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Date: 12th August 2025
Reference: R11145-1 Rev 1

Dear Ric

Re: Sarum Academy, Salisbury – Noise Assessment

Further to our recent survey of external noise levels, please see below our noise assessment for the proposed new school development.

1.0 INTRODUCTION AND SITE DESCRIPTION

- 1.1 Sarum Academy is an existing secondary and 6th form school located off Westwood Road in the northwest of Salisbury. A new 8FE teaching building is proposed which forms phase 1 of the Saram Academy redevelopment plan (4 phases in total). The new building will comprise 13 teaching rooms, office spaces, a group room and associated storage and circulation spaces spread over two floors. A new MUGA is proposed under phase 2 of the redevelopment plans which has also been considered in the assessment.
- 1.2 24 Acoustics has been instructed by Morgan Sindall to assess the external ambient noise levels affecting the proposed scheme, to provide advice on the implications with regards to the requirements of Building Bulletin 93, 'Acoustic Design of Schools' (BB 93) and to consider the potential noise from the operation of the building on nearby noise sensitive properties.
- 1.3 The site comprises Sarum Academy's existing teaching blocks and outside areas, with the proposed teaching building and MUGA locations currently being grassed/paved areas. Figure 1 shows the existing school site.
- 1.4 The new teaching building will be near the centre of the school site, with a future science garden and MUGA to the west. A staff car parking area is proposed to the north, with the existing buildings to the northeast and southeast retained. The proposed site plan is shown in Figure 2.
- 1.5 Environmental noise monitoring has been undertaken to assess the prevailing ambient and background noise levels at the site. This report addresses the control of noise break-in from external sources with reference to BB 93.
- 1.6 The operational hours of the proposed MUGA are not yet known. Therefore, this assessment assumes that the new MUGA would be operational outside school hours for community use, with floodlights for evening use. The aspirational hours of operation assumed in this assessment are 09:00 to 22:00 hours daily.

- 1.7 The nearest residential properties to the proposed MUGA are to the east at approximately 200 metres.
- 1.8 All measurements in this report are given in dB re: 20 μ Pa. A summary of acoustic terminology is given in Appendix A.

2.0 CRITERIA

Building Bulletin (BB) 93

- 2.1 The document 'Acoustic design of schools: performance standards, Building Bulletin 93' (BB 93) sets out acoustic performance standards for school buildings.
- 2.2 In order to maintain a satisfactory internal teaching environment, Building Bulletin 93 requires that an ambient noise survey be undertaken. The aim is to limit external noise break-in so that it does not interfere with teaching activities once the school is operational. The limits apply to existing or known sources of noise for which the internal levels can be accurately predicted. The limits do not apply to noise sources from within the school.
- 2.3 Ambient noise is defined as the total noise from all external sources intruding into the school together with noise from the school's own ventilation or other plant. This includes noise from road, rail and air traffic and industrial/commercial premises. It does not include noise from school activities such as teaching or sports, nor teaching equipment.
- 2.4 The indoor ambient noise levels must be achieved with adequate ventilation, which may be provided by natural ventilation, mechanical ventilation or a hybrid system.
- 2.5 For rooms that are naturally ventilated, 'normal operation' is defined in BB 93 as providing a minimum ventilation rate of approximately 5 l/s per person. Under this 'normal operation' condition, BB 93 permits internal noise levels that are up to 5 dB above the performance standards for internal noise levels in Table 1 of BB 93.
- 2.6 The upper limits for internal noise levels within the proposed new school rooms are specified in Table 1 of BB 93 as follows:

Room	Maximum Internal Noise Level (dB L _{Aeq} , 30 mins)
Group Room	30 (35 if naturally ventilated)
Science Classroom	35 (40 if naturally ventilated)
Science Lab/Prep	40 (45 if naturally ventilated)
ICT	40 (45 if naturally ventilated)
LRC	40 (45 if naturally ventilated)
Office	40 (45 if naturally ventilated)
Staff Workroom	40 (45 if naturally ventilated)

Table 1: BB 93 Criteria for Internal Ambient Noise Levels

- 2.7 BB93 also provides guidance for regular discrete noise events, stating:

"In order to protect students from regular discrete noise events, e.g aircraft or trains, indoor ambient noise levels should not exceed 60 dB LA1, 30mins. This is achieved by default for spaces with IANLs up to 40 dB LAeq, 30min, but requires assessment in spaces with higher IANL limits, e.g, 45 and 50 dB."

- 2.8 For 'summertime ventilation' (i.e. to prevent overheating) and 'intermittent boost' (i.e. for dilution of fumes), when provided by natural ventilation under local control of the teacher, BB 93 requires that internal noise levels are no greater than 55 dB LAeq, 30min. BB 93 also states that this relaxation does not apply to classrooms intended specifically for students with special hearing and communication needs.
- 2.9 In relation to summer overheating, BB 93 notes that *'the peak summertime condition is defined as the 200 hottest hours that occur using the design summer year (DSY) weather file during normal daily school operating hours including the summer holiday period.'*

MUGA Activity

- 2.10 In relation to the proposed MUGA, Wiltshire Council's Planning Consultation Guidance Note states the following in relation to multi-use all weather pitches:

"Multi Use Games Areas (MUGA) can include a combination of facilities such as football pitches, hockey pitches, basketball pitches, net ball pitches etc. and are usually community-based projects or within school premises. Guidance has been produced by Sport England on the acoustic implications and design considerations for artificial grass pitches which should be considered for MUGA proposals."

It is expected that a noise assessment will be provided in support of an application for a MUGA. Ball impact noise on kick boards and fencing is a significant factor as well as noise from whistles and people noise. Any assessment will need to consider these sources and include measurement of the existing noise environment and predicted impacts from the development on the amenity of noise-sensitive receptors."

Noise mitigation measures may include:

- *Ensuring kick boards are no more than 30cms in height from ground level.*
- *Acoustic treatment of kickboards.*
- *Ensuring that chain fencing is supported with rubber mounts.*
- *Restriction of hours.*
- *Siting MUGA's away from residential properties.*
- *Boundary treatment (noise barriers, fencing material or bunds).*
- *Management measures.*

MUGA proposals within the curtilage of a school may be treated differently where the site has already been used as a children's play area, particularly if the play area will not be used at night and there were no complaints."

- 2.11 Sports England advocates a noise level of 50 dB LAeq 1 hour from sports pitches when assessed at 1m from neighbouring residential properties and within associated gardens.

Guidance for Impulsive Sources (Ball Impacts)

- 2.12 Clay Target Shooting: Guidance on the Control of Noise, published by the Chartered Institute of Environmental Health, provides a methodology for the measurement and assessment of noise from clay target shooting. This methodology is considered an appropriate guide for assessing noise from the proposed development because shooting noise is impulsive in nature and therefore comparable with noise produced by balls rebounding or hitting the boundary fence. It is, however, deemed inappropriate to use this methodology for other types of noise associated with the use of the pitch such as talking or shouting. 24 Acoustics can confirm that in the absence of other published guidance, this standard has been used to assess a wide range of impulsive recreational sources other than shooting noise.
- 2.13 The guidance suggests that there is no fixed shooting noise level (SNL) at which annoyance starts to occur, however, annoyance is less likely to occur at a mean SNL below 55 dBA, and highly likely to occur at a mean SNL above 65 dBA. It is recognised that the likelihood of annoyance at levels within this range will depend upon local circumstances.

Building Services Plant

- 2.14 British Standard 4142:2014 'Methods for Rating Industrial and Commercial Sound, 2014' provides a method for rating the effects of industrial and commercial sound on residential areas. The standard advocates a comparison between the representative measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes, if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction should be applied.

3.0 NOISE MEASUREMENTS

- 3.1 Ambient noise measurements were undertaken at the site between 20th and 25th June 2025 to determine the prevailing noise levels in the area. Noise measurement equipment was located to the northern boundary of the site at a height of approximately 2m above local ground level. the monitoring location is shown in Figure 1.
- 3.2 The instrumentation was set up to monitor ambient, free-field noise levels and store data in 5-minute intervals, in terms of the overall A-weighted L_{eq} and L_{90} using fast time weighting. The following instrumentation was used during the survey:
- Rion NL32 Type 1 sound level meter;
 - Brüel & Kjær type 4231 acoustic calibrator.
- 3.3 Calibration of the equipment was checked before and on completion of the measurements and no drift was recorded. Noise measurements were made in accordance with BS 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use'.
- 3.4 Weather conditions during the measurements were variable, with periods of inclement weather. Measurements affected by meteorological conditions have been removed from the analysis.
- 3.5 Noise sources in the area include distant road and occasional distant aircraft.
- 3.6 Measurement results are presented graphically in Appendix B.

4.0 NOISE ASSESSMENT

Proposed Teaching Building - Internal Noise Levels

- 4.1 The average ambient noise levels were in the order of 47 to 50 $L_{Aeq, 30min}$ during school hours. This level is considered representative of the proposed new building façades and will be used as the ambient design level.
- 4.2 In 24 Acoustics' experience, the attenuation provided by an open window, in terms of the difference between an external and internal noise level, is approximately 18 dBA for classrooms that meet the reverberation requirements of BB 93.
- 4.3 Applying this reduction to the measured external noise levels gives predicted internal noise levels in the order of 29 - 32 dB $L_{Aeq, 30 min}$, which would achieve the BB 93 internal ambient noise level requirements for naturally ventilated teaching rooms.
- 4.4 On this basis, a natural or hybrid ventilation strategy that relies on open windows would be acceptable for the proposed school building.
- 4.5 The acoustic performance of the ventilation systems, whether passive, hybrid or mechanical, must be appropriately specified.

Plant Noise

- 4.6 The prevailing typical background noise levels measured on site were as follows:
- 39 dB $L_{A90, 1 \text{ hour}}$ daytime (07:00 to 19:00);
 - 35 dB $L_{A90, 1 \text{ hour}}$ evening (19:00 – 23:00);
 - 32 dB $L_{A90, 15 \text{ min}}$ night-time (23:00 – 07:00).
- 4.7 24 Acoustics considered the use of the typical (average minus one standard deviation) background noise level as a representative value.
- 4.8 Plant noise levels shall be assessed following local policy guidance and BS 4142: 2014.

MUGA- Impulsive Noise Levels

- 4.9 The mean Shooting Noise Level (SNL) would normally be determined from the logarithmic average of the 25 highest noise levels measured over a 30-minute period from the instantaneous A-weighted, and fast time weighted sound pressure level. In the absence of this specific data, it is considered that the typical maximum fast-weighted values measured, from library data, will be approximately equal to the SNL.
- 4.10 In order to reduce noise from impulsive ball events, it is recommended to provide a heavy gauge mesh fence around the MUGA, as per the photograph in Appendix C.
- 4.11 Source noise measurements were undertaken with heavy gauge mesh fencing installed at a MUGA at South Downs College and noise levels from ball impact events were in the order of 65 dB $L_{Amax,f}$ at approximately 24m from the centre of the pitch.
- 4.12 The noise level from impulsive ball events, with heavy gauge mesh fencing, has been calculated to the nearest residential locations (free-field location at a height of 1.5m) and is shown in Table 3. The calculations have included losses due to partial screening, provided by the existing and proposed school buildings, and distance between the residential properties and the centre of the proposed MUGA.

Receptor	Predicted SNL, dBA
Nearest properties to the east of site (approx. 200m)	46

Table 3 - Predicted Impulsive Noise Levels from MUGA.

- 4.13 The calculated SNL outside the nearest properties, is significantly lower than the level at which annoyance is highly likely to occur (65 dBA) and is therefore acceptable.

MUGA - Ambient Noise Levels

- 4.14 Calculations have been undertaken to predict noise levels from the use of the MUGA at the nearest residential properties. The calculations have used the following source noise levels from external sports/games activity, based on data obtained by 24 Acoustics at a MUGA in Winchester:

- MUGA Activity Sound power level of 89 dB L_{Aeq} .

- 4.15 The predicted external noise levels at first floor level of the nearest receptor location are summarised in Table 4 and include corrections for distance and partial screening.

Receptor	Predicted External Noise Level
Nearest properties to the east of site (approx. 200m)	34

Table 4 - Predicted External Noise Levels from MUGA.

- 4.16 The predicted MUGA noise levels are significantly below the Sports England Guideline noise limit of 50 dB $L_{Aeq, 1 \text{ hour}}$ and therefore acceptable.
- 4.17 Additionally, the predicted noise levels are significantly below the measured typical daytime and evening ambient noise levels, representative of the closest receptor to the proposed MUGA as shown below:
- 48 dB $L_{Aeq, 30 \text{ min}}$ daytime (07:00 to 19:00);
 - 43 dB $L_{Aeq, 30 \text{ min}}$ evening (19:00 to 22:00).
- 4.18 It is relevant to note that the majority of neighbouring residential properties will also be screened from the MUGA by existing and proposed buildings.
- 4.19 Based on the above and the context of the existing use of the school playing fields, noise levels from proposed MUGA activities at the nearest residential properties will be acceptable.

5.0 SUMMARY

- 5.1 A survey of external noise levels has been undertaken at the site of the proposed new teaching building at Saram Academy, Salisbury.
- 5.2 The assessment concludes that, based on the measured ambient noise levels, a natural or hybrid ventilation strategy that relies on open windows would be appropriate, to achieve the BB 93 requirement for ambient noise levels in the proposed school building.
- 5.3 Background noise levels have been outlined to inform future assessments for all new building services plant associated with the scheme.
- 5.4 An assessment of noise from the proposed new MUGA has been undertaken. Calculations demonstrate that noise from proposed MUGA use will be acceptable at the nearest residential properties.

I trust the above is in order. Please call if you have any queries.

Yours sincerely
For 24 Acoustics Ltd

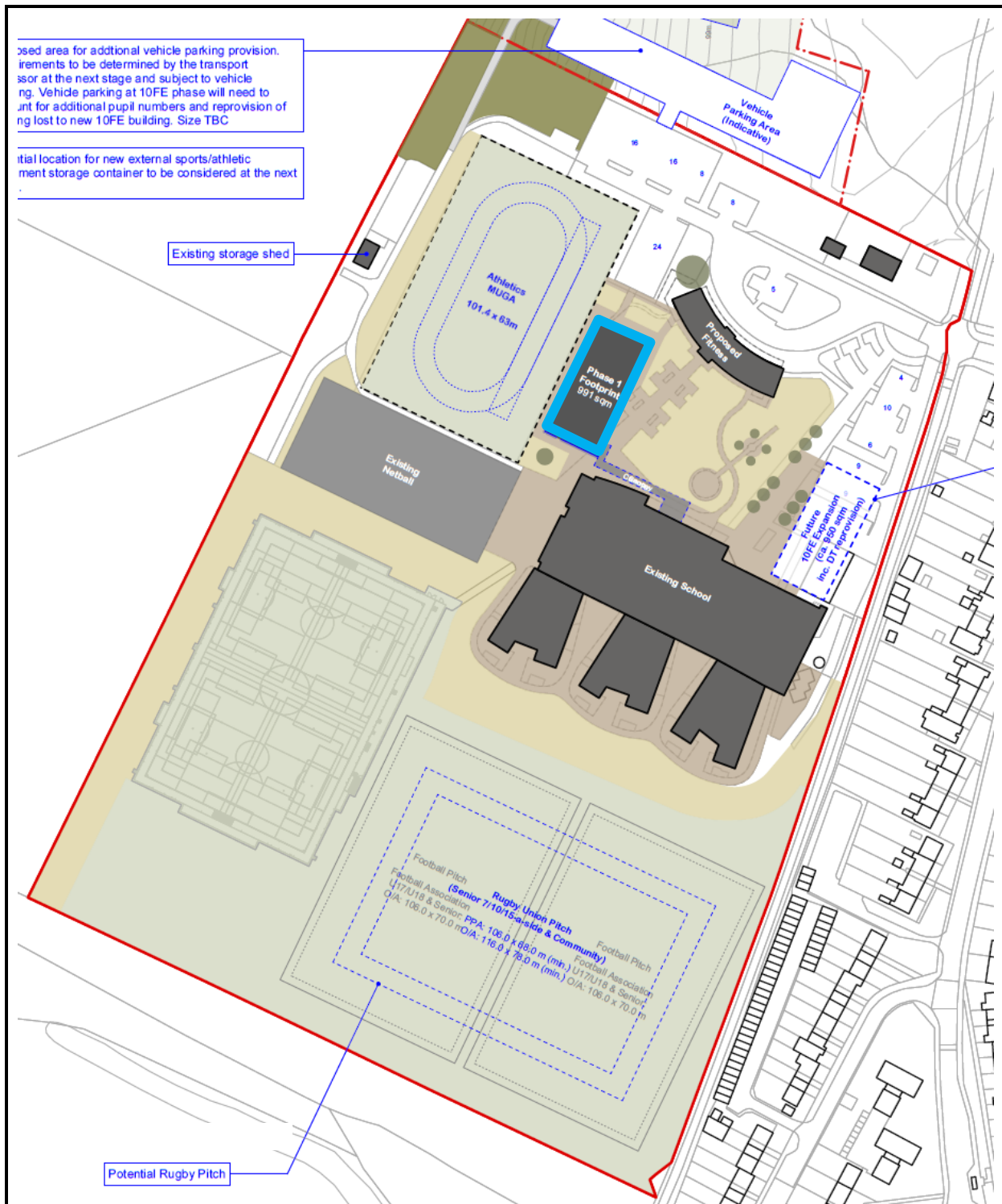
Kiel Edwards BSc MIOA
Senior Consultant



 Measurement Location

 Residential Properties

Project: Sarum Academy, Salisbury	Title: Site overview and noise measurement location		
DWG No: Figure 1	Scale: N.T.S.	Rev: 0	
Date: August 2025	Drawn By: KE	Job No: 11145	



 Phase 1 – Proposed New Teaching Building

Project: Sarum Academy, Salisbury	Title: Proposed site plan and nearest properties		 24Acoustics
DWG No: Figure 2	Scale: N.T.S.	Rev: 0	
Date: August 2025	Drawn By: KE	Job No: 11145	

APPENDIX A: ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dBA corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

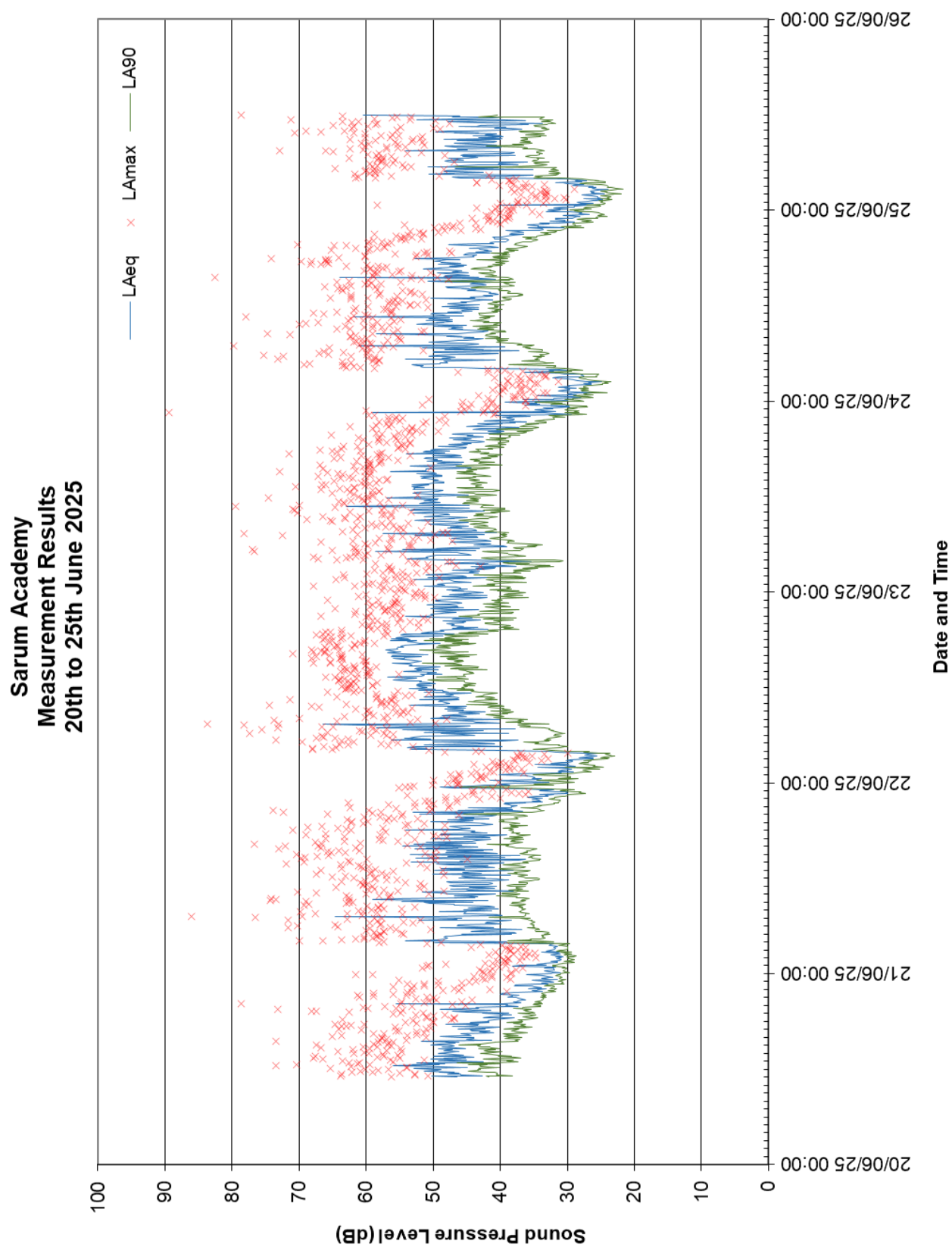
iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B: ENVIRONMENTAL NOISE MEASUREMENTS



APPENDIX C: PHOTOGRAPH OF HEAVY GAUGE MESH FENCE

