soundbuild

London Film School Limited

London Film School, 39-41 Parker Street

Noise Impact Assessment

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This document has 25 pages including the cover.

Document history

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Client sign off

Client	London Film School Limited
Project	London Film School, 39-41 Parker Street
Client signature	

Table of Contents

1 Introduction

1.1 Purpose

This Noise Impact Assessment is submitted on behalf of London Film School to accompany an application for full planning permission for the change of use of the site, 39-41 Parker Street, Covent Garden, London, WC2B 5PQ7-17 Ansdell Street, London ('the Site').

Full planning permission is sought for the following description of development (herein referred to 'the Proposed Development'):

Change of use of part of the first floor and the second and third floors from office use (Class E) to a mixed education and office use (Sui Generis), together with incidental uses and associated works; and the change of use of part of the ground floor from office use to a mixed office and cinema/education use (Sui Generis).

The proposals have been the subject to pre-application discussions with Camden officers.

This Noise Impact Assessment has been prepared by SoundBuild and details the impact on nearby Noise Sensitive Receptors (NSRs), and the suitability of the new use class for the Proposed Development.

1.2 Scope

The scope of this Noise Impact Assessment is set out below:

- Section 2 defines the noise criteria for which the Proposed Development is be assessed against, considering national, regional and local noise policy. Specifically, the following elements are discussed:
    - Noise impact of newly proposed ground floor cinema sound system on NSRs
    - Noise impact of newly proposed plant on NSRs
    - Suitability of the new use class, associated with the external noise break in for new occupants
- Section 3 presents the methodology and results of the site noise survey which establishes the baseline conditions of the Site
- Section 4 sets out the acoustic design strategy for the Proposed Development required to achieve the defined noise criteria

2 Assessment Criteria

2.1 London Borough of Camden consultation

London Borough of Camden (LBC) were consulted on the noise assessment methodology. The following key noise impacts were proposed to be assessed in accordance with the guidance set out in Appendix C of the Camden Local Plan:

- Noise impact of newly proposed ground floor cinema sound system on NSRs
- Noise impact of newly proposed plant on NSRs

LBC's response is summarised below:

- Increase the measurement period to 4 days, and include the weekend period
- Assess the suitability of the new use class, associated with the external noise break in for new occupants

SoundBuild have considered LBCs comments and incorporated them into the assessment criteria which is detailed in the following sub-sections.

In addition to the LBC specific noise policy, the derivation of noise criteria is considered to be in line with national and regional noise policy, which is discussed in Appendix B.

2.2 Cinema sound system noise impact assessment criteria

The *Entertainment Noise* subsection of *Appendix C of the Camden Local Plan* sets out the proposed noise criteria to assess newly introduced entertainment premises on nearby NSRs.

The noise criteria are defined as a Noise Rating (NR) curve within habitable rooms and is to be measured as a 15-minute linear L_{eq} at the octave band centre frequencies.

Table 1 – Noise criteria for entertainment noise onto nearby NSRs

Room	Noise rating curve	Design period
Bedrooms	NR25	2300-0700
All habitable rooms	NR35	0700-2300

Therefore, if the noise level in NSRs from newly introduced operational noise is equal or less than the noise rating curves respective to the design period, the noise is considered to be at an acceptable level.

2.3 Fixed plant installations noise impact assessment criteria

The *Industrial and Commercial Noise Sources* subsection of *Appendix C of the Camden Local Plan* sets out the proposed noise criteria to assess newly introduced building services plant on nearby (NSRs) and is indicated in Table 2.

Daytime is defined as the 16-hour period 0700 hours to 2300 and 2300 hours to 0700 hours for the night.

Table 2 - Plant noise emission criteria

Existing Noise sensitive receptor	**Assessment Location**	**Design period**	**LOAEL (Green)**
Dwellings**	Garden used for main amenity (free field) and Outside living or dining or bedroom window (façade)	Day	'Rating level' 10dB* below background
Dwellings**	Outside bedroom window (façade)	Night	'Rating level' 10dB* below background and no events exceeding 57dB L_{Amax}

**10dB should be increased to 15dB if the noise contains audible tonal elements. (day and night). However, if it can be demonstrated that there is no significant difference in the character of the residual background noise and the specific noise from the proposed development then this reduction may not be required. In addition, a frequency analysis (to include, the use of Noise Rating (NR) curves or other criteria curves) for the assessment of tonal or low frequency noise may be required.*

***levels given are for dwellings, however, levels are use specific and different levels will apply dependent on the use of the premises.*

2.4 External noise break in

It is proposed that the Proposed Development include design features and insulation to enable the following internal ambient levels to be achieved, which are based on British Standard 8233:2014 ' Guidance on sound insulation and noise reduction for buildings' and Building Bulletin BB93 'Acoustic design of schools - performance standards'.

- Open plan office areas – 50 dB $L_{Aeq,16hr}$
- Meeting room/study room – 45 $L_{Aeq,30min}$
- 3rd floor audio specialist rooms – 35 dB $L_{Aeq,30min}$

3 Baseline conditions

3.1 Site description

The Site is located on the north-west junction of Parker Street and Newton Street, in Covent Garden. The building itself comprises ground and three upper storeys with a mansard extension and basement. The three upper storeys are currently in use as office, whilst the basement and part of the ground floor is mixed use (primarily office with cinema), consented under ref: 2013/3792/P.

The cinema currently operates as The Garden Cinema, a two screen, digitally equipped, independent cinema with an ancillary café/bar. The upper three storeys of the building are currently vacant. The mansard extension is out of the scope of this application, but the floor is currently in use as office space and will continue to be used as such.

The nearest NSRs are described below and can be seen in the attached Appendix C - Site map:

- NSR1 - Residential occupancies neighbouring the site to the south at 25-37 Parker Street
- NSR2 - Residential occupancies neighbouring the site to the north-west at Macklin Street

The existing construction is thought to be a brick structure with timber joists spanning. The separating floors is understood to be a mixture clay-pot infill and timber joists from a previous refurbishment project.

3.2 Survey methodology and instrumentation

A noise survey was undertaken between Friday 14 June 2023 and Wednesday 19 June 2023, using a combination of long-term unattended noise monitoring and additional short-duration attended noise measurements.

The measurement positions are shown on attached Appendix C - Site map and are described as follows:

- MP1: On the roof terrace of 39-41 Parker Street. Adjacent to the residential occupancies at 25-37 Parker Street
- ST1: A façade measurement (1m from the façade) at the 2nd floor southern elevation
- ST2: A façade measurement (1m from the façade) at the 2nd floor northern elevation

Measurements were made in terms of L_{A90}, L_{Aeq} and L_{Amax}, over 15-minute periods at each position (see attached Glossary for an explanation of noise units used).

Additional short-term measurements were taken within the existing basement cinemas. Measurements were made in terms of L_{Aeq} and L_{Amax} over 1-minute periods.

Table 3 - Noise survey equipment

Item	Manufacturer	Type
Sound level meter	Rion	NL-52
Acoustic calibrator	Rion	NC-74
Weatherproof windshield	Rion	WS-15

The equipment was calibrated before and after the measurements and no significant drift was observed. Calibrations certificates for instrumentation are available on request.

The weather conditions while surveying were warm and dry with a gentle breeze, These conditions are suitable for the measurements conducted. This statement isn't applicable for the periods on 14-15 July 2023 where the weather was unsuitable for measurement, and hence these periods have been excluded from the measurement.

3.3 Results

The site is in a densely populated urban area with a variety of noise sources surrounding. The main factors affecting the noise climate is intermittent road traffic from the surrounding highways and building services noise from surrounding buildings.

The average of the diurnal $L_{Aeq,T}$ values, and most commonly occurring L_{A90} values from the unattended noise measurement (LT1) are shown below in Table 4. Full measurement results can be found in Appendix D - MP1 time history.

Table 4 – LT1 Day and night measured noise levels

$L_{Aeq,16hr}$ (0700-2300)	$L_{Aeq,8hr}$ (2300-0700)	$L_{A90,16hr}$ (0700-2300)	$L_{A90,8hr}$ (2300-0700)
52	45	44	41

The range of short-term attended measurements is shown below in Table 5.

Table 5 - Short term attended measurements

Measurement position	$L_{Aeq,15min}$	$L_{Amax,F,15min}$
ST1	61-62	77-81
ST2	53-63*	76-78

*Playground noise from St Josephs raised the noise climate

The short-term cinema measurements were carried out in Screen 1 and Screen 2 of the existing Garden cinema.

The survey was intended to measure worst case operational noise levels from the cinema. A 10-minute trailer reel was selected, which is intentionally produced at a higher volume, and features a lot of low frequency energy. In addition, the cinema sound system was played back at a higher level than normal.

The average $L_{Aeq,T}$ and 63 Hz – 2000 Hz octave band L_{eq} for the measurement period are shown for each screen in Table 6.

Table 6 - Short term cinema measurements

Screen	L_{Aeq}	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz
1	84	86	85	84	84	78	71
2	81	84	82	80	82	74	68

4 Acoustic Design Strategy

4.1 Overview

The following sub-section describes the acoustic design strategy implemented to enable the noise criteria outlined in Section 2 to be achieved.

4.2 Cinema sound system noise impact

4.2.1 Cinema sound system noise impact

As discussed in section 2.2 newly proposed operational noise in neighbouring occupant's should at an absolute level or lower than NR25 during the night-time (23000-0700), and NR35 during the daytime (0700-2300).

Preliminary calculations of the absolute levels at the closest NSR have been carried out based upon the following assumptions:

- The cinema operational acoustic data is assumed to be no more than the levels set out in Table 6
- The closest NSR is assumed to be the closest ground floor property at 25-37 Parker Street
- The separating construction is understood to be the following:
    - 2x9inch brick walls (both properties external facades doubled up)
    - Riser acting as a lobby with air gap of >1000mm
    - Twin cavity brick wall with plasterboard facing
- The cinema is formed as a 'box-in-box' isolated construction which is discussed further in section 4.2.2

Figure 1 - Ground floor plan neighbouring buildings stitched together

With the assumptions above set out, the calculations indicate that the absolute noise levels set out in Table 1 are likely to be achieved.

4.2.2 Box in box construction discussion

The main route for noise and vibration to travel through to the neighbouring residents, will be from cinema sound system acoustic energy vibrating the structure, and emanating to nearby NSRs through as structure noise and vibration.

To control the acoustic energy entering the structure, the ground floor cinema should be constructed as 'box-in-box' isolated construction.

A box in box construction would comprise of the following elements:

- 100mm floating concrete floor mounted off the floor on acoustic bearings (maximum natural frequency 12 Hz) forming an >80mm airspace with mineral wool insulation laid within
- Lining to the walls and any structural columns with 3no. 15mm (12.5 kg/m^2) layers of plasterboard. Lining should be resiliently fixed, or not touching the primary structure at all with a void >150mm cavity with mineral wool insulation installed within
- The 'lid' of the box-in-box shall be a resiliently mounted mass barrier ceiling underdrawn with 3no. 15mm (12.5 kg/m^2) layers of plasterboard with a >200mm void with 100mm mineral wool insulation installed within
- A lobbied floor would be most effective, but a single heavy door may suffice if located at levels where the acoustic 'box-in-box' starts

The above description is not an acoustic specification and is only intended to demonstrate proof of concept. The box-in-box design should be developed in the detailed design stage. The final design and assessment should be checked and verified by a suitably qualified acoustician.

4.3 Fixed plant installations

As discussed in section 2.2, the 'Rating Level' is to be 10dB below the existing background sound level. On this basis, the plant noise emission limits at the nearest NSR for associated new fixed plant installations are presented in Table 7.

Table 7 - Plant noise emission limits

Location	Rating level $L_{Ar,T}$ dB	
	Daytime (0700-2300)	**Night-time (2300-0700)**
LT1	34	31

It is understood that no new plant is being introduced at the Proposed Development, and that the existing Air Handling Unit (AHU) will supply and extract air to the newly proposed spaces.

Therefore, the AHU is inherently part of the prevailing ambient noise climate and does not need to be assessed as a newly proposed fixed plant installation, assuming it remains at the same duty.

For any other newly proposed roof-top plant such as air source heat pump units, variant refrigerable flow units, smoke extract plant and other associated mechanical plant, noise control principles such as barriers, enclosures, attenuators will be suitable to mitigate any noise impact, and are practicable considering the developments design intent.

4.4 Internal ambient noise levels

Based on the measured façade incident noise levels, and the design assumptions set out below, the internal noise level criteria presented in Section 2 should be met within any habitable room in the proposed development.

- Façade construction >100mm masonry with internal bonding and plaster skim finish
- Windows and frames are standard thermal double glazing > R_w30 on all windows
- Where up-lift in improvement is desired, either increase glazing R_w specification or install secondary glazing

5 Conclusions

Full planning permission is sought for the change of use of 39-41 Parker Street from office use to a mixed education and office use.

The main noise impacts associated with the Proposed Development are:

- Noise impact of newly proposed ground floor cinema sound system on NSRs
- Suitability of the new use class, associated with the external noise break in for new occupants

Noise criteria to assess each of the impacts listed above have been presented and agreed with LBC, and are considered to be in line national and regional noise policy.

A noise survey on site has been carried out to obtain the ambient noise climate around site and the operational noise levels of the existing basement cinemas.

Preliminary calculations of the absolute levels in the closest NSR arising from the ground floor cinema have been carried out and indicate that the absolute noise levels set out in Table 1 are likely to be achieved with the proposed acoustic design strategy implemented.

The existing AHU is inherently part of the prevailing ambient noise climate and does not need to be assessed as a newly proposed fixed plant installation, on the assumption it remains at the same duty.

For any newly proposed roof-top plant, plant noise emission limits have been defined, and standard noise control principles will be suitable to mitigate any noise impact, and are practicable considering the developments design intent.

Based on the assumed façade sound insulation performance, and measured noise levels, the external noise break in is suitable for the new occupants.

This Noise Impact Assessment demonstrates that the development can achieve the noise criteria set out in the Camden Local Plan, and planning permission should not be withheld on the grounds of noise impact.

Appendix A - Glossary of acoustic terms

Ambient Noise

Totally encompassing sound in a given situation at a given time usually composite of sounds from many sources near and far.

A-weighting, dB(A)

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq}, L_{A90} etc., according to the parameter being measured.

Decibel (dB)

A logarithmic scale for comparing the ratios of two quantities, including sound pressure and sound power. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa.

The following figure is provided for reference to illustrate typical noise levels experienced in common situations.

Noise Level Indices

Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.

Facade Noise Level

A facade noise level is the noise level 1m in front of the most exposed window or door in a building facade. The effect of reflection is to produce a slightly higher (typically +2.5 to +3dB) sound level than it would be if the building was not there.

Free-field

Measurement condition in which no reflective surfaces, other than the ground, lies within 3.5m of the microphone position.

$L_{Aeq,T}$

A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.

$L_{Amax,T}$

A noise level index defined as the maximum noise level during the period T. Lmax is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

$L_{A10,T}$

A noise level index. The noise level exceeded for 10% of the time over the period T. The LA10,18h measured between 06:00h and 24:00h has been shown to have a good correlation with community response to road traffic noise.

$L_{A90,T}$

A noise level index. The noise level that is exceeded for 90% of the measurement time interval, T. LA90 can be considered to be the "average minimum" noise level and is often used to describe the background noise level, i.e. the sound pressure level of non-specific noise.

Sound Pressure Level (L_p)

A value equal to 20 times the logarithm to the base 10 of the ratio of the root-mean-square pressure of a sound to a reference pressure, which is normally taken to be 20 μ Pa. Its unit of measurement is the decibel (dB).

Time Weightings, Fast (F), Slow (S) and Impulse (I)

Time weighting is used in sound level meters to stabilize the reading. This is achieved by standardizing the speed with which the metering circuit and meter respond. Two different averaging's are used (1) 'FAST', 'F', which has a time constant of 125ms, and (2) 'SLOW', 'S', which has a time constant of 1000ms. The impulse (I) characteristic is sometimes used to measure gunshots, punch presses, etc. It has a rise time constant of 35ms and a decay time constant of 1500ms.

Appendix B - Noise policy guidance and design criteria

National Planning Policy Framework

Published in February 2019, National Planning Policy Framework (NPPF) this document explains how the planning system should contribute to and enhance the natural and local environment. One of the means to achieve this is by preventing both new and existing developments from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

The NPPF places emphasis on the need to balance the environmental, economic and social aspects of development, rather than looking at any of these considerations in isolation.

According to paragraph 180,

"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;*
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason [...].*"

Noise Policy Statement for England (NPSE): 2010

The NPSE, published by Defra in March 2010, sets out the following aims:

"*Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.*"

In the explanatory notes, it goes on to use the concepts of NOEL – No Observed Effect Level and LOAEL – Lowest Observed Adverse Effect Level; borrowed from toxicology, to help explain the aims of the document and extends this concept to the SOAEL – Significant Observed Adverse Effect Level.

- *The NOEL is the level below which there is no detectable effect on health and quality of life due to noise.*
- *The LOAEL is the level above which adverse effects on health and quality of life can be detected.*
- *The SOAEL is the level above which significant adverse effects on health and quality of life occur.*

To achieve the first aim of the NPSE, it is therefore necessary to avoid any impacts above the SOAEL. Where the impact lies somewhere between the LOAEL and SOAEL, there is a requirement under the second aim to mitigate and minimise adverse effects on health and quality of life; although it is stated that this does not mean that these impacts cannot occur.

The NPSE does not attempt to ascribe objective noise measures to the effect levels; acknowledging that, for instance, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. Furthermore, it is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact of health and quality of life from noise.

National Planning Practice Guidance (NPPG): 2014

In March 2014, the government published Planning Practice Guidance (an on-line resource) to supplement the NPPF. The guidance incorporates a dedicated document in respect of noise (ID:30) updated in March 2014 which advises how the planning system should manage potential noise impacts in new development.

Paragraph 1 of the NPPG states that 'noise needs to be considered when new developments may create additional noise'. The NPPG also identifies instances where potential noise impacts could be a concern through the noise exposure hierarchy. The guidance acknowledges that impacts depend of the type of development being considered and the character of the proposed location.

The guidance also advises in paragraph 8 that there are four broad types of noise mitigation. These relate to engineering, layout, the use of conditions/obligations and mitigating the impact on areas likely to be affected.

The London Plan 2021

Policy D3 – Optimising site capacity through the design-led approach

Policy D3 states that a design-led approach to optimising site capacity should be based on an evaluation of the site's attributes, its surrounding context and its capacity for growth to determine the appropriate form of development for that site. Development proposals should: help present or mitigate the impact of noise and poor air quality.

Measures to design out exposure to poor air quality and noise from both external and internal sources should be integral to development proposals and be considered early in the design process. Characteristics that increase pollutant or noise levels, such as poorly-located emission sources, street canyons and noise sources should also be designed out wherever possible. Optimising site layout and building design can also reduce the risk of overheating as well as minimising carbon emissions by reducing energy demand.

Policy D13 – Agent of Change

The Agent of Change principle places the responsibility for mitigating impacts from existing noise and other nuisance-generating activities or uses on the proposed new noise-sensitive development. Boroughs should ensure that Development Plans and planning decisions reflect the Agent of Change principle and take account of existing noise and other nuisance-generating uses in a sensitive manner when new development is proposed nearby.

Development should be designed to ensure that established noise and other nuisance-generating uses remain viable and can continue or grow without unreasonable restrictions being placed on them.

New noise and other nuisance-generating development proposed close to residential and other noise-sensitive uses should put in place measures to mitigate and manage any noise impacts for neighbouring residents and businesses.

Development proposals should manage noise and other potential nuisances by:

1) ensuring good design mitigates and minimises existing and potential nuisances generated by existing uses and activities located in the area

2) exploring mitigation measures early in the design stage, with necessary and appropriate provisions including ongoing and future management of mitigation measures secured through planning obligations

3) separating new noise-sensitive development where possible from existing noise-generating businesses and uses through distance, screening, internal layout, sound-proofing, insulation and other acoustic design measures.

Boroughs should not normally permit development proposals that have not clearly demonstrated how noise and other nuisances will be mitigated and managed.

Policy D14 – Noise

In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:

1) avoiding significant adverse noise impacts on health and quality of life
2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change
3) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses
4) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)
5) separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation
6) where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles
7) promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.

Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations.

Appendix C - Site map

0 25 50 m

39 - 41 Parker Street
London Film School
Noise Impact Assessment Map

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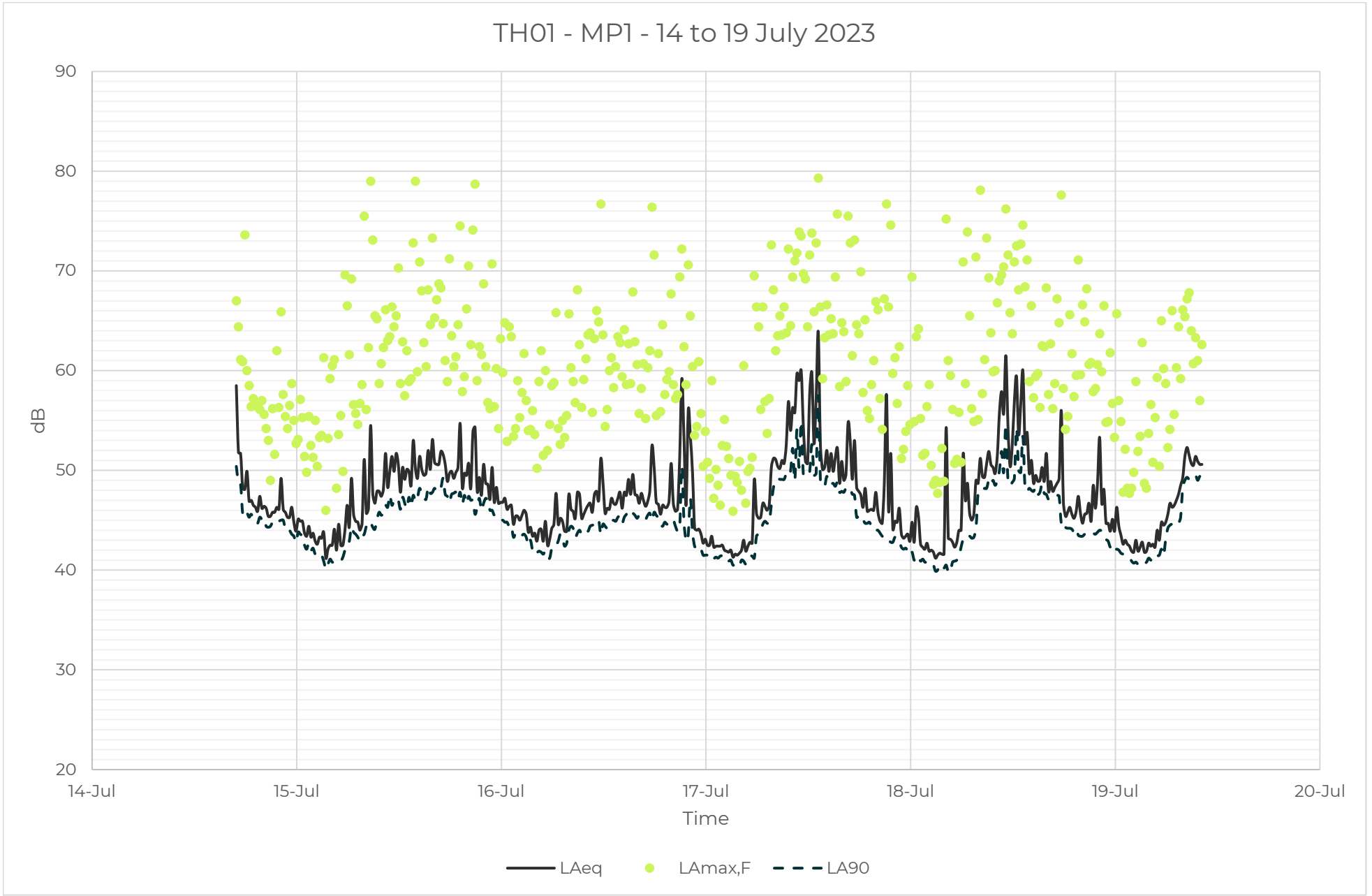
Appendix D - MP1 time history


TH01 - MP1 - 14 to 19 July 2023
90
80
70
60
50
40
30
20
dB
14-Jul
15-Jul
16-Jul
17-Jul
18-Jul
19-Jul
20-Jul
Time
LAeq
LAmax,F
LA90