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Lister Wilder, Reading Noise Impact Assessment

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Project Ref:	AS14075	Project Name:	Lister Wilder, Reading
Report Ref:	AS14075.250528.NIA1.1	Report Title:	Noise Impact Assessment
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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 EXECUTIVE SUMMARY

- 1.1 Clarke Saunders Acoustics (CSA) has been commissioned by Bourne Valley Associates to assess the potential noise impact associated with the proposed expansion of the service yard at the Reading branch of Lister Wilder, White House Lane, Spencers Wood, RG7 1HR.
- 1.2 An environmental sound survey has been undertaken to establish the existing background and ambient sound levels. The measured survey data, including in-situ measurements of Lister Wilder activities, has been used to assess the potential impact of sound generated by the activities within the expanded service yard. This assessment has been conducted in line with the requirements of the Local Authority and BS4142:2014+A.1:2019 *Methods for rating and assessing industrial and commercial sound* (BS4142).
- 1.3 When considered in context, the potential sound impact from the proposals is expected to be low, provided appropriate acoustic screening is installed on the 'Goods In' boundary.

2.0 INTRODUCTION

- 2.1 The buildings at the Reading branch of Lister Wilder, located on White House Lane, Spencers Wood, RG7 1HR, are proposed to be demolished and replaced with a single building comprising retail, storage and workshop uses. The proposed alterations will result in changes to site activity.
- 2.2 As part of the planning application, CSA has been appointed to undertake a noise impact assessment of the proposed development.
- 2.3 A summary of the acoustic terminology used throughout this report is provided at Appendix A.

3.0 SITE DESCRIPTION AND PROPOSALS

3.1 EXISTING SITE & OPERATION

- 3.1.1 The site is located in Spencers Wood, Reading, in a largely rural area. The nearest sensitive receptors are White House Farm (cottage, circa 25m to the south) and 17 Cook Grove (circa 55m to the east of the existing service yard and 33m to the east of the proposed service yard). White House Farm Mobile Home Park lies on land owned by Lister Wilder circa 20m from the existing service yard.
- 3.1.2 During visits to the site, it was noted that the residual sound climate was primarily influenced by the existing activity at site and occasional vehicle pass-bys on White House Lane. The on-site engineer noted that construction work at White House Farm (cottage) contributed to the acoustic environment, but did not determine the overall levels. The background sound climate is primarily determined by road traffic on the A33, which lies circa 340m to the west of the site.
- 3.1.3 It is understood that the site's typical operational hours are 08:00 – 17:00 Monday to Friday and 08:00 – 12:00 on Saturday. The site was confirmed to operate typically during the survey.
- 3.1.4 The attached site plan (figure AS14075/SPI) shows the site and the surrounding area.

- 3.1.5 CSA liaised with the project's transport consultant, Nichols Consulting, to confirm the existing trip attraction rates associated with Lister Wilder's goods in entrance. A summary of the observed trip rates of vehicles accessing the site is shown in Table 3.1.

Period	Observed 2-way movements
Morning peak hour	2
Afternoon peak hour	2

Table 3.1: Summary of observed existing trip generation

- 3.1.6 CSA also corresponded with Lister Wilder's managing director, who confirmed that other typical on-site activities include the following, a majority of which were observed during the site visits:

- Forklift movements, primarily used for loading/unloading;
- Jet-washing machinery in the washdown bay;
- Machinery hire, transported off-site using lorries/HGVs (typically 2 per day) or 4x4 cars with trailers (typically 4 per day);
- Occasional machinery repair, typically indoors.

3.2 PROPOSED OPERATION

- 3.2.1 The proposed development involves the demolition of the nine buildings and consolidating their functions into a single new building. There will also be an expansion to the service yard and relocation of related activities, such as the wash down bay and loading area, both of which are indicated on AS14075/SP2.1.

- 3.2.2 The new service yard will extend into the currently unused field that lies between the existing yard and Cook Grove.

- 3.2.3 It has been confirmed that the operational hours are not expected to change.

- 3.2.4 The transport consultant also confirmed the predicted goods in trip rates associated with the proposals, based on the observed movements and change in floor area of the proposed expansion. This is summarised in Table 3.2.

Period	Predicted 2-way movements
Morning peak hour	3
Afternoon peak hour	3

Table 3.2: Summary of predicted trip generation

- 3.2.5 Nichols Consulting confirmed that the largest vehicles expected to be make deliveries would be LGVs.

- 3.2.6 Through correspondence with Charlie King, it was confirmed that the other typical on-site activities discussed above would remain largely similar to that of the existing operation.

4.0 LOCAL AUTHORITY REQUIREMENTS & RELEVANT GUIDANCE

4.1 LOCAL AUTHORITY REQUIREMENTS

- 4.1.1 In a pre-application advice response letter dated 18th March 2024, a planning officer at Wokingham Borough Council (WBC) stated the following:

“The proposed development would be significantly closer to the houses to the east and static caravans on the immediately adjacent site to the north-west and noise emanating from the site could impact resident’s amenity.

The council’s Environment Health Officer has stated that to fully assess the impact the application will have to be described in more detail, what activity on site is proposed, what operational hours are proposed and how this will fit in with the surrounding area. Any future proposal would need to be accompanied by Noise Impact Assessment in accordance with the British Standard.”

- 4.1.2 CSA contacted WBC on 17th June 2025, where it was confirmed that the “British Standard” in question is BS4142.

4.2 BS4142

- 4.2.1 BS4142 provides a methodology to assess the likelihood of adverse impact arising from sound generated by industrial and commercial sound sources.
- 4.2.2 Sound emissions which result in distinguishable features are subject to additional penalties. The context of the sound emissions and existing soundscape form an important part of the assessment.
- 4.2.3 A detailed summary of the BS4142 assessment methodology is provided at Appendix B. It is noted that the assessment of sound from vehicles on public roads is explicitly scoped out of BS4142.

5.0 ENVIRONMENTAL SOUND SURVEY

5.1 PROCEDURE AND EQUIPMENT

- 5.1.1 Automated measurements of consecutive 5-minute L_{Aeq} , L_{Amax} , L_{A10} and L_{A90} sound pressure levels were taken at Positions 1 and 2, as shown in site plan AS14075/SP1, between 12:00 hours on Thursday 29th May and 11:00 hours on Tuesday 3rd June 2025, following procedures in BS4142 and BS7445:1991 *Description and measurement of environmental noise Part 2: Acquisition of data pertinent to land use*.
- 5.1.2 Weather during the survey was generally dry with light winds, and as such has been deemed suitable for the purposes of the survey.
- 5.1.3 Attended measurements of specific sound sources were undertaken on Thursday 29th May and Tuesday 3rd June 2025.

5.1.4 The equipment used during the survey was as follows:

- 2 no. Rion sound level meters type NL52;
- 1 no. Norsonic sound level meter type 118;
- 1 no. Rion sound level calibrator type NC74;
- 1 no. Norsonic sound level calibrator type 1251.

5.1.5 Calibration of the sound level meters was verified before and after the surveys, with no significant calibration drift detected. All CSA equipment has current traceable laboratory calibration which is available for inspection upon request.

5.2 SURVEY RESULTS

5.2.1 Table 5.1 presents the average ambient and typical background sound levels at the monitoring positions during proposed operational hours. The full daytime period is also shown for reference.

Position	Monitoring Period	Average $L_{Aeq,5mins}$	Typical Background* L_{A90}
Position 1	Daytime (07:00 – 23:00)	54dB	40dB
	Operational hours (08:00 – 17:00)	55dB	43dB
Position 2	Daytime (07:00 – 23:00)	50dB	39dB
	Operational hours (08:00 – 17:00)	50dB	42dB

Table 5.1: Typical measured average and background sound levels [dB ref. 20μPa]
*derived as the 10th percentile of the relevant L_{A90} dataset

5.2.2 The appended time histories, AS14075/TH1-TH10, show the variation of the measured parameters over time, at each of the measurement positions.

5.3 OPERATIONAL SOUND SOURCES

5.3.1 In-situ measurements of sound sources associated with the service yard were undertaken on Thursday 29th May and Tuesday 3rd June 2025. The measured sound pressure levels for each of these sources are detailed in Table 5.2.

Source	Distance	63	125	250	500	1k	2k	4k	8k	dB(A)
Forklift engine	1.5m (from exhaust)	92	86	77	80	73	71	72	69	81
Washdown Bay	2m (from jet washer)	73	74	74	76	76	75	76	74	82
Lorry reversing (with beeper)	10m (from side)	69	61	64	63	64	61	57	50	68
Lorry pulling forward	5m (from side)	77	71	66	65	67	64	61	52	71

Table 5.2: Measured sound pressure levels of sources associated with operation [dB ref. 20μPa]

5.3.2 Further reference has been made to CSA library data of a van manoeuvring, which is summarised in Table 5.3.

Sound Source	Measurement Unit	63	125	250	500	1k	2k	4k	8k	dB(A)
Van driving forwards	L_p @ 10m	71	65	63	63	60	56	54	46	65
Van reversing	L_p @ 10m	74	64	63	63	61	59	53	46	66

Table 5.3: Summary of library data used in BS4142 assessment

[dB ref. 20 μ Pa]

6.0 ASSESSMENT AND DISCUSSION

6.1 BS4142 ASSESSMENT

6.1.1 The cumulative sound level at the nearest sensitive receptors has been assessed following procedures in BS4142, using the sound pressure level data given in Section 5.3.

6.1.2 The operational periods of each sound source have been taken into account and expressed as an equivalent $L_{eq,1hr}$ as per the requirements of BS4142. These assumed operational periods within a one-hour period, based on observation, information received from the site managing director and experience of activities on other similar sites, are shown in Table 6.1.

Sound Source	Number in an Hour	Anticipated Operational Time (per use)
Forklift	1	20 minutes
Washdown Bay	4	5 minutes
Van (driving forwards)	3	1 minute
Van (reversing)	3	1 minute
Lorry (driving forwards)	1	1 minute
Lorry (reversing)	1	1 minute

Table 6.1: Summary of anticipated operational times

6.1.3 A summary of the BS4142 assessment at the nearest residential receptors is shown in Table 6.2. The positions from which each source is being assessed can be seen in the attached annotated site plan (Figure AS14075/SP2.1). Where a source may be operational at various points across the site, the most realistically onerous positions for each receptor has been assessed.

6.1.4 Appropriate screening losses have been applied when assessing the washdown bay, due to it being partially enclosed. Similarly, screening effects provided by the proposed warehouse buildings have been applied where applicable.

6.1.5 To provide a robust assessment, a 3dB character correction has been applied to account for the potentially distinctive nature of the sound, although this character would already be generated by the pre-existing Lister Wilder activities.

6.1.6 A summary of the Specific Sound Level calculations is shown in Appendix C.

BS4142 Initial Impact Estimate Summary (no additional mitigation)			
Parameter	White House Farm (Cottage)	White House Farm (Caravan Park)	Cook Grove
Assessment Period	08:00-17:00		
Specific Sound Level at Receptor ($L_{eq,1hr}$)	37dB	48dB	40dB
Acoustic Character Corrections	+3dB		
Rating Level ($L_{A,T,r}$)	40dB	51dB	43dB
Background Sound Level (L_{A90})	43dB	42dB	42dB
Assessment Level	-3dB	+9dB	+1dB
Impact Assessment	A low impact, depending on the context	Potential for adverse or significant adverse impact, depending on the context	Potential for adverse impact, tending towards a low likelihood, depending on the context

Table 6.2: BS4142 initial impact estimate

6.1.7 As the assessment level for the caravan park is indicative of an adverse impact, it is recommended that acoustic screening be installed on the boundary adjacent to the 'Goods In' area. It is noted that a 2.4m palisade fence is proposed to be installed between these areas; if instead a solid and imperforate close-boarded timber fence is built from the ground up to the same height, the assessment of potential impact reduces, as shown in the last page of Appendix C and Table 6.3.

BS4142 Initial Impact Estimate (with additional mitigation)	
Parameter	White House Farm (Caravan Park)
Assessment Period	08:00-17:00
Specific Sound Level at Receptor ($L_{eq,1hr}$)	43dB
Acoustic Character Corrections	+3dB
Rating Level ($L_{A,r,Tr}$)	46dB
Background Sound Level (L_{A90})	42dB
Assessment Level	+4dB
Impact Assessment	Potential for adverse impact, tending towards a low likelihood, depending on the context

Table 6.3: BS4142 initial impact estimate, with screening

6.2 CONTEXT & DISCUSSION

- 6.2.1 The primary contextual factor to consider within this assessment is the pre-existing presence of Lister Wilder activity. Vehicular movements to and from site, and on-site vehicular movements and activities, already contribute to the soundscape of the area. The expansion involves a greater level of activity, although does not involve changes to the nature of operation, nor the general soundscape associated with the site.
- 6.2.2 The predicted Specific Levels are generally lower than the pre-existing ambient sound levels across the proposed operating hours, which suggests that whilst the increased activity may be audible at the nearest sensitive receptors, it is unlikely to form a more significant part of the soundscape. Nevertheless, a +3dB acoustic character correction has been applied to provide a robust assessment.
- 6.2.3 The assessment is of a reasonable “worst-case scenario”, wherein a variety of sound sources have been assumed as operating simultaneously during the peak hour, close to the site boundaries shared with the residential receptors.
- 6.2.4 The sound data for the forklift (a large contributor to the overall predicted sound levels) was measured directly in front of the exhaust, which is the primary sound source. Measuring the sound levels at the exhaust thereby allows for a robust assessment, as opposed to relying on a measurement at a greater distance, off-axis to the exhaust.
- 6.2.5 It may be reasonable to expect sound sources such as the operating of machinery in an agricultural area, which could also reduce the incongruity of the sound sources.
- 6.2.6 Site access for delivery vehicles is proposed to be moved from its current location on the southern boundary to the western boundary. This means that there will be fewer Goods Vehicles passing White House Farm (Cottage), but more passing White House Farm (Caravan Park).
- 6.2.7 The Lister Wilder activities and, therefore, character of the sound are not anticipated to change, so the pre-existing soundscape would largely be maintained.

6.2.8 With the above context considered, it is anticipated that there is a low likelihood of adverse impact at each identified receptor, provided a 2.4m high solid and impermeable fence is installed along the 'Goods In' boundary.

7.0 UNCERTAINTY

- 7.1 As per the requirements of BS4142, the uncertainty in the assessment is considered and reported. This is not an indication of error, but an acknowledgement of possible variability of the factors contributing to the assessment.
- 7.2 Use of a calibrated type 1 sound level meter reduces measurement instrumentation error to insignificant levels as compared to environmental variations.
- 7.3 Measuring environmental sound levels across a six day period including a weekend reduces the uncertainty in the background sound levels used in the BS4142 assessment, compared with shorter term measurements only taken during weekdays.
- 7.4 Spectral sound data from the relevant sound sources have been measured in-situ, removing the uncertainty associated with manufacturer data.

8.0 CONCLUSIONS

- 8.1 Clarke Saunders Acoustics has conducted a noise impact assessment of the proposed expansion of the Reading Branch of Lister Wilder.
- 8.2 An environmental sound survey has been undertaken to determine representative background sound levels of the nearest residential receptors.
- 8.3 The survey data has been used, together with in-situ measurement data for the machinery, to assess the potential sound impact of the expansion on the nearest dwellings.
- 8.4 The assessment has been undertaken following procedures in BS4142, in accordance with the requirements of Wokingham Borough Council.
- 8.5 The assessment concludes that adverse impact is unlikely to be experienced at the receptors, provided that appropriate acoustic screening is installed along the 'Goods In' boundary.

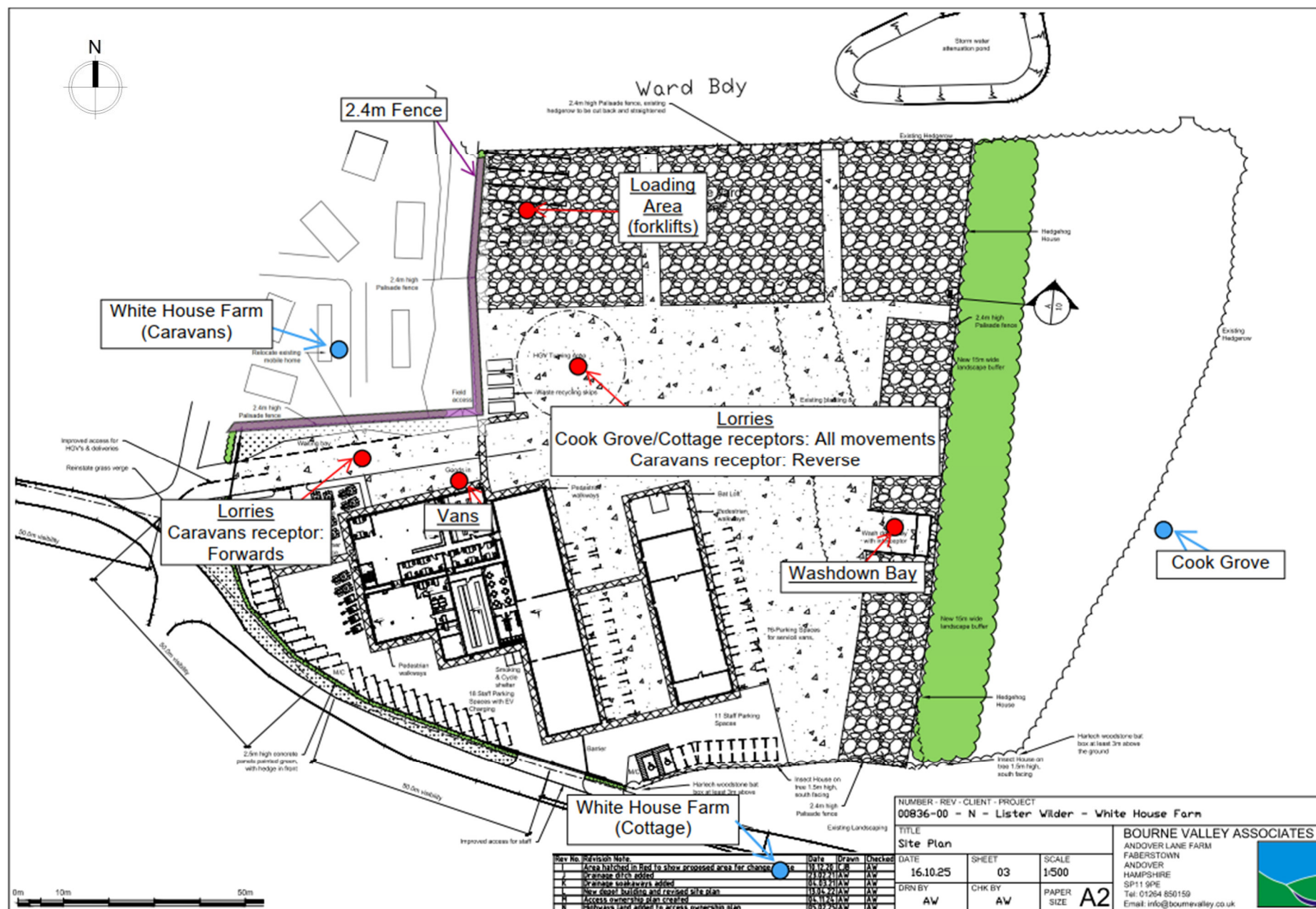
M Symmonds

Michael Symmonds MIOA
CLARKE SAUNDERS ACOUSTICS



Indicative Site Plan

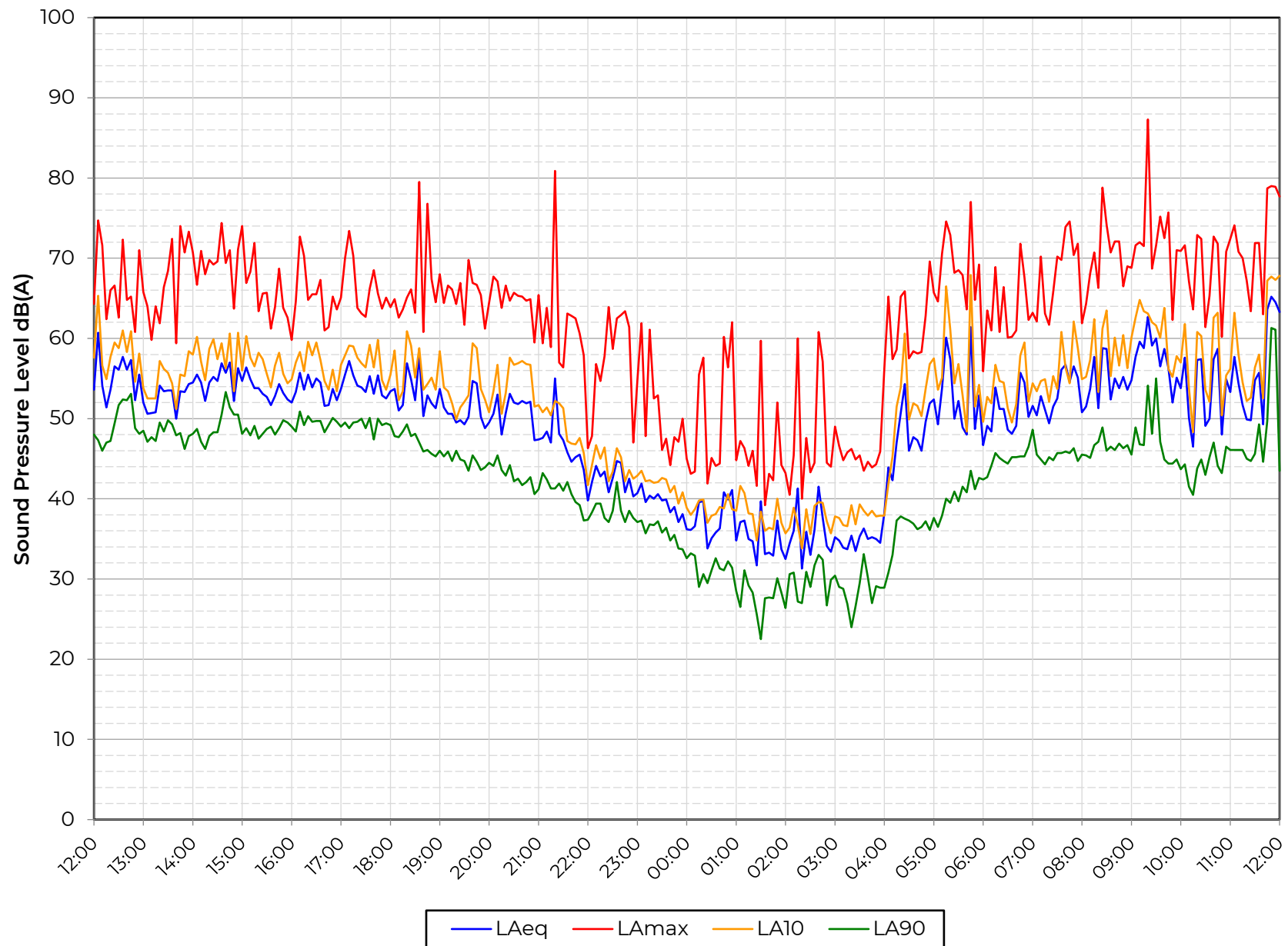
Figure AS14075/SP1



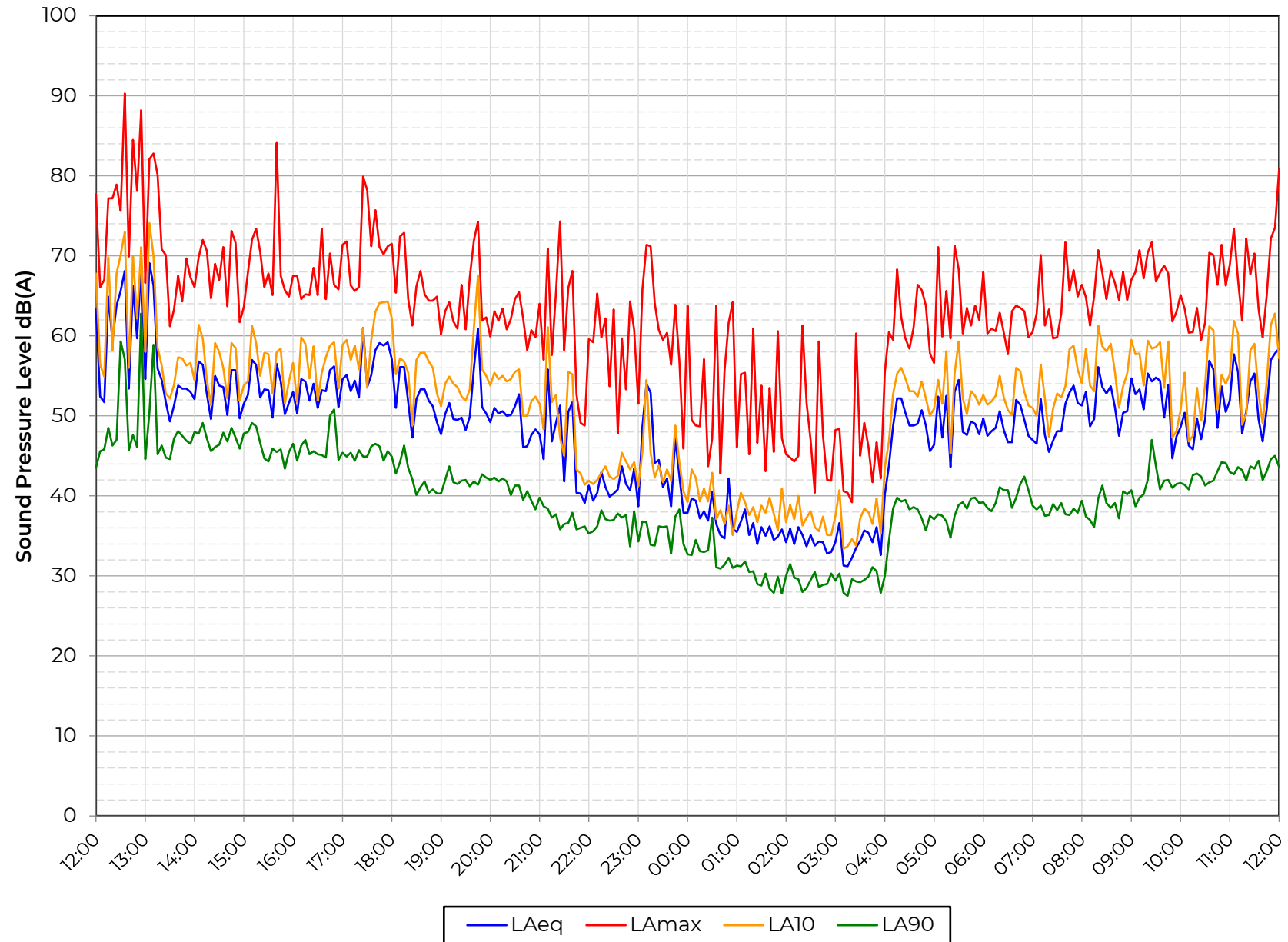
Annotated Site Plan

Figure AS14075/SP2.1

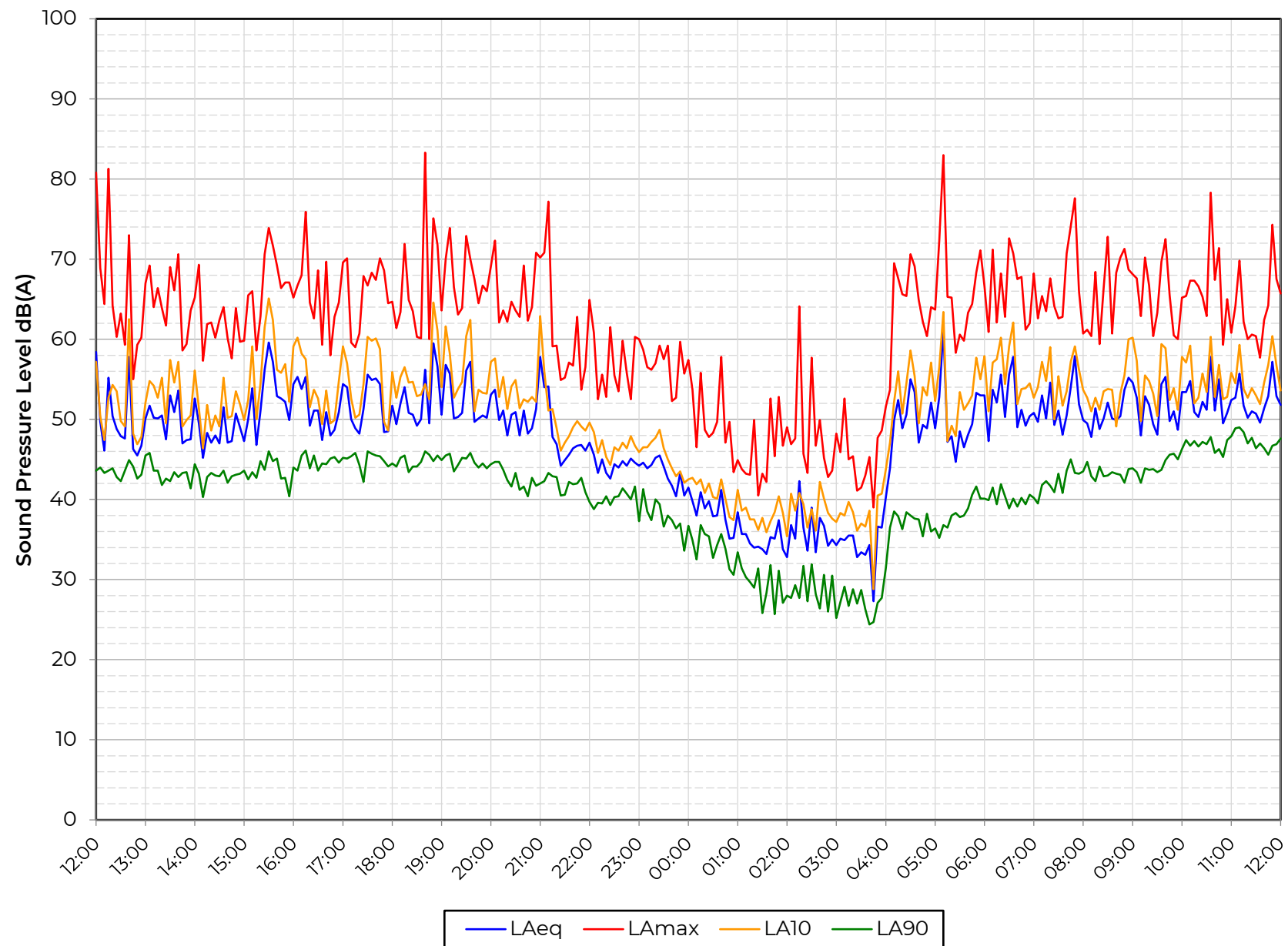
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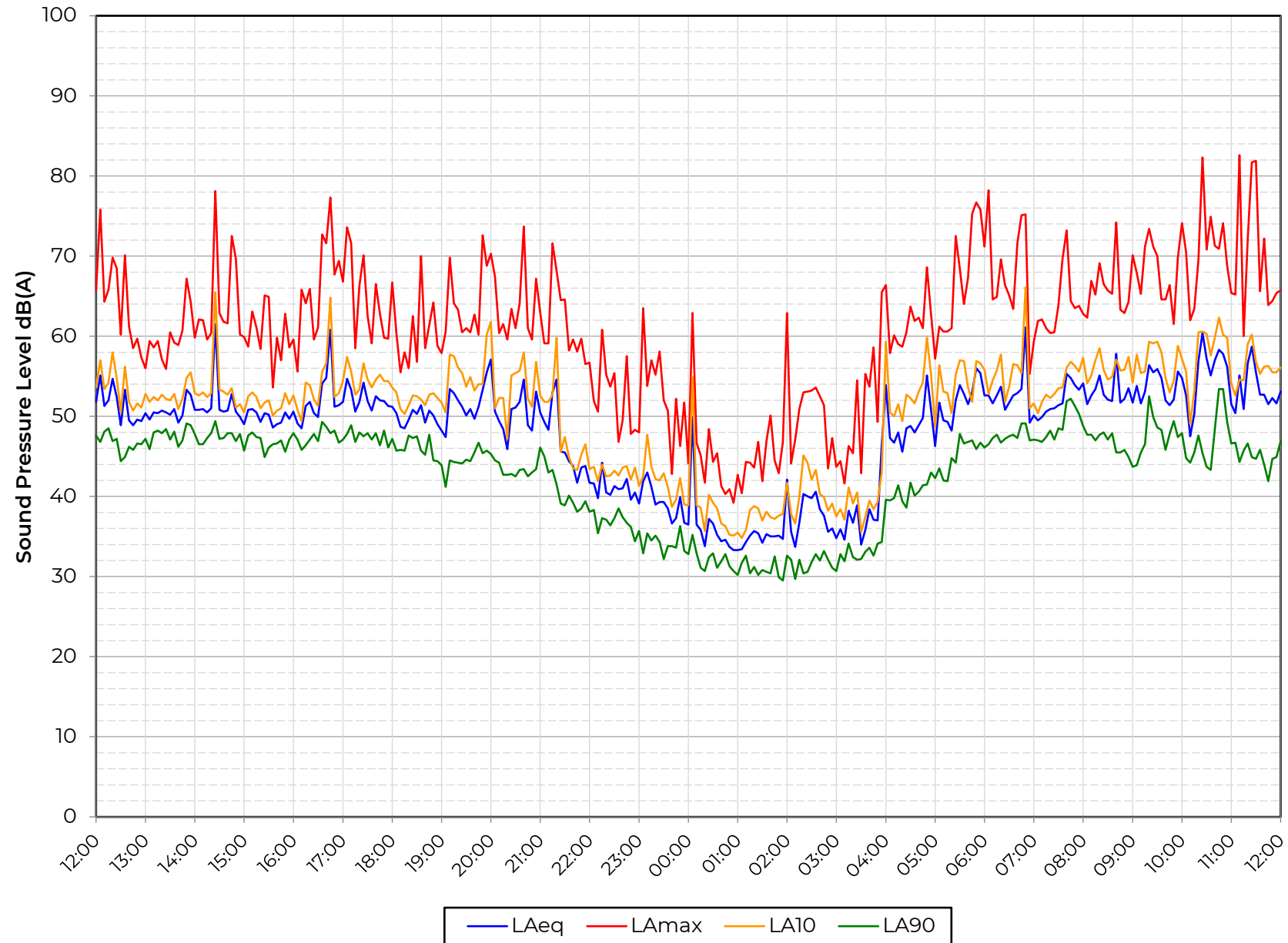
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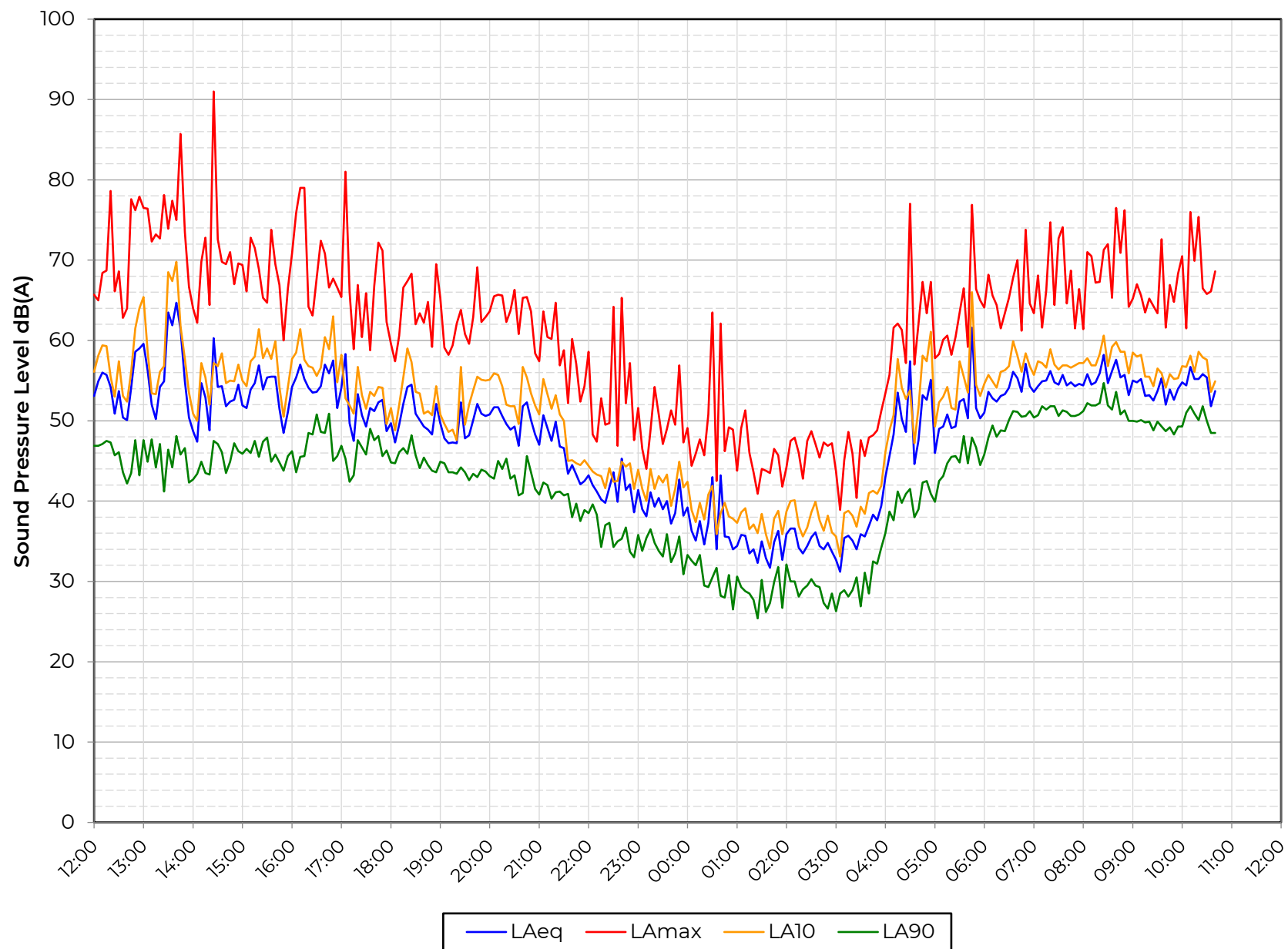
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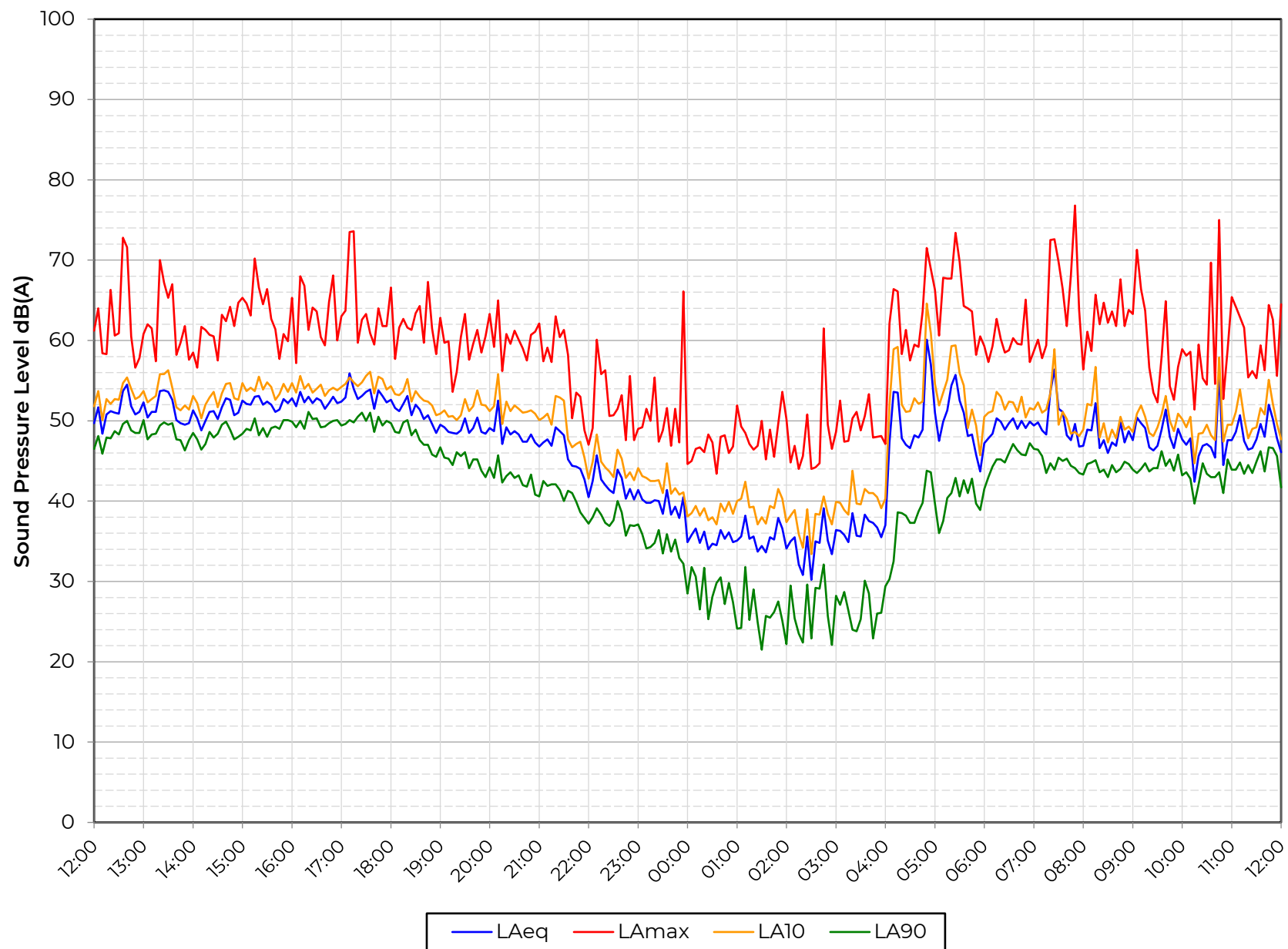
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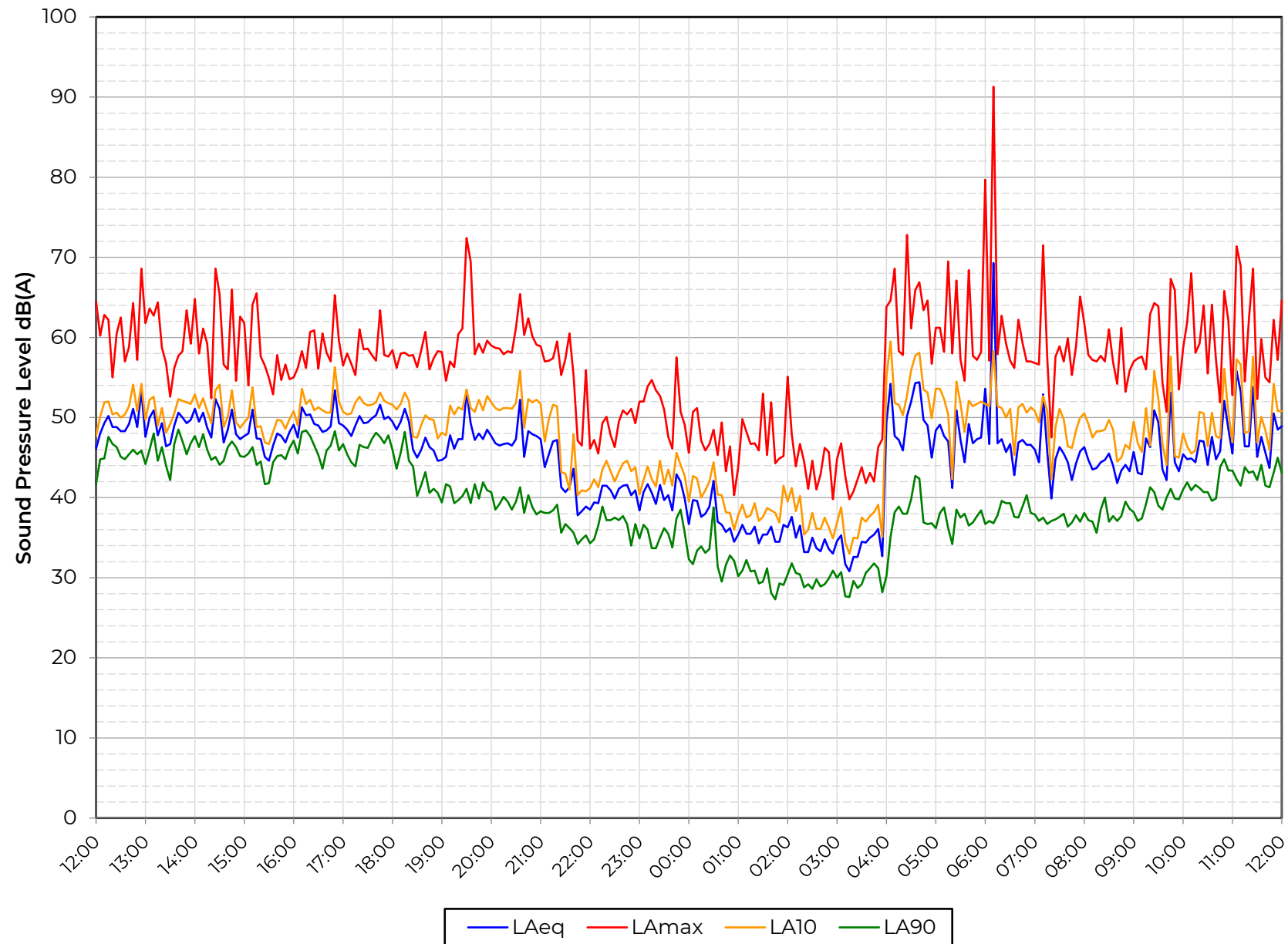
Position 1



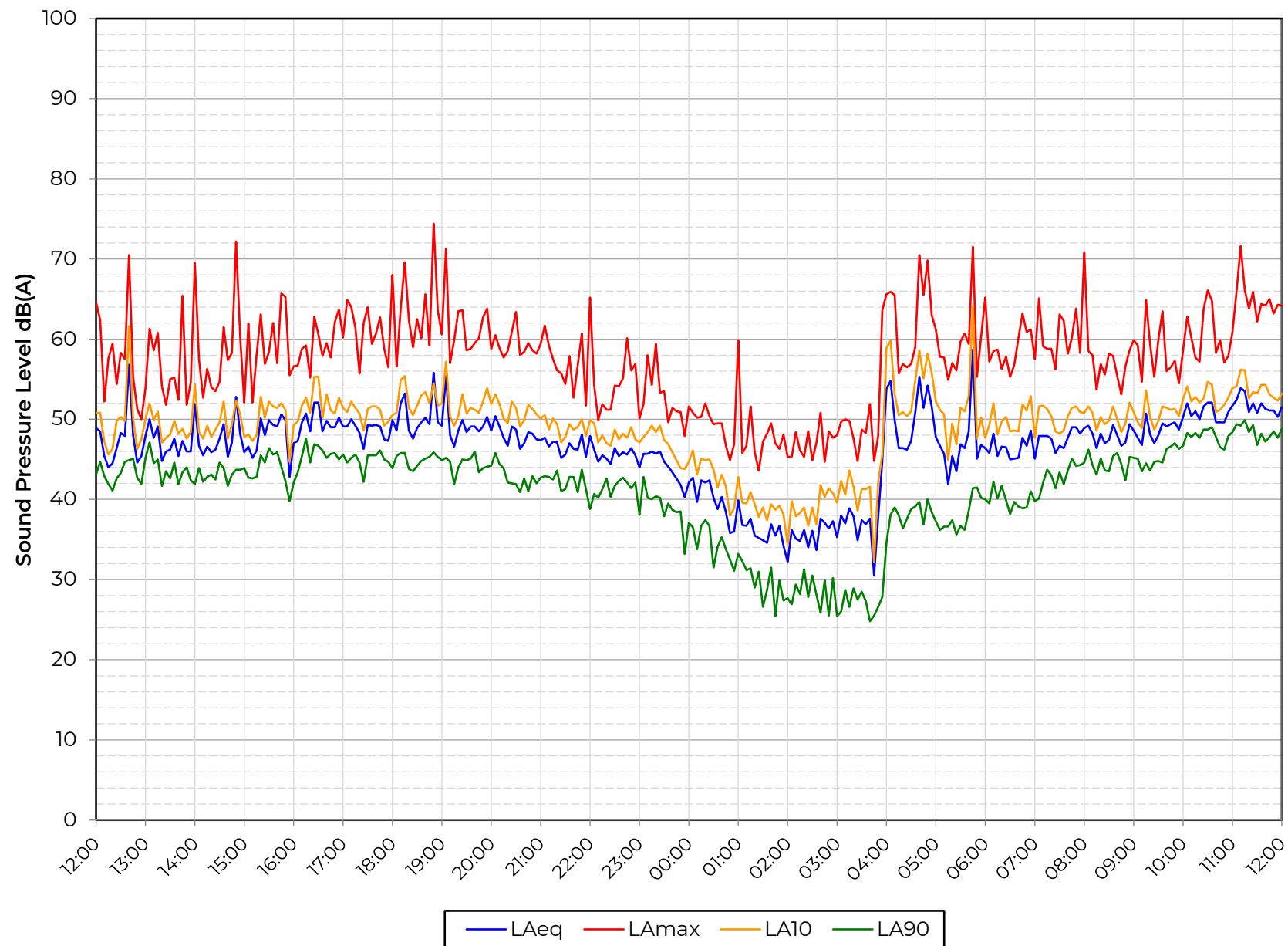
Position 2



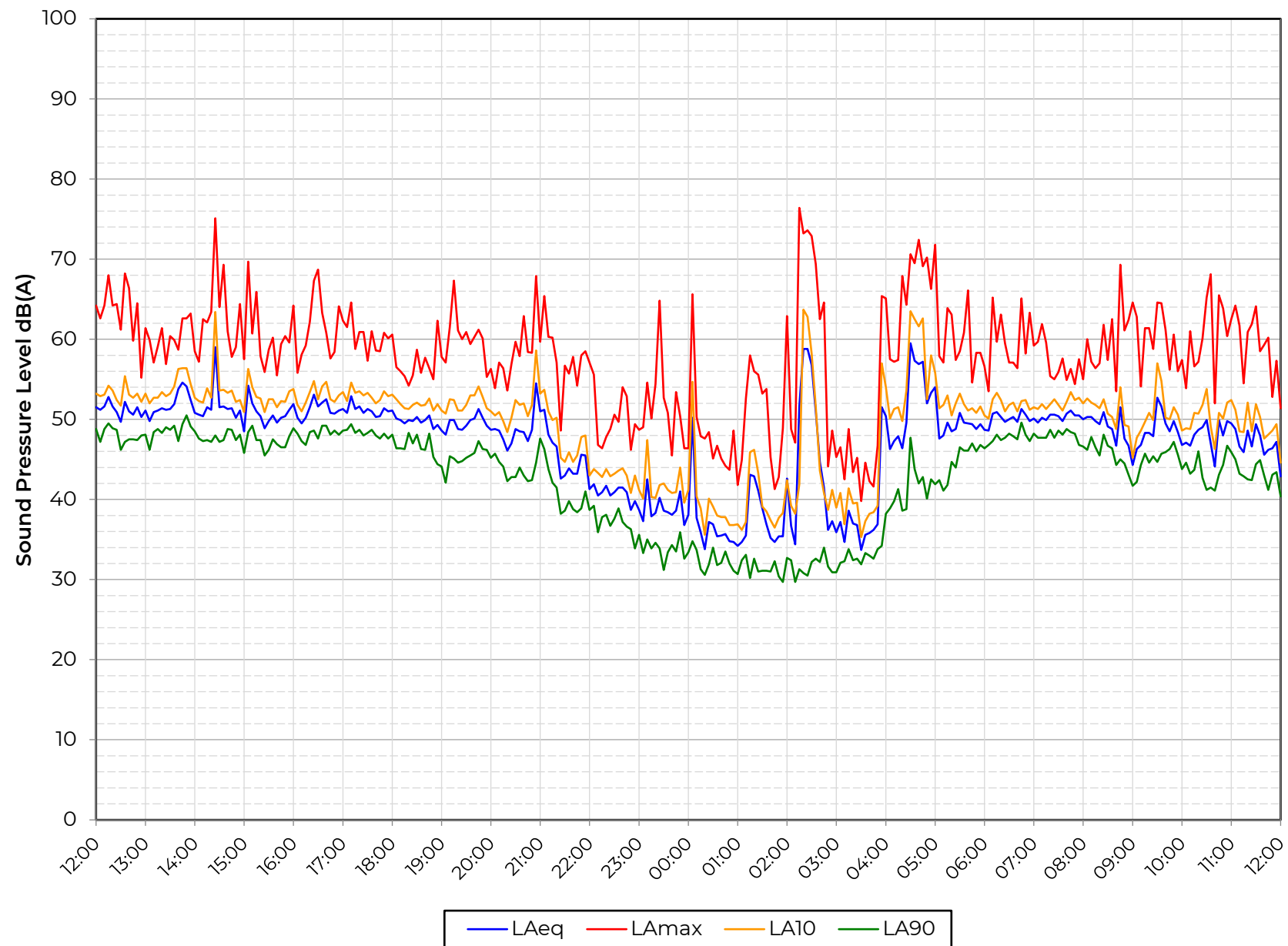
Position 2



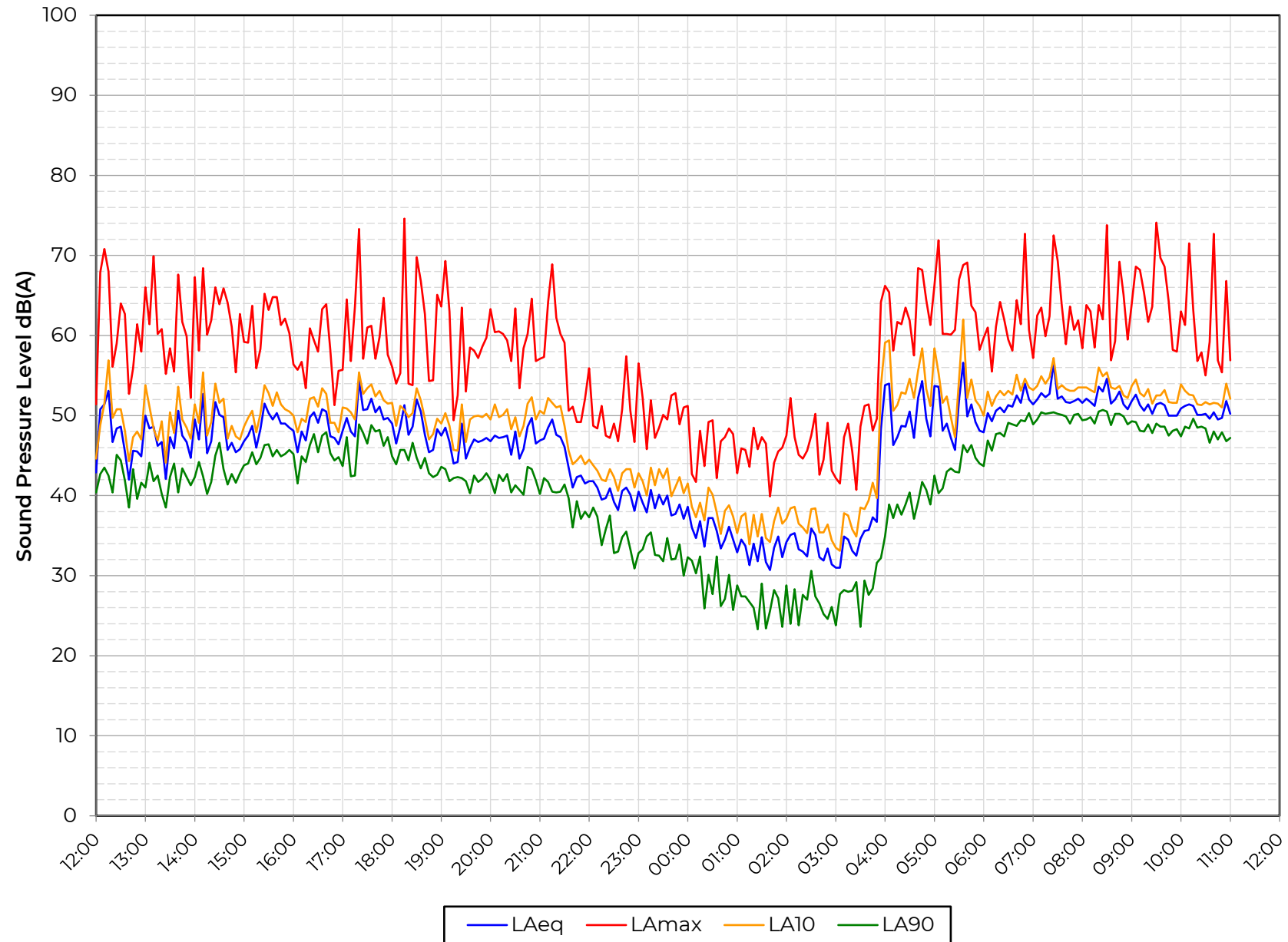
Position 2



Position 2



Position 2



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.
NR	<i>Noise Rating</i> . A single figure noise level rating that takes into account the frequency content of an acoustic environment.
R	<i>Sound Reduction Index</i> . Effectively the Level Difference of a building element when measured in an accredited laboratory test suite in accordance with the procedures laid down in BS EN ISO 10140-2:2010 and corrected for its size and the reverberant characteristics of the receive room.
D	The sound insulation performance of a construction is described in terms of the difference in sound level on either side of the construction in the presence of a

sound source on one side and the reverberant characteristics of the adjoining 'receive' space. D is the arithmetic Level Difference in decibels between the source and receive sound levels when filtered into frequency bands.

D_{nT}	<i>Weighted Standardised Level Difference.</i> As defined in BS EN ISO 717-1, representing the Weighted Level Difference, when standardised for reference receiving room reverberant characteristics.
$D_{n,e}$	Normalised sound insulation of small building elements of fixed dimensions, such as vents, measured in an accredited laboratory test suite in accordance with the procedures laid down in BS EN ISO 10140-2:2010.
$D_{n,f}$	Flanking sound insulation of lightweight elements, such as curtain wall mullions, measured in an accredited laboratory test suite in accordance with the procedures laid down in ISO 10848-2:2006
$R_w D_w$ $D_{nT,w} D_{n,e,w}$ $D_{n,f,w}$	Value of parameter, determined as above, but weighted in accordance with the procedures laid down in BS EN ISO 717-1 to provide a single-figure value.
C, C_{tr}	Spectral adaptation terms to be added to a single number quantity such as $D_{nT,w}$, to take account of the sound insulation within frequency ranges of particular interest.
$L'_{nT,w}$	<i>Weighted Standardised Impact Sound Pressure Level</i> as defined in BS EN ISO 717-2, representing the level of sound pressure when measured within a space where the floor above is under excitation from a calibrated tapping machine, standardised for the receiving room reverberant characteristics.
ΔL_w	Change in impact sound pressure level when a floor is fitted with a 'soft' or resilient covering, as measured in an accredited laboratory test suite in accordance with the procedures laid down in BS EN ISO 10140-3:2010.

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 they climb up a ladder (and are closer to the top of the barrier) than if they were standing at ground level. Equally if they sat on the ground the sound would seem quieter than if 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:

- a) *Typically, the greater this difference, the greater the magnitude of the impact;*
- b) *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;*
- c) *A difference of around +5dB could be an indication of an adverse impact, depending on the context;*
- d) *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.

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AS14075 - Lister Wilder, Reading SUMMARY OF BS4142 CALCULATIONS

Yard Activity to White House Farm (Cottage)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Forklift</u>										
Forklift	Lp @ 1.5m	92	86	77	80	73	71	72	69	81
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	20	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-5	-5	-5	-5	-5	-5	-5	-5	
Forklift Movements	Leq,1hr	87	81	72	75	69	67	67	64	77
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Signifiant	-10	-10	-10	-10	-10	-10	-10	-10	
Distance Loss	112m	-37	-37	-37	-37	-37	-37	-37	-37	
Specific sound level at receptor	L _{eq} 1hr	39	34	25	28	21	19	20	16	29

Yard Activity to White House Farm (Cottage)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Wash Down Bay</u>										
Jet washer	Lp @2m	73	74	74	76	76	75	76	74	82
Number in an hour	4	-	-	-	-	-	-	-	-	
Time of each use (minutes)	5	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-5	-5	-5	-5	-5	-5	-5	-5	
Washdown Bay Activity	Leq,1hr	68	70	70	72	71	70	71	70	78
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Fin - 4 W	-4	-5	-6	-7	-8	-10	-12	-15	
Distance Loss	82m	-32	-32	-32	-32	-32	-32	-32	-32	
Specific sound level at receptor	L _{eq} 1hr	31	32	32	33	31	28	26	22	36

Yard Activity to White House Farm (Cottage)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Van (forwards)	Lp @ 10m	71	65	63	63	60	56	54	46	65
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-13	-13	-13	-13	-13	-13	-13	-13	
LGV Movements (forwards)	Leq,1hr	58	52	50	50	47	43	40	33	
Directivity	No Direct	0	0	0	0	0	0	0	0	52
Screening Loss	Signifiant	-10	-10	-10	-10	-10	-10	-10	-10	
Distance Loss	112m	-21	-21	-21	-21	-21	-21	-21	-21	
Specific sound level at receptor	L _{eq} 1hr	27	21	19	19	16	12	10	2	21

Yard Activity to White House Farm (Cottage)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Van (reverse)	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-13	-13	-13	-13	-13	-13	-13	-13	
LGV Movements (reverse)	Leq,1hr	61	51	50	49	48	46	40	33	53
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Signifiant	-10	-10	-10	-10	-10	-10	-10	-10	
Distance Loss	112m	-21	-21	-21	-21	-21	-21	-21	-21	
Specific sound level at receptor	L _{eq} 1hr	30	20	19	19	17	15	9	2	22

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Yard Activity to White House Farm (Cottage)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Lorry pulling forward	Lp @ 5m	77	71	66	65	67	64	61	52	71
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	2	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-15	-15	-15	-15	-15	-15	-15	-15	
HGV Movements (forwards)	Leq,1hr	62	56	51	50	52	49	46	38	56
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Line of Sig	-5	-5	-5	-5	-5	-5	-5	-5	
Distance Loss	160m	-30	-30	-30	-30	-30	-30	-30	-30	
Specific sound level at receptor	L_{eq} 1hr	27	21	16	15	17	14	11	3	21

Yard Activity to White House Farm (Cottage)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Lorry reversing (w/ beeper)	Lp @ 10m	69	61	64	63	64	61	57	50	68
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	2	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-15	-15	-15	-15	-15	-15	-15	-15	
HGV Movements (reverse)	Leq,1hr	54	46	49	48	49	46	42	35	53
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Line of Sig	-5	-5	-5	-5	-5	-5	-5	-5	
Distance Loss	160m	-24	-24	-24	-24	-24	-24	-24	-24	
Specific sound level at receptor	L_{eq} 1hr	25	17	20	19	20	17	13	6	24

Cumulative Level at receptor	L _{eq} 1hr	41	37	33	34	32	29	28	24	37
Acoustic Character Correction		3	3	3	3	3	3	3	3	
Rating Level at receptor	L_{Ar,Tr}	44	40	36	37	35	32	31	27	40

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AS14075 - Lister Wilder, Reading SUMMARY OF BS4142 CALCULATIONS

Yard Activity to White House Farm (Caravans)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Forklift</u>										
Forklift	Lp @ 1.5m	92	86	77	80	73	71	72	69	81
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	20	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-5	-5	-5	-5	-5	-5	-5	-5	
Forklift Movements	Leq,1hr	87	81	72	75	69	67	67	64	77
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	65m	-33	-33	-33	-33	-33	-33	-33	-33	
Specific sound level at receptor	L_{eq}1hr	54	49	40	43	36	34	35	31	44

Yard Activity to White House Farm (Caravans)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Wash Down Bay</u>										
Jet washer	Lp @ 2m	73	74	74	76	76	75	76	74	82
Number in an hour	4	-	-	-	-	-	-	-	-	
Time of each use (minutes)	5	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-5	-5	-5	-5	-5	-5	-5	-5	
Washdown Bay Activity	Leq,1hr	68	70	70	72	71	70	71	70	78
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	135m	-37	-37	-37	-37	-37	-37	-37	-37	
Specific sound level at receptor	L_{eq}1hr	32	33	33	35	35	34	34	33	41

Yard Activity to White House Farm (Caravans)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Van (forwards)	Lp @ 10m	71	65	63	63	60	56	54	46	65
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-13	-13	-13	-13	-13	-13	-13	-13	
LGV Movements (forwards)	Leq,1hr	58	52	50	50	47	43	40	33	52
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	43m	-13	-13	-13	-13	-13	-13	-13	-13	
Specific sound level at receptor	L_{eq}1hr	45	39	37	37	34	30	28	20	39

Yard Activity to White House Farm (Caravans)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Van (reverse)	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-13	-13	-13	-13	-13	-13	-13	-13	
LGV Movements (reverse)	Leq,1hr	61	51	50	49	48	46	40	33	53
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	43m	-13	-13	-13	-13	-13	-13	-13	-13	
Specific sound level at receptor	L_{eq}1hr	48	38	38	37	35	33	28	21	40

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Yard Activity to White House Farm (Caravans)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Lorry pulling forward	Lp @ 5m	77	71	66	65	67	64	61	52	71
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-18	-18	-18	-18	-18	-18	-18	-18	
HGV Movements (forwards)	Leq,1hr	59	53	48	47	49	46	43	35	53
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	65m	-22	-22	-22	-22	-22	-22	-22	-22	
Specific sound level at receptor	L_{eq} 1hr	37	31	26	25	27	24	21	12	31

Yard Activity to White House Farm (Caravans)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Lorry reversing (w/ beeper)	Lp @ 10m	69	61	64	63	64	61	57	50	68
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-18	-18	-18	-18	-18	-18	-18	-18	
HGV Movements (reverse)	Leq,1hr	51	43	46	45	46	43	39	32	50
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	61m	-16	-16	-16	-16	-16	-16	-16	-16	
Specific sound level at receptor	L_{eq} 1hr	36	27	30	29	31	27	24	16	34

Cumulative Level at receptor	L _{eq} 1hr	56	50	44	45	42	39	39	36	48
Acoustic Character Correction		3	3	3	3	3	3	3	3	
Rating Level at receptor	L_{Ar,Tr}	59	53	47	48	45	42	42	39	51

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Yard Activity to Cook Grove		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Forklift</u>										
Forklift	Lp @ 1.5m	92	86	77	80	73	71	72	69	81
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	20	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-5	-5	-5	-5	-5	-5	-5	-5	
Forklift Movements	Leq,1hr	87	81	72	75	69	67	67	64	77
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	147m	-40	-40	-40	-40	-40	-40	-40	-40	
Specific sound level at receptor	L_{eq} 1hr	47	41	32	36	29	27	27	24	37

Yard Activity to Cook Grove		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Wash Down Bay</u>										
Jet washer	Lp @ 2m	73	74	74	76	76	75	76	74	82
Number in an hour	4	-	-	-	-	-	-	-	-	
Time of each use (minutes)	5	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-5	-5	-5	-5	-5	-5	-5	-5	
Washdown Bay Activity	Leq,1hr	68	70	70	72	71	70	71	70	78
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Inf - 2 Wa	-6	-7	-9	-11	-13	-16	-18	-18	
Distance Loss	50m	-28	-28	-28	-28	-28	-28	-28	-28	
Specific sound level at receptor	L_{eq} 1hr	34	34	33	33	30	26	25	24	35

Yard Activity to Cook Grove		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Van (forwards)	Lp @ 10m	71	65	63	63	60	56	54	46	65
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-13	-13	-13	-13	-13	-13	-13	-13	
LGV Movements (forwards)	Leq,1hr	58	52	50	50	47	43	40	33	52
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	147m	-23	-23	-23	-23	-23	-23	-23	-23	
Specific sound level at receptor	L_{eq} 1hr	35	28	27	26	24	20	17	9	29

Yard Activity to Cook Grove		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Van (reverse)	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-13	-13	-13	-13	-13	-13	-13	-13	
LGV Movements (reverse)	Leq,1hr	61	51	50	49	48	46	40	33	53
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	147m	-23	-23	-23	-23	-23	-23	-23	-23	
Specific sound level at receptor	L_{eq} 1hr	38	28	27	26	24	22	17	10	29

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Yard Activity to Cook Grove		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
Deliveries										
Lorry pulling forward	Lp @ 5m	77	71	66	65	67	64	61	52	71
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-18	-18	-18	-18	-18	-18	-18	-18	
HGV Movements (forwards)	Leq,1hr	59	53	48	47	49	46	43	35	53
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	147m	-29	-29	-29	-29	-29	-29	-29	-29	
Specific sound level at receptor	L_{eq} 1hr	30	23	19	18	20	17	14	5	24

Yard Activity to Cook Grove		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
Deliveries										
Lorry reversing (w/ beeper)	Lp @ 10m	69	61	64	63	64	61	57	50	68
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-18	-18	-18	-18	-18	-18	-18	-18	
HGV Movements (reverse)	Leq,1hr	51	43	46	45	46	43	39	32	50
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	No Screen	0	0	0	0	0	0	0	0	
Distance Loss	147m	-23	-23	-23	-23	-23	-23	-23	-23	
Specific sound level at receptor	L_{eq} 1hr	28	20	22	22	23	20	16	8	27

Cumulative Level at receptor	L _{eq} 1hr	48	43	37	38	34	31	30	27	40
Acoustic Character Correction		3	3	3	3	3	3	3	3	
Rating Level at receptor	L_{Ar,Tr}	51	46	40	41	37	34	33	30	43

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Yard Activity to White House Farm (Caravans, with screening)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Forklift</u>										
Forklift	Lp @ 1.5m	92	86	77	80	73	71	72	69	81
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	20	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-5	-5	-5	-5	-5	-5	-5	-5	
Forklift Movements	Leq,1hr	87	81	72	75	69	67	67	64	77
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Line of Sig	-5	-5	-5	-5	-5	-5	-5	-5	
Distance Loss	65m	-33	-33	-33	-33	-33	-33	-33	-33	
Specific sound level at receptor	L_{eq} 1hr	49	44	35	38	31	29	30	26	39

Yard Activity to White House Farm (Caravans, with screening)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Wash Down Bay</u>										
Jet washer	Lp @ 2m	73	74	74	76	76	75	76	74	82
Number in an hour	4	-	-	-	-	-	-	-	-	
Time of each use (minutes)	5	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-5	-5	-5	-5	-5	-5	-5	-5	
Washdown Bay Activity	Leq,1hr	68	70	70	72	71	70	71	70	78
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Line of Sig	-5	-5	-5	-5	-5	-5	-5	-5	
Distance Loss	135m	-37	-37	-37	-37	-37	-37	-37	-37	
Specific sound level at receptor	L_{eq} 1hr	27	28	28	30	30	29	29	28	36

Yard Activity to White House Farm (Caravans, with screening)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Van (forwards)	Lp @ 10m	71	65	63	63	60	56	54	46	65
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-13	-13	-13	-13	-13	-13	-13	-13	
LGV Movements (forwards)	Leq,1hr	58	52	50	50	47	43	40	33	52
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Line of Sig	-5	-5	-5	-5	-5	-5	-5	-5	
Distance Loss	43m	-13	-13	-13	-13	-13	-13	-13	-13	
Specific sound level at receptor	L_{eq} 1hr	40	34	32	32	29	25	23	15	34

Yard Activity to White House Farm (Caravans, with screening)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Van (reverse)	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-13	-13	-13	-13	-13	-13	-13	-13	
LGV Movements (reverse)	Leq,1hr	61	51	50	49	48	46	40	33	53
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Line of Sig	-5	-5	-5	-5	-5	-5	-5	-5	
Distance Loss	43m	-13	-13	-13	-13	-13	-13	-13	-13	
Specific sound level at receptor	L_{eq} 1hr	43	33	33	32	30	28	23	16	35

APPENDIX C

AS14075 - Lister Wilder, Reading SUMMARY OF BS4142 CALCULATIONS

Yard Activity to White House Farm (Caravans, with screening)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Lorry pulling forward	Lp @ 5m	77	71	66	65	67	64	61	52	71
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-18	-18	-18	-18	-18	-18	-18	-18	
HGV Movements (forwards)	Leq,1hr	59	53	48	47	49	46	43	35	53
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Line of Sig	-5	-5	-5	-5	-5	-5	-5	-5	
Distance Loss	65m	-22	-22	-22	-22	-22	-22	-22	-22	
Specific sound level at receptor	L_{eq,1hr}	32	26	21	20	22	19	16	7	26

Yard Activity to White House Farm (Caravans, with screening)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	dB(A)
<u>Deliveries</u>										
Lorry reversing (w/ beeper)	Lp @ 10m	69	61	64	63	64	61	57	50	68
Number in an hour	1	-	-	-	-	-	-	-	-	
Time of each movement (minutes)	1	-	-	-	-	-	-	-	-	
Correction to 1hr Leq		-18	-18	-18	-18	-18	-18	-18	-18	
HGV Movements (reverse)	Leq,1hr	51	43	46	45	46	43	39	32	50
Directivity	No Direct	0	0	0	0	0	0	0	0	
Screening Loss	Line of Sig	-5	-5	-5	-5	-5	-5	-5	-5	
Distance Loss	61m	-16	-16	-16	-16	-16	-16	-16	-16	
Specific sound level at receptor	L_{eq,1hr}	31	22	25	24	26	22	19	11	29

Cumulative Level at receptor	L _{eq,1hr}	51	45	39	40	37	34	34	31	43
Acoustic Character Correction		3	3	3	3	3	3	3	3	
Rating Level at receptor	L_{Ar,Tr}	54	48	42	43	40	37	37	34	46