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PREPARED: 03 October 2024

12 STEPHEN MEWS, CAMDEN

NOISE IMPACT ASSESSMENT

CONTENTS

LIST OF ATTACHMENTS

Project Ref:	AS13654	**Project Name:**	12 Stephen Mews, Camden
Report Ref:	AS13654.241003.NIA	**Report Title:**	Noise Impact Assessment
Client Name:	Moresand Limited		
Project Manager:	Ravee Long		
Report Author:	Ravee Long		

Clarke Saunders Acoustics
Winchester SO22 5BE

1.0 EXECUTIVE SUMMARY

1.1 Clarke Saunders Acoustics have been commissioned by Moresand Limited to conduct a noise impact assessment of proposed building services plant to be installed as part of the refurbishment project at 12 Stephen Mews, Camden.

1.2 The plant noise impact assessment has been undertaken following the London Borough of Camden methodologies, resulting in the proposed plant scheme complying with the "green" risk level.

1.3 No further mitigation is necessary.

2.0 INTRODUCTION

2.1 Planning approval is sought for the installation of new building services plant at 12 Stephen Mews, Camden, London, as part of a wider refurbishment of the office building.

2.2 Clarke Saunders Acoustics (CSA) has been commissioned by Moresand Limited to undertake a noise impact assessment, in accordance with the planning requirements of the London Borough of Camden (LBC).

2.3 The report describes the assessment undertaken, including acoustic calculations, and its findings.

2.4 A glossary relevant to the terminology used in this report is presented in Appendix A.

3.0 SITE DESCRIPTION

3.1 The site is located at 12 Stephen Mews, Camden, bounded by Stephen Mews to the south and Percy Mews to the north. Stephen Mews branches off Gresse Street roughly 20m from the site.

3.2 The properties on Stephen Mews are understood to be primarily commercial.

3.3 The properties on Percy Mews are understood to be a mixture of commercial and residential.

3.4 The nearest residential receptors to the site have been identified as the top floors of the Bricklayers Arms, 31 Gresse Street to the south and 8 Percy Mews to the north.

4.0 LOCAL AUTHORITY REQUIREMENTS

4.1 The LBC 'Local Plan 2017' refers to the 'National Planning Policy Framework' and 'Planning Practice Guidance' on the matter of noise impact assessment., stating the following:

A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 'Methods for rating and assessing industrial and commercial sound' (BS 4142) will be used. For such cases a 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion).

4.2 The document also provides targeted numerical values broadly corresponding to the LOAEL and SOAEL effect levels, as shown in Table 4.1.

Noise Significance Risk	Green LOAEL	Amber LOAEL to SOAEL	Red SOAEL
Camden Local Plan	'Rating level' 10dB* below background	'Rating level' between 9dB below and 5dB above background	'Rating level' greater than 5dB above background

Table 4.1 Excerpt from LBC Local Plan 2017

4.3 The following description is also provided with regard to acceptability of the green, amber and red designations:

- Green – where noise is considered to be at an acceptable level.
- Amber – where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development.
- Red – where noise is observed to have a significant adverse effect.

5.0 ENVIRONMENTAL NOISE SURVEY & EQUIPMENT

5.1 A survey of existing noise levels was undertaken at roof level of the site at the locations presented in the attached indicative site plan AS13654/SP1. Measurements of consecutive 5-minute L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} sound pressure levels were taken between Thursday 18th July and Tuesday 23rd July 2024.

5.2 The following equipment was used during the course of the survey:

- 1 no. Rion data logging sound level meter type NL52;
- 1 no. NTi data logging sound level meter type XL2; and
- 1 no. Rion sound level calibrator type NC74.

5.3 The calibration of the sound level meters was verified before and after use. No significant calibration drift was detected.

5.4 The weather during the survey was noted on site at installation and retrieval of the meters. There were short periods of light showers and rain reported during the survey period. Overall, however, conditions were suitable to determine the background levels during the survey period, from which the external plant sound criteria are set.

5.5 Measurements were made following procedures in BS 7445-2:1991 (ISO1996-2:1987) *Description and measurement of environmental noise – Part 2: Acquisition of data pertinent to land use* and BS 4142:2014 + A.1:2019 *Methods for rating and assessing industrial and commercial sound.*

6.0 RESULTS

6.1 ENVIRONMENTAL NOISE SURVEY

6.1.1 Figures AS13654/TH1-TH10 show the L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} sound pressure levels as time histories at the two measurement positions.

6.1.2 Table 6.1 provides a summary of the measured average noise levels and the typical background noise levels (derived as the 10th percentile of the L_{A90} dataset) at the monitoring locations during the survey.

Monitoring Location	Monitoring Period	Typical Background $L_{A90,5mins}$	Average Ambient $L_{Aeq,T}$
North	Daytime 07:00 to 23:00	48 dB	54 dB
	Night-time 23:00 to 07:00	46 dB	51 dB
South	Daytime 07:00 to 23:00	57 dB	59 dB
	Night-time 23:00 to 07:00	57 dB	58 dB

Table 6.1 Summary of environmental noise survey results

6.1.3 The environmental noise survey data and experiences on site indicate that the existing noise climate is plant dominated. The plant serving 12 Stephen Mews was not in operation for the duration of the survey. During the installation and the collection of the equipment, it was observed that the measurement positions are representative of the receptor locations.

6.2 PROPOSED PLANT

6.2.1 The selected plant has been confirmed as:

- 2no. Panasonic U-10LE1E8 condensing units;
- 1no. Panasonic CU-TZ71ZKE condensing unit; and
- 1no. Panasonic CU-Z35YKEA condensing unit.

6.2.2 The proposed location of these units is at the existing roof level of the site, split into two separate plant areas, one to the north and one to the south of the roof space. This is detailed in the indicative site plan AS13654/SP1.

6.2.3 The north plant area will house 1no. Panasonic U-10LE1E8 and 1no. Panasonic CU-TZ71ZKE condensing unit and the other plant area will house the remaining two.

6.2.4 It has been confirmed that the Panasonic U-10LE1E8 units will be limited to the Silent 3 operation mode. The manufacturer sound data is available in octave bands for the normal operation mode. Therefore, this octave band data has been scaled to meet the single figure data for the Silent 3 operation mode.

6.2.5 The manufacturer sound data for the Panasonic CU-TZ71ZKE and Panasonic CU-Z35YKEA condensing units are not available, however the manufacturer has confirmed that the sound data for the Panasonic U-71PZ3E5A is a representative substitution for these two units.

6.2.6 The sound data for the proposed units are outlined in Table 6.2.

Frequency (Hz)	63	125	250	500	1K	2K	4K	8K	dB(A)
Panasonic U-10LE1E8 (Silent 3)*	53	52	51	47	46	46	44	40	52
Panasonic CU-TZ71ZKE**	47	50	50	47	45	40	32	28	49
Panasonic CU-Z35YKEA**	47	50	50	47	45	40	32	28	49

Table 6.2 Proposed plant sound pressure levels @ 1m
**Octave band data scaled from normal mode operations to meet the single figure value of Silent 3.*
***Plant sound data for the Panasonic U-71PZ3E5A used as substitute as advised by manufacturer.*

6.3 PREDICTED NOISE LEVELS

6.3.1 Plant noise levels have been calculated to the most affected residential receptors considering building screening and propagation losses. These are compared against the associated risk levels set out in Section 4.0.

6.3.2 As part of the larger development works, the roof level between the two plant areas is going to be built up to provide an additional floor. This additional floor is expected to offer additional building screening from the south proposed plant area to the north receptor and vice versa.

6.3.3 A summary of the results from the acoustic calculations is presented in Table 6.3.

Receptor	Period	Typical Background $L_{A90,5mins}$	Plant Noise Level $L_{Aeq,T}$	LBC Risk Level
8 Percy Mews (North Receptor)	Daytime 07:00 to 23:00	48 dB	36 dB	Green
	Night-time 23:00 to 07:00	46 dB	36 dB	Green
31 Gresse Street (South Receptor)	Daytime 07:00 to 23:00	57 dB	33 dB	Green
	Night-time 23:00 to 07:00	57 dB	33 dB	Green

Table 6.3 Summary of predicted noise levels against LBC Risk Levels

6.3.4 A summary of the calculations is shown in Appendix B of this report.

7.0 CONCLUSIONS

7.1 Clarke Saunders Acoustics have been commissioned by Moresand Limited to conduct a noise impact assessment of proposed building services plant to be installed at 12 Stephen Mews, Camden.

7.2 An environmental noise survey has been completed to establish the existing background noise level in the area which has been used to compare against the predicted plant noise levels at the receptor locations. The results have been assessed against the risk levels outlined within the LBC Local Plan.

7.3 The assessment has indicated that the plant noise at the closest, most affected noise sensitive receptors is expected to be within the “green” risk level.

7.4 No further mitigation is required.

Ravee Long AMIOA
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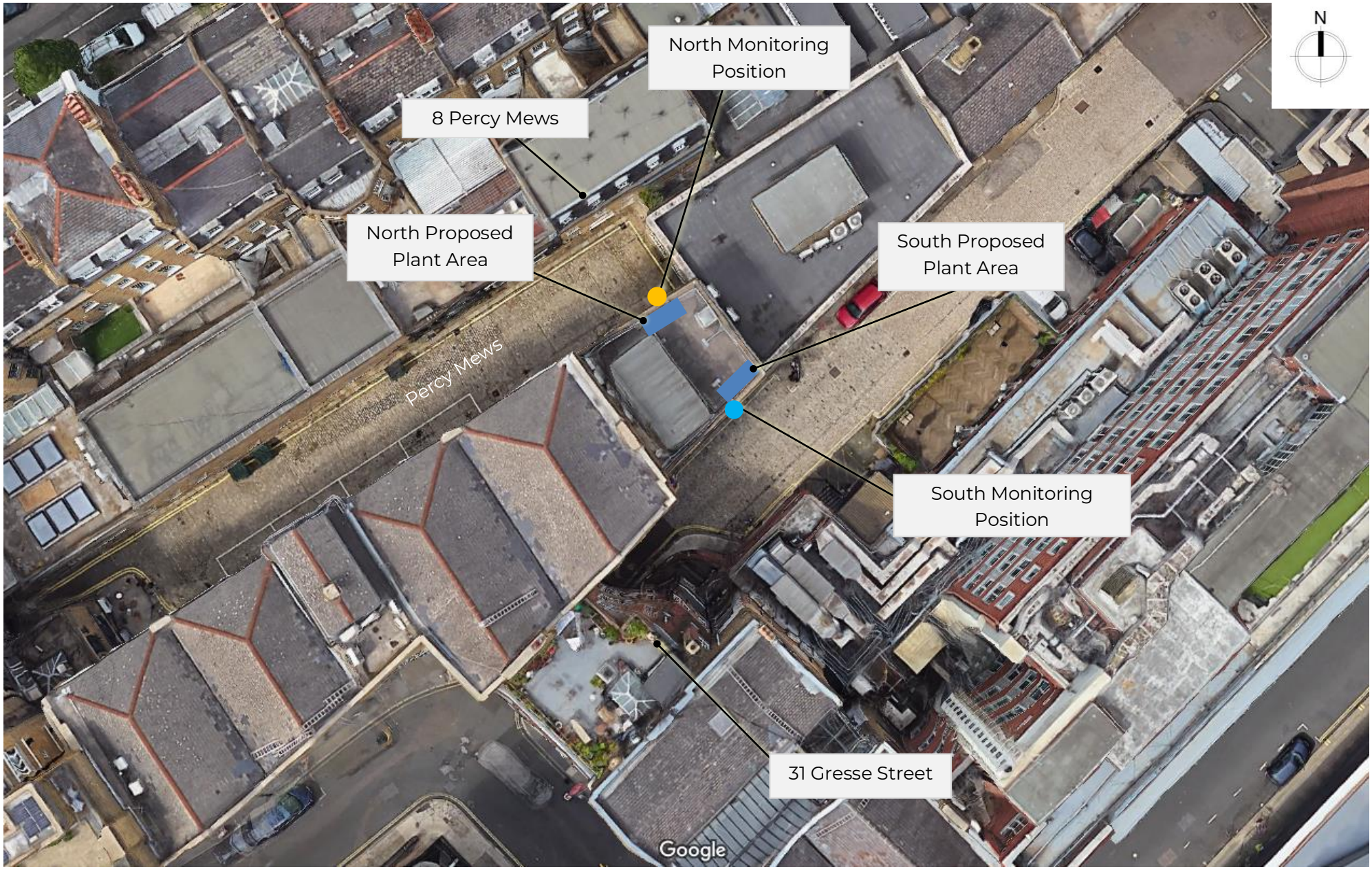
N
North Monitoring Position
8 Percy Mews
North Proposed Plant Area
South Proposed Plant Area
Percy Mews
South Monitoring Position
31 Gresse Street
Google

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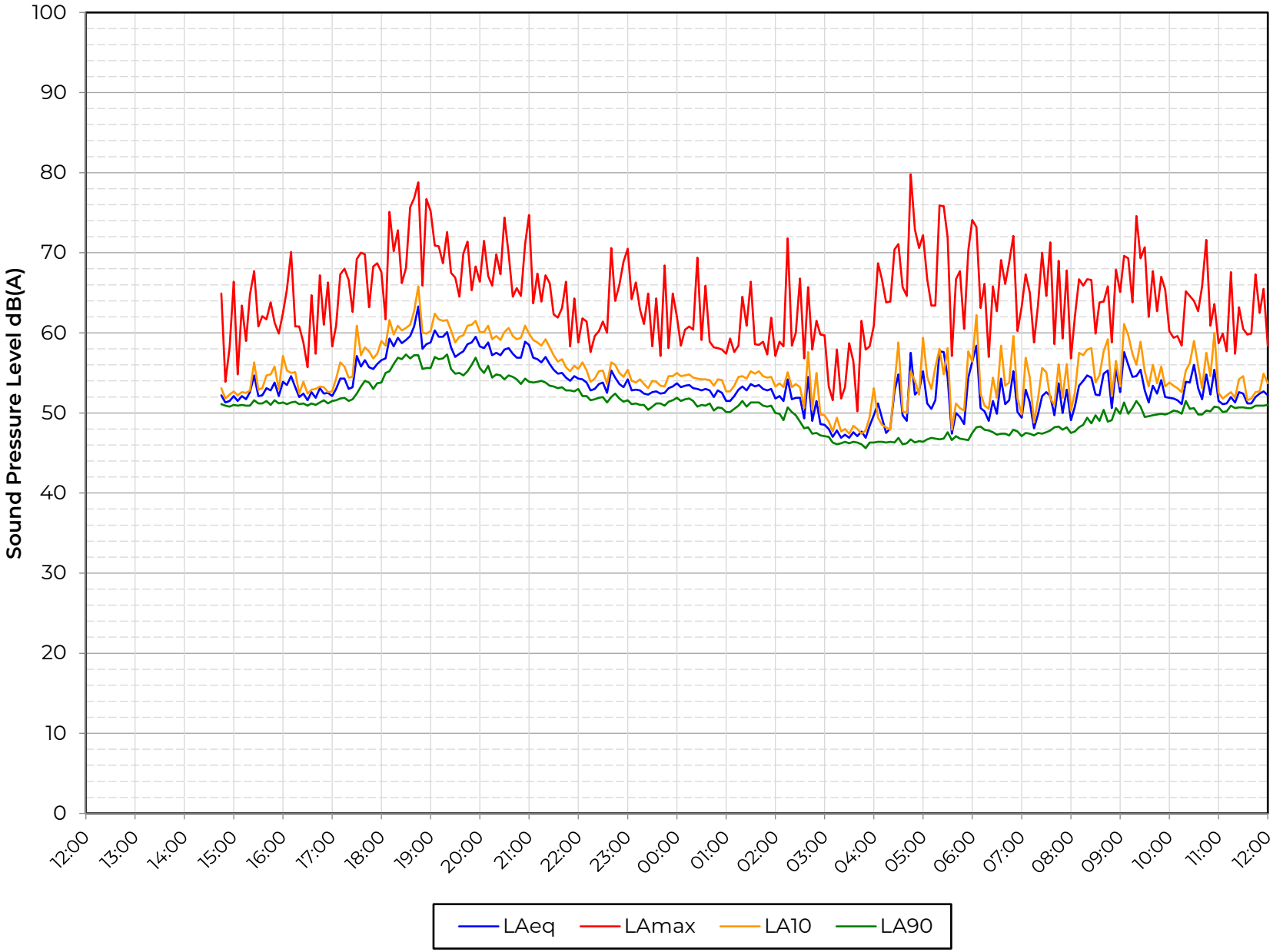
12 Stephen Mews, Camden

Position North



Thu 18 Jul to Fri 19 Jul

Figure AS13654/TH1

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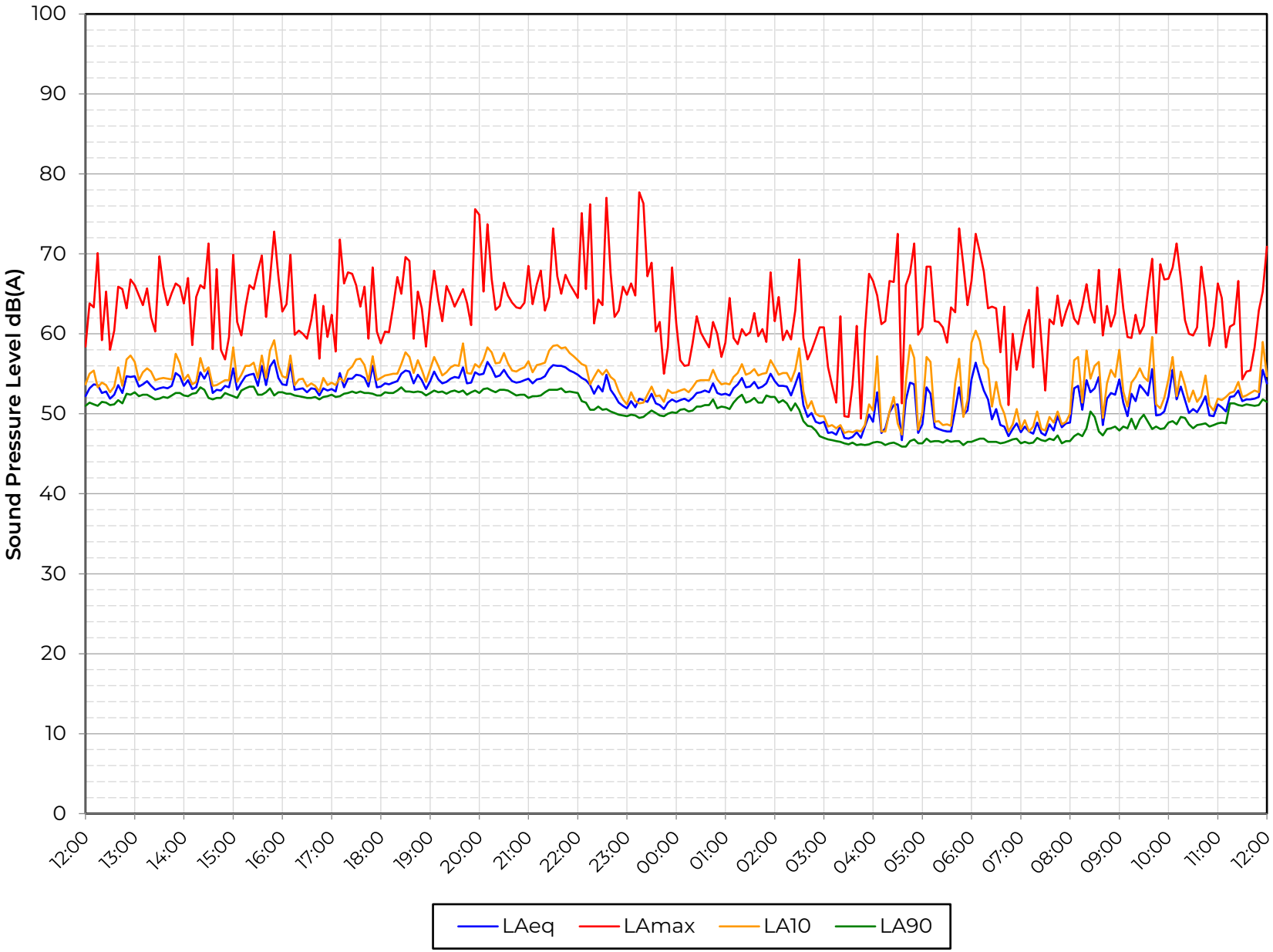
12 Stephen Mews, Camden

Position North



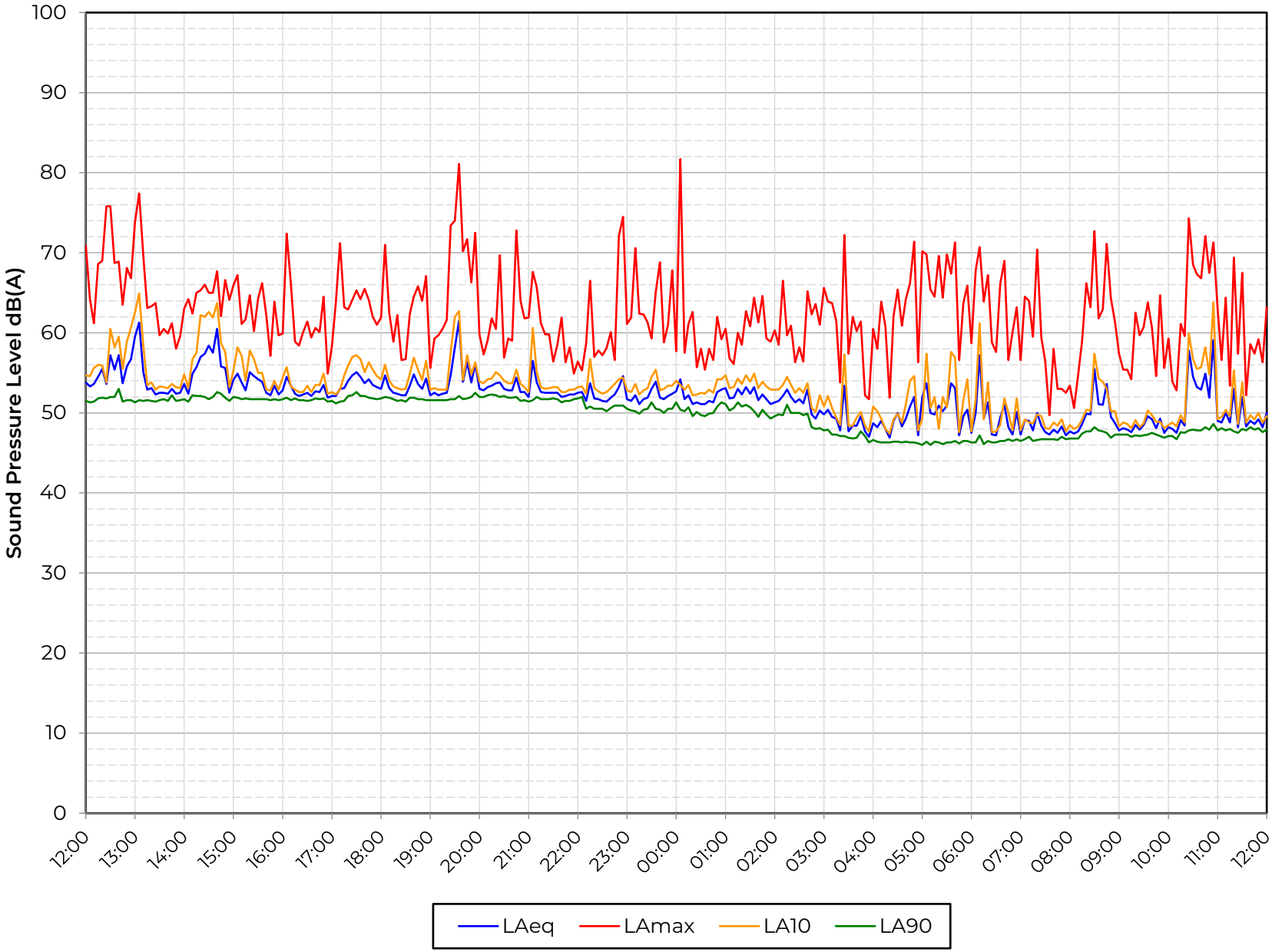
Fri 19 Jul to Sat 20 Jul

Figure AS13654/TH2

clarke saunders acoustics

12 Stephen Mews, Camden

Position North



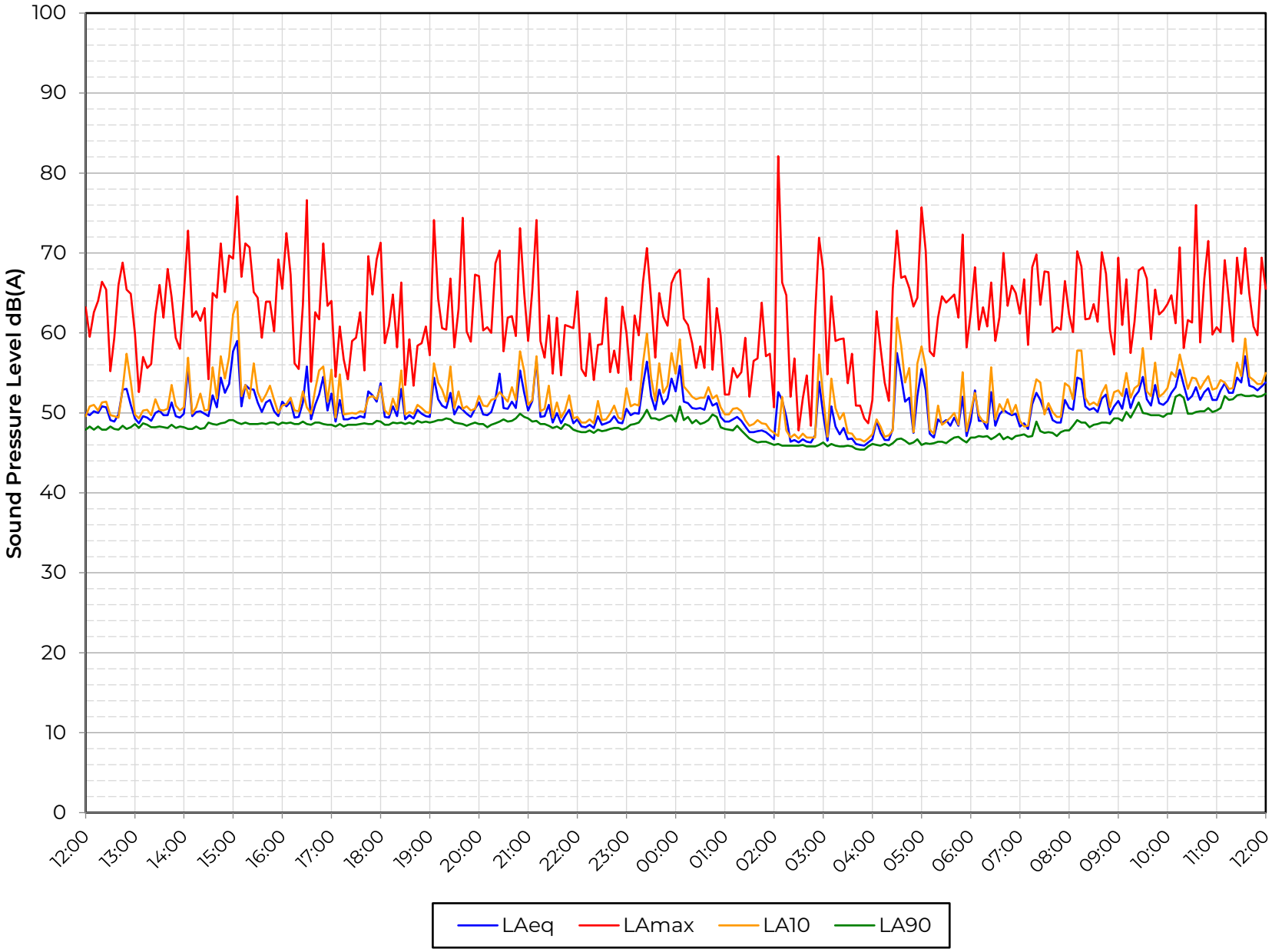
Sat 20 Jul to Sun 21 Jul

Figure AS13654/TH3

clarke saunders acoustics

12 Stephen Mews, Camden

Position North



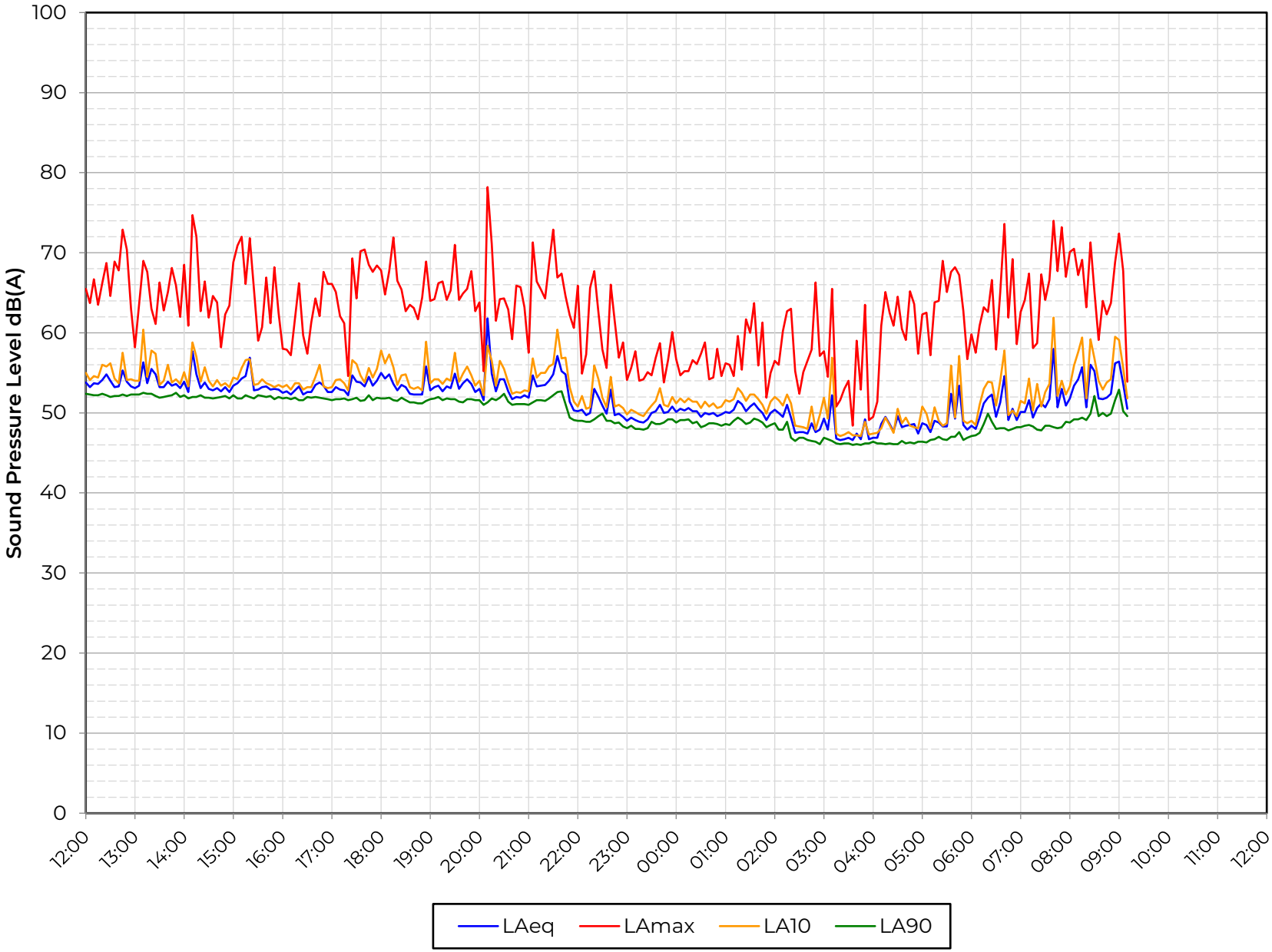
Sun 21 Jul to Mon 22 Jul

Figure AS13654/TH4

clarke saunders acoustics

12 Stephen Mews, Camden

Position North



Mon 22 Jul to Tue 23 Jul

Figure AS13654/TH5

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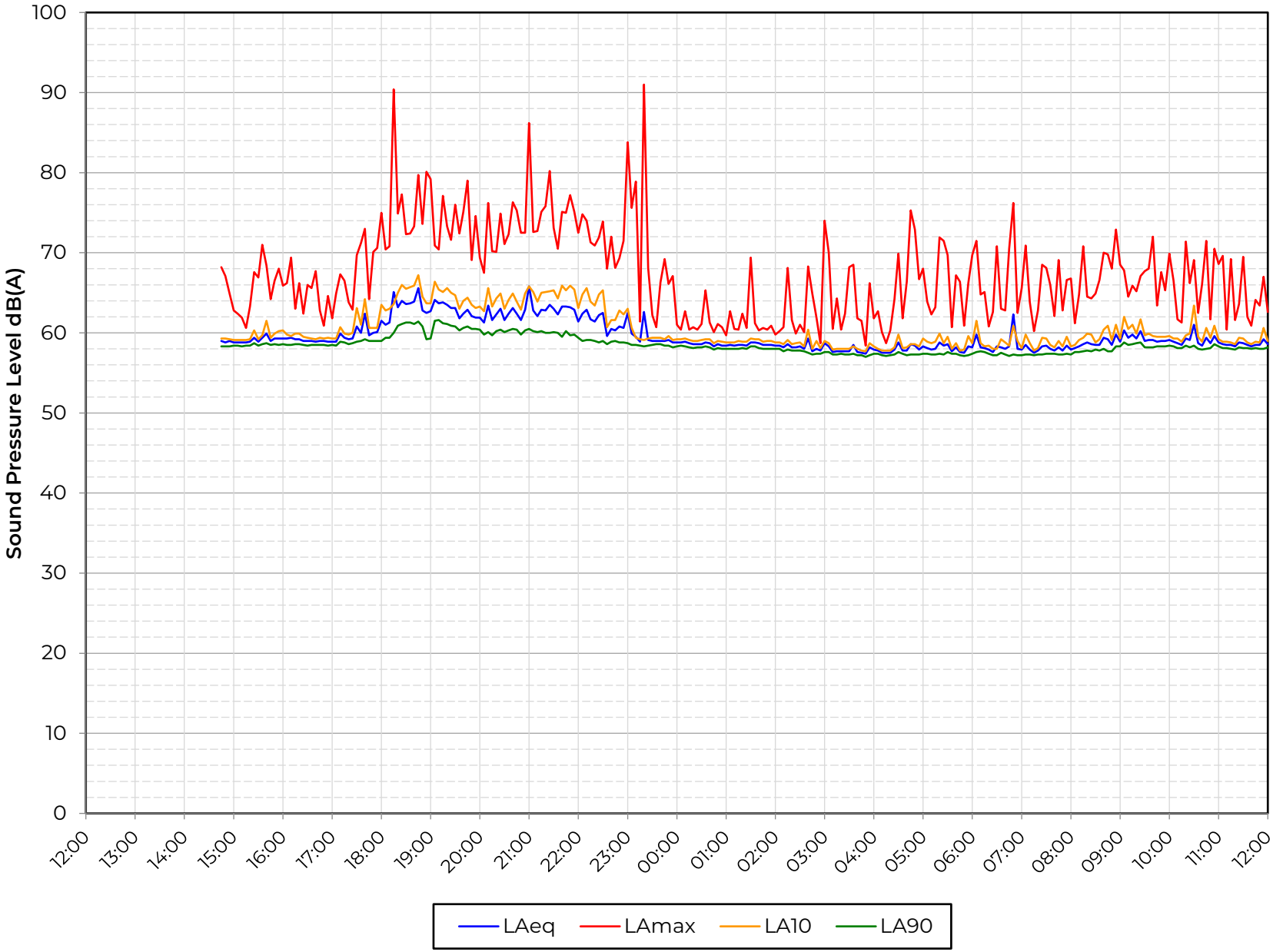
12 Stephen Mews, Camden

Position South



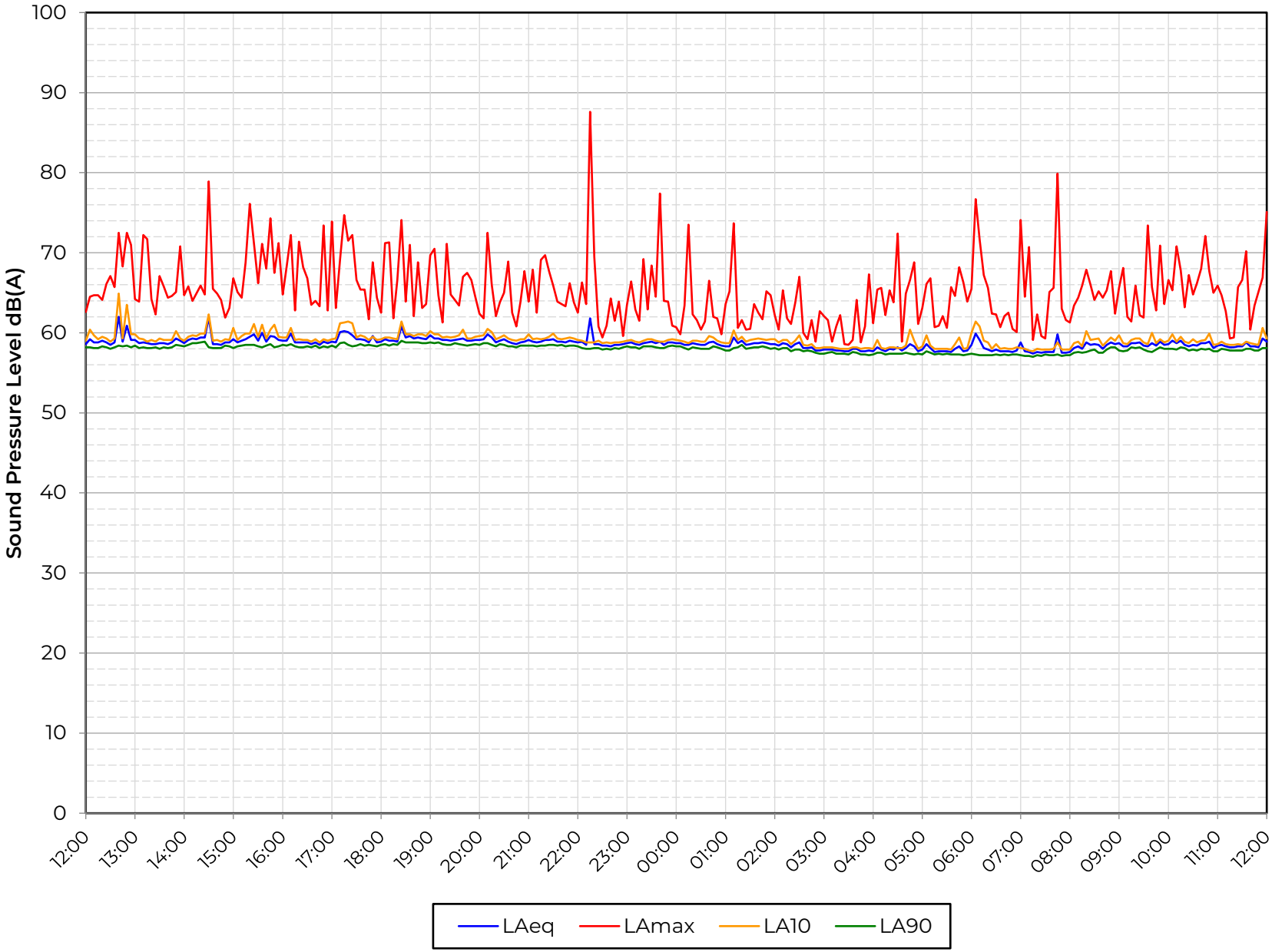
Thu 18 Jul to Fri 19 Jul

Figure AS13654/TH6

clarke saunders acoustics

12 Stephen Mews, Camden

Position South



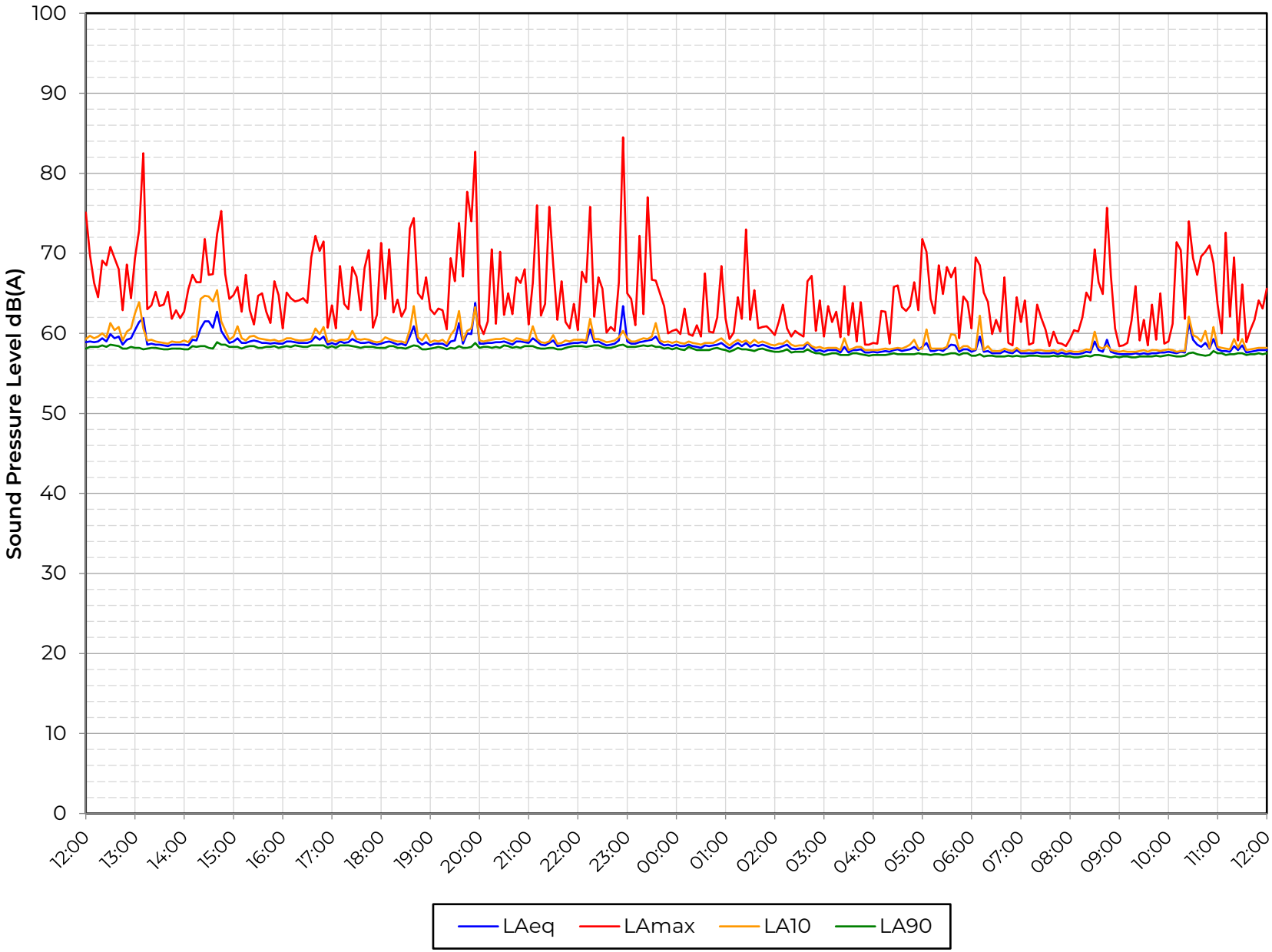
Fri 19 Jul to Sat 20 Jul

Figure AS13654/TH7

clarke saunders acoustics

12 Stephen Mews, Camden

Position South



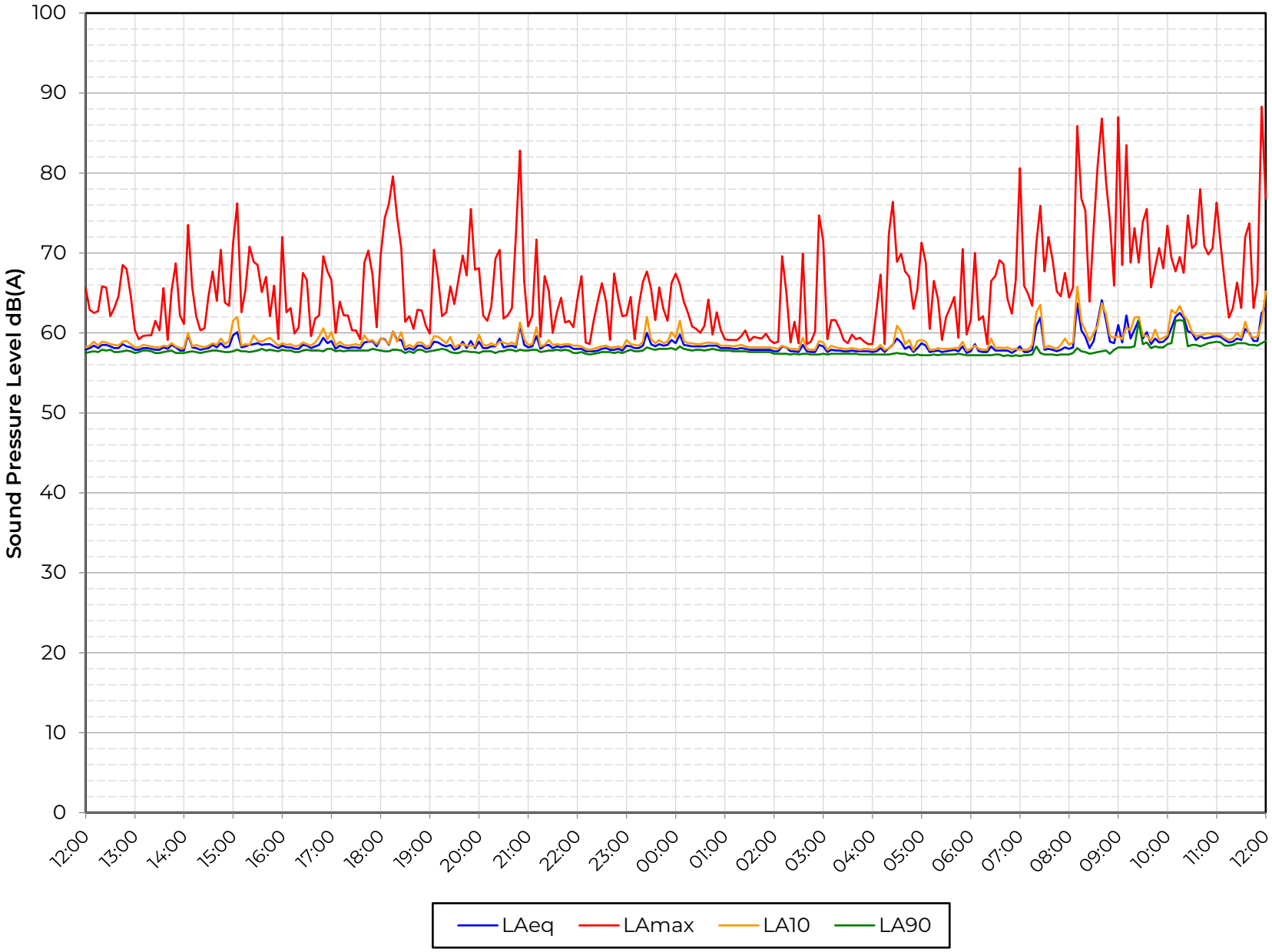
Sat 20 Jul to Sun 21 Jul

Figure AS13654/TH8

clarke saunders acoustics

12 Stephen Mews, Camden

Position South



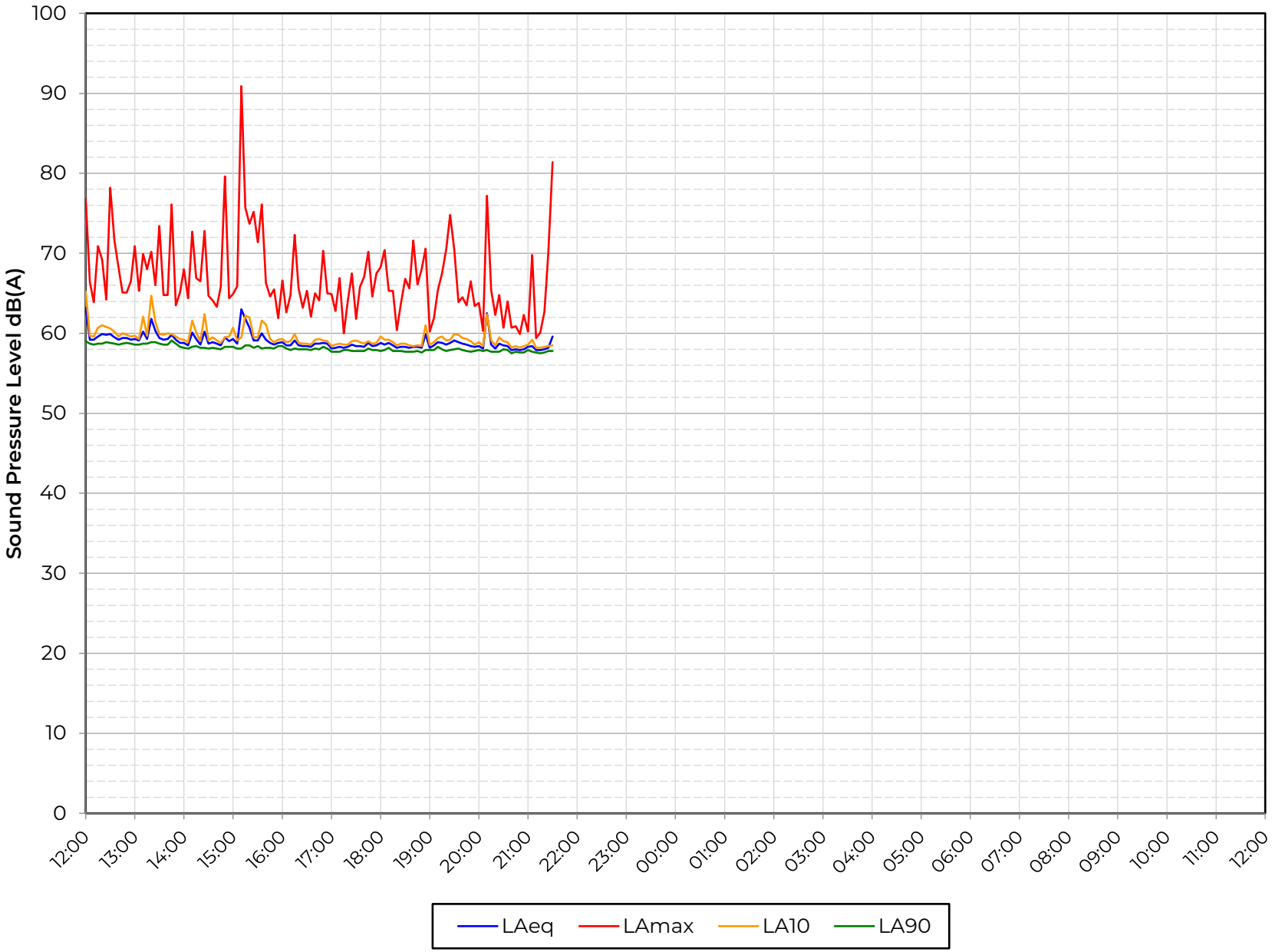
Sun 21 Jul to Mon 22 Jul

Figure AS13654/TH9

clarke saunders acoustics

12 Stephen Mews, Camden

Position South



Mon 22 Jul to Tue 23 Jul

Figure AS13654/TH10

APPENDIX A

Acoustic Terminology

The human impact of sounds is dependent upon many complex interrelated factors such as 'loudness', its frequency (or pitch) and variation in level. In order to have some objective measure of the annoyance, scales have been derived to allow for these subjective factors.

Sound Vibrations propagating through a medium (air, water, etc.) that are detectable by the auditory system.

Noise Sound that is unwanted by or disturbing to the perceiver.

Frequency The rate per second of vibration constituting a wave, measured in Hertz (Hz), where 1Hz = 1 vibration cycle per second. The human hearing can generally detect sound having frequencies in the range 20Hz to 20kHz. Frequency corresponds to the perception of 'pitch', with low frequencies producing low 'notes' and higher frequencies producing high 'notes'.

dB(A): Human hearing is more susceptible to mid-frequency sounds than those at high and low frequencies. To take account of this in measurements and predictions, the 'A' weighting scale is used so that the level of sound corresponds roughly to the level as it is typically discerned by humans. The measured or calculated 'A' weighted sound level is designated as dB(A) or L_A.

L_{eq}: A notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 8 hour, 1 hour, etc).

The concept of L_{eq} (equivalent continuous sound level) has primarily been used in assessing noise from industry, although its use is becoming more widespread in defining many other types of sounds, such as from amplified music and environmental sources such as aircraft and construction.

Because L_{eq} is effectively a summation of a number of events, it does not in itself limit the magnitude of any individual event, and this is frequently used in conjunction with an absolute sound limit.

L_{10} & L_{90}: Statistical L_n indices are used to describe the level and the degree of fluctuation of non-steady sound. 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 as such can be regarded as a typical maximum level. Similarly, L_{90} is the typical minimum level and is often used to describe background noise.

It is common practice to use the L_{10} index to describe noise from traffic as, being a high average, it takes into account the increased annoyance that results from the non-steady nature of traffic flow.

L_{max}: The maximum sound pressure level recorded over a given period. L_{max} is sometimes used in assessing environmental noise, where occasional loud events occur which might not be adequately represented by a time-averaged L_{eq} value.

Octave Band Frequencies

In order to determine the way in which the energy of sound is distributed across the frequency range, the International Standards Organisation has agreed on "preferred" bands of frequency for sound measurement and analysis. The widest and most commonly used band for frequency measurement and analysis is the Octave Band.

In these bands, the upper frequency limit is twice the lower frequency limit, with the band being described by its "centre frequency" which is the average (geometric mean) of the upper and lower limits, e.g. 250 Hz octave band extends from 176 Hz to 353 Hz. The most commonly used octave bands are:

Octave Band Centre Frequency Hz	63	125	250	500	1000	2000	4000	8000

Human Perception of Broadband Noise

Because of the logarithmic nature of the decibel scale, it should be borne in mind that sound levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) sound level is not twice as loud as 50dB(A). It has been found experimentally that changes in the average level of fluctuating sound, such as from traffic, need to be of the order of 3dB before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10dB is perceived by the average listener as a doubling or halving of loudness. Using this information, a guide to the subjective interpretation of changes in environmental sound level can be given.

INTERPRETATION

Change in Sound Level dB	Subjective Impression	Human Response
0 to 2	Imperceptible change in loudness	Marginal
3 to 5	Perceptible change in loudness	Noticeable
6 to 10	Up to a doubling or halving of loudness	Significant
11 to 15	More than a doubling or halving of loudness	Substantial
16 to 20	Up to a quadrupling or quartering of loudness	Substantial
21 or more	More than a quadrupling or quartering of loudness	Very Substantial

Earth Bunds and Barriers - Effective Screen Height

When considering the reduction in sound level of a source provided by a barrier, it is necessary to establish the "effective screen height". For example if a tall barrier exists between a sound source and a listener, with the barrier close to the listener, the listener will perceive the sound as being louder if he climbs up a ladder (and is closer to the top of the barrier) than if he were standing at ground level. Equally if he sat on the ground the sound would seem quieter than if he were standing. This is explained by the fact that the "effective screen height" is changing with the three cases above. In general, the greater the effective screen height, the greater the perceived reduction in sound level.

Similarly, the attenuation provided by a barrier will be greater where it is aligned close to either the source or the listener than where the barrier is midway between the two.

APPENDIX B

PLANT SOUND TO 8 PERCY MEWS		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
North Plant Area										
Panasonic U-10LE1E8 (Silent 3)	Lp @ 1m	53	52	51	47	46	46	44	40	52
Reflections		3	3	3	3	3	3	3	3	
Distance Loss	11m	-21	-21	-21	-21	-21	-21	-21	-21	
	Subtotal	**35**	**34**	**33**	**29**	**28**	**28**	**26**	**22**	**35**
Panasonic CU-TZ71ZKE	Lp @ 1m	47	50	50	47	45	40	32	28	49
Reflections		3	3	3	3	3	3	3	3	
Distance Loss	11m	-21	-21	-21	-21	-21	-21	-21	-21	
	Subtotal	**29**	**32**	**32**	**29**	**27**	**22**	**14**	**10**	**32**
South Plant Area										
Panasonic U-10LE1E8 (Silent 3)	Lp @ 1m	53	52	51	47	46	46	44	40	52
Building Screening Loss		-10	-10	-10	-10	-10	-10	-10	-10	
Distance Loss	16m	-24	-24	-24	-24	-24	-24	-24	-24	
	Subtotal	**19**	**18**	**17**	**13**	**12**	**12**	**10**	**6**	**18**
Panasonic CU-Z35YKEA	Lp @ 1m	47	50	50	47	45	40	32	28	49
Building Screening Loss		-10	-10	-10	-10	-10	-10	-10	-10	
Distance Loss	16m	-24	-24	-24	-24	-24	-24	-24	-24	
	Subtotal	**13**	**16**	**16**	**13**	**11**	**6**	**0**	**0**	**15**
Specific sound level at receptor	**$L_{eq\ 1hr}$**	**36**	**36**	**36**	**32**	**31**	**29**	**27**	**23**	**36**

APPENDIX B

PLANT SOUND TO 31 GRESSE STREET		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
North Plant Area										
Panasonic U-10LE1E8 (Silent 3)	Lp @ 1m	53	52	51	47	46	46	44	40	52
Building Screening Loss	Signifiant	-10	-10	-10	-10	-10	-10	-10	-10	
Distance Loss	23m	-27	-27	-27	-27	-27	-27	-27	-27	
	Subtotal	**16**	**15**	**14**	**10**	**9**	**9**	**7**	**3**	**15**
Panasonic CU-TZ71ZKE	Lp @ 1m	47	50	50	47	45	40	32	28	49
Building Screening Loss	Signifiant	-10	-10	-10	-10	-10	-10	-10	-10	
Distance Loss	23m	-27	-27	-27	-27	-27	-27	-27	-27	
	Subtotal	**10**	**13**	**13**	**10**	**8**	**3**	**0**	**0**	**13**
South Plant Area										
Panasonic U-10LE1E8 (Silent 3)	Lp @ 1m	53	52	51	47	46	46	44	40	52
Reflections		3	3	3	3	3	3	3	3	
Distance Loss	17m	-25	-25	-25	-25	-25	-25	-25	-25	
	Subtotal	**31**	**30**	**29**	**25**	**24**	**24**	**22**	**18**	**31**
Panasonic CU-Z35YKEA	Lp @ 1m	47	50	50	47	45	40	32	28	49
Reflections		3	3	3	3	3	3	3	3	
Distance Loss	17m	-25	-25	-25	-25	-25	-25	-25	-25	
	Subtotal	**25**	**28**	**28**	**25**	**23**	**18**	**10**	**6**	**28**
Specific sound level at receptor	**$L_{eq\ 1hr}$**	**32**	**33**	**32**	**29**	**27**	**25**	**23**	**19**	**33**