



PREPARED: 28 March 2025

LONGLEY LANE WTS, MANCHESTER CITY SOUND IMPACT ASSESSMENT

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Project Ref:	AS13809	Project Name:	Longley Lane WTS, Manchester City
Report Ref:	AS13809.250303.R1	Report Title:	Sound Impact Assessment
Client Name:	SUEZ		
Project Manager:	Alec Korchev		
Report Author:	Alec Korchev		
Clarke Saunders Acoustics Winchester SO22 5BE		This report has been prepared in response to the instructions of our client. It is not intended for and should not be relied upon by any other party or for any other purpose.	

1.0 INTRODUCTION

- 1.1 Planning approval is sought for extended operational hours of the Longley Lane Waste Transfer Station (the Site) Materials Recovery Facility (MRF) and Green Waste Processing Facility (GWPF).
- 1.2 Clarke Saunders Acoustics (CSA) has been appointed by SUEZ to undertake a sound impact assessment of the site operations under the proposed operational hours.
- 1.3 This report describes the survey and assessment undertaken, including acoustic calculations, and its findings.
- 1.4 A glossary of technical terminology relevant to this report is presented in Appendix A.

2.0 SITE DESCRIPTION

- 2.1 The site is located on the edge of an industrial area due south of Manchester city centre within the Manchester City Council Area. Industrial sites flank the Site to the west and south, Didsbury Golf Club to the north, Gatley Carrs Nature Reserve to the east. Residential housing is situated to the south-east and north-west of the Site, with the nearest houses located along Lorna Grove (~125m away) and Bronington Close (~380m away), respectively.
- 2.2 The site operations include: lorries entering and exiting the Site; articulated lorries manoeuvring around the Site; lorries depositing and collecting material; shovelling material around the Site; forklift and clamp truck operation; glass breaking; use of binder screen; air classification of material; use of balers; use of eddy current and overband magnets for separating metals.
- 2.3 With reference to the conditional consent for Application 083920/FO/2007/S2, the following condition restricts onsite activity:

“9) The facilities shall not be operate [sic.] outside the following hours, unless otherwise agreed in writing by the City Council as local planning authority:-

Household Waste Recycling Centre (HWRC) 8.00am - 8.00pm Monday to Sunday during British Summer Time and 8.00am - 6.00pm Monday to Sunday in winter.

Materials Recovery Facility 6.00am - 6.00pm Monday to Friday and 7.00am - 1.00pm on Saturday for material reception and 24 hours Monday to Sunday for materials processing.

Green Waste Processing Facility 7.00am - 6.00pm Monday to Sunday for material reception and 7.00am - 6.00pm Monday to Friday and 7.00am - 1.00pm on Saturday for material processing.

Reason - In interests of residential amenity in order to reduce noise and general disturbance in accordance with Policies H2.2 and DC26 and the Unitary Development Plan for the City of Manchester.

- 2.4 Condition 9 also refers to hours related to the Household Waste Recycling Centre (HWRC). An extension of hours for the HWRC is not currently sought and therefore, this is excluded from this assessment.

- 2.5 It is proposed to extend the hours for material reception to both MRF and GWRF; as well as materials processing within the GWPF to 06:00 to 22:00hrs Monday to Sunday (including bank holidays).

2.6 COMPETENCE

- 2.6.1 The author of this report, Alec Korchev, is a Senior Specialist Consultant at CSA with over 6 years' experience in acoustics consulting. Alec holds a MSc in Architectural and Environmental Acoustics and is a corporate member of the Institute of Acoustics (MIOA).
- 2.6.2 The report adheres with the principles required by the Institute of Acoustics in their Code of Conduct, and the work is within the author's own area of knowledge and expertise. Where opinions have been expressed, these represent true and complete professional opinions on the matters to which they refer.
- 2.6.3 CSA is a full member of the Association of Noise Consultants (ANC).

3.0 ASSESSMENT METHODOLOGY

3.1 BRITISH STANDARD BS4142:2014+A.1:2019

- 3.1.1 British Standard BS4142:2014+A.1:2019¹ considers the sound from proposed specific sound sources in the context of the existing background sound climate to determine magnitude of impact. The methodology provides guidance on the potential interpretation of impact and is a reasonable methodology to identify the need for noise mitigation measures.
- 3.1.2 A summary of the BS4142:2014+A.1:2019 methodology is presented in Appendix B.

4.0 ENVIRONMENTAL SOUND SURVEY

4.1 PROCEDURE & EQUIPMENT

- 4.1.1 A survey of existing sound levels was undertaken at the locations shown in the attached indicative site plan AS13809/SP1.
- 4.1.2 Measurements of consecutive 5-minute L_{Aeq} , L_{Amax} , L_{A10} and L_{A90} sound pressure levels were taken between 15:00 hours on Wednesday 5 February and 12:30 hours on Friday 14 February 2025.
- 4.1.3 The following equipment was used during the course of the survey:
- 1 no. Rion data logging sound level meter type NL52;
 - 1 no. Svantek data logging sound level meter type SV971;
 - 1no. NTi data logging sound level meter type XL2; and
 - 1 no. Rion sound level field calibrator type NC74.
- 4.1.4 In addition to the automated survey positions 1 and 2, manual measurements were undertaken in close proximity to the nearest noise-sensitive receptors along Lorna Grove and Bronington Close, respectively. The indicative locations of these are shown in the attached Site Plan AS13809/SP1. In both locations the sound field was dominated by road

¹ British Standard BS4142:2014+A.1:2019 *Methods for rating and assessing industrial and commercial sound*

traffic; primarily from the M56 for receptors to the south-east, and primarily from Manchester Outer Ring Road for receptors to the north-west. For receptors to the north-west, at Bronington Close, additional contributions were noted from trains along the tracks to the south, as well as occasional reversing alarms which were '*just perceptible*'.

- 4.1.5 The results of measurements at Monitoring Position 2 were compared with the results of the manual measurements undertaken behind 10 Bronington Close and demonstrated a difference in L_{A90} of up to circa 1 dB and a difference in L_{Aeq} of up to circa 5 dB over the 30-minute comparison period (between 09:30 and 10:00hrs of 14/02/2025). On this basis, results of Monitoring Position 2 have been determined to be reasonably representative of the Background Sound Level experienced at receptors at Bronington Close.
- 4.1.6 The most exposed noise-sensitive receptors to the south-east are expected to be the second-floor windows along the north elevation of Mitchell House due to the significant elevation of the M56 relative to the ground level of buildings to the south. It was not possible to undertake attended measurements at second floor level of Mitchell House, however given the situation of the monitor location, proximity to the M56, and distance between the M56 and Mitchell House, it has been determined that the measurement location is reasonably representative of conditions at these receptors with a potential uncertainty of circa 3 dB to account for increased distances between Lorna Grove receptors and the M56.
- 4.1.7 Further measurements were made of the various processing activities within and around the shared MRF and GWPF building. Given the diverse sound field, these measurements have been used to inform a view on the overall sound level generated internally during processing activities.
- 4.1.8 The calibration of the measurement equipment was verified before and after use. No significant calibration drift was detected. All CSA equipment has current traceable laboratory calibration. Certificates are available for inspection upon request.
- 4.1.9 Measurements were made following procedures in BS 7445-2:1991² and BS4142. Monitoring Position 2 was affected by occasional local sources such as lorries idling, artificially increasing the representative background level of the area. Where appropriate, these periods have been excluded from the assessment and indicated in grey on the attached time histories AS13809/TH10-TH18.
- 4.1.10 The weather during the survey was generally dry with light winds, which made the conditions suitable for the measurement of environmental sound. Through review of historical weather records, some brief periods of rainfall have been observed in the vicinity of the Site. These do not appear to have had a significant effect on the representative background sound levels (L_{A90}) nor ambient sound levels (L_{Aeq}).

4.2 RESULTS

- 4.2.1 Figures AS13809/TH1-TH9 show the L_{Aeq} , L_{Amax} , L_{A10} and L_{A90} sound pressure levels as time histories at Monitoring Position 1, whilst AS13809/TH10-18 show those at Monitoring Position 2.

² British Standard BS 7445-2:1991 *Description and measurement of environmental noise – Part 2: Acquisition of data pertinent to land use*

4.2.2 Table 1 provides a summary of the measured background and average sound levels at the monitoring locations during the survey. The typical Background Sound Level is derived from the lowest 10th percentile of the $L_{A90,5min}$ dataset per period.

4.2.3 For the purposes of this exercise, the measured data for Sunday is expected to be suitably representative of Bank / Public holiday sound levels.

PERIOD	POSITION 1		POSITION 2	
	TYPICAL L_{A90}	AVERAGE L_{Aeq}	TYPICAL L_{A90}	AVERAGE L_{Aeq}
06:00 to 07:00hrs Monday to Friday	71	77	57	63
07:00 to 18:00hrs Monday to Friday	71	76	59	66
18:00 to 22:00hrs Monday to Friday	68	76	56	64
06:00 to 07:00hrs Saturday	66	73	53	61
07:00 to 13:00hrs Saturday	70	77	58	65
13:00 to 22:00hrs Saturday	69	76	58	63
06:00 to 07:00 Sunday	66	73	53	58
07:00 to 22:00 Sunday	69	77	57	65
06:00 to 07:00 Monday to Sunday	68	76	55	62
07:00 to 18:00hrs Monday to Sunday	70	76	59	65
18:00 to 22:00 Monday to Sunday	68	76	56	63

Table 1: Summary of typical background and average sound levels

[dB ref. 20μPa]

5.0 PREDICTED SOUND IMPACT

5.1 OPERATIOAL SOUND LEVELS

5.1.1 Manual measurements conducted onsite alongside CSA library data has been used to assess the sound emissions of the activities at the Site. A summary of the data used for this assessment is presented in Table 2.

ACTIVITY	LEVEL	REFERENCE DISTANCE
HGV Arrival	$L_{Aeq,T}$ 70 dB	3m
HGV Departure	$L_{Aeq,T}$ 72 dB	3m
Processing Activities*	Up to circa $L_{Aeq,T}$ 80 dB	<i>Internal level</i>

Table 2: Operational sound levels

[dB ref. 20μPa]

* A number of measurements were undertaken within the shared MRF / GWPF building. These have been used to form a worst-case operational level within the building over the duration of the assessment periods

5.1.2 Vehicle movements associated with the Site have been confirmed to be in the order of 50 HGVs in and 50 HGVs out for the current operating environment. It has been confirmed that the proposals may allow for up to 4 in and 4 out between 06:00 and 07:00hrs; and 5 in and 5 out between 18:00 and 22:00hrs.

- 5.1.3 Activity during the 06:00 to 07:00 hours period falls within the night-time period, and therefore this review targets a 15-minute assessment period, as per the guidance provided in BS4142:2014+A.1:2019.
- 5.1.4 Activity between the hours of 07:00 and 23:00 hours would fall within the daytime period, and therefore, this review targets a 1-hour period, as per the guidance provided in BS4142:2014+A.1:2019.
- 5.1.5 For all assessment periods, a view has been taken on the activity counts and durations that can reasonably be expected within the assessment period.

5.2 PREDICTIONS TO SOUTH-EASTERN RECEPTORS: LORNA GROVE

- 5.2.1 The exact construction of the external building envelope for the shared MRF / GWPF building is unknown. Based on previous experience with such sites, it is expected that the sound insulation of the building would be sufficient to suitably control sound breakout, in principle. The weak point in such layouts is often the entrance areas that may remain open for extended periods of time at some sites. This is typically more relevant for sites that have such openings in the direction of nearby noise-sensitive receptors, which is not the case for the southern-eastern receptors. For the purposes of this robust review, an assessment of sound breakout through the front entrances has been undertaken. For both robustness and simplicity, the calculation models assume that the total internal level will be emitted from the entrances to the building, allowing for distance and screening effects. In reality, additional losses can be anticipated relating to directivity, and aperture of entranceways.
- 5.2.2 The vehicle movement schedule has been used, alongside the activity sound level data to calculate the typical 1-hour and 15-minute Specific Sound Level (for daytime and night-time periods, respectively) at the nearest noise sensitive receptors along Lorna Grove.
- 5.2.3 No character corrections have been applied on the basis that the activity proposed is unlikely to be readily noticeable in the context of the existing environment. The results of the calculations are summarised in Table 3. Detailed calculations are presented in Appendix C.

PERIOD / ACTIVITY	RATING LEVEL	BACKGROUND SOUND LEVEL	ASSESSMENT LEVEL
06:00 to 07:00hrs (Monday to Friday)	L _{Ar,Tr} 25 dB	L _{A90} 71 dB	-46
18:00 to 22:00hrs (Monday to Friday)	L _{Ar,Tr} 24 dB	L _{A90} 68 dB	-44
06:00 to 07:00hrs (Saturday)	L _{Ar,Tr} 25 dB	L _{A90} 66 dB	-41
13:00 to 22:00hrs (Saturday)	L _{Ar,Tr} 25 dB	L _{A90} 69 dB	-44
06:00 to 07:00hrs (Sunday)	L _{Ar,Tr} 25 dB	L _{A90} 66 dB	-41
07:00 to 22:00hrs (Sunday)	L _{Ar,Tr} 25 dB	L _{A90} 69 dB	-44
06:00 to 07:00hrs (Monday to Sunday)	L _{Ar,Tr} 18 dB	L _{A90} 68 dB	-50
18:00 to 22:00hrs (Monday to Sunday)	L _{Ar,Tr} 12 dB	L _{A90} 68 dB	-56

Table 3: Summary of BS4142 assessment

[dB ref. 20µPa]

5.3 PREDICTIONS TO NORTH-WESTERN RECEPTORS: BRONINGTON CLOSE

- 5.3.1 The entrance of the shared MRF / GWPF faces in the direction of the receptors on Bronington Close, however there are a number of buildings and installations at the Site between the entranceways and the receptors. As before, the calculation models assume that the total internal sound level will be emitted from the entrances to the building, allowing for distance and screening effects.
- 5.3.2 The vehicle movement schedule has been used, alongside the activity sound level data to calculate the typical 1-hour and 15-minute Specific Sound Level (for daytime and night-time periods, respectively) at the nearest noise-sensitive receptors along Bronington Close.
- 5.3.3 No character corrections have been applied on the basis that the activity proposed is unlikely to be readily noticeable in the context of the existing environment. The results of the calculations are summarised in Table 3. Detailed calculations are presented in Appendix C.

PERIOD / ACTIVITY	RATING LEVEL	BACKGROUND SOUND LEVEL	ASSESSMENT LEVEL
06:00 to 07:00hrs (Monday to Friday)	L _{Ar,Tr} 25 dB	L _{A90} 57 dB	-32
18:00 to 22:00hrs (Monday to Friday)	L _{Ar,Tr} 21 dB	L _{A90} 56 dB	-35
06:00 to 07:00hrs (Saturday)	L _{Ar,Tr} 25 dB	L _{A90} 53 dB	-28
13:00 to 22:00hrs (Saturday)	L _{Ar,Tr} 23 dB	L _{A90} 58 dB	-35
06:00 to 07:00hrs (Sunday)	L _{Ar,Tr} 25 dB	L _{A90} 53 dB	-28
07:00 to 22:00hrs (Sunday)	L _{Ar,Tr} 23 dB	L _{A90} 57 dB	-34
06:00 to 07:00hrs (Monday to Sunday)	L _{Ar,Tr} 24 dB	L _{A90} 55 dB	-31
18:00 to 22:00hrs (Monday to Sunday)	L _{Ar,Tr} 18 dB	L _{A90} 56 dB	-38

Table 4: Summary of BS4142 assessment

[dB ref. 20µPa]

5.4 DISCUSSION

- 5.4.1 The calculations for both scenarios represent the total predicted level from the proposed operations, per assessment period. Specific contributions from vehicles and processing activities are shown in greater detail in the attached Appendix C.
- 5.4.2 The results demonstrate that in all cases levels are below the representative Background Sound Level, and therefore a low probability of adverse impact is expected depending on context. This outcome remains, even when considering the uncertainty described in section 4.1.6 for receptors to the south.

5.5 CONTEXT

- 5.5.1 The nearby receptors on Lorna Grove and Bronington Close are subject to a number of sound sources including road traffic, train activity on the nearby National Rail tracks, and miscellaneous commercial activity throughout the neighbouring industrial spaces.
- 5.5.2 As evidenced by the time histories appended to this report in the attached AS13809/TH1-TH9, no clear 'on' and 'off' periods are readily associable with the existing Site operation.

Therefore, it would not be unreasonable to suggest that the sound field at the nearby receptors may be predominantly dominated by other sources unrelated to the Site.

- 5.5.3 On the basis of the above, the expectation of a low probability of adverse impact on the basis of the proposals remains.

6.0 UNCERTAINTY

- 6.1 As per the requirements of BS 4142:2014, the uncertainty in the assessment is considered and reported. This is not an indication of error but an acknowledgment of possible variability of the factors contributing to the assessment.
- 6.2 Use of calibrated type 1 sound level meters is considered to reduce measurement instrument error to insignificant levels as compared with environmental variations.
- 6.3 Access to the premises of the nearby noise-sensitive receptors was not possible. Measurements were therefore taken at acoustically equivalent locations to the assessment positions and supplemented with local manual measurements and observations.
- 6.4 The Background Sound Level is based on measurements captured using a 5-minute sampling time. This higher degree of resolution offers a more robust appraisal of the 'typical' Background Sound Level over 15-minute and 1-hour time periods used in the BS4142 assessment.
- 6.5 Due to the variance in demand on the Site, there is uncertainty regarding the exact regularity of individual activities included in the operational scenarios. Where reasonable to do so, pessimistic assumptions have been made in any areas of uncertainty to provide a suitably robust assessment.

7.0 CONCLUSIONS

- 7.1 A sound impact assessment has been undertaken by Clarke Saunders Acoustics for the proposed amended operational hours of Longley Lane, WTS in Manchester.
- 7.2 The assessment has been undertaken at the most exposed residential receptors considering the cumulative sound of each proposed operational scenario.
- 7.3 Results of an automated environmental sound survey supplemented with additional attended measurements have established the current background sound climate representative of the nearest noise-sensitive receptors.
- 7.4 Following procedures in BS4142:2014+A1:2019, the sound impact assessment shows that adverse impacts are unlikely to occur as a result of the proposals.

Alec Korchev

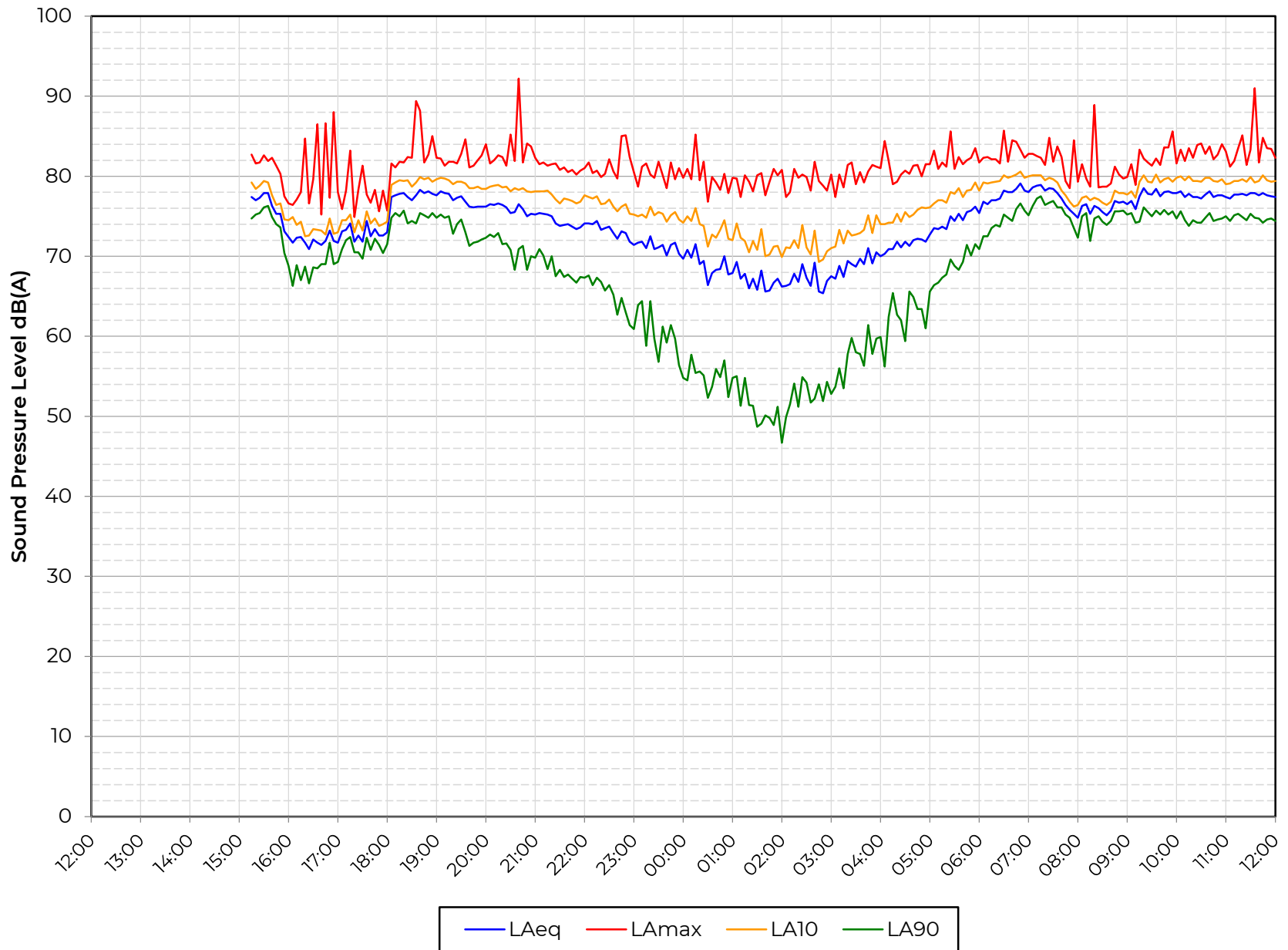
Alec Korchev MIOA
CLARKE SAUNDERS ACOUSTICS



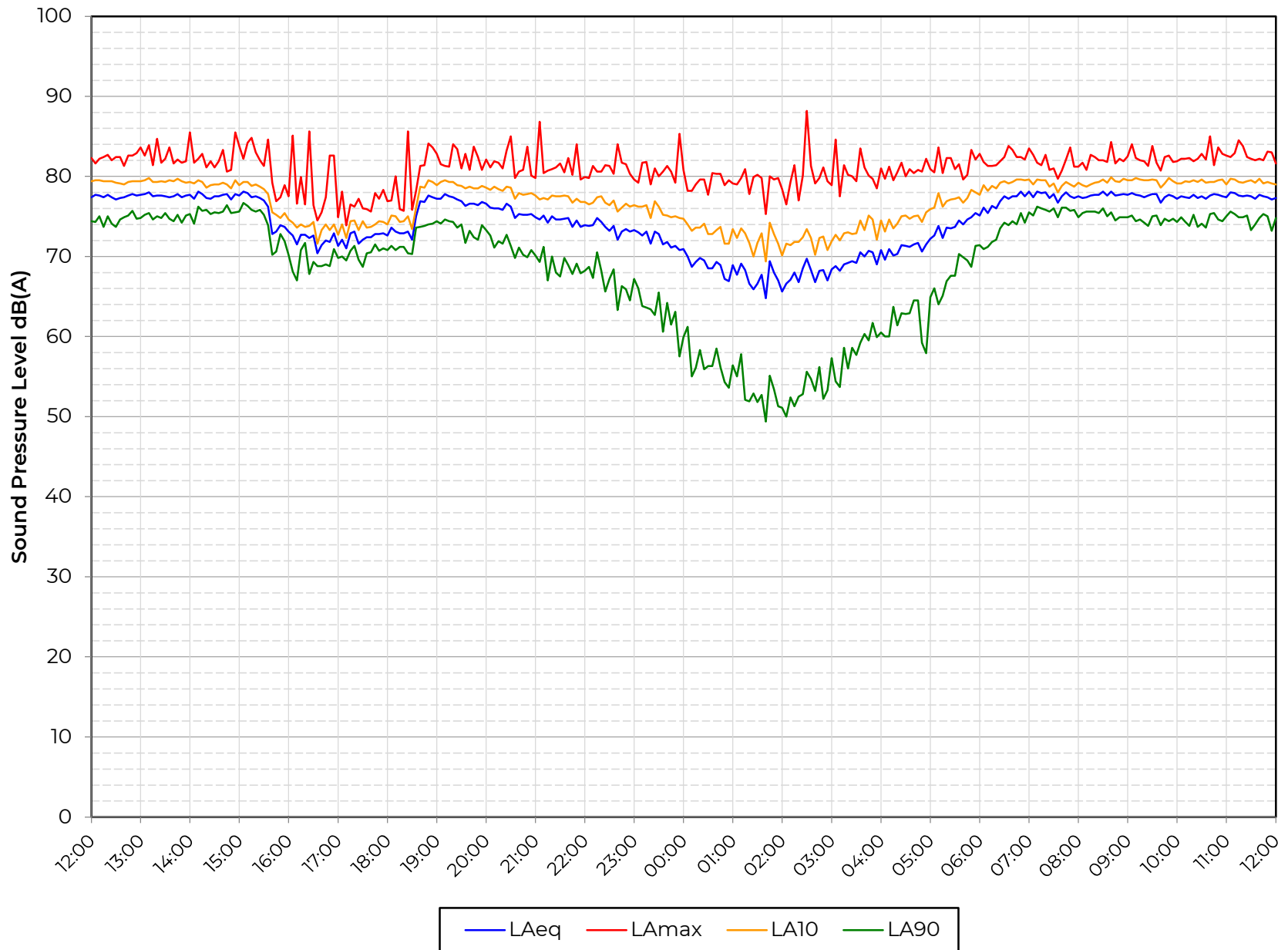
Indicative Site Plan

Figure AS13809/SP1

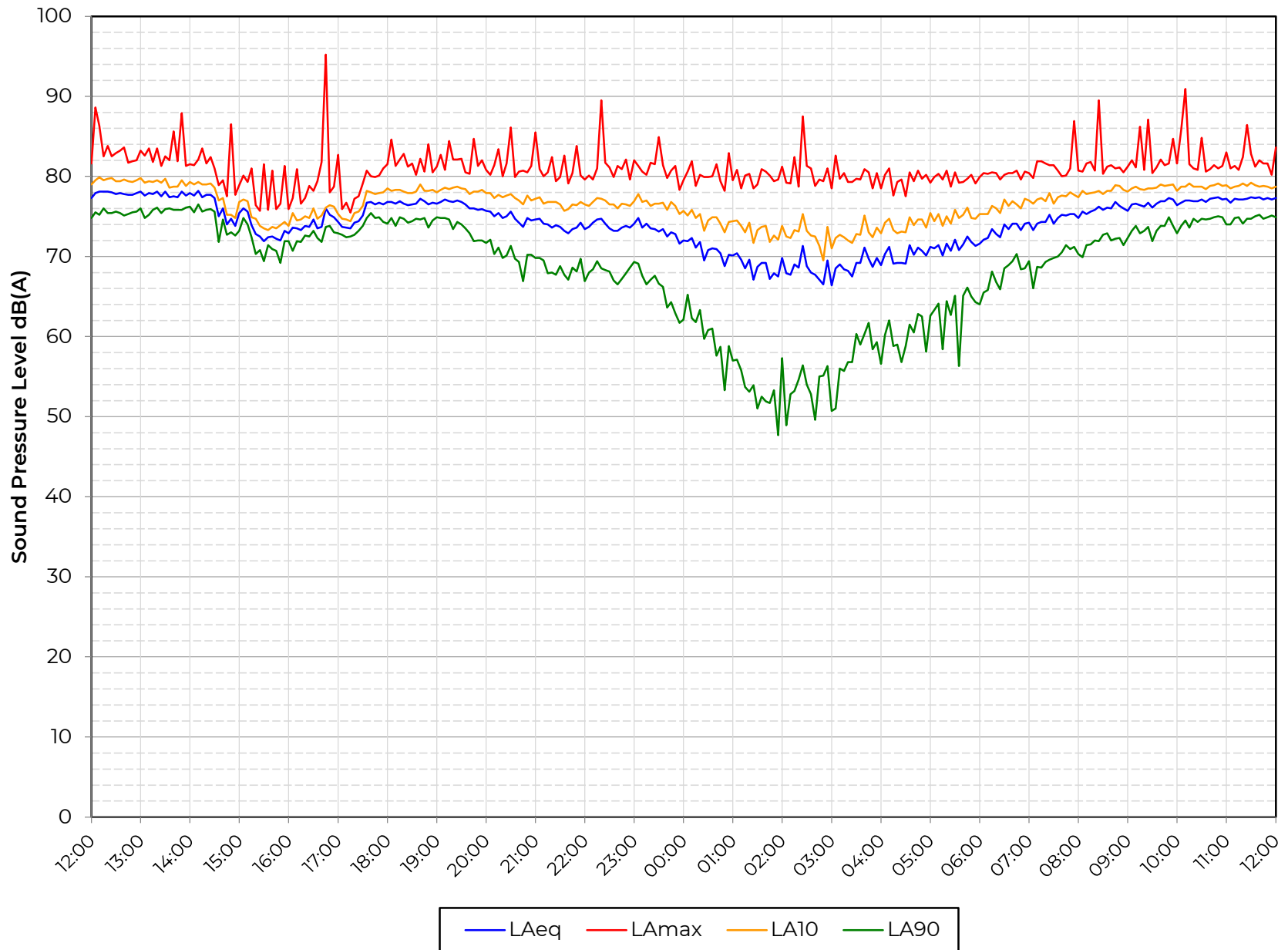
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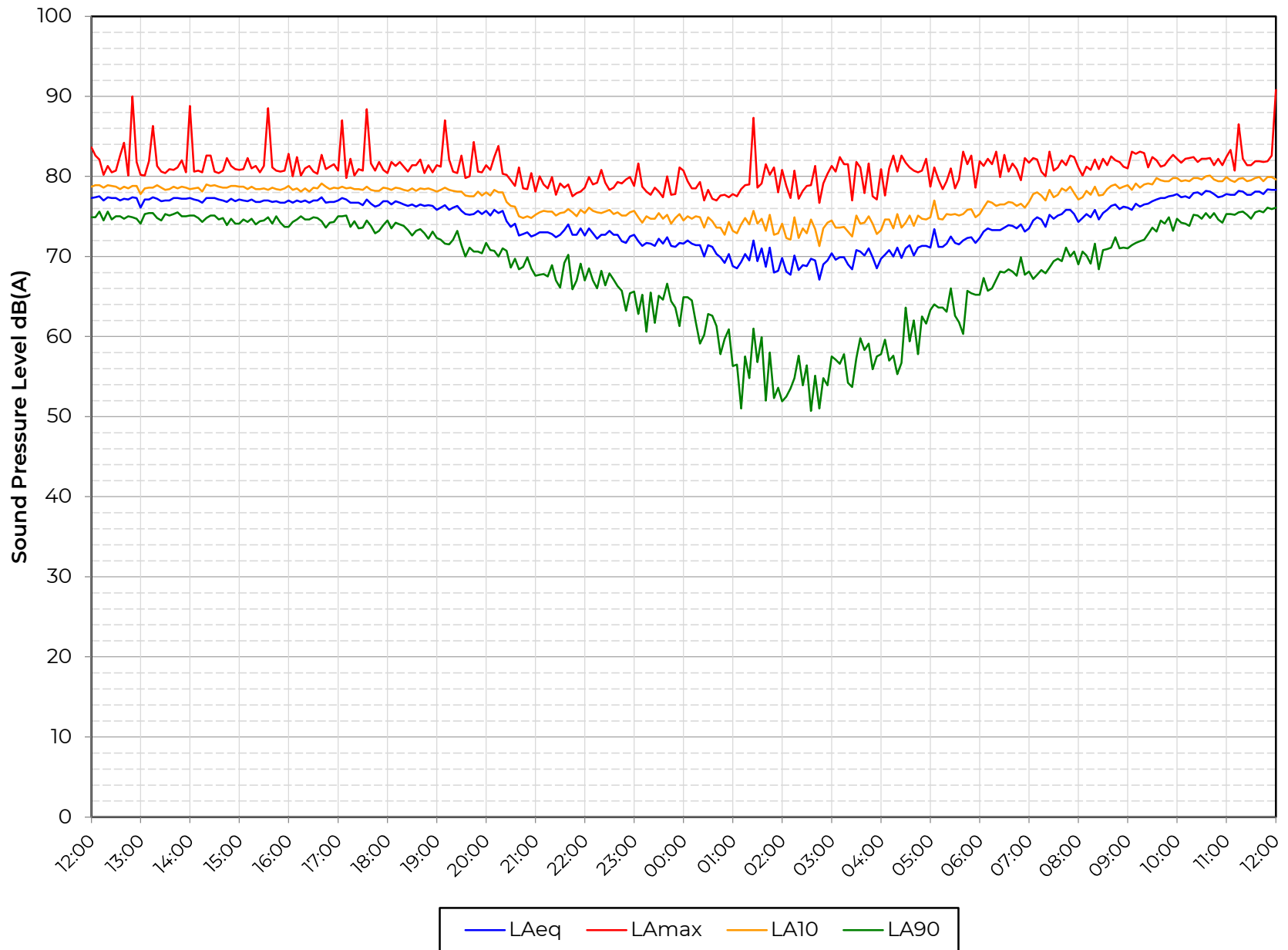
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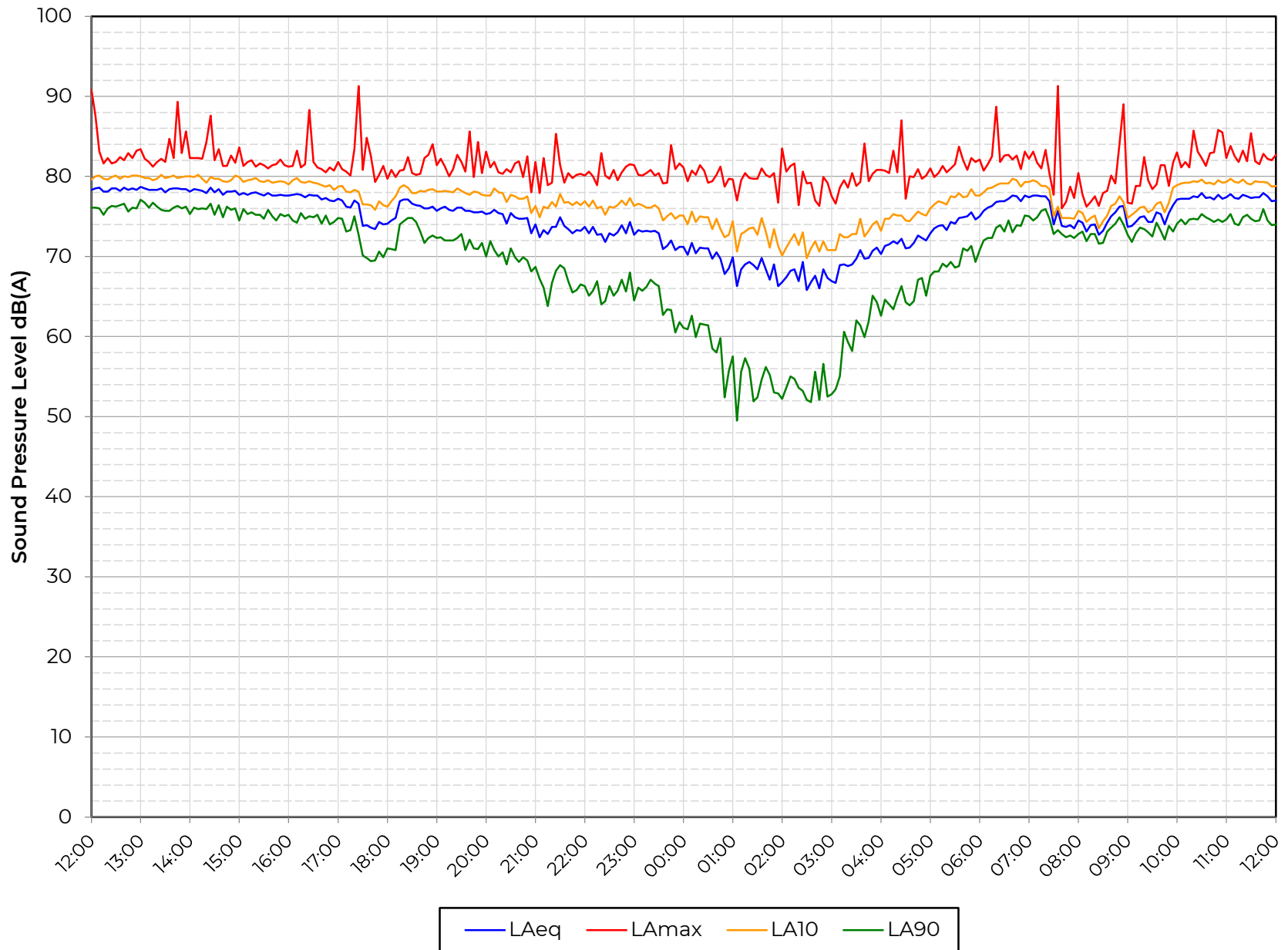
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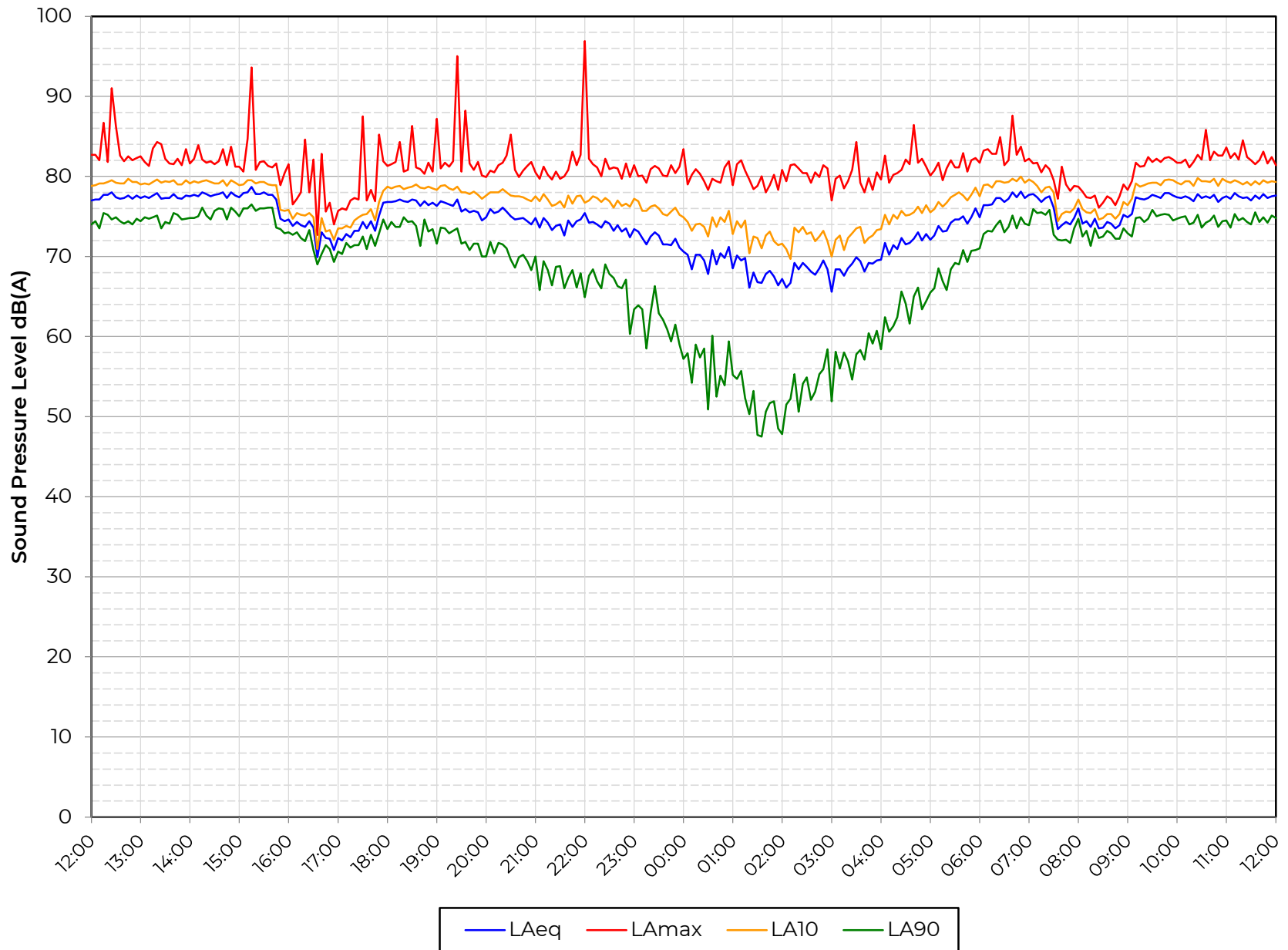
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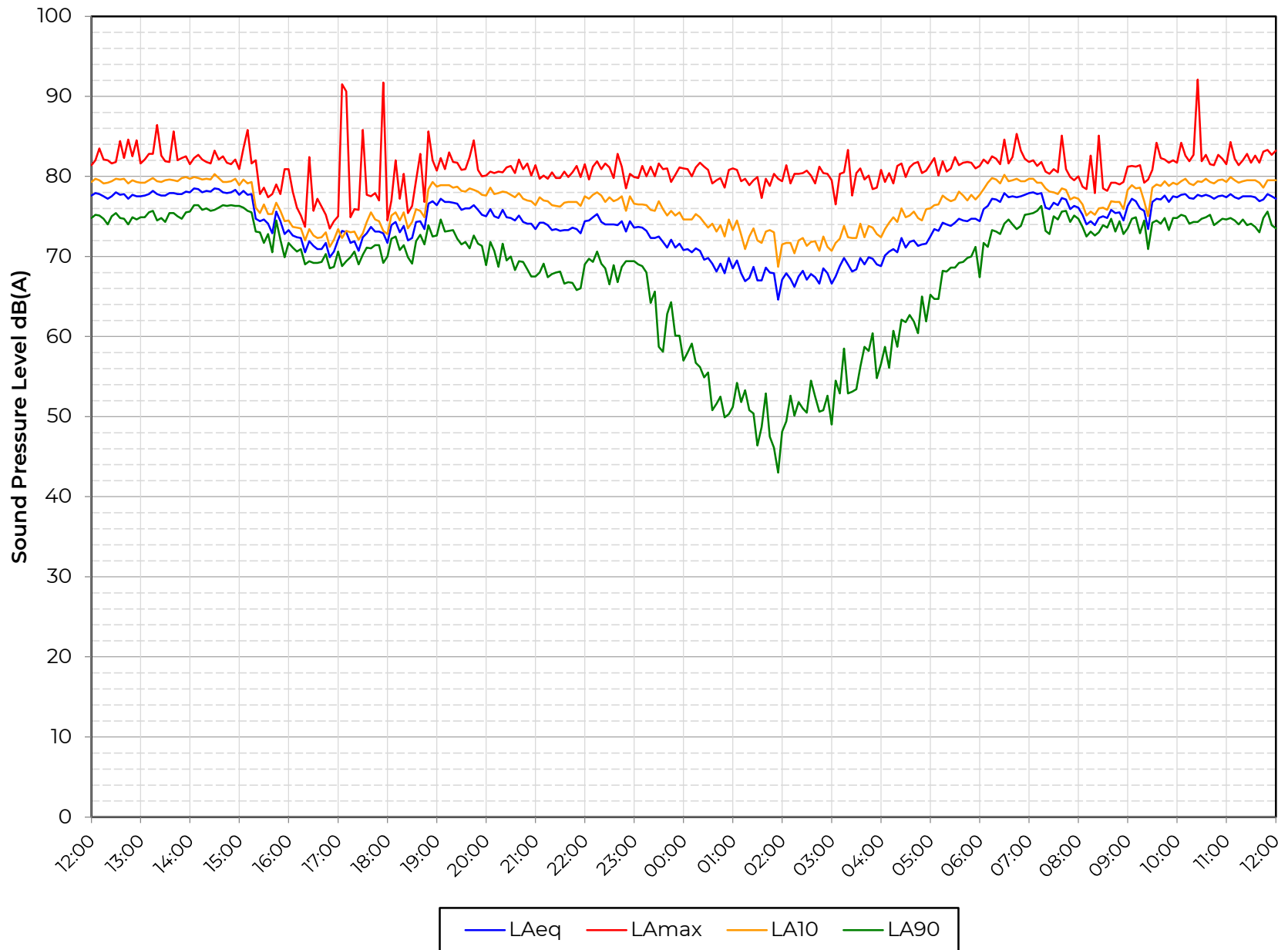
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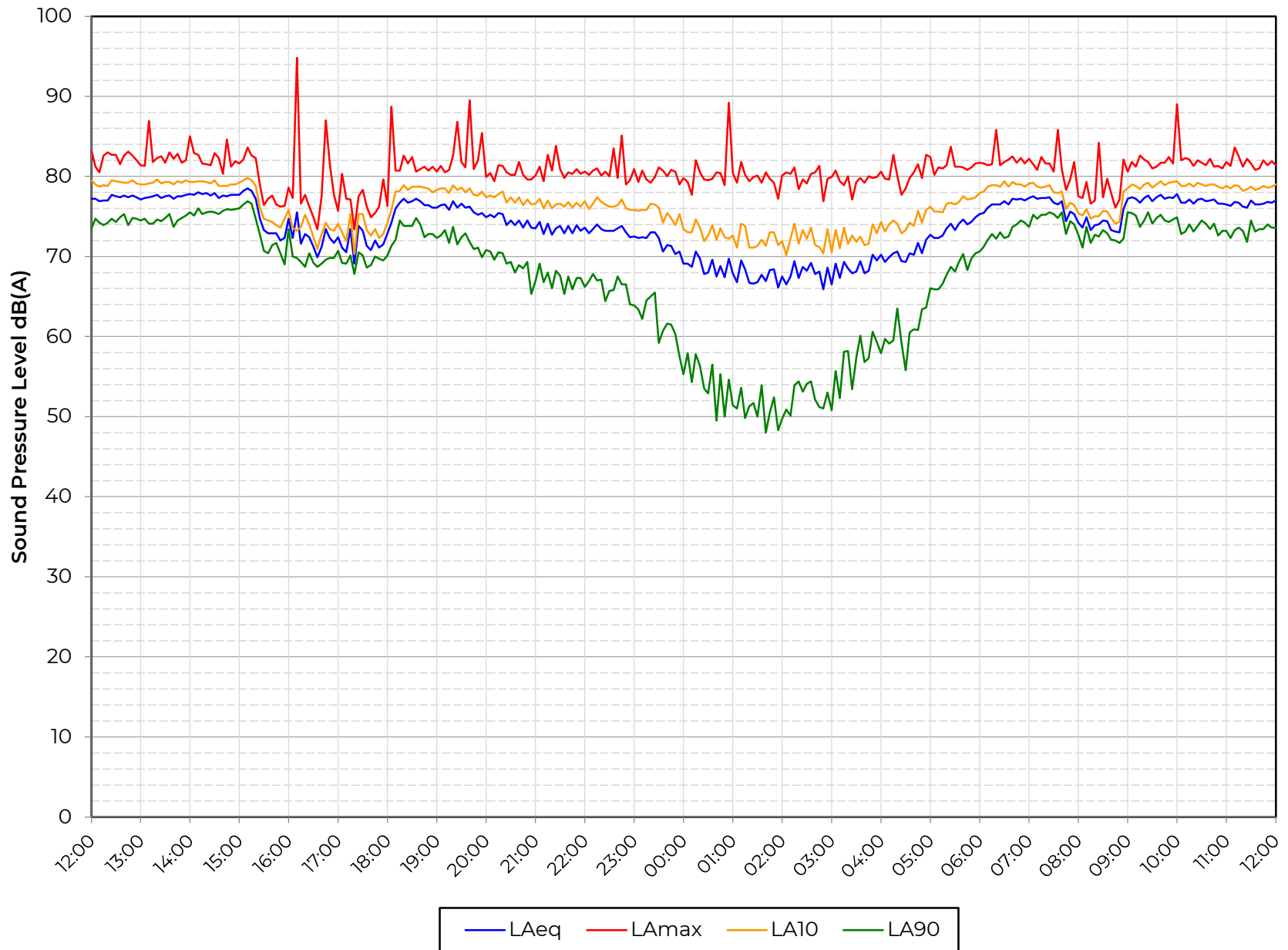
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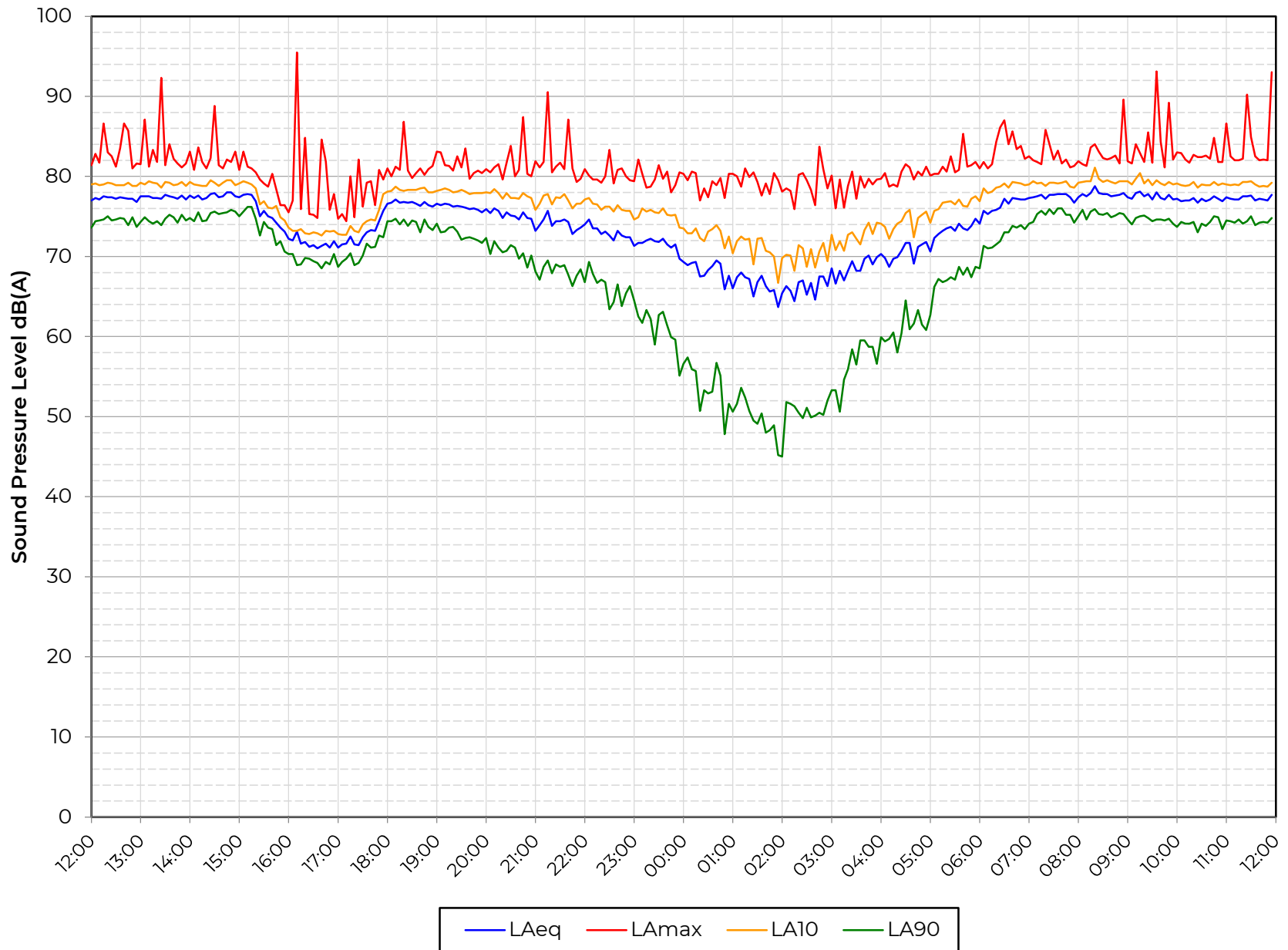
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Position 1

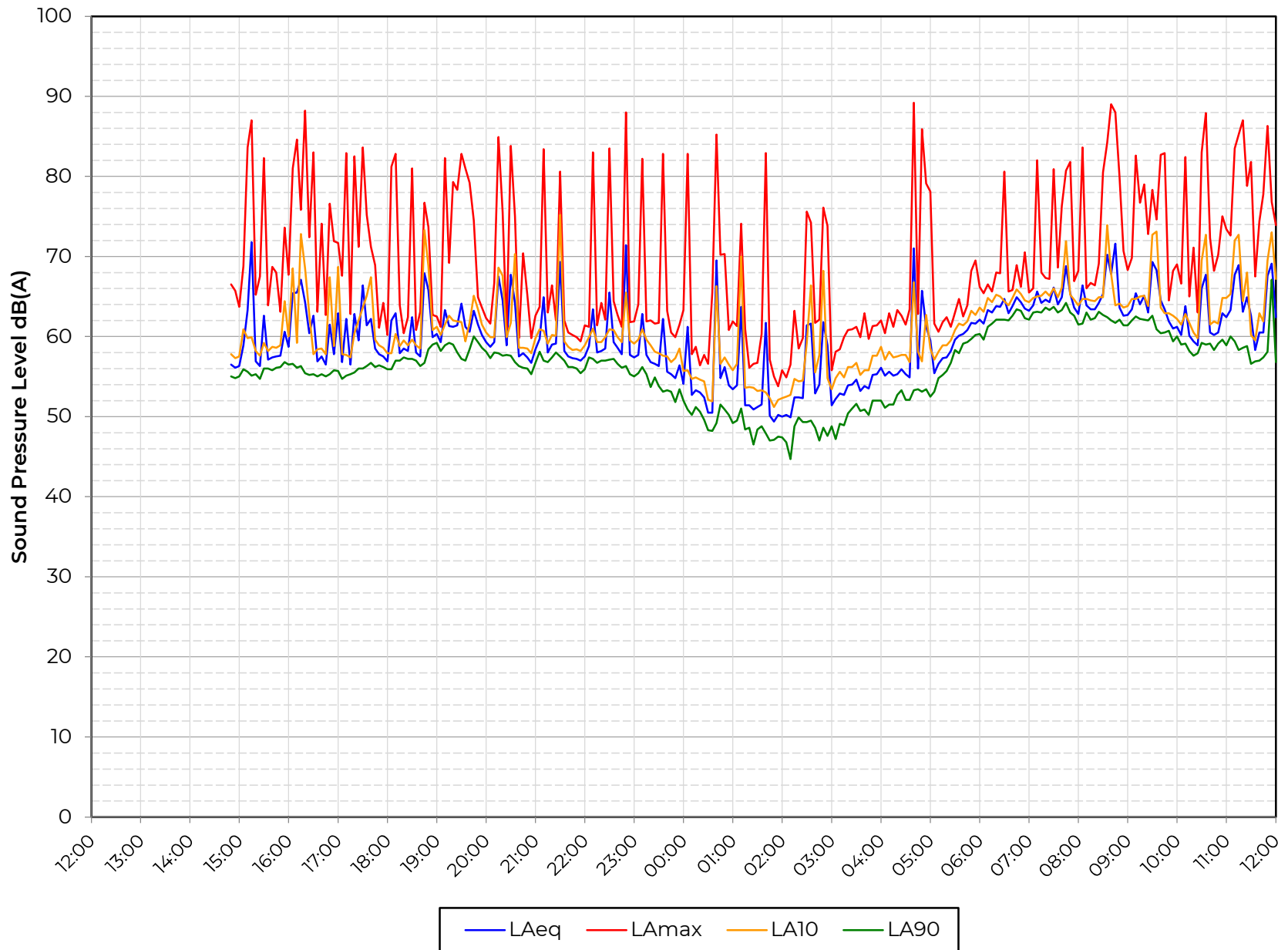


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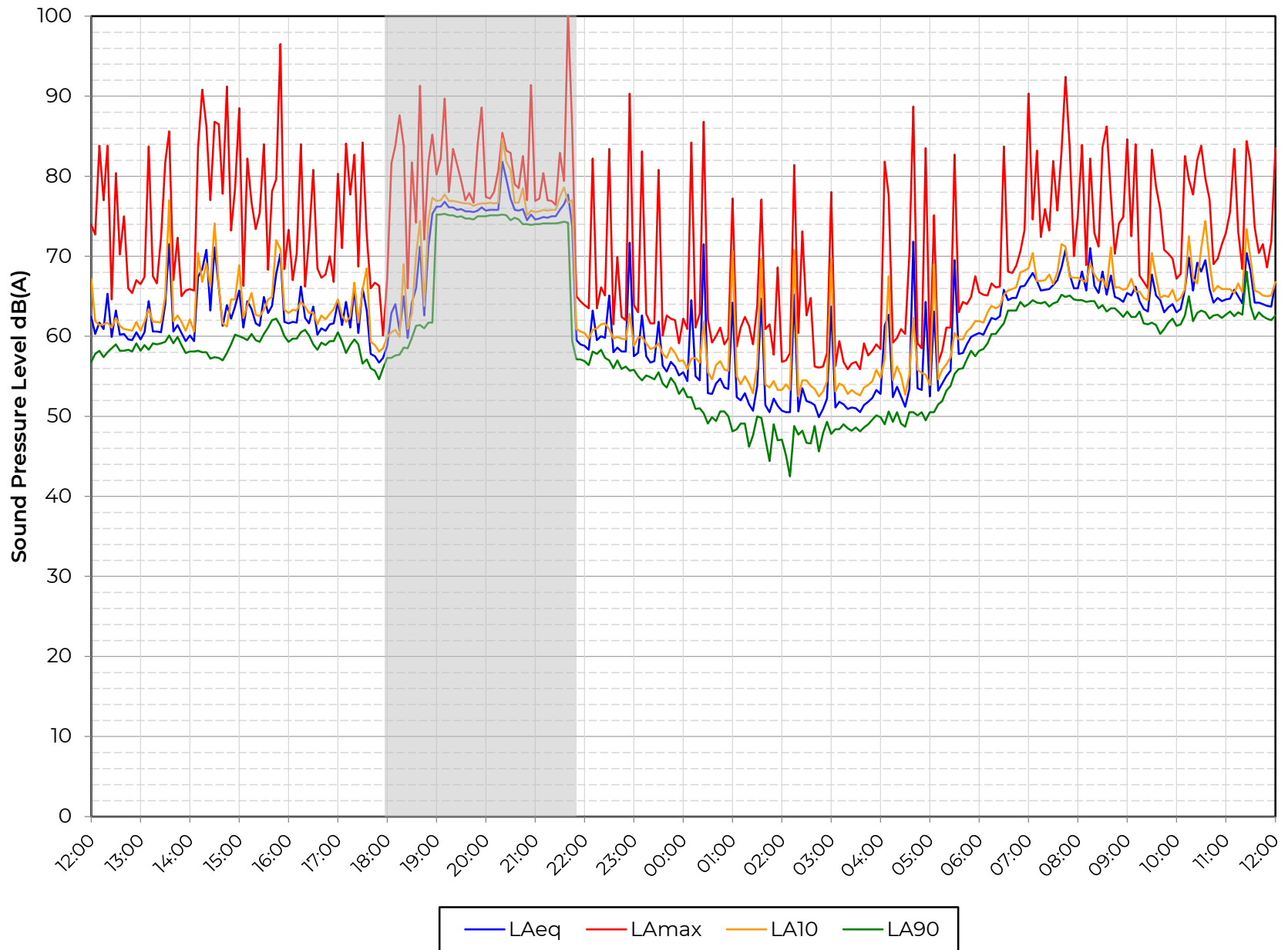
Longley Lane WTS, Manchester City

Position North



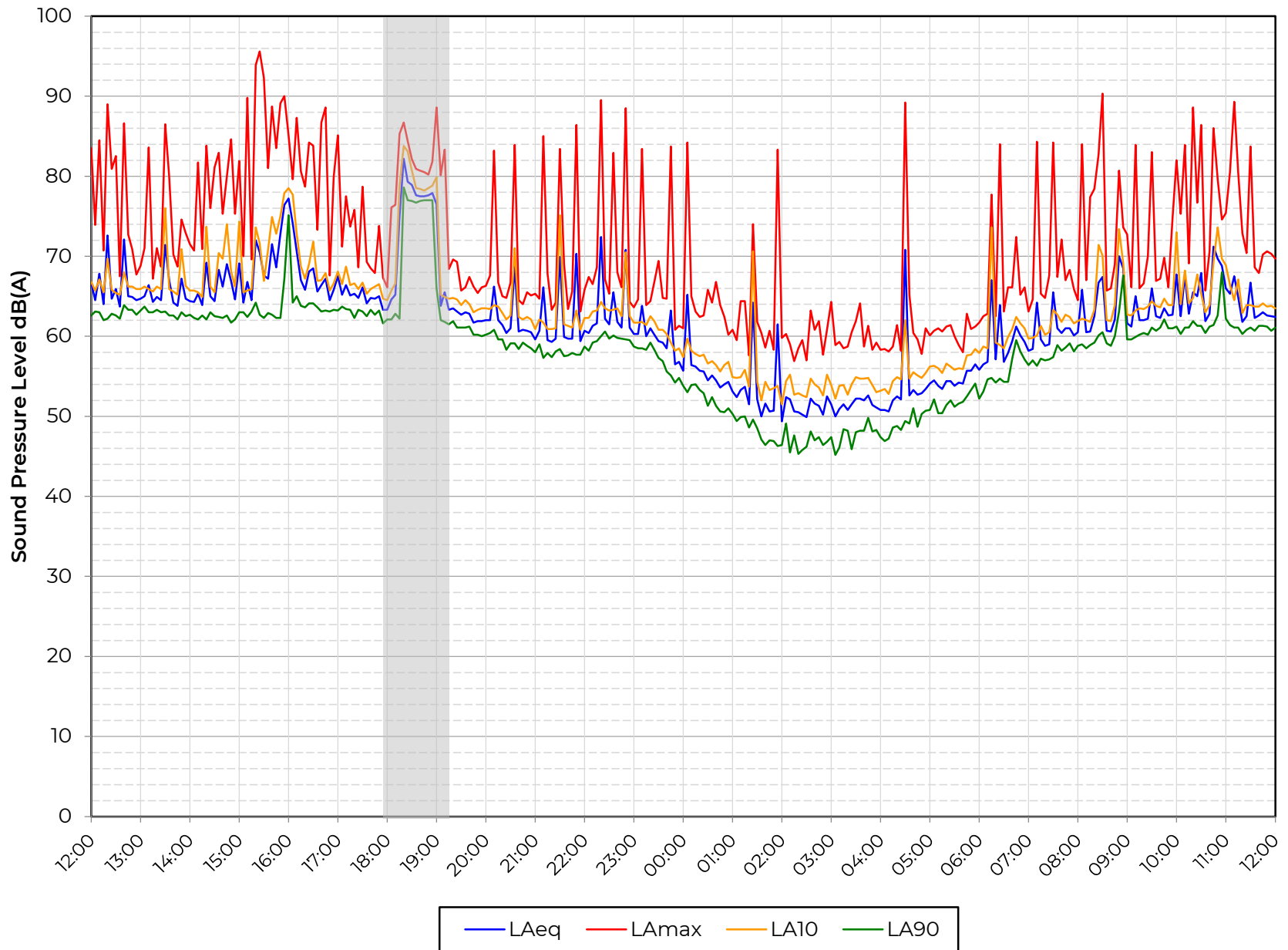
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Position North



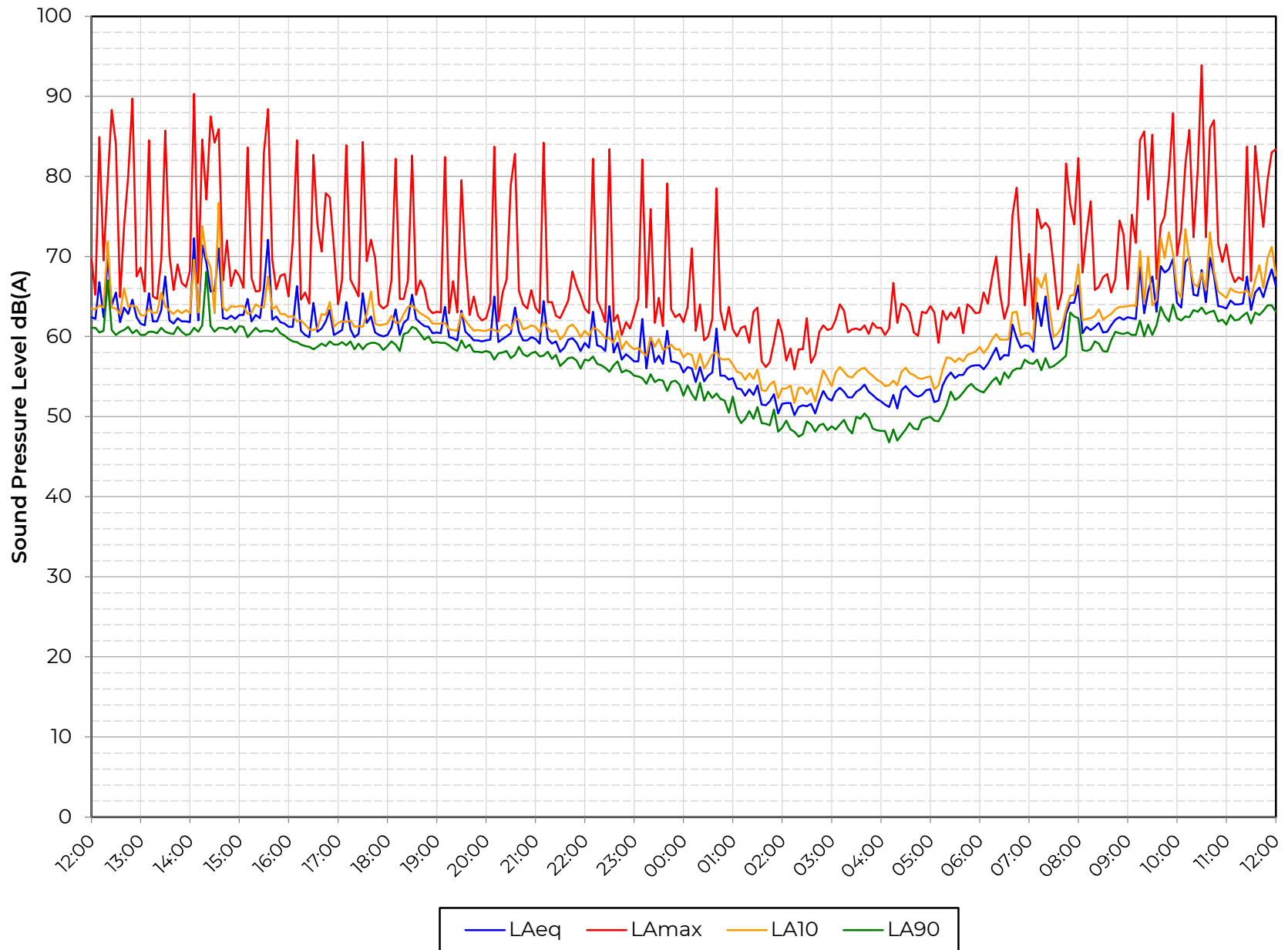
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Position North



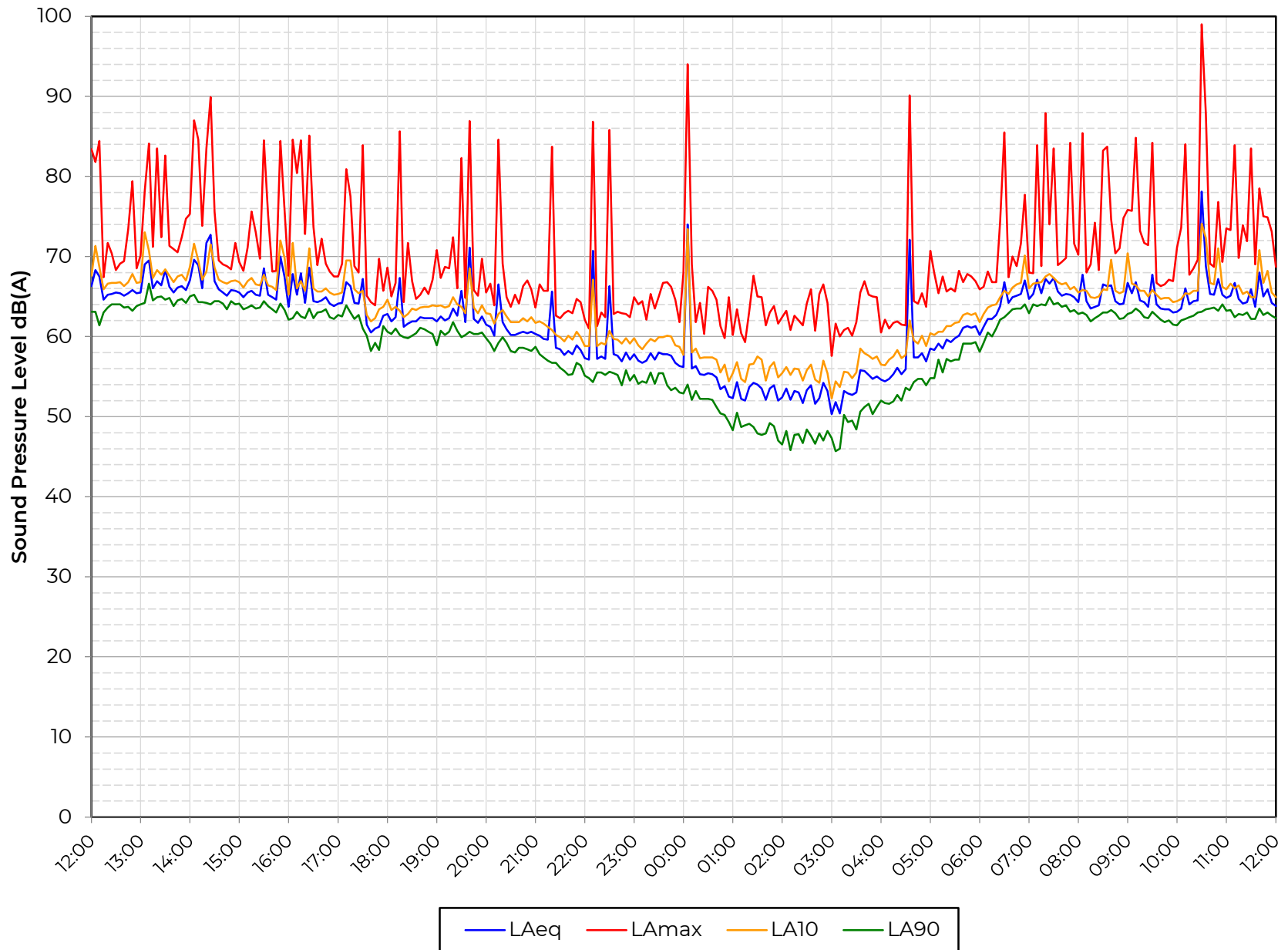
Longley Lane WTS, Manchester City

Position North



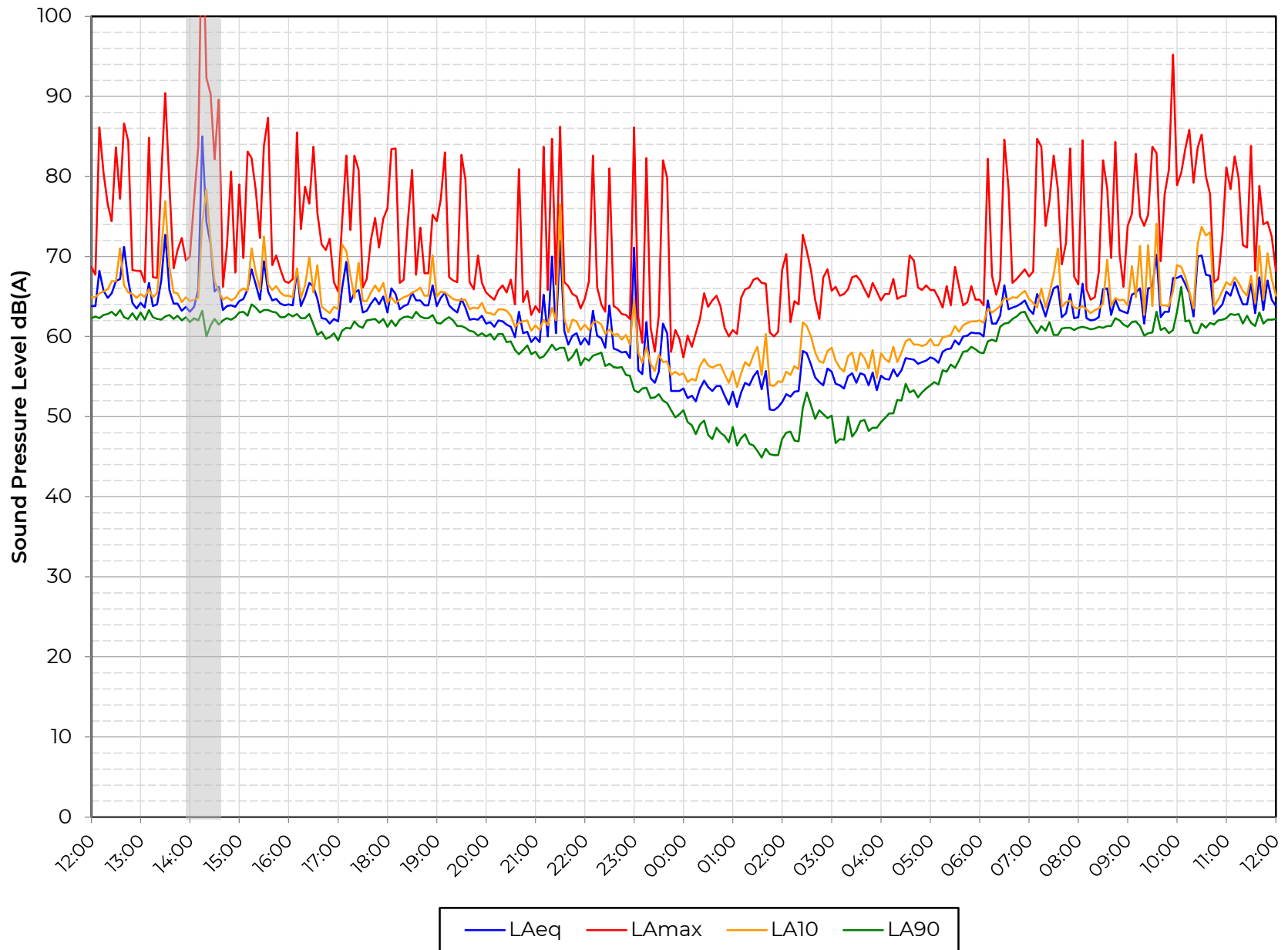
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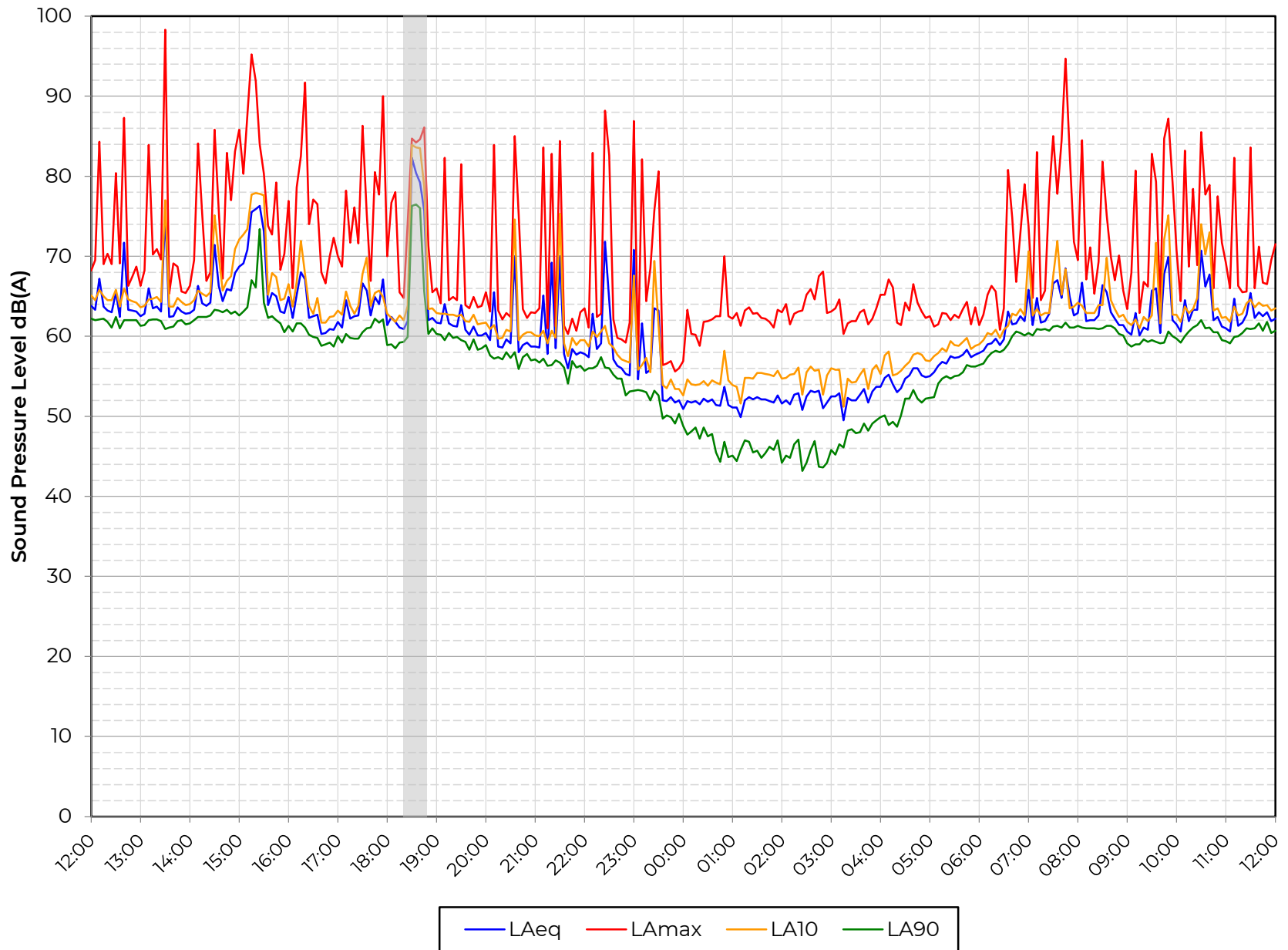
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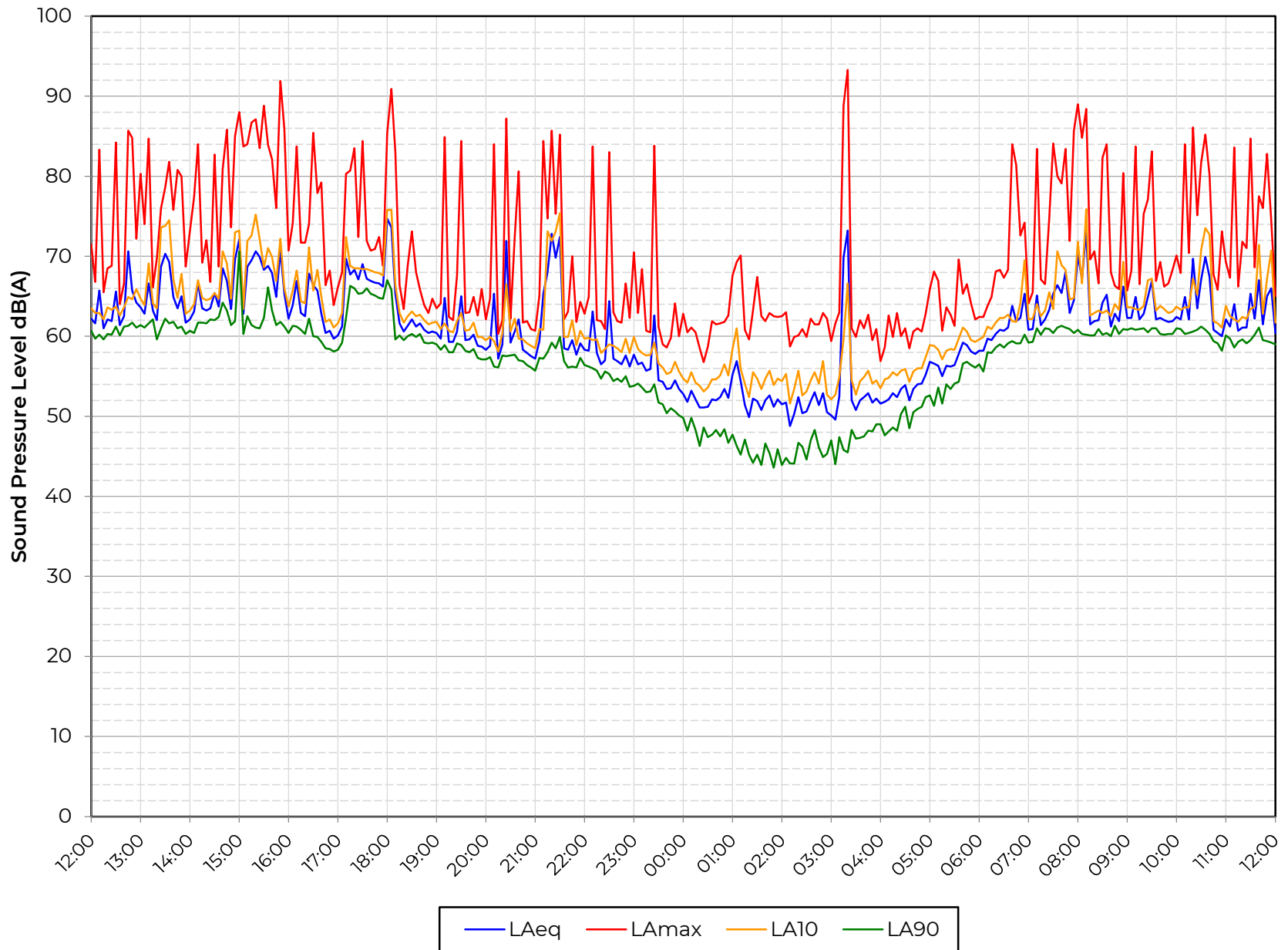
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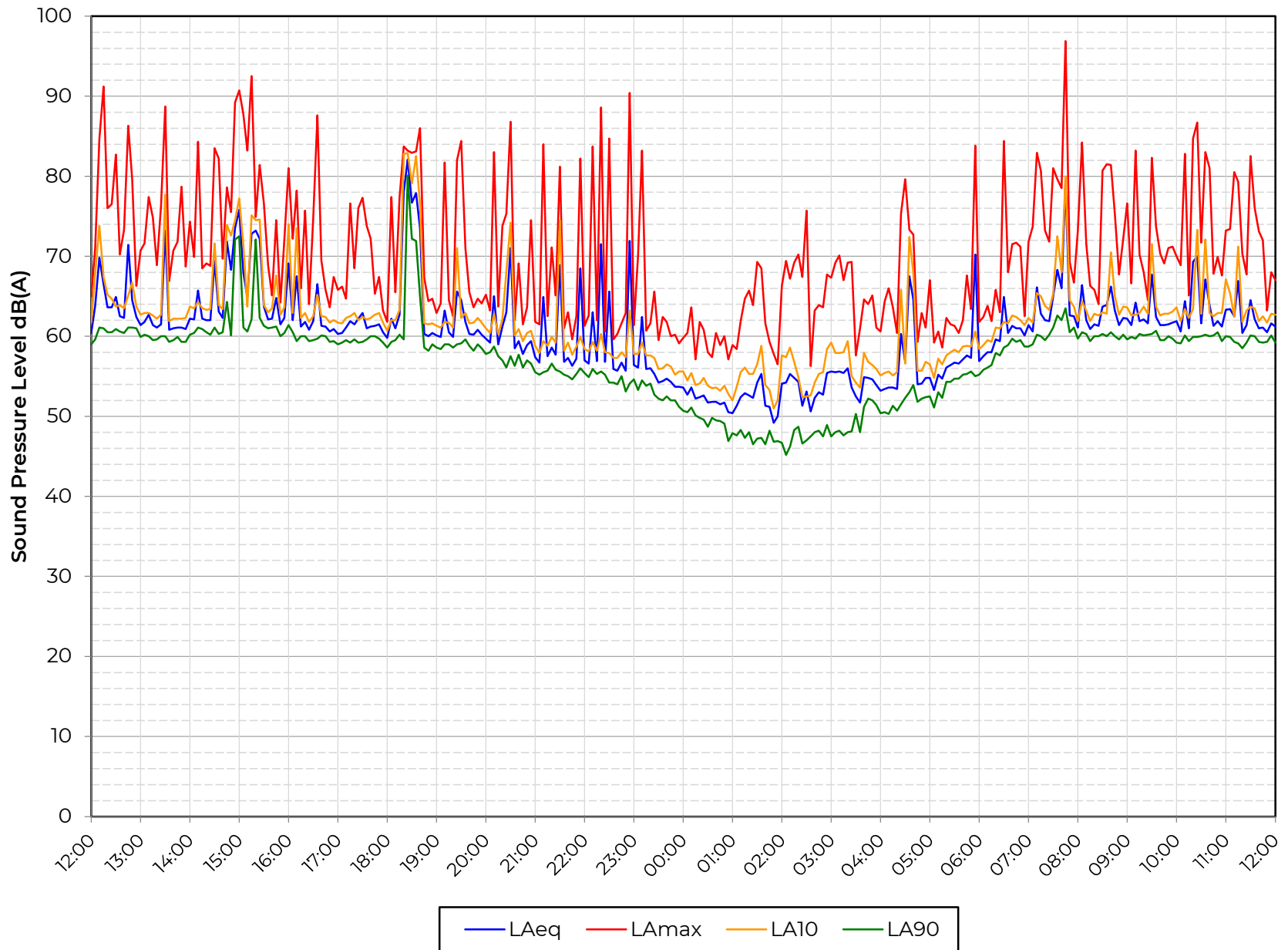
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Position North



Longley Lane WTS, Manchester City

Position North



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
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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.

BS4142 is designed to allow contextual assessment of impact from commercial, or industrial sound on sensitive receptors. Examples covered by the Standard include:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment.
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises, and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes.

In brief, the assessment procedure involves establishing sound levels from the items or processes of interest, (the specific sound source(s)), corrected for any acoustic features to derive the Rating Level, (L_{Ar,T_r}), at the relevant assessment position(s). The Rating Level is compared against the existing Background Sound Level, ($L_{A90,T}$), to provide an initial estimate of impact. The Standard offers the following guidance with regard to the significance of estimated impact:

- Typically, the greater this difference, the greater the magnitude of the impact;*
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;*
- A difference of around +5dB could be an indication of an adverse impact, depending on the context;*
- Where the rating level does not exceed the background sound level, this is an indication of the specific sound having a low impact, depending on the context. The lower the rating level is relative to the background sound level, the less likely it is that the specific sound source will have an adverse impact.*

Where relevant, the initial estimate should then be modified by accounting for contextual aspects of the operation of the specific sound source and / or the context of the character of the area.

Other Assessment Parameters and Guidance on Character Corrections

The Specific Sound Level (L_s) is expressed in terms of an L_{Aeq} for a reference time interval, (T_r) of one-hour during the daytime (07:00 – 23:00 hours) and a fifteen-minute period during the night-time (23:00 – 07:00 hours). The Rating Level is also expressed in terms of the reference time interval, T_r .

The Specific Sound Level can be determined by various means, which can include prediction based on manufacturer's data and accompanying propagation calculations to the assessment position(s). This method could be used, for instance, where the specific sound source is not yet in-situ, or is in-situ but not yet operational.

Where the specific sound source is already operational and in-situ, measurements of the sound climate resulting from both the specific sound source and all other contributing sources, (known as the Ambient Sound Level, $L_a = L_{Aeq,T}$) should be measured over a representative time period, ideally at the assessment position(s).

Depending on the relative contribution of other sources not related to the specific sound, (known as the residual sound), the Specific Sound Level can be derived by logarithmically subtracting the Residual Sound Level, $L_r = L_{Aeq,T_r}$, from the Ambient Sound Level.

With justification, representative proxy locations can be used for the measurement of the ambient and/or residual sound climate. Where these measurement locations are not fully representative of the assessment position(s), measurement can be supplemented with calculation.

The Background Sound Level should ideally also be measured at the assessment position(s) but can be measured at representative proxy locations where suitable reasons can be provided. The Background Sound Level should be measured over a period which is suitable to characterise the background sound climate during the period of interest and should normally be at least 15 minutes.

When deriving the Rating Level from the Specific Sound Level, consideration is given to the character of the sound. The Standard provides several methods for deriving appropriate character corrections, offering the following advice for subjective assessment:

Tonality

For sound ranging from not tonal to prominently tonal, the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be allocated as a penalty of 2 dB for a tone which is just perceptible at the sound receptor, 4 dB where it is clearly perceptible and 6 dB where it is highly perceptible.

Impulsivity

A correction of up to +9dB can be applied for sound that is highly impulsive considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be allocated as a penalty of 3dB for impulsivity which is just perceptible at the receiver, 6dB where it is clearly perceptible and 9dB where it is highly perceptible.

Other sound characteristics

Where the specific sound contains characteristics that are neither tonal nor impulsive, but are otherwise startling, disturbing or incongruous with the residual acoustic environment, a penalty of +3dB can be applied.

Intermittency

When the specific sound has identifiable on/off conditions, if the intermittency is readily distinctive against the residual acoustic environment, a penalty of +3dB can be applied.

APPENDIX C

ACOUSTIC CALCULATIONS

Commercial sound impact to receptors to the south-east along Lorna Grove

Activity		No	Distance (m)	Ref. distance (m)	Duration (s)	Level (dBA)	Accumulation (dB)	Propagation (dB)	On-time (dB)	Screening (dB)	Specific Sound Level (dBA)
MRF Reception	06:00 to 07:00hrs (Monday to Friday)										
	HGV in	2	150	3	30	70	3	-34	-15	-10	14
	HGV out	2	150	3	30	72	3	-34	-15	-10	16
	18:00 to 22:00hrs (Monday to Friday)										
	HGV in	2	150	3	30	70	3	-34	-21	-10	8
	HGV out	2	150	3	30	72	3	-34	-21	-10	10
	06:00 to 07:00hrs (Saturday)										
	HGV in	2	150	3	30	70	3	-34	-15	-10	14
	HGV out	2	150	3	30	72	3	-34	-15	-10	16
	13:00 to 22:00hrs (Saturday)										
	HGV in	4	150	3	30	70	6	-34	-21	-10	11
	HGV out	4	150	3	30	72	6	-34	-21	-10	13
	06:00 to 07:00hrs (Sunday)										
	HGV in	2	150	3	30	70	3	-34	-15	-10	14
HGV out	2	150	3	30	72	3	-34	-15	-10	16	
GWPF Reception	07:00 to 22:00hrs (Sunday)										
	HGV in	4	150	3	30	70	6	-34	-21	-10	11
	HGV out	4	150	3	30	72	6	-34	-21	-10	13
	06:00 to 07:00hrs (Monday to Sunday)										
	HGV in	2	150	3	30	70	3	-34	-15	-10	14
	HGV out	2	150	3	30	72	3	-34	-15	-10	16
GWPF Processing	18:00 to 22:00hrs (Monday to Sunday)										
	HGV in	2	150	3	30	70	3	-34	-21	-10	8
	HGV out	2	150	3	30	72	3	-34	-21	-10	10
	06:00 to 07:00hrs (Monday to Friday)										
	Internal Processing Activity	1	125	1	900	80	0	-42	0	-14	24
	18:00 to 22:00hrs (Monday to Friday)										
	Internal Processing Activity	1	125	1	3600	80	0	-42	0	-14	24
	06:00 to 07:00hrs (Saturday)										
	Internal Processing Activity	1	125	1	900	80	0	-42	0	-14	24
	13:00 to 22:00hrs (Saturday)										
Internal Processing Activity	1	125	1	3600	80	0	-42	0	-14	24	
Totals	06:00 to 07:00hrs (Sunday)										
	Internal Processing Activity	1	125	1	900	80	0	-42	0	-14	24
	07:00 to 22:00hrs (Sunday)										
	Internal Processing Activity	1	125	1	900	80	0	-42	0	-14	24
	06:00 to 07:00hrs (Monday to Sunday)										
	Internal Processing Activity	1	125	1	900	80	0	-42	0	-14	24
	18:00 to 22:00hrs (Monday to Sunday)										
	Internal Processing Activity	1	125	1	900	80	0	-42	0	-14	24
	06:00 to 07:00hrs (Monday to Friday)										25
	18:00 to 22:00hrs (Monday to Friday)										24
06:00 to 07:00hrs (Saturday)										25	
13:00 to 22:00hrs (Saturday)										25	
06:00 to 07:00hrs (Sunday)										25	
07:00 to 22:00hrs (Sunday)										25	
06:00 to 07:00hrs (Monday to Sunday)										18	
18:00 to 22:00hrs (Monday to Sunday)										12	

APPENDIX C

ACOUSTIC CALCULATIONS

Commercial sound impact to receptors to the north-west along Bronington Close

Activity	No	Distance (m)	Ref. distance (m)	Duration (s)	Level (dBA)	Accumulation (dB)	Propagation (dB)	On-time (dB)	Screening (dB)	Specific Sound Level (dBA)	
MRF Reception	06:00 to 07:00hrs (Monday to Friday)										
	HGV in	2	250	3	30	70	3	-38	-15	0	20
	HGV out	2	250	3	30	72	3	-38	-15	0	22
	18:00 to 22:00hrs (Monday to Friday)										
	HGV in	2	250	3	30	70	3	-38	-21	0	14
	HGV out	2	250	3	30	72	3	-38	-21	0	16
	06:00 to 07:00hrs (Saturday)										
	HGV in	2	250	3	30	70	3	-38	-15	0	20
	HGV out	2	250	3	30	72	3	-38	-15	0	22
	13:00 to 22:00hrs (Saturday)										
	HGV in	4	250	3	30	70	6	-38	-21	0	17
	HGV out	4	250	3	30	72	6	-38	-21	0	19
	06:00 to 07:00hrs (Sunday)										
	HGV in	2	250	3	30	70	3	-38	-15	0	20
HGV out	2	250	3	30	72	3	-38	-15	0	22	
GWPF Reception	07:00 to 22:00hrs (Sunday)										
	HGV in	4	250	3	30	70	6	-38	-21	0	17
	HGV out	4	250	3	30	72	6	-38	-21	0	19
	06:00 to 07:00hrs (Monday to Sunday)										
	HGV in	2	250	3	30	70	3	-38	-15	0	20
GWPF Processing	HGV out	2	250	3	30	72	3	-38	-15	0	22
	18:00 to 22:00hrs (Monday to Sunday)										
	HGV in	2	250	3	30	70	3	-38	-21	0	14
	HGV out	2	250	3	30	72	3	-38	-21	0	16
	06:00 to 07:00hrs (Monday to Friday)										
	Internal Processing Activity	1	380	1	900	80	0	-52	0	-10	18
	18:00 to 22:00hrs (Monday to Friday)										
	Internal Processing Activity	1	380	1	3600	80	0	-52	0	-10	18
	06:00 to 07:00hrs (Saturday)										
	Internal Processing Activity	1	380	1	900	80	0	-52	0	-10	18
Totals	13:00 to 22:00hrs (Saturday)										
	Internal Processing Activity	1	380	1	3600	80	0	-52	0	-10	18
	06:00 to 07:00hrs (Sunday)										
	Internal Processing Activity	1	380	1	900	80	0	-52	0	-10	18
	07:00 to 22:00hrs (Sunday)										
	Internal Processing Activity	1	380	1	900	80	0	-52	0	-10	18
	06:00 to 07:00hrs (Monday to Sunday)										
	18:00 to 22:00hrs (Monday to Sunday)										
	06:00 to 07:00hrs (Monday to Friday)									25	
	18:00 to 22:00hrs (Monday to Friday)									21	
06:00 to 07:00hrs (Saturday)									25		
13:00 to 22:00hrs (Saturday)									23		
06:00 to 07:00hrs (Sunday)									25		
07:00 to 22:00hrs (Sunday)									23		
06:00 to 07:00hrs (Monday to Sunday)									24		
18:00 to 22:00hrs (Monday to Sunday)									18		