

Heyford Park – Primary School Bicester

Environmental Noise Survey Report

23195/ENS2

3 November 2021

For:
Dorchester Living
Heyford Park House
Heyford Park
Camp Road
OX25 5HD



Hann Tucker Associates

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Document Control

Rev	Date	Comment	Prepared by	Authorised by
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Contents		Page
1.0	Introduction	1
2.0	Objectives	1
3.0	Counties Requirement	1
4.0	Site Description	2
5.0	Methodology	4
6.0	Results	6
7.0	Discussion	7
8.0	Conclusions	8

Attachments

Appendix A – Acoustic Terminology



1.0 Introduction

A new educational site is proposed at Heyford Park.

Hann Tucker Associates have been commissioned to undertake an environmental noise survey in order to assess the existing noise level around the proposed site boundaries in line with the Counties requirements as detailed in Section 3.0.

This report presents the survey methodology and findings.

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

2.0 Objectives

To establish, by means of an unmanned 24-hour survey the existing L_{max} , L_{90} , and L_{eq} environmental road, rail, and air traffic noise levels at secure and accessible on-site positions, using fully computerised noise monitoring equipment.

To prepare a report presenting our survey findings in line with the Counties requirements.

3.0 Counties Requirement

We understand the Counties requirements are as follows:

“Existing and predicted noise levels at the part of the Primary School Site where the buildings are to be sited, the proposed play areas, the proposed games pitch and at the boundaries of the Primary School Site. This survey shall be undertaken by a professional who has attained the Institute of Acoustics certificate of competence in environmental noise measurement. The contract for such survey shall accord with industry standards for contracts for noise assessment surveys and a certified copy will be supplied with the survey report.

The school and playing fields need to be situated in a quiet part of the development. As a rule of thumb the noise levels on unoccupied playing fields used for teaching sport should not exceed 50 dB LAeq,30min at the site perimeter

Provide details of the proposed mitigation strategy to ensure that the noise level on the boundary of the school site is 50 dB LAeq,30min.”



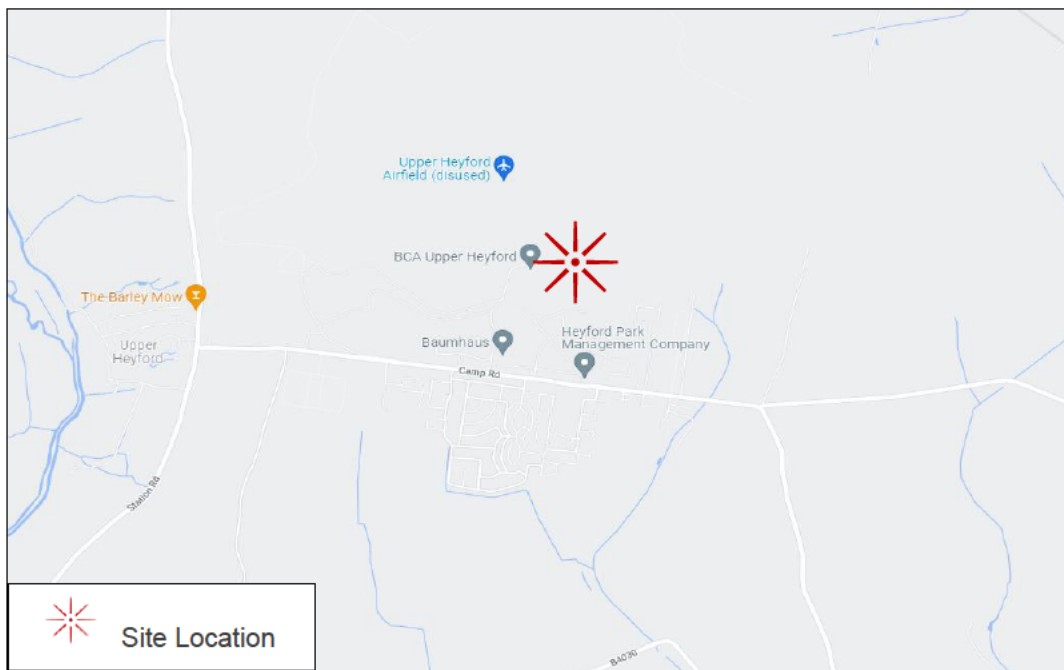
4.0 Site Description

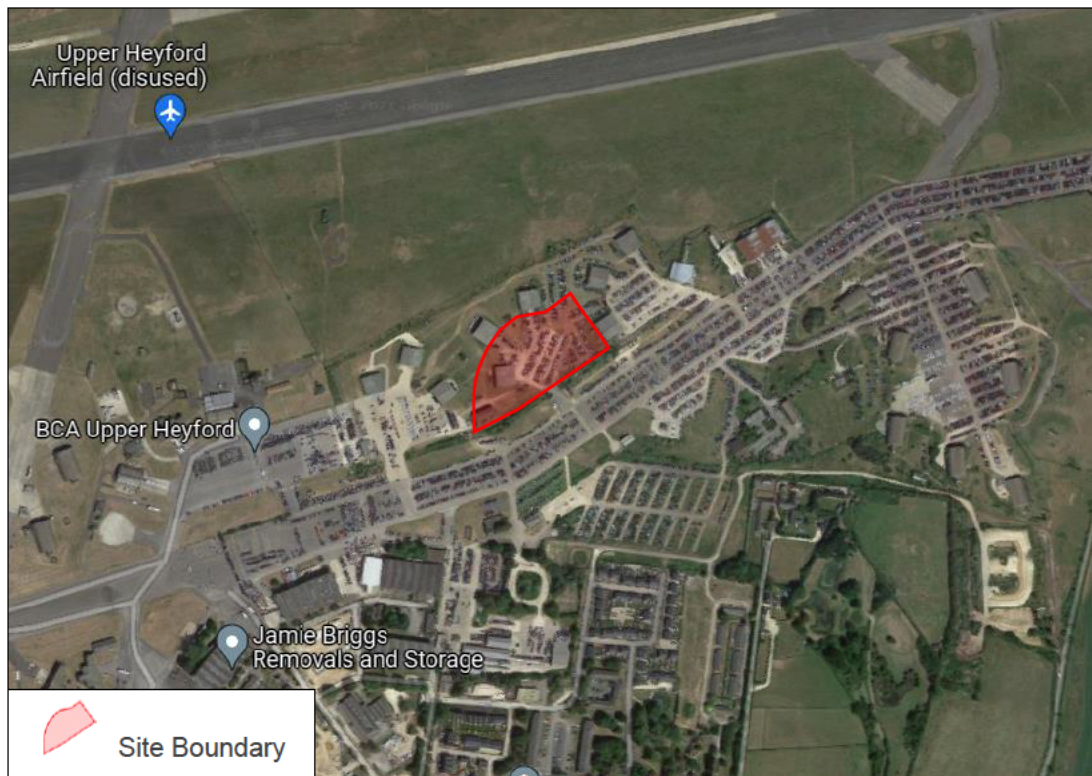
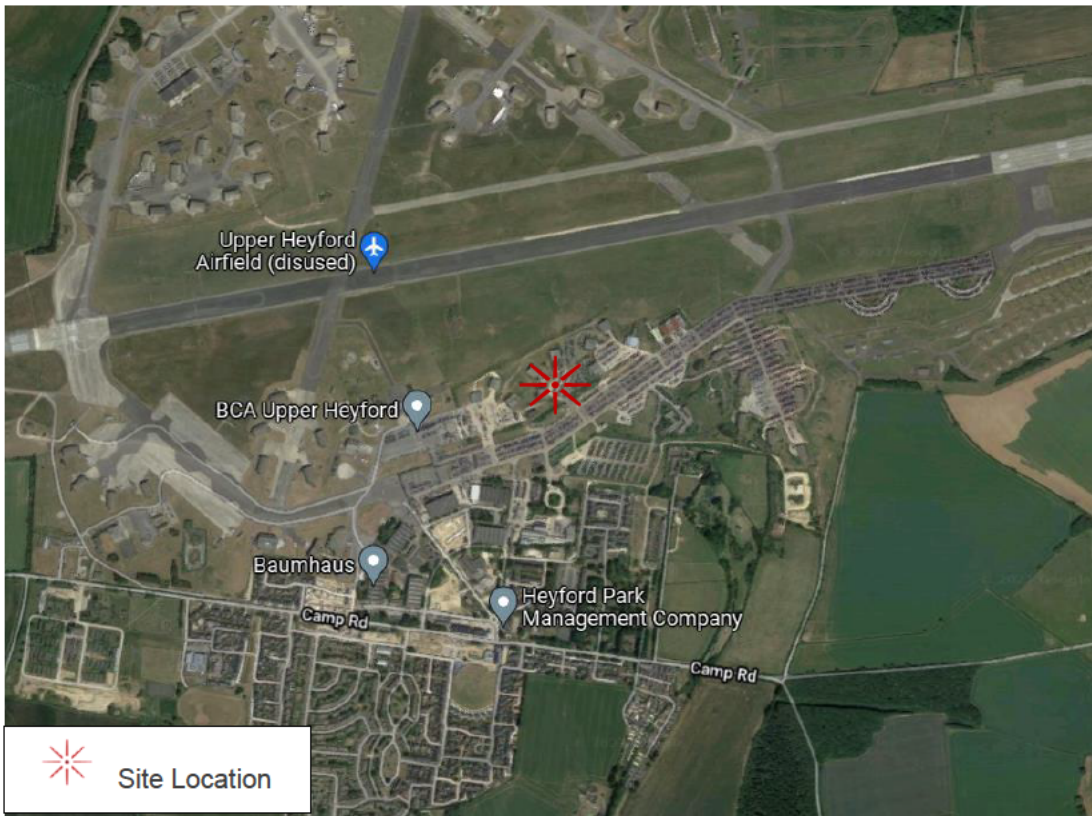
The site falls within the jurisdiction of Cherwell District Council.

The site is situated within a disused airfield compound, to the north of Camp Road, Bicester. The site is currently tenanted by BCA (British Car Auctions).

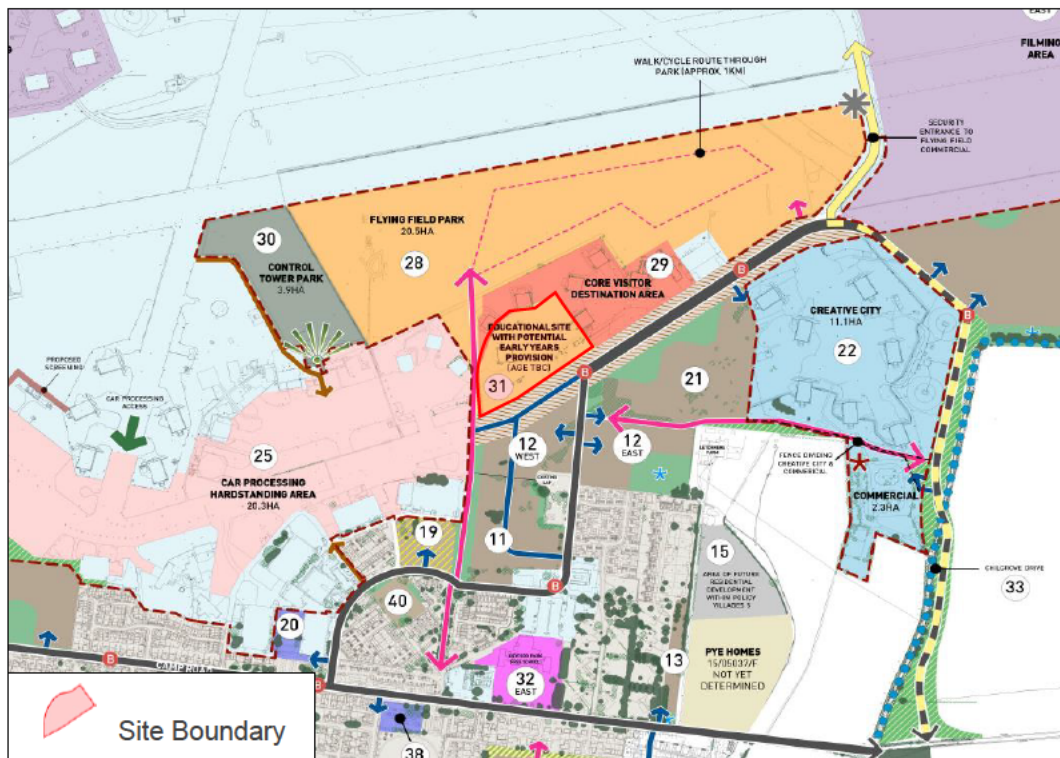
To the north of the site is a disused airstrip used by BCA for testing vehicles, and to the south is a network of BCA's internal traffic and parked vehicles.

The site location and boundary are shown in the Location Maps and Site Plan below.





Location Map (Map Data ©2021 Google)



Proposed Site Plan (Drawing ref. P16-0631_08 sheet number 1. Provided by Dorchester Group)

5.0 Methodology

The survey was undertaken by Kyungmin Kim, Assistant Consultant.

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 11:00 hours on Wednesday 27 October 2021 to 11:00 hours on Thursday 28 October 2021.

During the periods we were on site the wind conditions were moderate and sky was generally clear. We understand that generally throughout the survey period the weather conditions were similar. These conditions are considered suitable for obtaining representative measurement results.

Measurements were taken continuously of the A-weighted (dBA) L_{90} , L_{eq} and L_{max} sound pressure levels over 15-minute periods.

5.2 Measurement Positions

The noise level measurements were undertaken at 2No. positions as described in the table below.



Position No	Description
1	Microphone was attached to an extended pole and tied to a barrier, which was 3m from the disused vehicle shelter. The microphone was facing southwest, approximately 3.5m above ground level, and 1m to the nearest reflective surface.
2	Microphone was attached to an extended pole and tied to a barrier, which was 3m from the disused vehicle shelter. The microphone was facing northeast, approximately 3.5m above ground level, and 1m to the nearest reflective surface.

The positions are shown on the plan below.



Plan Showing Unmanned Measurement Positions (Map Data ©2021 Google)

The instrumentation used during the survey is presented in the table below:



Description	Manufacturer	Type	Serial Number	Calibration
Position 1 Type 1 ½" Condenser Microphone	PCB	377B02	106753	Calibration on 20/10/2021
Position 1 Preamp	Larson Davis	PRM902	880	Calibration on 20/10/2021
Position 1 Type 1 Data Logging Sound Level Meter	Larson Davis	824	3839	Calibration on 20/10/2021
Position 2 Type 1 ½" Condenser Microphone	PCB	377B02	107427	Calibration on 28/07/2020
Position 2 Preamp	Larson Davis	PRM902	4154	Calibration on 28/07/2020
Position 2 Type 1 Data Logging Sound Level Meter	Larson Davis	824	3155	Calibration on 28/07/2020
Type 1 Calibrator	Bruel & Kjaer	4231	2205779	Calibration on 17/09/2021

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred (no more than 0.1 dB).

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. Each microphone was fitted with a windshield.

6.0 Results

The results have been plotted on Time History Graphs 23195/TH1 to 23195/TH2 enclosed presenting the 30-minute A-weighted (dBA) L_{90} , L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

Due to the nature of the survey, i.e., unmanned, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However, at the beginning and end of the survey period the dominant noise sources were noted to be vehicle noise, vehicle maintenance noise from adjacent garages, and vehicle testing from across the airfield.

The following table presents the measured $L_{Aeq,T}$ noise levels during the survey:



Position	Measured $L_{Aeq,T}$ Noise Level (dB re 2×10^{-5} Pa)	
	Daytime (07:00 – 23:00) Hours, $L_{Aeq,16hr}$	Night-Time (23:00 – 07:00) Hours, $L_{Aeq,8hr}$
1	48	46
2	51	44

*The level is as measured at the measurement position and include local reflections.

The following table presents the lowest measured L_{A90} background noise levels during the survey:

Position	Lowest Measured L_{A90} Background Noise Level (dB re 2×10^{-5} Pa)		
	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours	24 Hours
1	36	34	34
2	38	37	37

*The level is as measured at the measurement position and include local reflections.

The following table presents the modal average of the measured L_{A90} background noise levels during the survey:

Position	Modal Average Measured L_{A90} Background Noise Level (dB re 2×10^{-5} Pa)		
	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours	24 Hours
1	43	36	36
2	43	37	37

*The level is as measured at the measurement position and include local reflections.

7.0 Discussion

We understand the Counties requirements are as follows:

“Existing and predicted noise levels at the part of the Primary School Site where the buildings are to be sited, the proposed play areas, the proposed games pitch and at the boundaries of the Primary School Site. This survey shall be undertaken by a professional who has attained the Institute of Acoustics certificate of competence in environmental noise measurement. The contract for such survey shall accord with industry standards for contracts for noise assessment surveys and a certified copy will be supplied with the survey report.

The school and playing fields need to be situated in a quiet part of the development. As a rule of thumb the noise levels on unoccupied playing fields used for teaching sport should not exceed 50 dB $L_{Aeq,30min}$ at the site perimeter

Provide details of the proposed mitigation strategy to ensure that the noise level on the



boundary of the school site is 50 dB LAeq,30min.”

Upon our assessment of the measured 30-minute A-weighted (dBA) L_{Aeq} results shown on Time History Graphs 23195/TH1 to 23195/TH2 enclosed, the prevailing noise on the boundary of the proposed school site generally falls below the Counties required 50 dB $L_{Aeq,30min}$, with few exceptions. Due to the nature of the survey, i.e., unmanned, it is not possible to accurately identify the source contributing to the events where the $L_{Aeq,30min}$ levels exceed 50 dBA. However, as observed at the beginning and the end of the survey, the nearby vehicle processing operation being carried out by BCA most likely have contributed to the noise levels during these events. To add, the land adjacent to the proposed school site is proposed to be used as *Core Visitor Destination Area* according to the composite parameter plan provided by Dorchester Group.

In the future, we anticipate that the noise levels around the boundary of the proposed site will be lower than what has been measured, given that the site adjacent to measurement Position 1 will be the edge of the site rather than the centre, and the site adjacent to measurement Position 2 will no longer be used for vehicle processing by BCA.

We also anticipate, if new buildings are constructed around the proposed school site, these will provide barrier attenuation to the noise perceived within the school ground which will also lower the prevailing noise level.

8.0 Conclusions

An environmental noise survey has been undertaken in order to establish the currently prevailing noise levels.

An assessment has been carried out to determine the prevailing noise levels at the proposed school site.

Our assessment indicates the measured noise level at the boundary of the proposed school ground provide a positive indication the prevailing noise around the proposed site should be in line with the Counties requirements in Section 3.0.

Appendix A

The acoustic terms used in this report are defined as follows:

dB	Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).
dBA	<p>The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The _A subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted</p> <p>It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.</p>
L _{90,T}	L ₉₀ is the noise level exceeded for 90% of the period <i>T</i> (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.
L _{eq,T}	L _{eq,T} is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, <i>T</i> .
L _{max}	L _{max} is the maximum sound pressure level recorded over the period stated. L _{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L _{eq} noise level.
L _p	Sound Pressure Level (SPL) is the sound pressure relative to a standard reference pressure of 2 x 10 ⁻⁵ Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).
L _w	Sound Power Level (SWL) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10 ⁻¹² W).

Upper Heyford School

Position 1

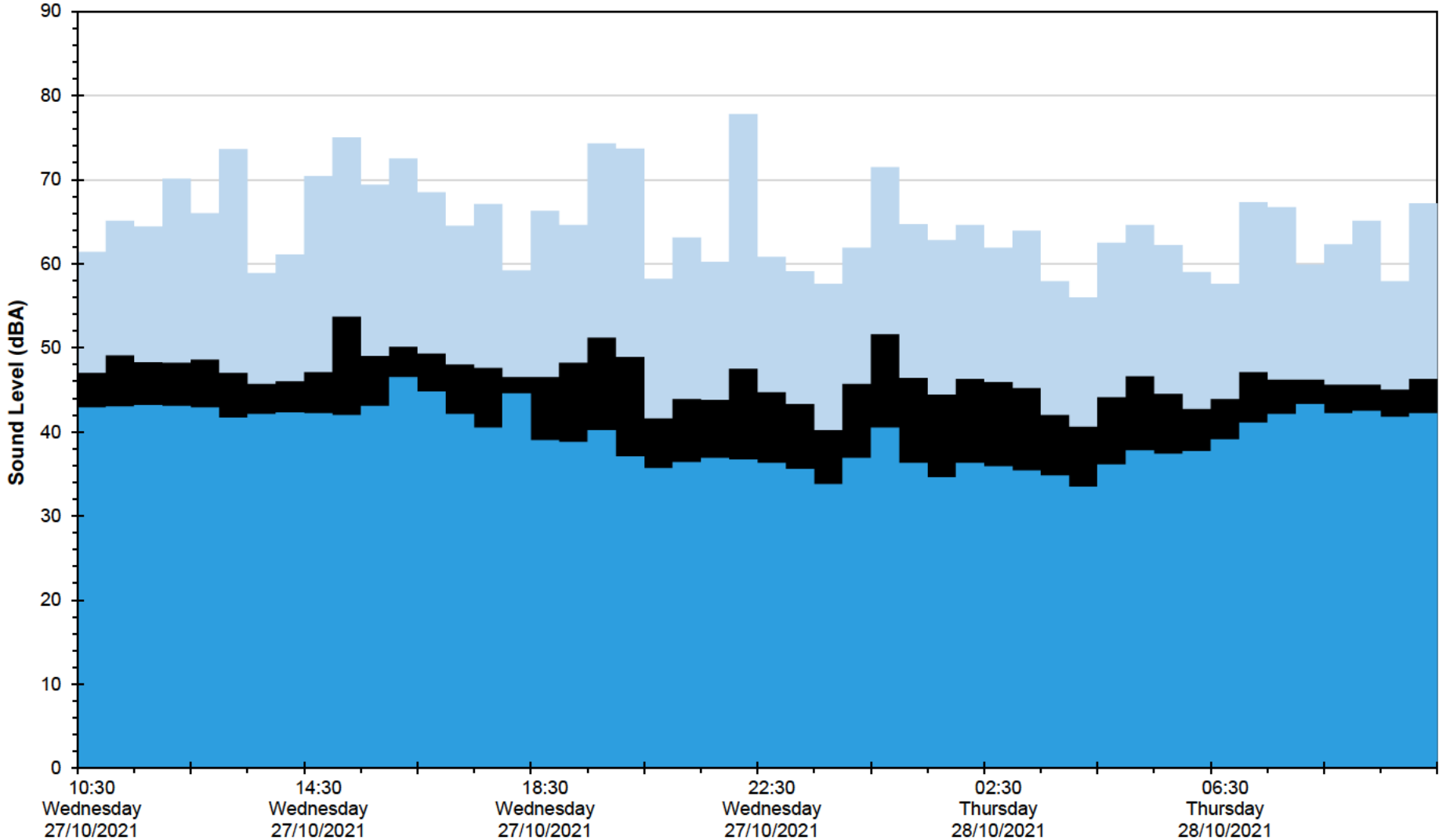
L_{eq} , L_{max} and L_{90} Noise Levels

Wednesday 27 October 2021 to Thursday 28 October 2021

■ L_{max}

■ L_{eq}

■ L_{90}



Date and Time

23195/TH1

Upper Heyford School

Position 2

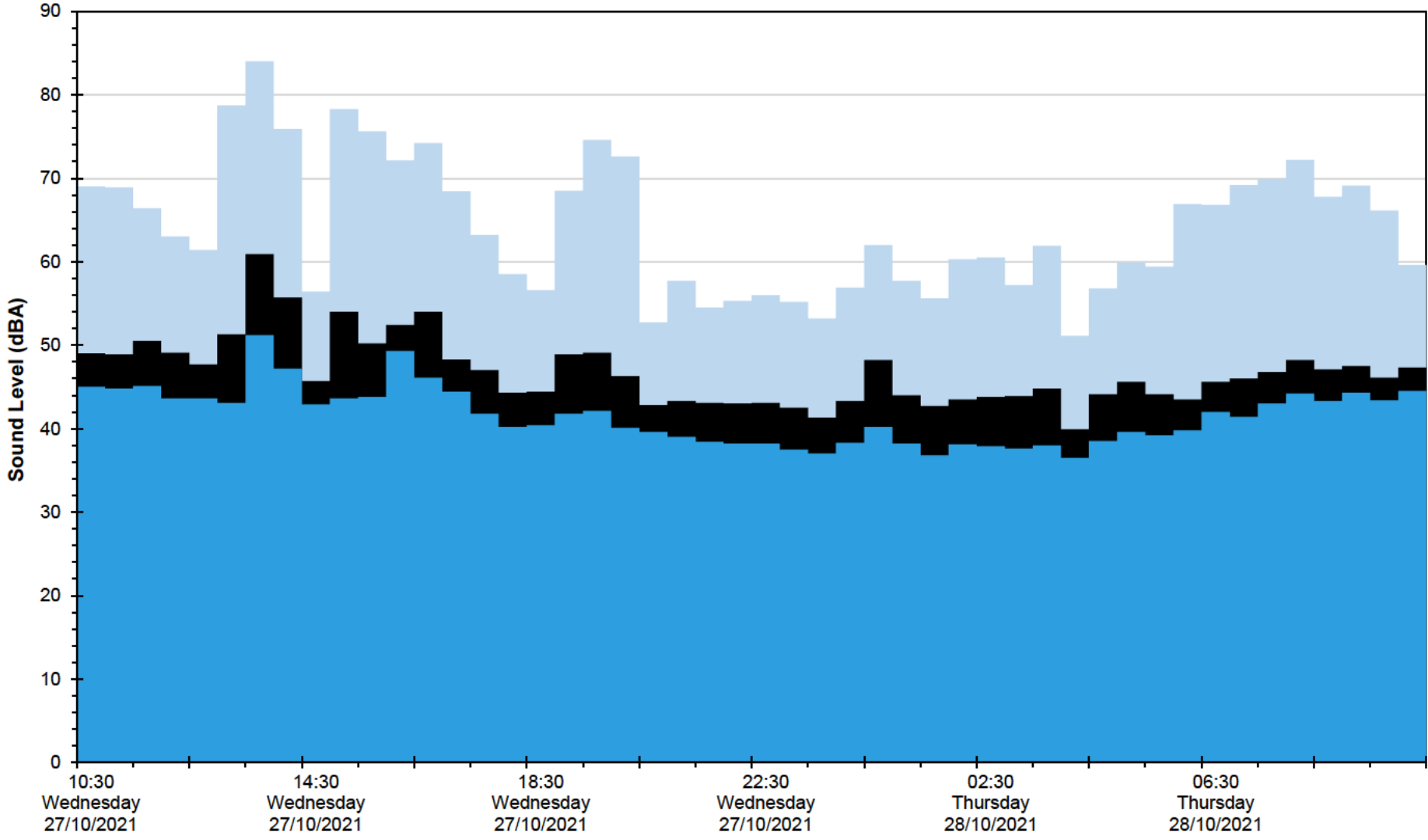
L_{eq} , L_{max} and L_{90} Noise Levels

Wednesday 27 October 2021 to Thursday 28 October 2021

■ L_{max}

■ L_{eq}

■ L_{90}



Date and Time

23195/TH2