

TECHNICAL NOTE

Project: Thermocouple Calibrator MEV, BAE Systems, Samlesbury
Description: Verification Report
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Date: 27th October 2025
Ref: J005639-9166-RDC-01

Following installation of the new Thermocouple Calibration Furnace MEV at BAE Systems, Samlesbury a verification report is required for the Local Planning Authority to satisfy planning condition 4 of the installation (reproduced below).

4. The development shall be carried out in strict accordance with the mitigation measures as set out in section '00-50-103 Recommendations' of the submitted Noise Impact Assessment by Mechon Limited dated 11th March 2025.

These mitigation measures shall have been fully implemented prior to the first use of the LEV system, hereby approved, and shall thereafter be maintained and retained as such.

The verification report referenced at 00-50-103/3 of the submitted Noise Impact Assessment shall be undertaken and submitted for written approval to the Local Planning Authority once the LEV system has been commission and is operational.

Reason: In order to protect the adjacent properties from any undue impacts and to mitigate the potential impact of the proposed development.

Figure 1 – Planning Condition 4 of Ribble Valley Borough Council Decision Notice 3/2024/1002

The Planning Condition refers to the mitigation recommendations of the Mechon Limited noise impact assessment dated 11th March 2025. Those recommendations are reproduced below:

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00-50-103 Recommendations

Based on the assessment findings, the following recommendations are provided for the implementation of the proposed LEV system.

00-50-103/1 Standard good practice measures

To ensure compliance with the applicable noise criteria, particularly during night-time operations, the following measures should be implemented:

- a) The fan unit should be housed in an acoustic enclosure providing a minimum sound reduction of 10 dB at low frequencies (63-125 Hz) and 15 dB at mid to high frequencies
- b) In-line duct silencers should be installed on both the fan inlet and outlet, with special attention to low-frequency attenuation performance.
- c) Anti-vibration mounts should be installed for all rotating equipment to prevent structure-borne noise transmission.
- d) Flexible connections should be used on inlet and outlet duct connections to the fan to prevent vibration transmission to ductwork.
- e) The discharge cowl should be aerodynamically designed to prevent rain ingress while maintaining effective discharge velocity and minimising regenerated noise.
- f) Ductwork supports should incorporate vibration isolation elements where attached to building structures.

00-50-103/2 Equipment specification requirements

The equipment selection and installation should meet the following specifications:

- a) Fan sound power level should not exceed 85 dB LWA (unattenuated)
- b) In-line silencers should provide minimum insertion loss of:
 - 8 dB at 63 Hz
 - 10 dB at 125 Hz
 - 15 dB at 250-500 Hz
 - 20 dB at 1-8 kHz
- c) Discharge velocity should be maintained between 10-15 m/s to balance effective dispersion with minimised regenerated noise
- d) The 18m stack height (3m above roof level) should be maintained as modelled to maximise dispersion and attenuation benefits

Figure 2 – Mechon report recommendations

1.0 VERIFICATION

The installed system has been inspected to confirm the above good practice guidelines have been followed with the following measures observed on the installed system.

- Vibration isolation connections to the ductwork support brackets
- Allaway acoustics duct silencers fitted to the room-side and atmosphere side of the Fan.
- Fan housed in an acoustic enclosure.
- Fan assembly installed on anti-vibration pads.

In addition to the above specified good practice measures, the following details were noted:

- The duct attenuators were 1200mm Allaway Acoustics SL-G attenuators with the following insertion losses:



	Performance, dB							
	63	125	250	500	1k	2k	4k	8k
IL	8	14	22	34	41	36	31	20

These meet the insertion loss requirements of the Mechon report.

- The stack was ducted above roof level and fitted with an appropriate discharge cowl.
- Although the discharge cowl was not accessible, measurements were undertaken of the breakout sound from the fan unit enclosure. Measurements were taken with the fan operating at 100% duty. Measurements were corrected for residual sound levels (measured at a representative location away from the fan) in octave frequency bands to determine the sound pressure level at 1m as 63 dB(A). Measurements were taken using a calibrated Class 1 NTi XL2 sound level meter. Calibration certificates are available on request. The meter was field calibrated before and after the measurement during which no significant drift occurred, and was also fitted with an appropriate wind-shield to the microphone.
- Sound pressure levels from the fan enclosure at the nearest noise sensitive properties (houses on Myerscough Smithy Road approximately 100m south west of the MEV system) were calculated, treating the fan enclosure as a point source and assuming hemispherical propagation. The calculated sound pressure level was 23 dB(A) [neglecting air attenuation, ground effects and shielding]. This is well below the night-time noise criterion of 31 dB(A) from the Mechon report and hence meets the design specification.

2.0 CONCLUSION

The rooftop exhaust terminal is not accessible for close measurements or inspection. However, inspection and measurement of the installed system at ground level has shown that good practice measures and attenuation specifications of the Mechon report have been undertaken for the installed system and measurements of the fan enclosure sound break-out meet the night-time noise criteria of the design specification at the nearest residence with the fan operating at 100% duty.