioning measurements – Revision A

We are writing to summarise the results of our external plant noise commissioning measurements undertaken at Hough End Leisure Centre, Manchester. 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 plant equipment location at the site are identified to be the residential properties on Princess Road approximately 69 metres to the east / south-east of the battery container location.

A noise impact assessment was undertaken by Waterman Infrastructure & Environment Limited in May 2021 in support of the construction of an extension to the existing Hough End Leisure Centre (Planning Application reference 129948/VO/2021). The existing background noise levels referenced in the Waterman report have been used to inform this noise assessment. Refer to BDP Acoustics report reference ‘P3001965/(REP)U006’ dated October 2021 for further details.

2. Plant details

This noise assessment considers the following newly installed plant equipment:

- 1no. battery and associated equipment enclosed within a plant enclosure

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

Figure 1: Location of installed plant 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 short-term (1min) nearfield measurements at 1.5m A.G.L have been undertaken at the installed external plant, on 31/08/2022 by BDP Acoustics. A Rion NA-28 sound level meter was used for the measurements, and was site calibrated prior to and following the survey period with no significant drift in sensitivity observed. Full laboratory calibration information can be provided upon request.

The Amerseco representative on site confirmed that the plant was operating at typical operating duty during the measurements.

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. 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. traffic passbys).

The nearfield measurements were taken at a distance of 1m from the noise sources & acoustic weak-points associated with the battery enclosure (2 no. atmospheric terminations to container/enclosure, 1no. louvred door, 1no. solid access door), the measured results are outlined in Table 1. No acoustic screening correction has been taken in the noise propagation calculation; in reality the enclosure container itself would be expected to offer a level of acoustic screening, potentially 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

Position	L_{A90} dB	Measurement distance (m)	Source – NSR distance (m)	Distance attenuation (dB)	Noise level at NSR (dB)
1	72	1	69	37	35
2	60	1	69	37	23
3	61	1	69	37	24
4	59	1	69	37	22
Cumulative noise level at NSR					36

Table 2 summarises the predicted external plant noise levels at the NSR along with the proposed external plant noise limits for comparison. Due to the low predicted plant noise level at the NSR relative to the residual noise climate character corrections have not been added to the predicted rating level, i.e. specific plant noise is not expected to be readily distinctive against the background noise climate at the NSR position.

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

Noise Sensitive Receptor	Lowest measured background noise (dB $L_{A90,T}$)	Proposed noise limit at NSR (dB $L_{A,T}$)	Predicted noise level at NSR (dB $L_{A,T}$)
Residential properties on Princess Road	45	40	36

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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