



PROJECT TECHNICAL MEMORANDUM

JOB TITLE : Heyford Park
PROJECT NO : 23195
DATE : 12 April 2017
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RE: VILLAGE CENTRE SOUTH

- 1.0 The new village centre is proposed to comprise several commercial activities including restaurants, bars and a hotel. Whilst these commercial activities are provided for the benefit of local residents it is recognised there is potential for the activities to produce noise which could have an adverse impact on local residents.

The planning permission for the development includes the following condition.

Village Centre South – 16/01000/F – Condition 8

No development shall take place until a noise assessment survey of the site has been carried out and a scheme for protecting residential premises from noise from the commercial development is submitted to and approved in writing by the Local Planning Authority. All works that form part of the approved scheme shall be completed before the development is brought into use.

The following document and attachments sets out the noise control strategy for controlling noise impact from the commercial activities within the new village centre south upon neighbouring residential property.

- 2.0 The attached draft form of words for inclusion in Tenants Handbook regarding acoustics within Appendix A details our recommendation for controlling commercial noise.

It is recommended all future commercial tenants comply with the recommendations within Appendix A, to prevent adverse noise impact upon residential neighbours.

See attached Appendix B for details of existing background noise levels within the attached Environmental Noise Survey Report 23195/ENS1.



3.0 The most significant sources of noise are likely to be external plant and noise from deliveries/servicing. Prior to commencement of the development actual tenants proposals are not available for assessment. However, the proposed Landlords conditions in Appendix A detail how future noise emissions will be controlled.

To achieve the Landlords criteria external plant will be suitably located and attenuated, using a combination of screen enclosures and induct attenuators as necessary.

The Table 3.0 below summarise the typical noise at 3m from rigid delivery lorry with rear tail lift and goods unloaded on roll pallets/cages. This form of delivery is expected to produce the highest noise levels, delivery from smaller vehicles should produce lower noise levels.

Table 3.1

Source Description	Sound Pressure Level SEL (dB) at 3 metres for Single Event
Lorry driving in and stopping	84.7
Lorry door slam	65.7
lowering tail lift	65.3
Raising tail lift	72.7
lorry shutter opening and removing support bars	77.6
moving roll cages inside lorry	77.3
loading tail lift with two roll cages	74.4
lowering tail lift	64.2
lowering tail lift ramp and wheeling 2 roll cages off into store	89.3
wheeling four empty roll cages from inside the store to outside	90.7
loading empty roll cages onto tail lift	77.3
Raising tail lift	72.7
Moving empty roll cages from tail lift into the lorry and securing support bars	72.6
Closing lorry shutter	71.1
lowering tail lift	64.2
Raising tail lift	72.7
Door slam	75.0
Lorry driving away	82.2
= 59dB L_{Aeq,1hr}	

Noise levels from the delivery activity above have been assessed in accordance with BS4142:2014 in Table 3.2 below, based upon a distance of 20m to the nearest residential property.



Table 3.2

Specific Sound Level @ 20m	37dB LAeq,1hr
Acoustic feature correction	+3dB (impulsivity)
Rating level	40dB
Typical daytime background level	38dB LA90
Excess over background level	+2dB

The above demonstrates noise impact from delivery activities based upon a large delivery truck with roll caged goods would have a worst case impact of +2dB. This impact is considered to be low in the context of the number of daily deliveries likely to be required and considering the Village Centre is for the benefit of local residents.

Yours sincerely

John Gibbs
for HANN TUCKER ASSOCIATES

APPENDIX A



HEYFORD PARK

DRAFT FORM OF WORDS FOR INCLUSION IN TENANT'S HANDBOOK REGARDING ACOUSTICS

X ACOUSTICS

All designs, works, materials, installations and tolerances are to be fully in accordance with the following:

- Building Regulations
- British Standard BS 8233 "*Guidance on sound insulation and noise reduction for buildings*".
- British Standard BS 4142 "*Methods for rating and assessing industrial and commercial sound*".
- CIBSE Guides issued by the Chartered Institution of Building Services Engineers.
- Planning Conditions and other requirements of the Local Authority.
- Statutory noise nuisance legislation.
- Manufacturer's installation instructions, particularly those relating to acoustic matters.
- Other relevant British Standards and Codes of Practice.

Where more than one standard is applicable, the more onerous shall be achieved.

Any relaxation of the acoustic criteria described herein must be agreed in writing by the Landlord or his Acoustic Consultant.

Tenants are warned that in some cases the acoustic criteria contained herein will be difficult to achieve. Tenants are advised to engage an acoustic consultant at an early stage to identify and address the implications of these acoustic criteria.



X.2 Atmospheric Noise Emissions

Tenants shall control noise from all of their sources (including mechanical services, amplified speech/music and activities) such that the total noise emissions from the development:

- a) Do not cause a statutory noise nuisance.
- b) Comply with the planning conditions and other requirements of the Local Authority.
- c) When measured in terms of $L_{Aeq(5minutes)}$ they are at least the following amount below the prevailing background $L_{A90(15minutes)}$ noise level at any time:

Location	Assessment Location	Criterion $L_{Aeq(5minutes)}$		
		All Plant (i.e. combined)	Individual Tonal or Intermittent mechanical service, amplified speech/music and activities.	Emergency Plant Tested up to 1hour/week between 09:00 and 17:00 hours Monday to Friday or 09:00 to 13:00 Saturday
Residential	1m outside any openable noise sensitive window	$L_{A90} -5dB$	$L_{A90} -10dB$	As per statutory requirements. See above
Office	1m outside any openable noise sensitive window	52dB or $L_{A90} -3dB$, whichever is higher	50dB or $L_{A90} -5dB$, whichever is higher	60dB or $L_{A90} +5dB$, whichever is higher
Pavement	1m from façade, 1.8m above ground level	55dB or $L_{A90} +5dB$, whichever is higher		60dB or $L_{A90} +10dB$, whichever is higher

Note: Planning condition may be more onerous than above criteria.

All of the above criteria relate to the total noise levels from all sources within the development. Tenants shall therefore make appropriate allowances for contributing noise from all sources within the development. In the case of noise from amplified music and activities this shall be calculated according to the tenant’s demise area relative to the total relevant tenant areas, unless otherwise agreed. In the case of mechanical services this shall be calculated on a pro-rata basis according to the tenant’s plant/louvre area relative to the total plant/louvre area, unless otherwise agreed.

The tenant shall employ an acoustic consultant to assess their design and shall make a full submittal of the acoustic performance of the proposed installation for landlord approval prior to commencing installation.



X.3 Noise and Vibration Transfer to Internal Areas

Tenants shall control noise and vibration transfer from all of their sources (including mechanical services, amplified speech/music and activities) to internal areas beyond their demise such that:

- a) It does not cause a nuisance, disturbance or annoyance.
- b) It does not exceed any acoustic criteria specifically agreed between the Landlord and other Tenants.
- c) It does not exceed the following Noise Rating (NR) levels.

Area	Criteria for Mechanical Services L_{eq}	Criteria for Music & Activities $L_{max(fast)}$
Residential	At least 5dB below the minimum L_{90} in each octave band across the audible frequency range.	
Offices/Management Suite	NR30	NR35
Retail Units, Restaurants, Bars, Circulation Areas, Landlord's Areas and Other Occupied Areas	NR35	NR40
Car Park ,service yards/Loading bays	NR50	NR55

- d) It does not give rise to audible tones or rattles.
- e) Vibration transfer from M&E services to internal occupied areas shall not exceed $0.01m.s^{-2}$ peak based on the W_b weighting as defined within BS 6472-1: 2008 "Guide to Evaluation of Human Exposure to Vibration in Buildings".

Criterion (a) is ultimately the overriding requirement. Provided (a) is complied with in full, some relaxation of (b) (c) (d) and (e) may be permissible, but only at the Landlord's discretion. Compliance with (b) (c) (d) and (e) would however, in most cases, be considered as evidence tending to demonstrate compliance with a).

X.4 Emergency Plant

Relaxation of the above criteria may be permissible for emergency or standby plant, subject to agreement in writing with the Landlord or his Acoustic Consultant.



X.5 Delivery & Servicing Noise

The BS4142:2014 rating level of noise associated with servicing and deliveries to commercial units would not exceed 5dB above the background noise level at any permitted time of operation.

A delivery and servicing management plan should be submitted to and approved by the landlord.

APPENDIX B

Heyford Park Bicester

Environmental Noise Survey Report

23195/ENS1

27 March 2017

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



Hann Tucker Associates


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Environmental Noise Survey Report 23195/ENS1

Document Control

Rev	Date	Comment	Prepared by	Authorised by
0	27/03/2017	-	<i>Ryan Fernandez</i>	
			Ryan Fernandez Technical Assistant	John Gibbs Director MIOA, MSEE, CEnv

This report has been prepared by Hann Tucker Associates Limited (HTA) with all reasonable skill, care and diligence in accordance with generally accepted acoustic consultancy principles and the purposes and terms agreed between HTA and our Client. Any information provided by third parties and referred to herein may not have been checked or verified by HTA unless expressly stated otherwise. This document contains confidential and commercially sensitive information and shall not be disclosed to third parties. Any third party relies upon this document at their own risk.



Environmental Noise Survey Report 23195/ENS1

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Attachments

Appendix A – Acoustic Terminology



1.0 Introduction

Hann Tucker Associates have been commissioned to undertake an environmental noise survey at Heyford Park.

This reports presents the survey methodology and findings.

2.0 Objectives

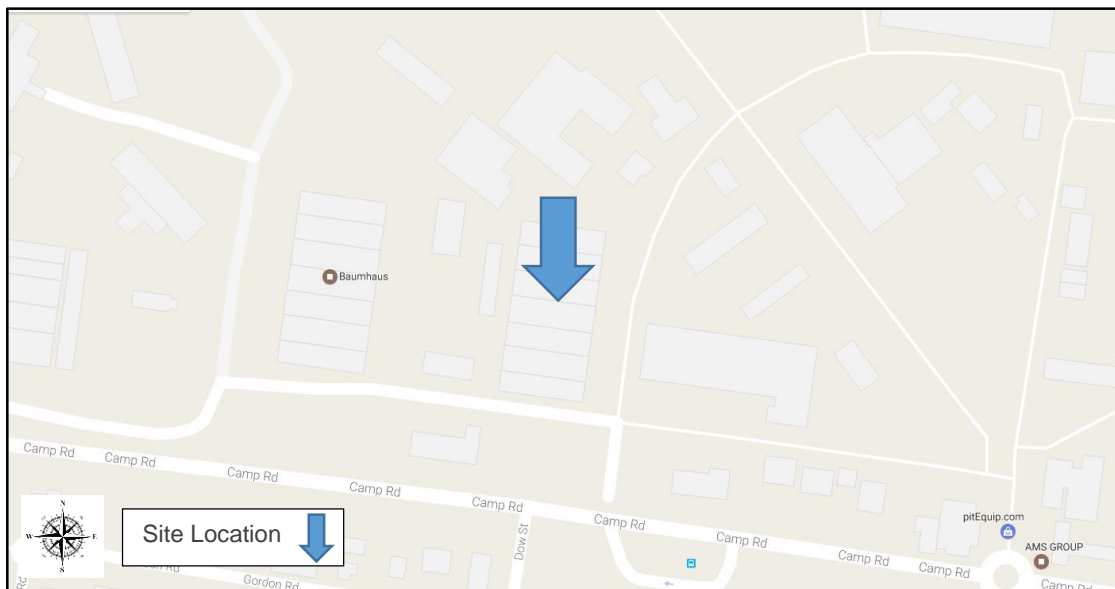
To establish, by means of detailed 24 hour daytime and night-time fully automated environmental noise monitoring, the existing A-weighted (dBA) L_{90} , L_{eq} and L_{max} environmental road, rail and air traffic noise levels at up to three secure and accessible on-site positions, using fully computerised unmanned monitoring equipment.

To prepare a report presenting our survey findings.

3.0 Site Description

3.1 Location

The site is located at Camp Road, Bicester. The location is shown in the Location Map below.



Location Map (Map Data ©2017 Google.com)

The site falls within the jurisdiction of Cherwell District Council.



3.2 Description

The site comprises a mixture of commercial and residential properties. To its west north and east lie commercial buildings and Camp Road lies to the south of the site, with residential properties to the south of Camp Road.

The site is shown in the Site Plan below.



Site Plan (Imagery © 2017 DigitalGlobe, Getmapping plc, Infoterra Ltd & Bluesky, Map Data © 2017 Google.)

4.0 Acoustic Terminology

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

5.0 Methodology

The survey was undertaken by John Gibbs MIOA, MSEE, CEnv.

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 11:00 hours on Tuesday 31 January to 11:00 hours on Wednesday 1 February.



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

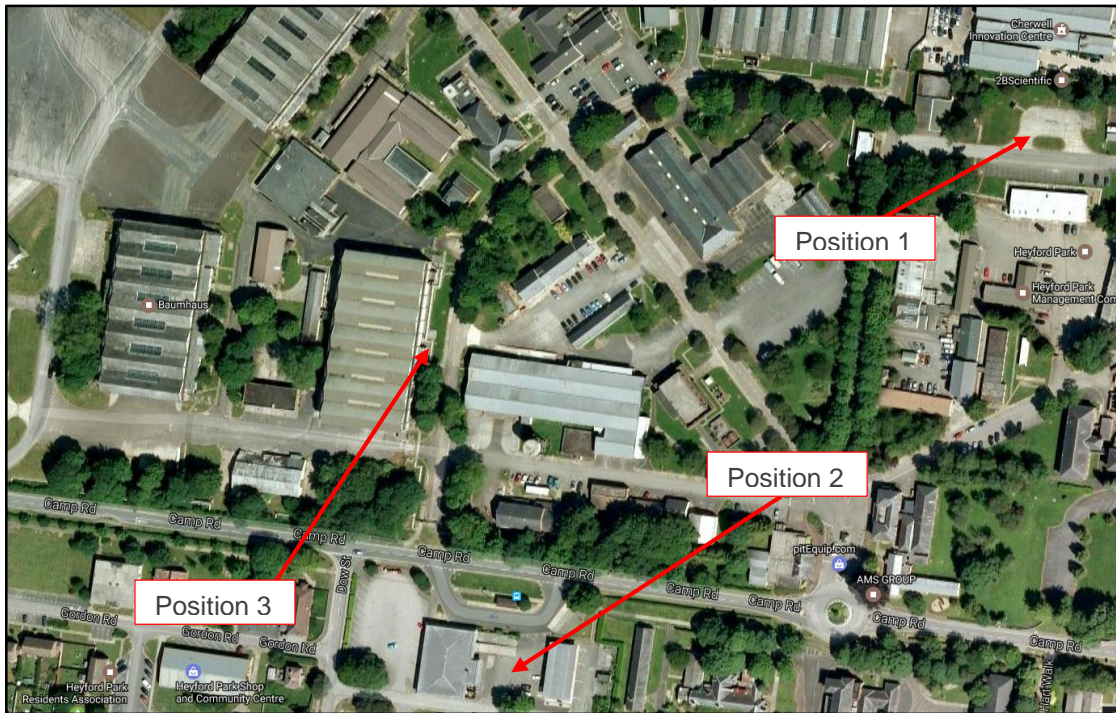
Measurements were taken continuously of the A-weighted (dBA) L_{90} , L_{eq} and L_{max} sound pressure levels over 15 minute periods.

5.2 Measurement Position(s)

The noise level measurements were undertaken at 3No. Positions as described in the table below.

Position No	Description
1	Placed on a tripod adjacent to the building.
2	Placed on a tripod adjacent to the building.
3	Placed on a tripod adjacent to the building.

The positions are shown on the plan below.



Site Plan (Imagery © 2017 DigitalGlobe, Getmapping plc, Infoterra Ltd & Bluesky, Map Data © 2017 Google.)

5.3 Instrumentation

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

Description	Manufacturer	Type	Serial Number	Calibration
Position 1 Type 1 Data Logging Sound Level Meter	Larson Davis	820	1873	LD calibration on 05/12/2014
Position 1 Type 1 ½" Condenser Microphone	Larson Davis	2541	8523	LD calibration on 05/12/2014
Position 2 Type 1 Data Logging Sound Level Meter	Larson Davis	Lxt SE	4569	LD calibration on 11/11/2015
Position 2 Type 1 ½" Condenser Microphone	PCB	377B02	155002	LD calibration on 11/11/2015
Position 3 Type 1 Data Logging Sound Level Meter	Larson Davis	Lxt SE	4086	LD calibration on 23/12/2014
Position 3 Type 1 ½" Condenser Microphone	PCB	377B02	146893	LD calibration on 25/11/2014
Type 1 Calibrator	Larson Davis	CAL200	3082	LD calibration on 09/06/2016



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

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 15 minute A-weighted (dBA) L_{90} , L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

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	32	33	32
2	31	31	31
3	32	33	32

7.0 Conclusion

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

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. $30\text{dB} + 30\text{dB} = 33\text{dB}$, 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 T (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, T .
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 2×10^{-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).

Heyford Park Heritage Building

Position 1

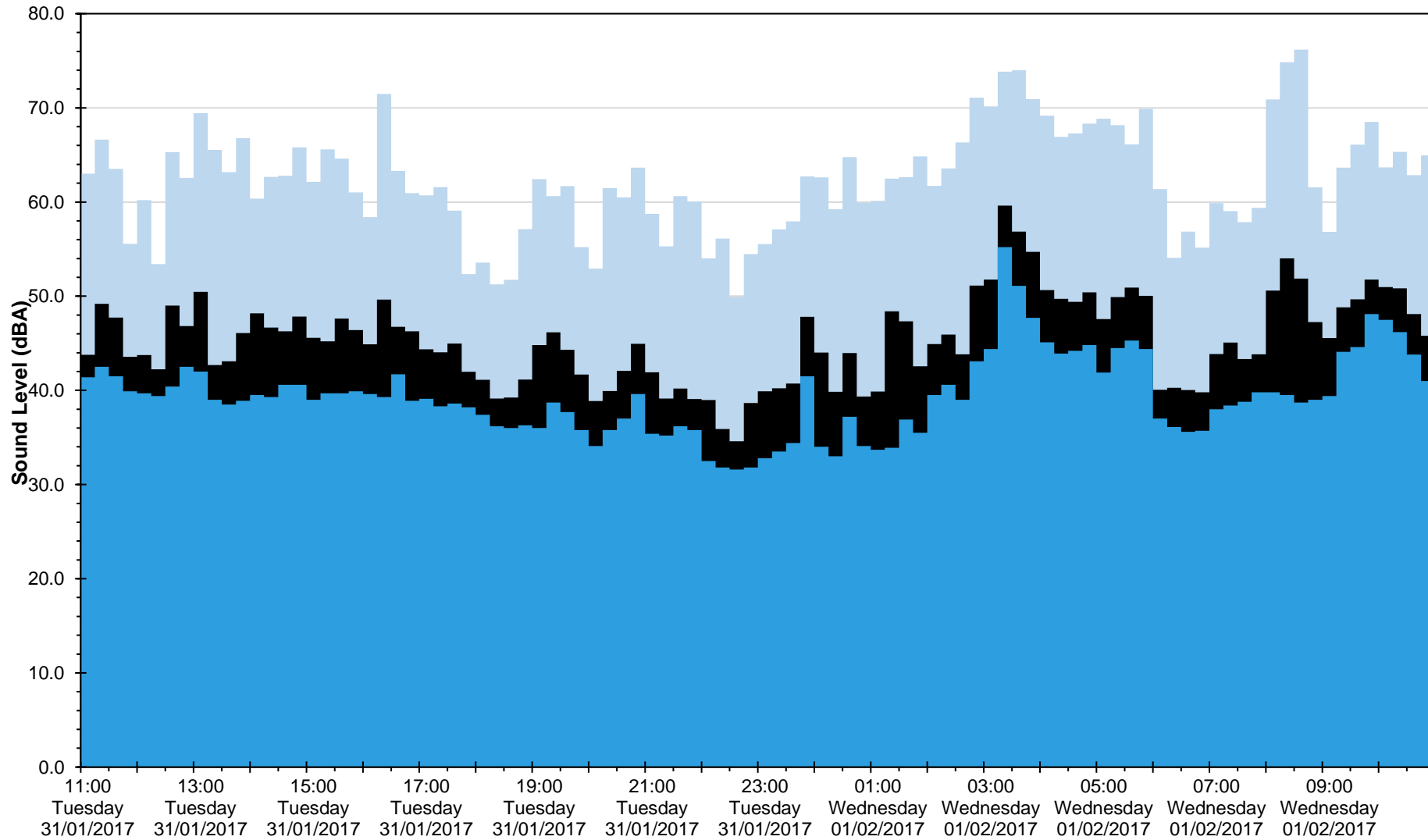
L_{Aeq} , L_{Amax} and L_{A90} Noise Levels

Tuesday 31 January 2017 to Wednesday 1 February 2017

■ L_{Amax}

■ L_{Aeq}

■ L_{A90}



Date and Time

23195/TH1.1

Heyford Park

Position 2

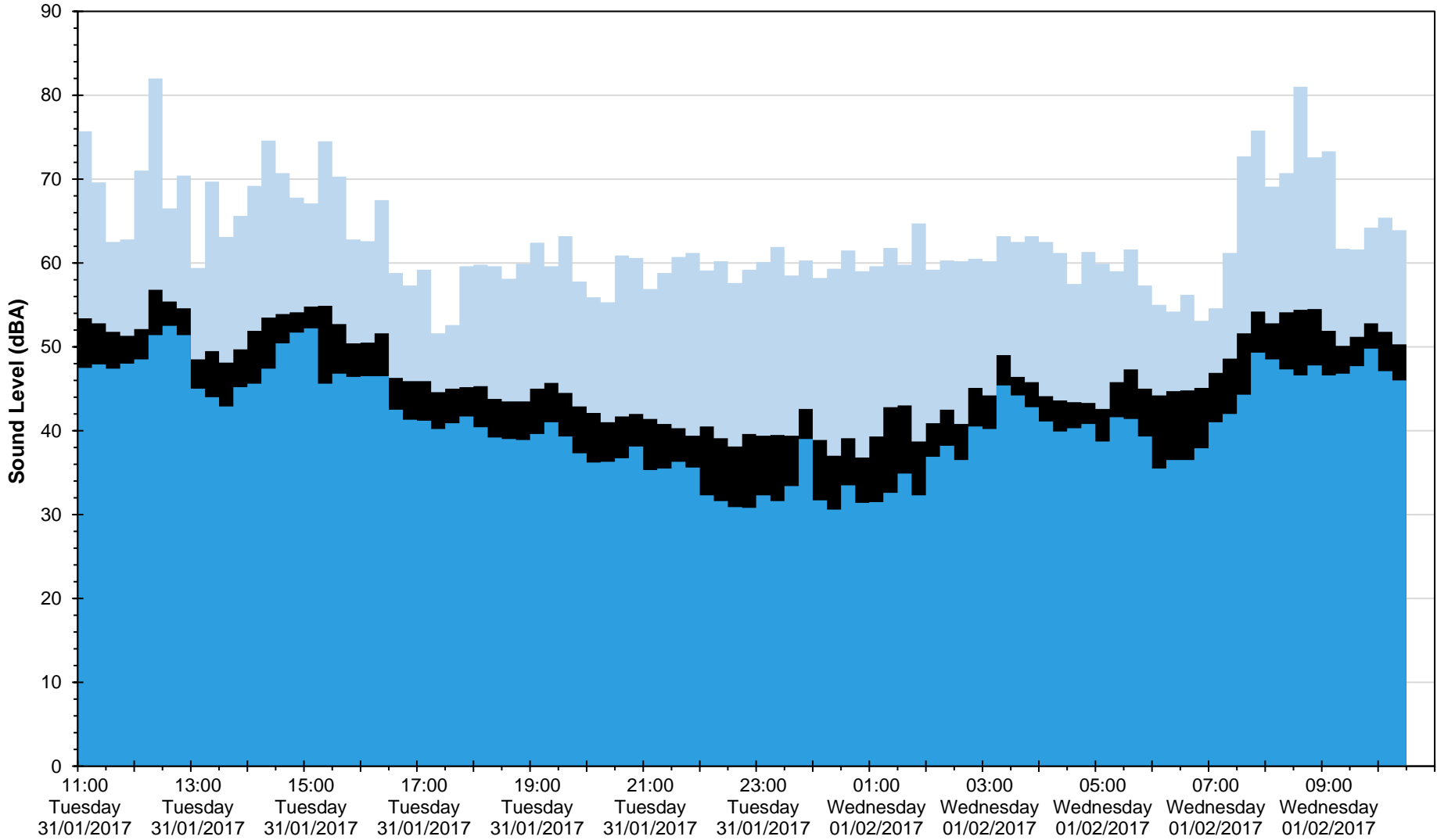
L_{Aeq} , L_{Amax} and L_{A90} Noise Levels

Tuesday 31 January 2017 to Wednesday 1 February 2017

■ L_{Amax}

■ L_{Aeq}

■ L_{A90}



Date and Time

23195/TH1.2

Heyford Park

Position 3

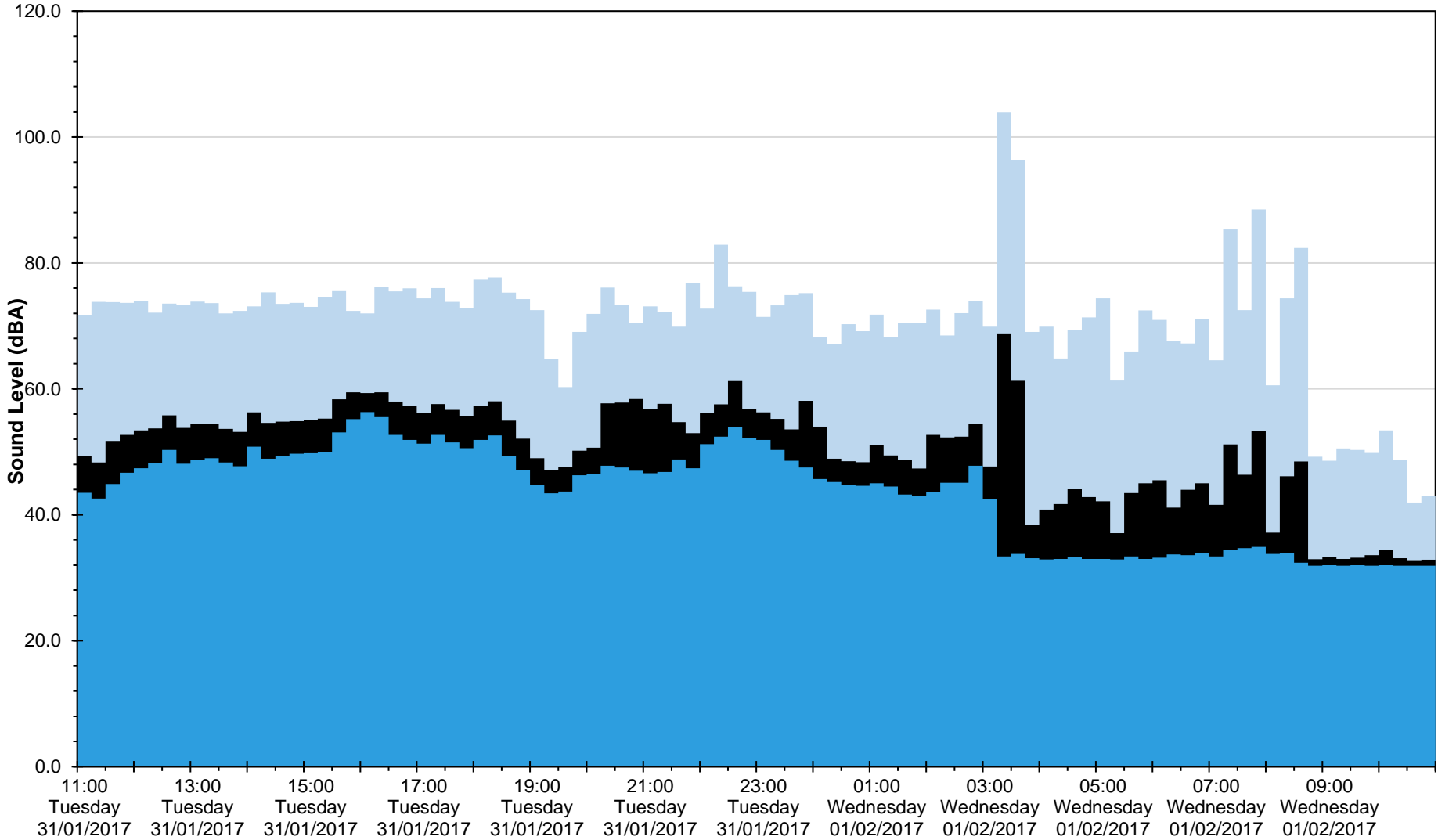
L_{Aeq} , L_{Amax} and L_{A90} Noise Levels

Tuesday 31 January 2017 to Wednesday 1 February 2017

■ L_{Amax}

■ L_{Aeq}

■ L_{A90}



Date and Time

23195/TH1.3