



Boulton House, Manchester

Noise Impact Assessment

For Avison Young

Date *26 June 2023*

Doc ref *30090-HYD-XX-XX-RP-Y-1001*

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Issued by	Hydrock Consultants Limited Northern Assurance Buildings 9-21 Princess Street Albert Square Manchester M2 4DN United Kingdom	T +44 (0)161 804 5550 E manchestercentral@hydrock.com hydrock.com
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Prepared by	Jake Schofield, BSc(Hons), Pg. Dip, MIOA	
Checked by	Eddy Goldsmith, BEng(Hons), MIOA	
Approved by	Eddy Goldsmith, BEng(Hons), MIOA	

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1. INTRODUCTION

Hydrock have been instructed to provide a Noise Impact Assessment to support a temporary Change of Use application, to allow the 2nd floor and one upper floor at Boulton House, Manchester, to be used for education (Class F1(a)), alongside the extant office use (Class E(c)). The proposed development is intended to be used as a language school.

This assessment has been prepared in response to comments raised by Manchester City Council (MCC) with regards to noise, following submission of the application. The assessment considers the potential for noise impacts with respect to the proposed education usage, in accordance with current Policy and guidance. The assessment findings and subsequent requirements for acoustic mitigation are set out herein.

This note is technical in nature therefore a glossary of acoustic terminology has been provided in **Appendix A**.

2. METHODOLOGY

This assessment considers the potential for noise impact at sensitive areas of the Proposed Development. It also considers break-out noise and the potential for impact at Existing Sensitive Receptors (ESRs).

The assessment carried out considers the following current policy, standards, and guidance documents:

- » National Planning Policy Framework, 2021 (NPPF);
- » Noise Policy Statement for England, 2010 (NPSE);
- » Planning Practice Guidance – Noise, 2021 (PPG);
- » British Standard 8233: 2014 – Guidance on Sound Insulation and Noise Reduction for Buildings (BS8233); and,
- » Building Bulletin 93 - Acoustic Design of Schools; Performance Standards, 2015 (BB93)

The development is not required to comply with the requirements of The Building Regulations Approved Document E, Requirement E4, as the proposed class use it is not classified as a 'school' premises in accordance with Section 4 of the Education Act.

A summary of the above documents have been provided in **Appendix B**.

2.1 Consultation with Local Planning Authority

The proposed scope of works and assessment methodology were sent to Ms. Laura Miller, Environmental Protection Officer at Manchester City Council (MCC), on 14th June 2023.

Ms. Miller responded on 19th June 2023, confirming that the principles of survey and assessment methodology were acceptable.

The assessment methodology was adjusted while maintaining the same principles, for which an update was sent to Ms. Miller on 21st of June 2023. Ms. Miller provided an additional response on the 23rd June 2023.

Ms. Miller advised that weekend data is not considered to be required by MCC to support the assessment. However, weekend noise data has been measured and considered herein. Ms. Miller also requested the consideration of noise break-out from the classrooms.

2.2 Noise Survey

A noise survey has been carried out at the Site in order to characterise baseline conditions. Details of the survey and methodology are set out **Section 3**.

3. NOISE SURVEY

3.1 Survey Overview

Hydrock carried out a noise survey at the Site between 15th and 19th June 2023, covering weekday and weekend periods.

It is understood that openable windows form part of the background ventilation strategy at the Site, therefore windows were opened throughout the survey period.

Measurement microphones were positioned vertically on a tripod at least 1.2m above the ground. The sound level meters were calibrated to a reference level of 94dB at 1kHz both prior to, and on completion of, the noise survey. No significant drift in calibration was noted during the surveys (≤ 0.5 dB).

Noise measurements were carried at three Monitoring Locations (MLs) on the second floor of the building. Each ML was positioned approximately 2m from a glazed area of façade, with windows open, to establish internal ambient noise levels, representative of the proposed development.

The A-weighted, time-equivalent, one-third octave band sound pressure levels have been measured. Noise measurements were made using Class 1, integrating sound level meters.

During the weekday period and Saturday (15th to 17th June) the survey weather conditions were considered acceptable, i.e. dry, with no significant precipitation, and with wind speeds $<5\text{ms}^{-1}$. However, during Sunday 18th June winds speeds $>5\text{ms}^{-1}$ with moderate precipitation throughout the daytime period. Therefore, noise data measured on Sunday 18th June has been eliminated from this assessment.

Monitoring Locations are illustrated on **Figure 1** and are detailed in **Table 1**.

Table 1: Noise Monitoring Locations

Monitoring Locations	Location	Time Period	
		Start	End
1	On the second floor and adjacent to the south-western elevation of the building, facing Chorlton St, National Express Coach Station and the NCP car park.	1300hrs 15/06/2023	1430hrs 19/06/2023
2	On the second floor and adjacent to the south eastern elevation of the building, facing Bloom St, and car parking areas.	1300hrs 15/06/2023	1430hrs 19/06/2023
3	On the second floor and adjacent to the north-western elevation of the building, facing Major St.	1230hrs 15/06/2023	1430hrs 19/06/2023

3.2 Site Conditions

Observations made during the survey and a review of audio recordings identified the following sound sources contributing to the acoustic climate at the Site:

Road Traffic: Road traffic noise from Chorlton St, Bloom St, and Major St was dominant at each of the respective monitoring locations.

Commercial Noise: No commercial and or industrial noise was noted.

Other: Pedestrian noise was occasionally audible.

3.3 Summary of Existing Noise Levels

Daytime noise levels between 0800 to 2000 hours have been adopted, for the purposes of this assessment, allowing consideration for early morning and evening use of the language school,

Noise levels which are not considered to be typical i.e. elevated levels from construction works, emergency vehicles and nearby fire alarms, have been eliminated.

At each ML an average daytime $L_{Aeq,12hour}$ and maximum $L_{Aeq,30minute}$, and noise level has been presented in **Table 2**.

Table 2: Summary of the Measured Noise Levels

Monitoring Location	Measured Daytime Sound level (dB)	
	$L_{Aeq,12hour}$	Maximum $L_{Aeq,30minutes}$
1	41dB	43dB
2	39dB	43dB
3	39dB	40dB

A summary of measured levels over the entire survey period is provided in **Appendix C**.

4. NOISE ASSESSMENT

4.1 Assessment of Noise at Educational Use

In accordance with BB93 the recommended Internal Ambient Noise Level (IANL) criteria for educational for refurbished spaces is between 35 and 55dB $L_{Aeq,30mins}$.

The proposed education use is understood to be for teaching of languages. The recommended level in BB93 for this use, in the context of a refurbishment, is 40dB $L_{Aeq, 30mins}$. However, BB93 includes a 5dB relaxation of the guideline IANLs when a natural ventilation strategy is used.

Therefore, because the proposed development will utilise openable windows as the primary form of ventilation, the guideline internal ambient noise level criteria for the proposed educational usage of the development is 45dB $L_{Aeq,30min}$ as in accordance with BB93.

The maximum measured $L_{Aeq30minute}$ IANLs between 0800 and 2000hrs, **Table 2**, are below the 45dB criteria. Furthermore, the average measured IANLs between 0800 and 2000hrs are ≤ 41 dB $L_{Aeq,12hour}$ across the proposed teaching areas.

In summary, internal ambient noise levels comply with BB93 guidance and are considered to provide an acceptable noise environment for educational use. Therefore, no specific mitigation measures are required.

4.2 Assessment of Noise Break-Out

The primary noise sources associated with the proposed language classrooms will comprise the sound of voices and verbal communication between teachers and students. Similarly, the primary noise sources within an office environment is typically the sound of verbal communication between colleagues, together with telephone and web-based conversations. Therefore, the proposed change of use is not considered to represent a significant change in noise levels or character.

Furthermore, the nearest noise sensitive receptors are located approximately 15m from the proposed development, at Arthur House, Chorlton St, which is also education use. Any noise break out from the proposed usage will be significantly below residual noise levels in the vicinity of receptors, and therefore unlikely to be audible.

In summary, the potential impacts associated with noise break-out from the proposed usage is considered to be negligible, and unlikely to be present at receptors at Arthur House.

5. CONCLUSION

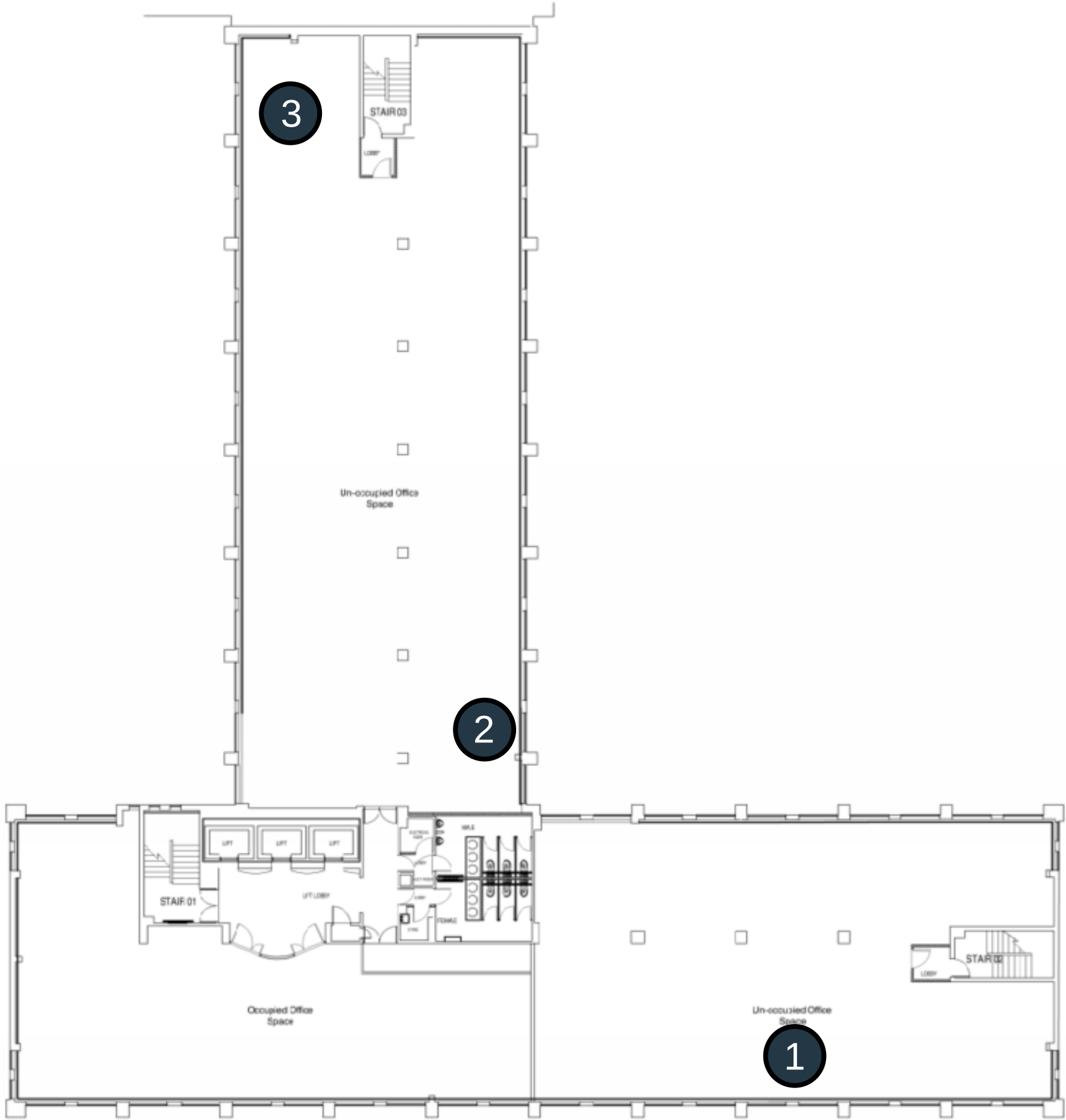
Hydrock have been instructed to provide a Noise Impact Assessment to support a temporary Change of Use application, to allow the second floor and one upper floor at Boulton House, to be used for education (Class F1(a)), alongside the extant office use (Class E(c)).

A survey has been carried within the proposed development to demonstrate compliance with suitable internal ambient noise level criteria, in accordance with current policy and guidance.

The noise survey demonstrates that internal ambient noise levels satisfy the recommended criteria of BB93 for naturally ventilated language laboratories (teaching classrooms), for refurbishments. Therefore, no specific noise mitigation measures are required.

Break-out noise from the classrooms is also considered to be negligible at ESRs.

It is considered there is no reason for refusal of the proposed change of use application on noise grounds.



LEVEL 02 - AS EXISTING

KEY PLAN

X

NOISE MONITORING LOCATION

NOTES

NOT TO SCALE

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE NOISE IMPACT ASSESSMENT REPORT PREPARED BY HYDROCK.

NOTE: UNOCCUPIED SPACE IN THE BOTTOM LEFT WAS OCCUPIED AND NOT SUTABLE FOR NOISE MONITORING.

REVISIONS

PO1	FIRST ISSUE EXAMPLE				
	J SCHOFIELD	21/06/23			
REV.	REVISION NOTES/COMMENTS				

Hydrock

Northern Assurance Building
9-21 Princess Street
Albert Square
Manchester
M2 4DN

CLIENT

AVISON YOUNG

PROJECT

BOULTON HOUSE, MANCHESTER

TITLE

FIGURE 1

NOISE MONITORING LOCATIONS

HYDROCK PROJECT NO.	30090	SCALE	NTS
PURPOSE OF ISSUE	FOR INFORMATION	STATUS	S2
DRAWING NO.	30090-HYD-XX-XX-DR-Y-1001	REVISION	P01

Appendix A Glossary of Acoustic Terminology

Term	Description
dB (decibel)	The scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ($2 \times 10^{-5} \text{Pa}$).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' - weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq,T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L_{Amax}	L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L_{10} and L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time, and the L_{90} is the level exceeded for 90% of the time.
R_w	R_w is the single-number quantity which characterizes the sound insulating properties of a given material over a range of frequencies. This is typically measured in a laboratory in accordance with BS EN ISO 717-1.
$D_{n,e,w}$	$D_{n,e,w}$ is the single number quantity which characterizes the airborne sound insulation performance across a given 'element' and is typically used to describe the acoustic performance of trickle ventilators etc.
C_{tr}	C_{tr} is a correction term applied to single-number sound insulation values (R_w , $D_{n,e,w}$ etc.) to afford additional weighting against low frequency performance.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, it is measured outside and at least 3m from buildings.

Appendix B Policy, Standards & Guidance

National Planning Policy Framework (NPPF)

Published in 2021, this document sets out the Government's planning policies for England and supersedes the previous version of the NPPF published in 2019. It makes the following reference to noise in the section entitled Conserving and enhancing the natural environment:

"174. Planning policies and decisions should contribute to and enhance the natural and local environment by

[...]

e) Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."

It also makes the following references to noise in the Section entitled Ground conditions and pollution:

"185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life(60);

identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

60 See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010)."

And

"187. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

Noise Policy Statement for England (NPSE)

Published in March 2010, the Noise Policy Statement for England (NPSE) sets out the long-term vision of Government noise policy as follows:

"Promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development."

The NPSE identifies three observed effect levels, names "No Observed Effect Level" (NOEL), "Lowest Observed Adverse Effect Level" (LOAEL) and "Significant Observed Adverse Effect Level" (SOAEL).

The NPSE contains little detail on assessment methodologies and specific parameters at which the varying observed effect levels would occur in the context of a residential development.

BS 8233:2014 - Guidance on sound insulation and noise reduction for buildings

BS8233 provides guidance for the control of noise in and around buildings. The guidance provided within the document is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building. The guidance provided includes appropriate internal and external noise level criteria which are applicable to dwellings for steady external noise sources.

Building Bulletin 93, Department for Education

BB93:2015 provides performance standards for the acoustic design of schools and gives supporting advice and recommendations for the planning and design of schools. Design criteria are provided for internal ambient noise levels, internal sound insulation between spaces and control of reverberation times.

BB93 Indoor Ambient Noise Levels

Tables 1 and 2 of BB93:2015 details the upper limits for Indoor Ambient Noise Levels (IANLs) in the different rooms within a school. The specified indoor noise levels refer to the highest 30-minute equivalent continuous A- weighted sound pressure level ($L_{Aeq,30\text{ min}}$ dB) likely to occur during normal teaching hours.

BB93:2015 aims to provide suitable conditions with IANLs for unoccupied spaces for:

- » Clear communication of speech between teacher and student;
- » Clear communication between students; and
- » Learning and study activities

The IANL includes contributions from sources such as:

- » External sources outside the school premises (including, but not limited to, noise from road, rail and air traffic, industrial and commercial premises)
- » Building services (e.g., ventilation systems, plant drainage etc). If a room is naturally ventilated, the IANLs are calculated and measured with ventilators or windows open as required to provide ventilation. If a room is mechanically ventilated or cooled, the plant should be assumed to be running at its normal operating duty
- » actuator and damper noise

The IANL excludes noise contributions from:

- » teaching activities within the school premises, including noise from staff, students and equipment within the building or in the playground (noise transmitted from adjacent spaces is addressed by the airborne and impact sound insulation requirements);
- » equipment used in the space (e.g. machine tools, CNC machines, dust and fume extract equipment, compressors, computers, projectors, fume cupboards), though there are separate noise limits that apply to these items; and
- » rain noise, though BB93 does require that rain noise is controlled to IANL + 25 dB during heavy rain as defined in BS EN ISO 140-18.

The upper limit for IANLs in each room as per the guidance in BB93:2015 is summarised in the table below. The more relaxed natural ventilation limits do not apply when windows or natural vents are closed and any mechanical systems are operating at normal duty. It is recommended that building services plant are designed to a level 5dB below the limits in Table 1 to allow for the effect of environmental noise break-in.

Type of Room	Upper Limit for Indoor Ambient Noise Level (IANL) LAeq 30 minutes, dB	
	New Build	Refurbishment
Classroom, general teaching and seminar rooms	35	40
Atrium, circulation space (considered to include reception/admin)	45	50
Individual study, quiet study, resource areas (LRC) and break out spaces	40	45
Drama studio, assembly hall, multi-purpose hall (drama, PE, audio/visual presentations, assembly, occasional music), performance and recital rooms.	35	40
Changing Area, Toilets, Kitchen (non-teaching)	50	55
Staff Room, Offices, Medical Rooms	40	45

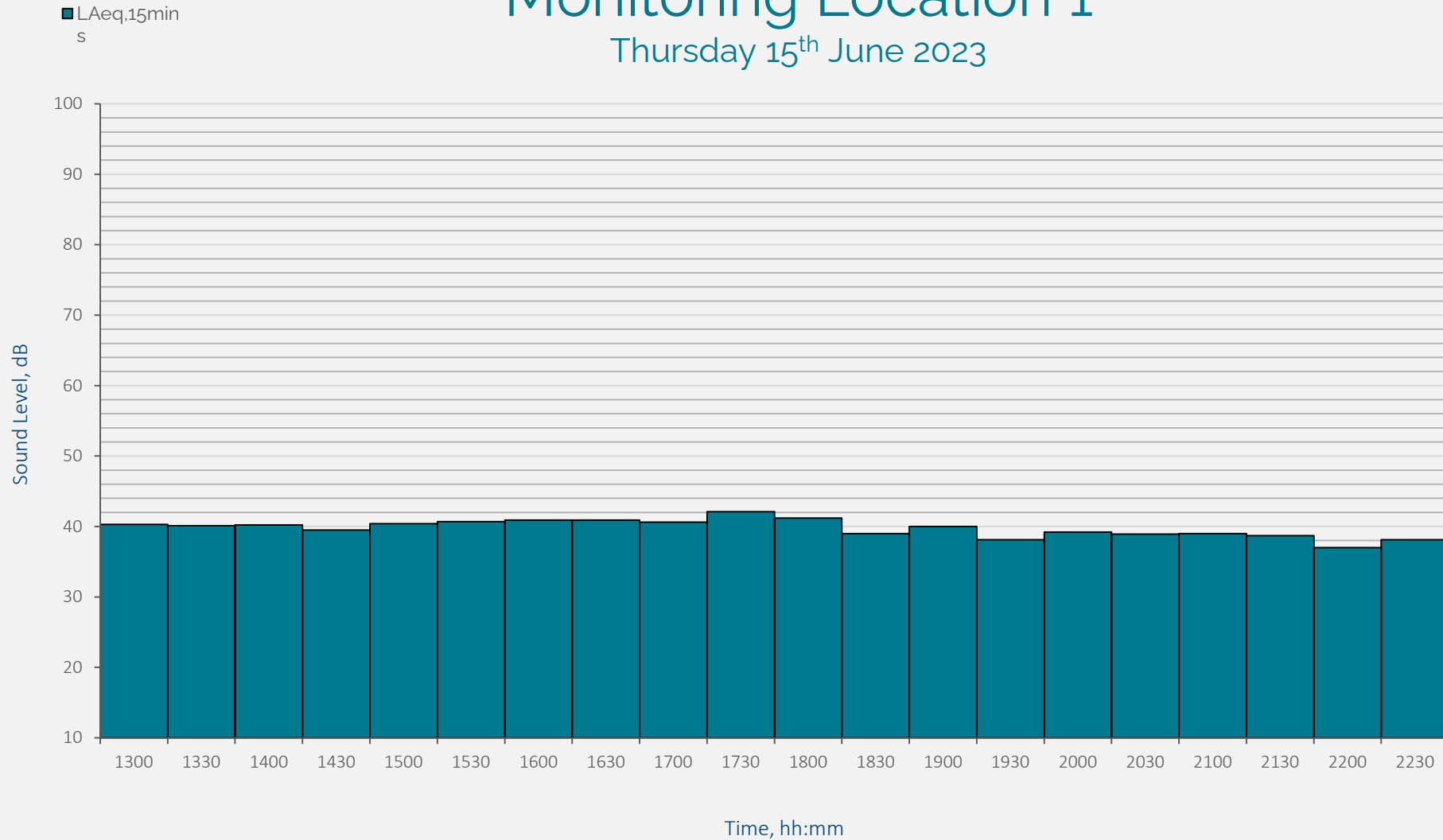
Where a hybrid system is proposed, any mechanical system components should cumulatively with external noise ingress not exceed the IANLs. The IANLs are qualified by various notes, of which applicable ones are provided in the next table.

Condition	Ventilation System	Noise Limit from Combination of System noise and Noise Break-in
Normal - ventilation for normal teaching and learning activities	Mechanical	Table 1 Value
	Natural	Table 1 Value + 5dB
	Hybrid	Mechanical system noise: Table 1 value
		Total noise level Table 1 value + 5dB
Summertime - ventilation under local control of teacher to prevent overheating - allowable during the hottest 200 hours of the year	Mechanical	Table 1 value +5dB
	Natural or Hybrid	≤ 55dB
Intermittent boost - ventilation under local control of teacher for dilution of fumes during practical activities as in practical spaces for science, art, food technology and design and technology.	Mechanical	Table 1 value +5dB
	Natural	≤ 55dB
Process - extract can be automatic ventilation for safety and/or under local control of teacher.	Mechanical and/or natural	See IOA/ANC guide for operational noise level

Appendix C Measured Noise Levels

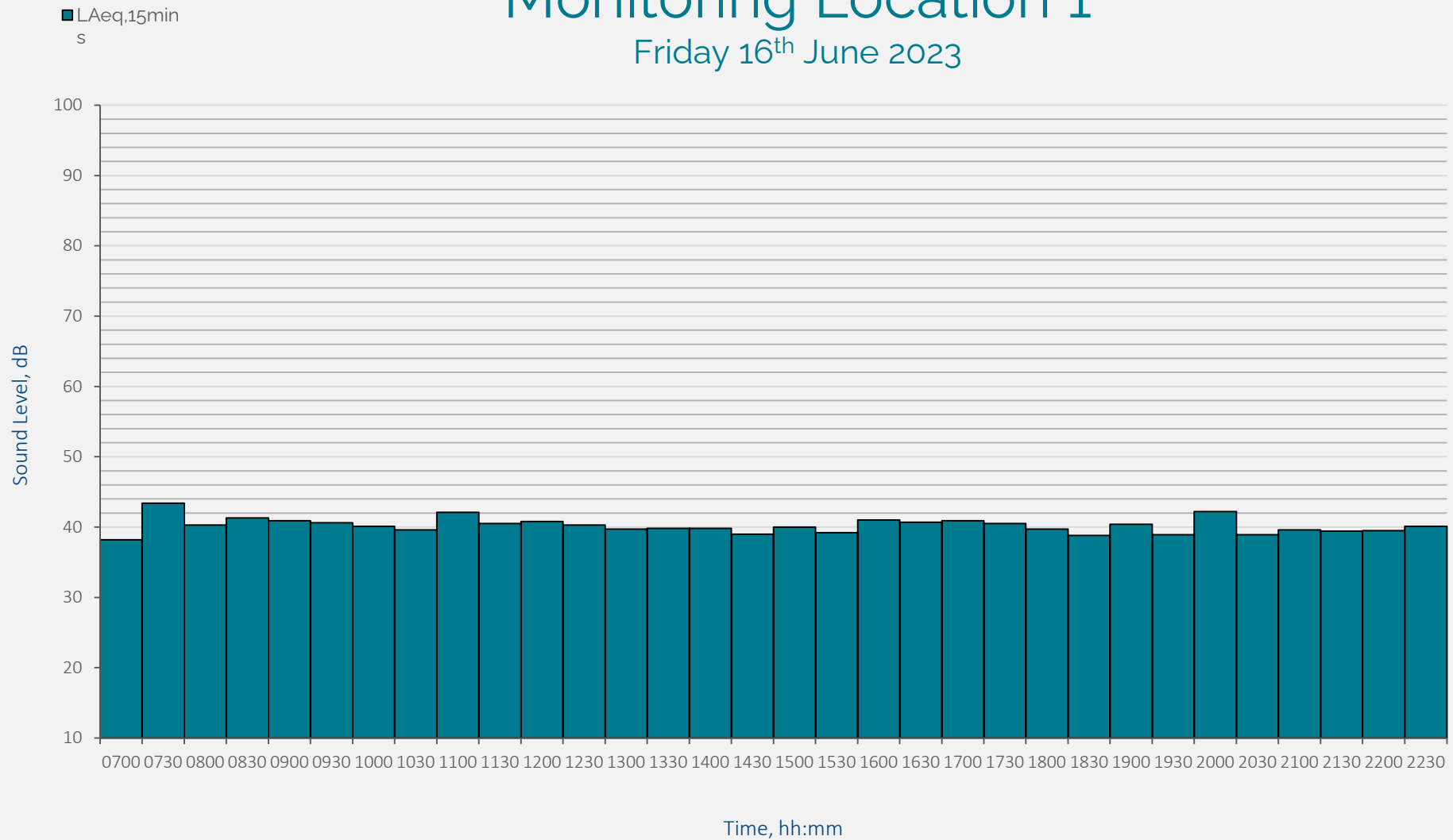
Monitoring Location 1

Thursday 15th June 2023



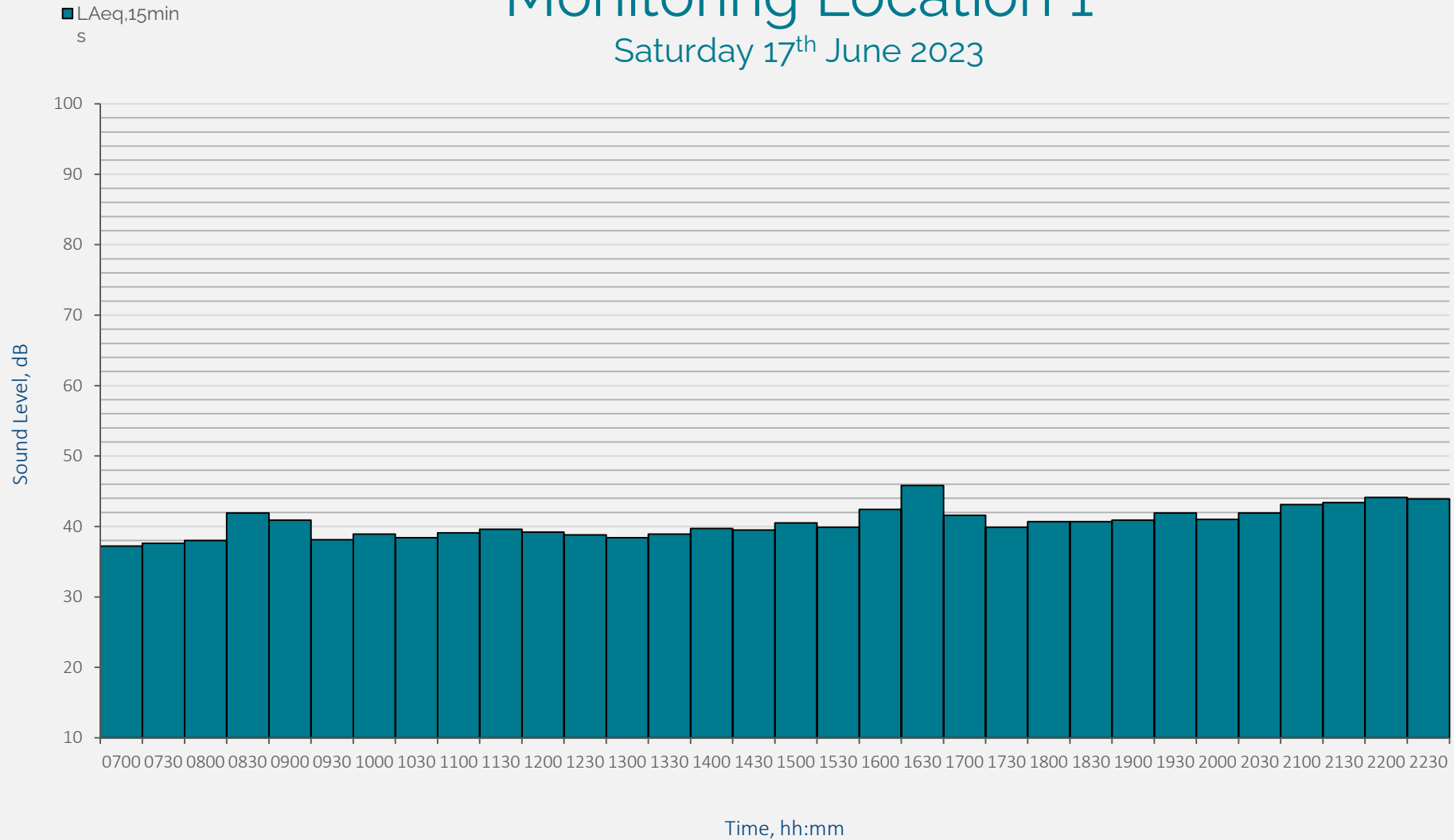
Monitoring Location 1

Friday 16th June 2023



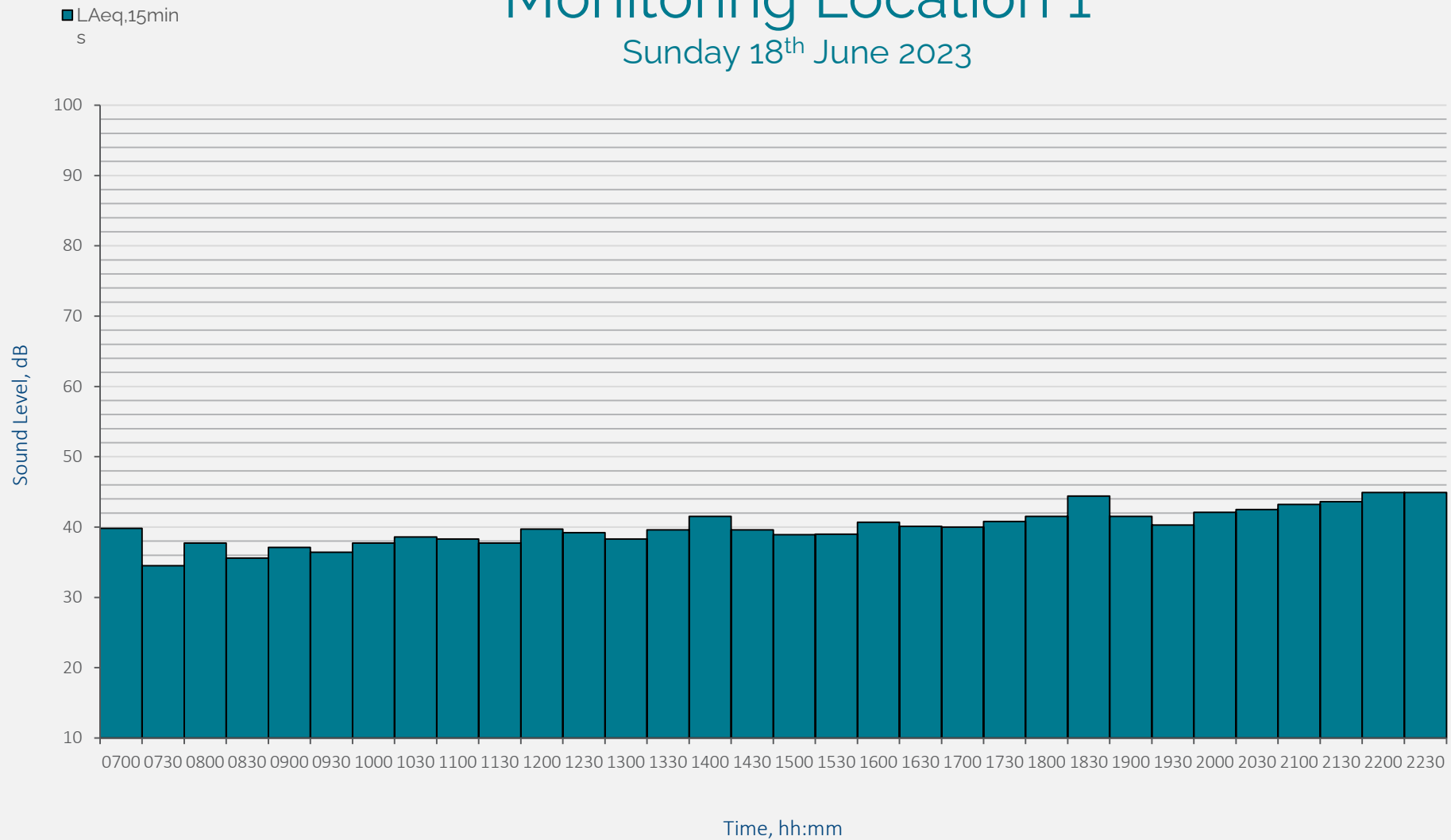
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Saturday 17th June 2023



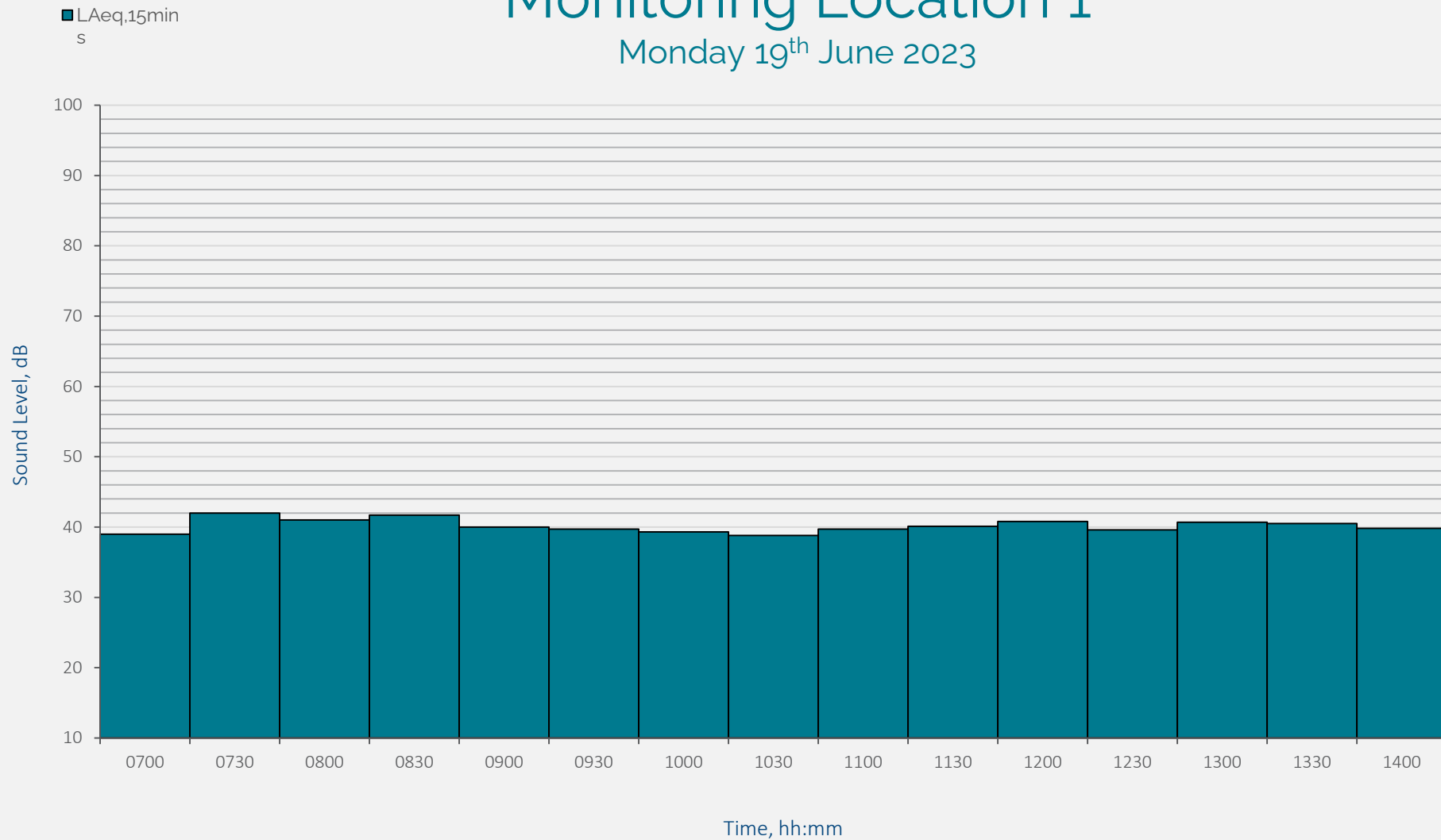
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Sunday 18th June 2023



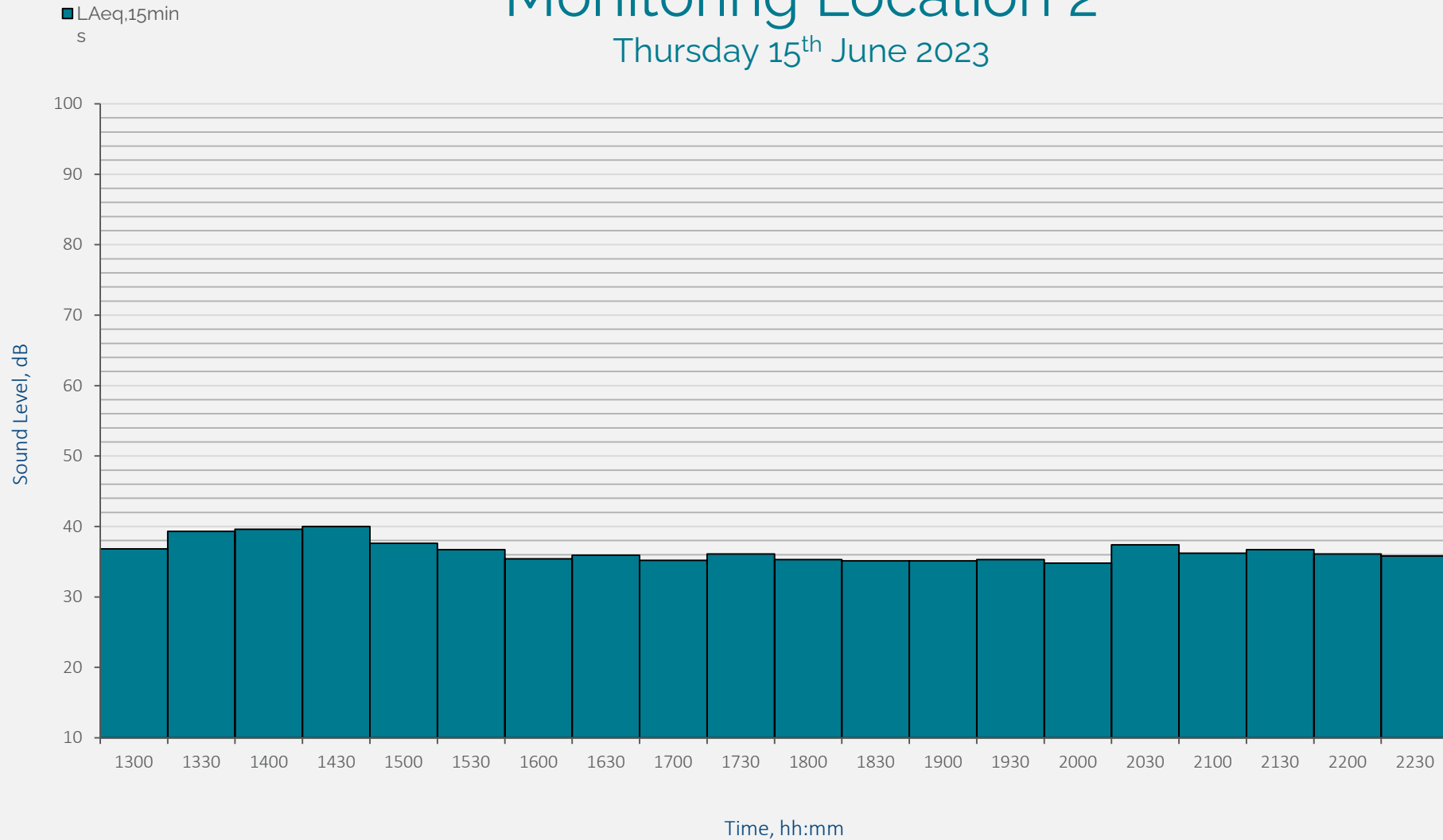
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Monday 19th June 2023



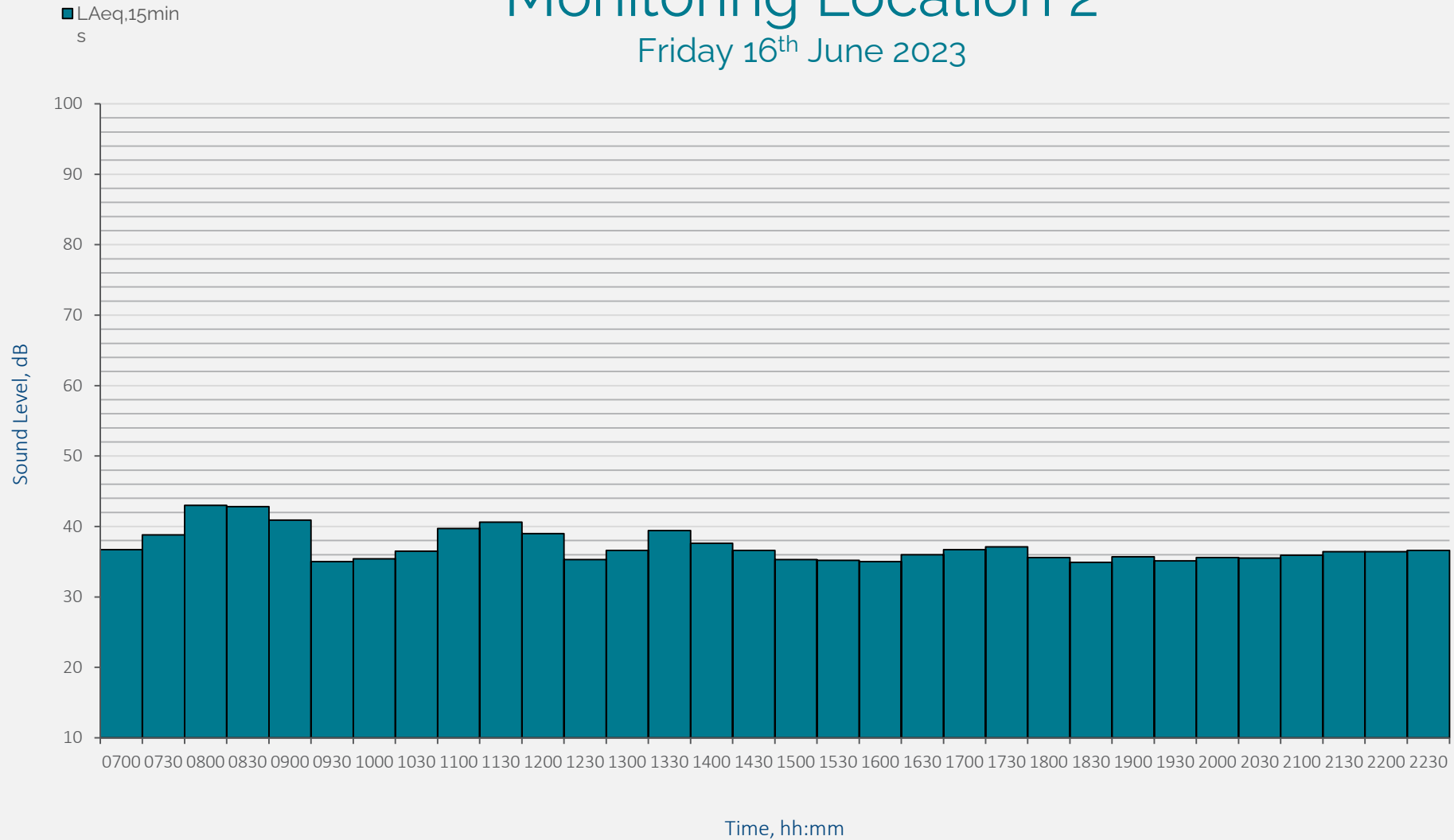
Monitoring Location 2

Thursday 15th June 2023



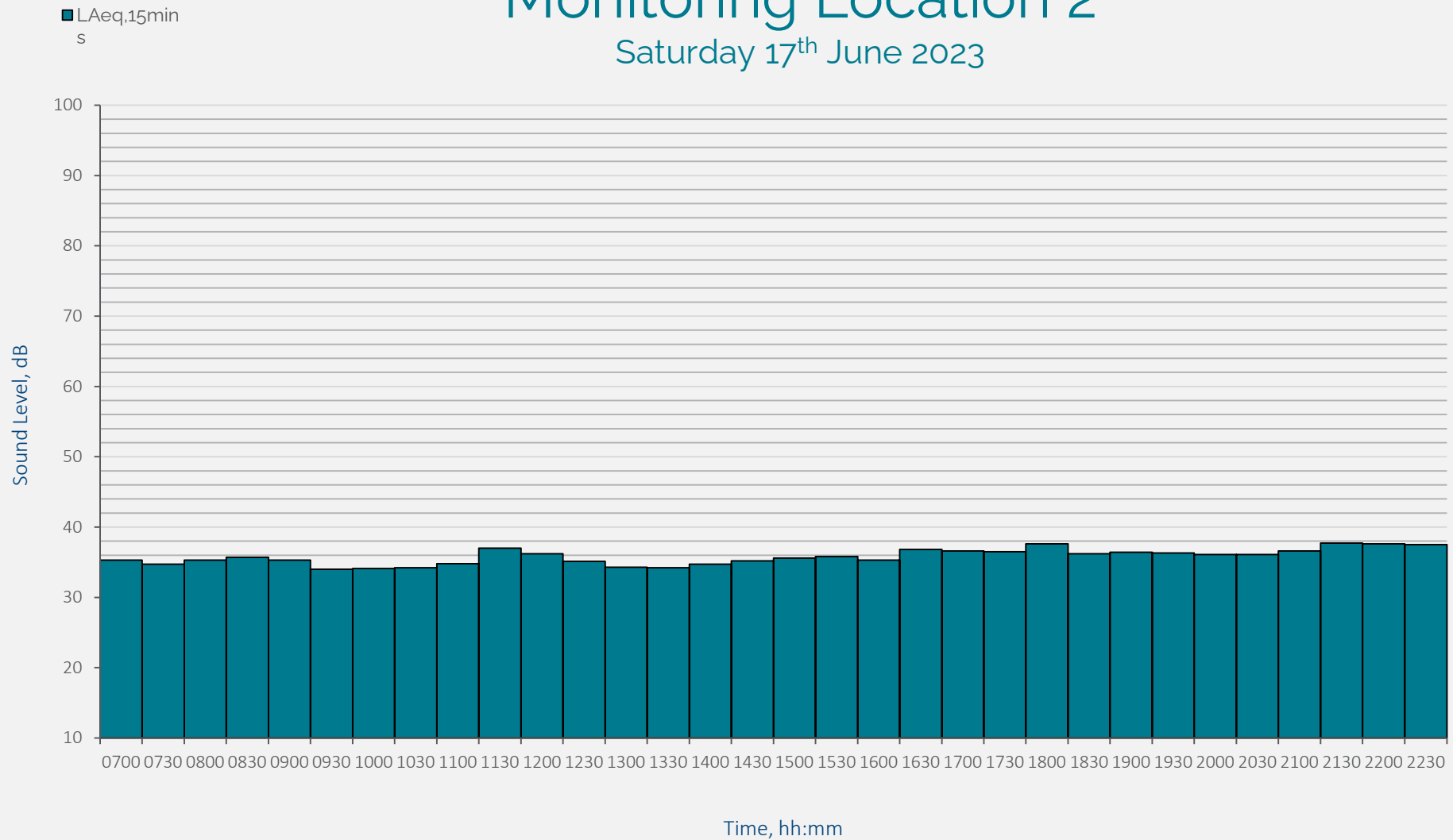
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Friday 16th June 2023



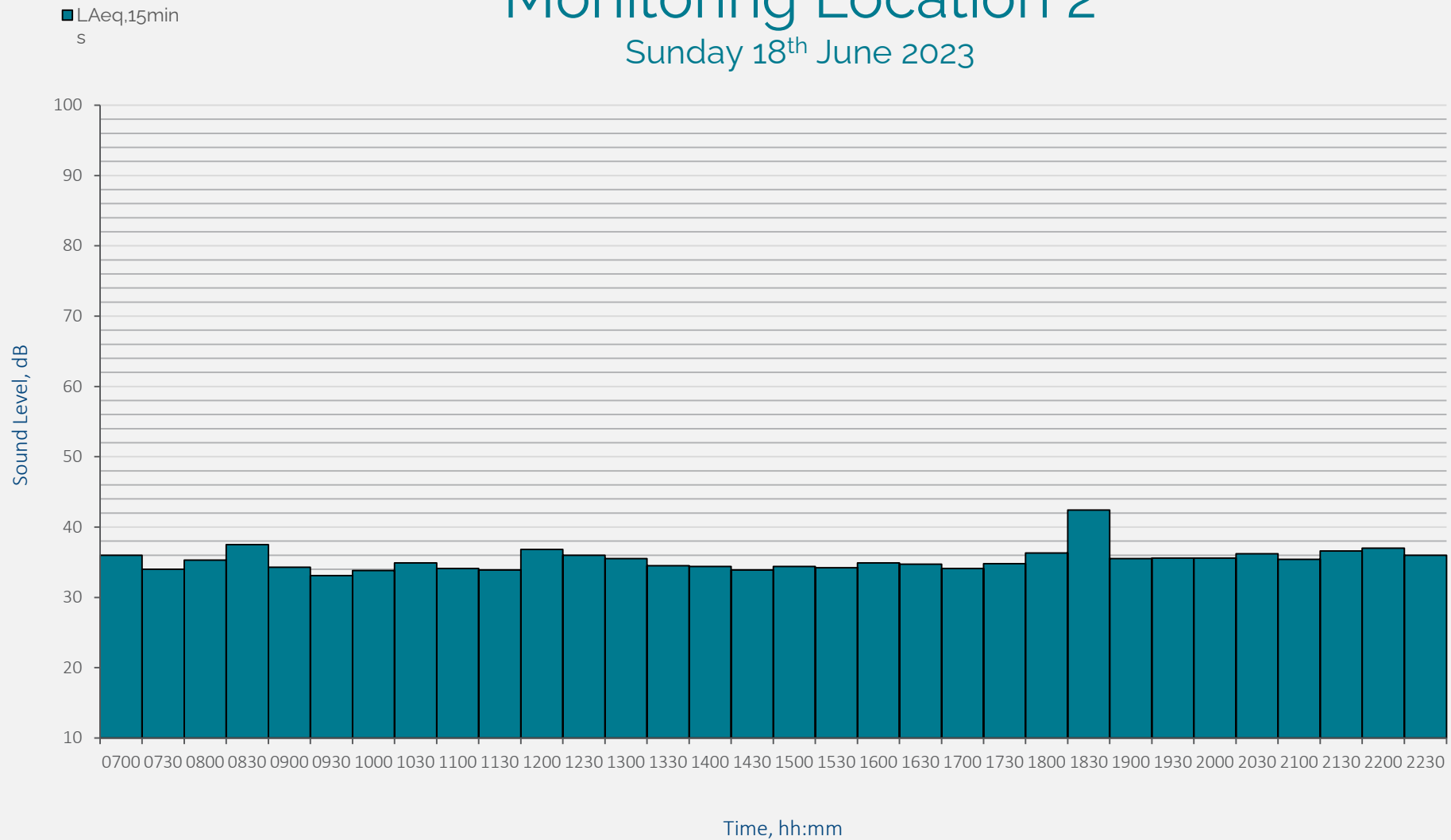
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Saturday 17th June 2023



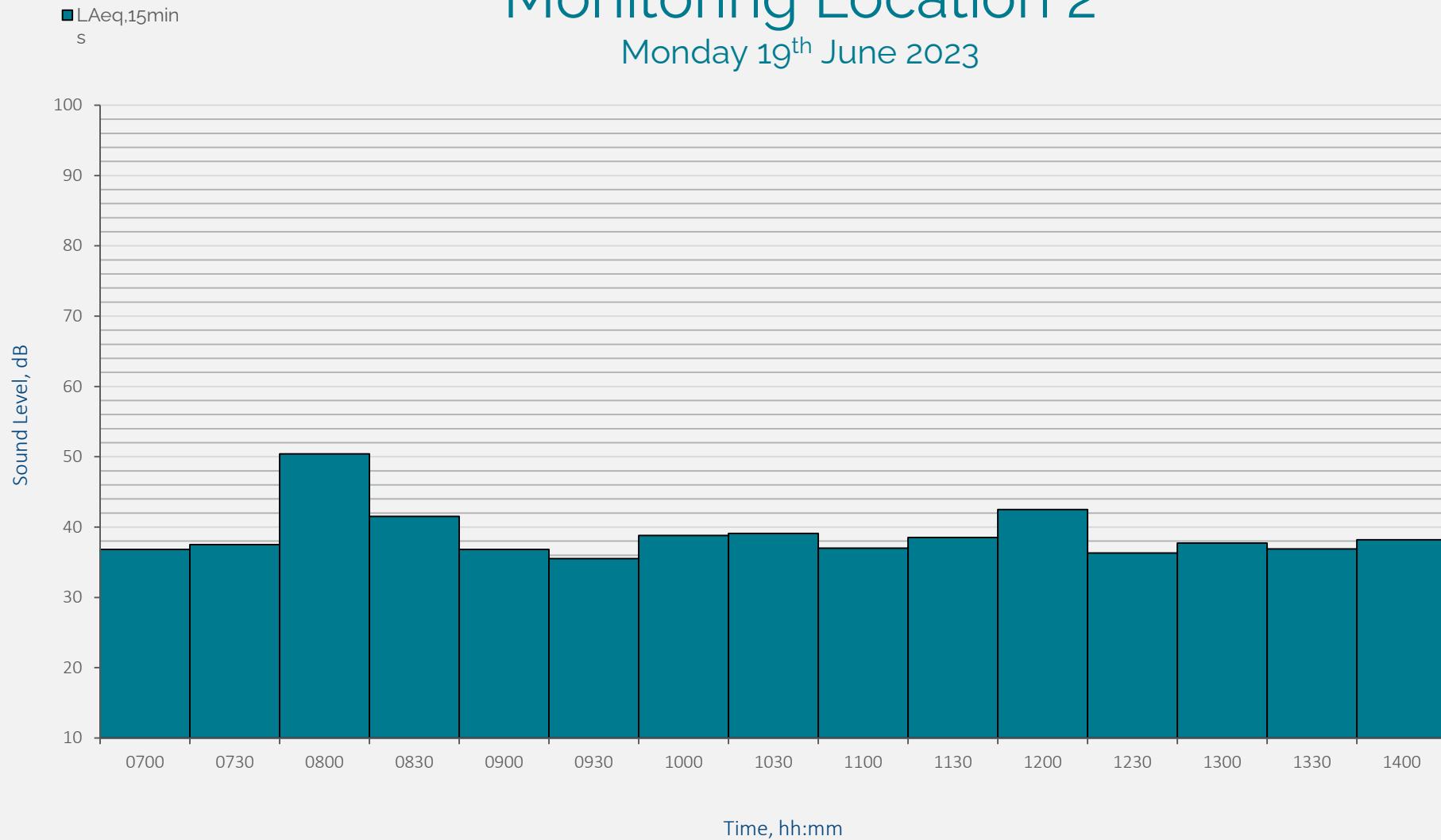
Monitoring Location 2

Sunday 18th June 2023



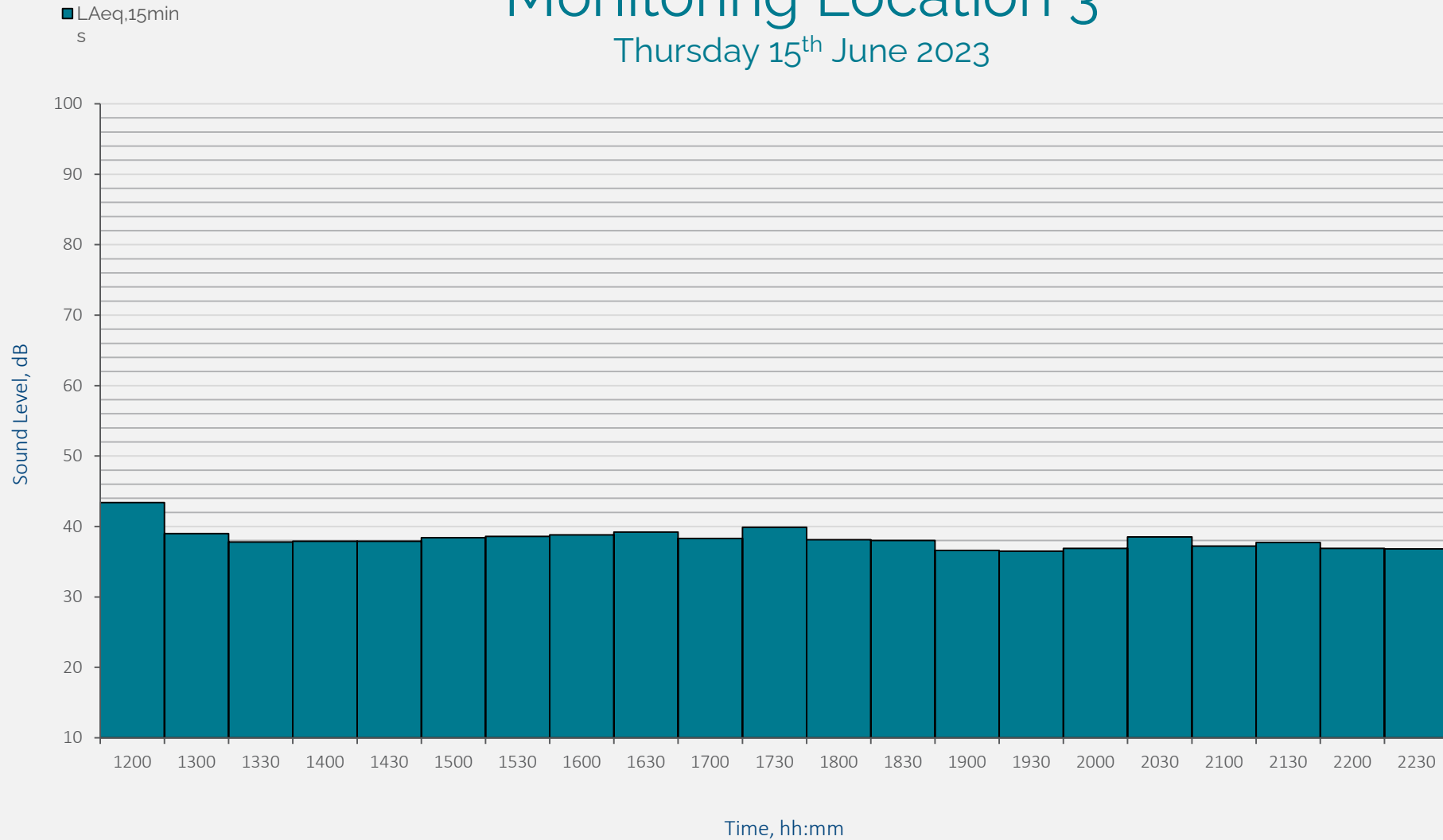
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Monday 19th June 2023



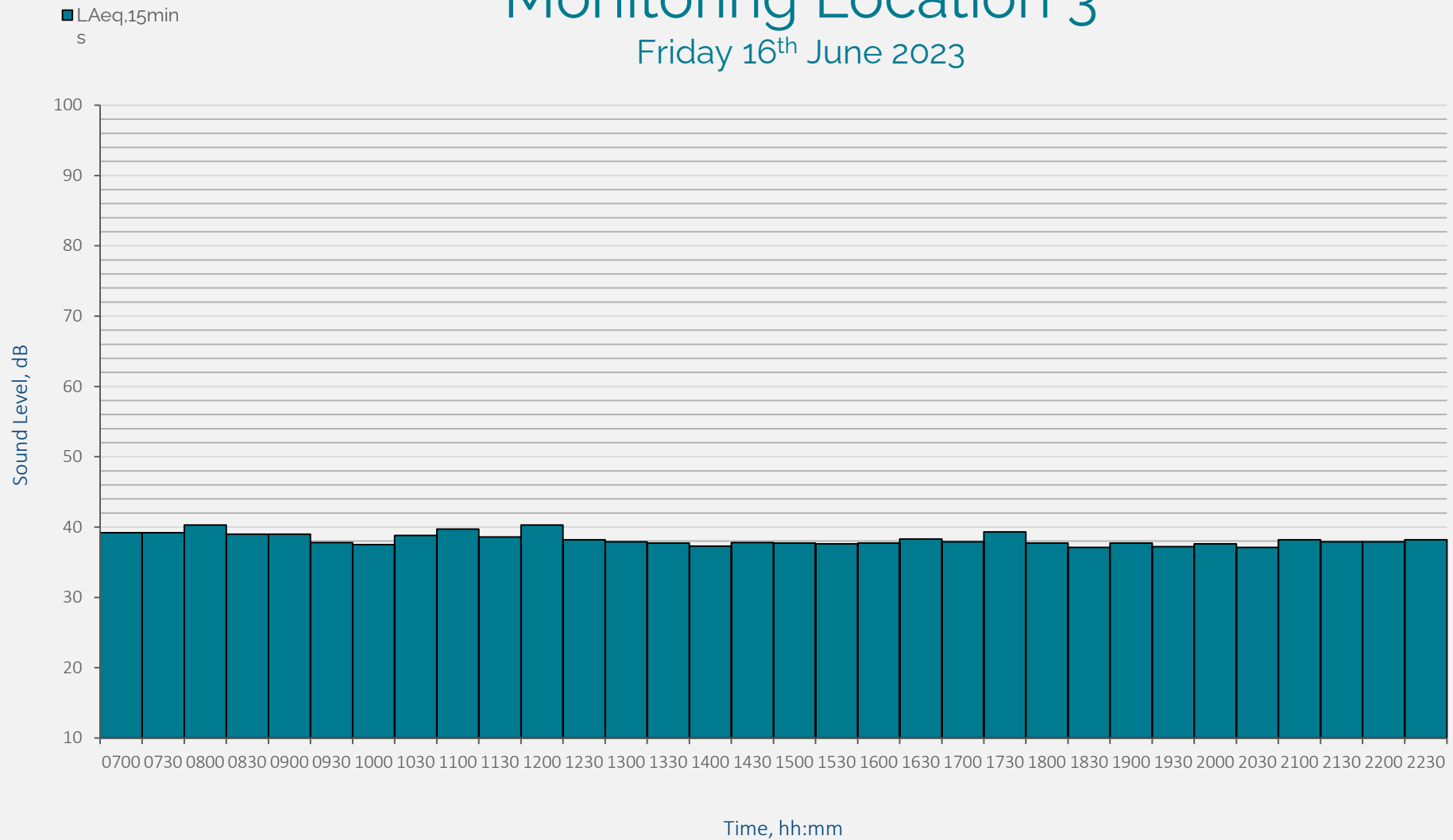
Monitoring Location 3

Thursday 15th June 2023



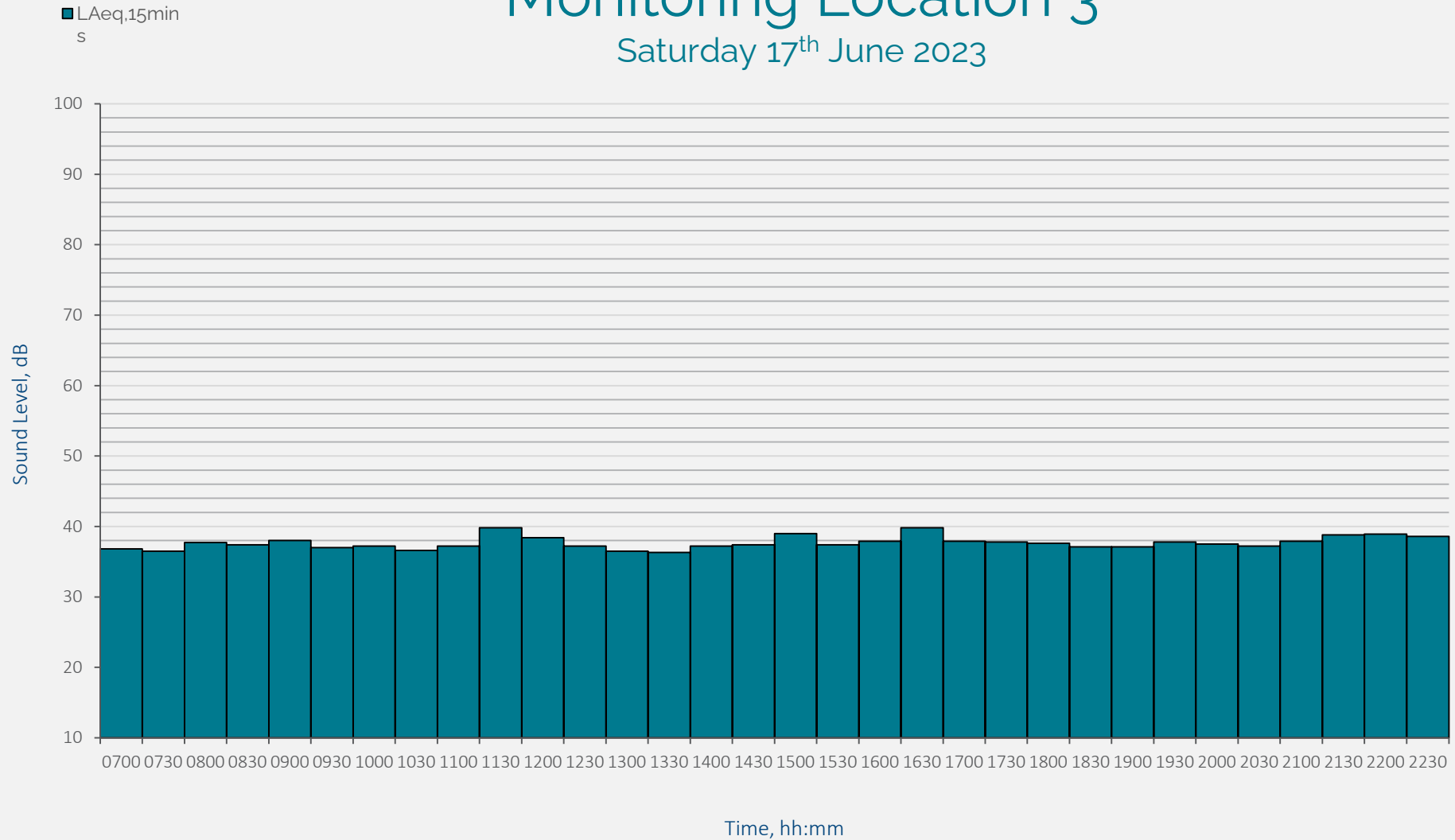
Monitoring Location 3

Friday 16th June 2023



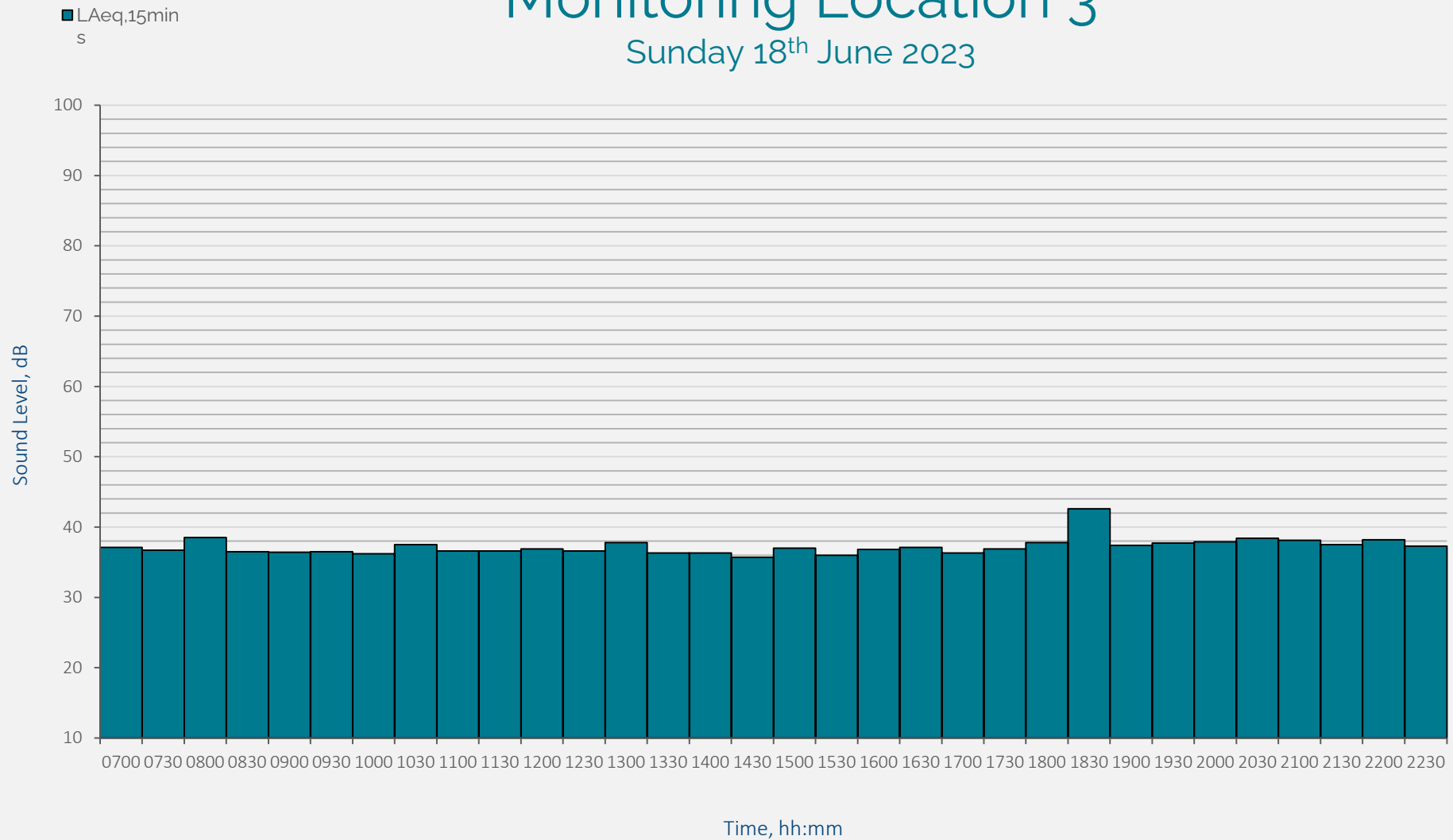
Monitoring Location 3

Saturday 17th June 2023



Monitoring Location 3

Sunday 18th June 2023



Monitoring Location 3

Monday 19th June 2023

