



TO **Cedric Jackson**
OF Ameresco
csjackson@ameresco.com

CC As per email distribution list

FROM **Alex Taylor**

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SUBJECT **AMERESCO SCHEMES – SHARP PROJECT MEDIA CENTRE, MANCHESTER**
Plant noise commissioning measurements – Revision A

We are writing to summarise the results of our external plant noise commissioning measurements undertaken at Sharp Project Media 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 equipment location at the site are identified to be:

- Residential properties on Halliford Rd, approximately 246 meters to the North-East of the plant equipment location;
- Residential properties on Eldridge Drive, approximately 150 meters to the South-East of the plant equipment location.

An environmental noise survey has been undertaken by BDP Acoustics on 11/05/2021 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)U001’ dated June 2021.

2. Plant details

This noise assessment considers the following newly installed plant equipment:

- 6no. Air Source Heat Pump (ASHP) units

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 equipment highlighted in red and closest NSR properties highlighted in white



3. Predicted noise levels at NSR properties

The specific noise associated with the new plant equipment is not expected to be perceptible against the residual ambient noise climate. Consequently, in order to demonstrate compliance with the noise criteria a series of short-term (1min) nearfield measurements at approx. 1.5m A.G.L have been undertaken around the installed external plant on 17/08/2022 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 measured results are outlined in Table 2 below.

Table 1: Summary of ASHP source measurements

Source	$L_{Aeq,1min}$ dB	Measurement position
ASHP 1	58	0.5m in front of ASHP
ASHP 2	58	0.5m in front of ASHP
ASHP 3	62	0.5m in front of ASHP

Note that during the measurement survey, 3 of the 6 ASHPs were noted to be non-operational. As the ASHPs are identical models, the following assessment has utilised the highest measured noise level of the 3 operating ASHPs (ASHP 3, $L_{Aeq,1min}$ 62 dB) to calculate the worst case noise contribution from 6 no. ASHPs operating simultaneously.

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.

Conservative acoustic screening corrections of -10 dB and -15 dB have been applied for the NSRs at Halliford Rd and Eldridge Drive respectively, to account for the adjacent Sharp Project Media Centre buildings blocking line of sight between ASHP noise sources and NSR receivers.

Table 2 below provides a summary of the predicted external plant noise levels at the NSR.

Table 2: Summary of source measurements and simple noise propagation corrections to derive external plant noise levels at 1 m from façade of NSRs

NSR	ASHP $L_{Aeq,1min}$	Correction for 6 no. ASHPs	ASHP – NSR distance	Distance attenuation	Screening attenuation	Noise level at NSR
Halliford Rd	62 dB	+ 8 dB	246 m	- 47 dB	- 10 dB	12 dB
Eldridge Drive	62 dB	+ 8 dB	150 m	- 43 dB	- 15 dB	12 dB

Table 3 below provides a summary of 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 (≥ 26 dB below background noise), BS4142 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 3: 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_{A,r,Tr})	Predicted noise level at NSR (dB L_{A,r,Tr})
Residential properties on Halliford Road	38	33	12
Residential properties on Eldridge Drive	40	35	12

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

Alex Taylor
Senior Acoustic Consultant
alex.taylor@bdp.com