



PREPARED: 24 July 2026

INTERBRIDGES, NEW BRIGHTON ROAD, EMSWORTH NOISE IMPACT ASSESSMENT

CONTENTS

1.0	EXECUTIVE SUMMARY	1
2.0	INTRODUCTION	1
3.0	COMPETENCE	2
4.0	SITE CONTEXT	2
5.0	RELEVANT GUIDANCE	3
6.0	ENVIRONMENTAL SOUND SURVEY	6
7.0	FIXED PLANT ASSESSMENT CRITERIA	8
8.0	BS4142 ASSESSMENT – EXTERNAL OPERATIONS	9
9.0	INTERNAL NOISE BREAKOUT – OPERATIONAL NOISE	13
10.0	CONCLUSIONS	16

LIST OF ATTACHMENTS

AS14674/SP1	Indicative Site Plan
AS14674/TH1-TH10	Environmental Noise Time Histories
APPENDIX A	Acoustic Terminology
APPENDIX B	Summary of BS4142 Methodology
APPENDIX C	Vehicle Sound Calculations

Project Ref:	AS14674	Project Name:	Interbridges, New Brighton Road, Emsworth
Report Ref:	AS14674.260630.R1	Report Title:	Noise Impact Assessment
Client Name:	Emsworth Business Park Limited		
Project Manager:	Daniel Saunders		
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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 It is proposed to develop an industrial / commercial site at the Land at the East Side of New Brighton Road, Emsworth, PO10 7PP.
- 1.2 The proposals involve 14 no. individual planning units operating under Use Class B2 and Use Class E(c)-(g) with associated storage yards operating under Use Class B8.
- 1.3 Clarke Saunders Acoustics (CSA) has undertaken an environmental sound survey and assessment of the potential noise emissions from commercial vehicle which would access the site as part of the proposals. The assessment is based on library sound data for commercial vehicles and vehicle trip generation data provided by Bellamy Roberts.
- 1.4 A numerical and contextual assessment were undertaken following procedures in BS4142:2014+A.1:2019¹ (BS4142), where the resultant impact is expected to be low at nearby noise-sensitive receptors.
- 1.5 Environmental sound survey data has also been used to set plant noise emissions criteria for future fixed mechanical plant items.
- 1.6 Specific tenants and potential activity are still to be determined, however a high-level assessment has been undertaken with respect to noise breakout from Units 06-12 from a B2 use. The assessment has demonstrated that the base-build, with roller shutter doors both open and closed, is capable of controlling noise breakout from internal noise levels up to 80dB $L_{p,rev}$ to those below existing sound levels at the most affected receptors. The site is, therefore, suitable for a large range of Use Class B2 activities, where further enhancements can be provided by future tenants if higher noise levels may prevail. For context, in accordance with The Control at Work Regulations 2005, sustained internal noise levels in exceedance of 80 dB(A) ($L_{EP,d}$) would require a noise risk assessment and training, with hearing protection becoming mandatory above 85 dB(A) ($L_{EP,d}$).
- 1.7 The assessment concludes that the development has a low likelihood of adverse impact being at or below the Lowest Observed Adverse Effect Level (LOAEL) set out in NPSE.

2.0 INTRODUCTION

- 2.1 CSA has been instructed to undertake a noise impact assessment for activity associated with the proposed industrial / commercial development at the Land at the East Side of New Brighton Road, Emsworth, PO10 7PP.
- 2.2 The proposals involve 14no. individual planning units operating under Use Class B2 and Use Class E(c)-(g) with associated storage yards operating under Use Class B8.
- 2.3 This assessment has been prepared to consider the potential impact of noise emissions from commercial vehicles visiting the site, and assess the feasibility of the scheme with respect to potential noise impacts.

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

- 2.4 The design is not sufficiently advanced to assess sound from future mechanical plant sources, nor specific sound generated from internal activity associated with B2 Use. A high-level assessment has been undertaken on the basis of an assumed internal reverberant sound level, $L_{p,rev}$, to inform the efficacy of the building fabric and potential use-cases with respect to existing background sound levels.
- 2.5 Noise emissions criteria for future fixed mechanical plant are set on the basis of the measured in-situ environmental sound data.
- 2.6 A glossary of Acoustic Terminology is provided in Appendix A.

3.0 COMPETENCE

- 3.1 The sound measurements and assessment were conducted by CSA employees under the instruction of Daniel Saunders, Director at CSA and the author of this report. He has over 20 years' experience in consultancy, holding the Institute of Acoustics Diploma in Acoustics & Noise Control. He is a Corporate Member of the Institute of Acoustics.
- 3.2 The report adheres to the principles required by the Institute of Acoustics in its 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.
- 3.3 Uncertainty is minimised, where practicable, and deviations from relevant standards and guidance are clearly stated and discussed within the technical report.
- 3.4 CSA is a full member of the Association of Noise Consultants (ANC).

4.0 SITE CONTEXT

4.1 SITE DESCRIPTION & SURROUNDINGS

- 4.1.1 The application site is a narrow plot of land lying between the main south coast railway and the A27 within the Emsworth settlement area.
- 4.1.2 The site is immediately surrounded by transport infrastructure, with the A27 to the north, a railway line to the south, and North Street to the west. A gas compound borders the site on its eastern boundary.
- 4.1.3 The surrounding A27 thoroughfare and south coast railway line are elevated above the ground level of the site and surrounding receptors, removing line of sight between dwellings and the proposed development at ground floor.
- 4.1.4 The surrounding area is characterised by a mixed-use employment and residential context, with industrial/commercial uses to the south and south-west of site along North Street and abutting the railway line, respectively.
- 4.1.5 To the north and east of site the locale is primarily residential, with the New Brighton settlement to the north and dwellings along Lumley Road to the east.
- 4.1.6 The existing soundscape is generally dominated by road traffic noise from the A27 along with contributions from train passbys on the south coast railway and local vehicle activity on North Street.

4.1.7 The most affected noise-sensitive receptors have been identified as follows:

- Sultan Road & Malvern Mews ca. 30m from site boundary (south);
- Northlands Park ca. 75m from site boundary (north)

4.1.8 The site and surroundings are shown in the attached site plan AS14674/SP1

4.2 PROPOSED DEVELOPMENT

4.2.1 The proposed scheme includes 14 no. individual employment units providing a mix of flexible employment uses within the following planning Use Classes:

- Class B2 : General Industrial;
- Class B8 : Storage & Distribution;
- Class E(c)-(g) : Flexible Class E.

4.2.2 The development will comprise of two building blocks providing 2,196m² of employment floor space together with two storage yards totalling 1,099m². Due to site constraints, the larger building block (Block A) is located along the northern edge with the smaller storage yard (Yard A), adjacent; the smaller building block (Block B) lays in the south-eastern corner adjacent to the larger storage yard (Yard B).

4.2.3 No more than 50% of the available floorspace will be used for Class B2 at any one time, where the remaining units will fall under the flexible Class E use. The storage yards will form part of the proposed Class B8 use, as well as the associated adjacent units.

4.2.4 A range of infrastructure will serve the employment units including 14no. loading bays/ramps and 55no. car parking spaces, with 6no. EV charging stations.

4.2.5 A single access point will be constructed from North Street, where two restricted height bridges sit either side of the proposed entrance.

4.2.6 The proposed operational hours are as follows:

- Monday to Friday: 7am – 7pm;
- Saturday: 8am – 5pm;
- Sunday & Bank Holidays: 9am – 1pm.

5.0 RELEVANT GUIDANCE

5.1 LOCAL AUTHORITY REQUIREMENTS

5.1.1 The HBC Environmental Protection Team provided the following response to the initial planning application (ref. APP/24/01010):

“Any future application will need to be accompanied by a detailed acoustic report which reflects the impact of the potential uses on nearby noise sensitive receptors, including a British Standard 4142:2014+A.1:2019 assessment. The baseline noise survey must cover a period sufficient to accurately establish and quantify the prevailing noise climate...during the proposed operating hours (at least a 4-day period including the weekend). We would expect that a typical minimum 15-minute background sound level, defined as the 10th percentile value...is used in the assessment. The L_{Amax} and L₁ values should be included in the assessment.

Internal noise generated within the units should be assessed, including noise arising from any external plant and processes (including FLT movements and unloading/loading of vehicles), and noise arising from vehicle movements on site, including from the service road. In respect of internal noise outbreak consideration will need to be given to the acoustic performance of the building envelope, in addition to the location of ventilation and apertures and their insertion loss."

5.1.2 Subsequent telephone liaison with Craig Milligan, who advises Environmental Health Department at HBC, has agreed the following methodology for survey and assessment. In addition, it was confirmed that the stated requirement for assessment of L_{Amax} and/or L_1 values is superfluous in this instance. The intended approach and clarifications of the scope were confirmed subsequently by email.

5.1.3 The assessments of activity and fixed mechanical plant should follow BS4142. The outcomes of the assessment should consider the NPPF and NPSE. CSA has adopted an aspirational target where the Rating Level should not exceed the Background Sound Level at the nearest noise-sensitive receptors which would be considered to be commensurate with the Lowest Observed Adverse Effect Level (LOAEL) identified in NPSE2010.

5.2 NATIONAL PLANNING POLICY FRAMEWORK

5.2.1 In March 2012 the 'National Planning Policy Framework' (NPPF) was introduced as the current planning policy guidance within England and in its latest revision of February 2025, Paragraph 198 of the NPPF states:

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

- mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."*

5.2.2 In addition, Paragraph 200 of the NPPF states:

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

5.3 NOISE POLICY STATEMENT FOR ENGLAND (2010)

5.3.1 The intent of this document is to provide clarity on current policies and practices to enable noise management decisions to be made within the wider context.

5.3.2 The noise policy aims are as follows:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life;
- Where possible, contribute to the improvement of health and quality of life.

5.3.3 The Statement refers to effect level concepts established from toxicology, as follows:

NOEL – No Observed Effect Level

5.3.4 This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

5.3.5 This is the level above which adverse effects on health and quality of life can be detected.

5.3.6 The Statement then extends the concepts, to define a significant adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

5.3.7 This the level above which significant adverse effects on health and quality of life occur.

5.3.8 There are no defined objective measures that characterise these effect levels, as they will vary depending on the context.

5.4 BS4142:2014+A.1:2019

5.4.1 BS4142:2014+A.1:2019 describes a method for rating and assessing sound of an industrial and/or commercial nature, which includes:

- 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.

5.4.2 The purpose of this standard is to determine the magnitude of potential impact on nearby sensitive receptors from industrial or commercial sound, with respect to the existing background sound levels and relevant character penalties owing to distinguishable sound features.

5.4.3 The numerical impact assessment may then be modified by taking consideration of the context in which the sound occurs.

5.4.4 A detailed overview of the BS4142 methodology is provided in Appendix B.

6.0 ENVIRONMENTAL SOUND SURVEY

6.1 PROCEDURES & EQUIPMENT

6.1.1 An unattended survey of the existing background and ambient sound levels was conducted at positions LT1 & LT2, as indicated in site plan AS14674/SP1.

6.1.2 Measurements of consecutive 5-minute L_{Aeq} , L_{Amax} , L_{A10} and L_{A90} sound pressure levels were taken between 12:00 hours on Thursday 2nd July and 08:20 hours on Tuesday 7th July 2026, following procedures in BS7445:1991 (ISO 1996 2:1987) *Description and measurement of environmental noise Part 2: Acquisition of data pertinent to land use* and BS4142.

6.1.3 Supplementary synchronous attended measurements were undertaken at positions MP1, MP2 & MP3 on Thursday 2nd and Tuesday 7th July, as indicated in the site plan. These positions were selected to evaluate the acoustic screening effects of the elevated railway on the background sound levels at the identified receptors, and to determine representative background sound levels to be extrapolated from the automated monitoring results.

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

- 1 no. Rion data logging sound level meter type NL53 (LT1);
- 1 no. Rion data logging sound level meter type NL32 (LT2);
- 1 no. Rion sound level field calibrator type NC74;
- 1 no. Norsonic data logging sound level meter type 118 (MP1, MP2 & MP3);
- 1 no. Norsonic sound level field calibrator type 1251.

6.1.5 The field calibration of the sound level meters was verified before and after use. The calibration drift was within the limits defined in the Association of Noise Consultants (ANC) Green Book: *Environmental Sound Measurement Guide*.

6.1.6 The weather during the survey was generally dry with light winds. These meteorological conditions are suitable for the measurement of environmental sound.

6.2 SURVEY RESULTS

6.2.1 Figures AS14674/TH1-TH5 and TH6-TH10 present the L_{Aeq} , L_{Amax} , L_{A10} and L_{A90} sound pressure levels as time histories at positions LT1 and LT2, respectively.

6.2.2 Table 6.1 presents the ambient, background and typical maximum sound pressure levels during the daytime and proposed operational hours. No night-time operation is proposed, although night-time sound levels are provided for reference.

Monitoring Position	Period	Typical Background* L_{A90}	Ambient $L_{Aeq,T}$	Typical Maximum** L_{AFmax}
LT1	Daytime (07:00 – 23:00)	53 dB	65 dB	79 dB
	Night-time (23:00 – 07:00)	34 dB	58 dB	76 dB
	Weekday Operational Hours (07:00 – 19:00)	60 dB	66 dB	80 dB
	Weekend Operational Hours (Saturday 08:00 – 17:00) (Sunday 09:00 – 13:00)	59 dB	65 dB	79 dB
LT2	Daytime (07:00 – 23:00)	49 dB	58 dB	71 dB
	Night-time (23:00 – 07:00)	33 dB	52 dB	69 dB
	Weekday Operational Hours (07:00 – 19:00)	53 dB	58 dB	72 dB
	Weekend Operational Hours (Saturday 08:00 – 17:00) (Sunday 09:00 – 13:00)	53 dB	57 dB	69 dB

Table 6.1: Results of environmental sound survey

[dB ref. 20µPa]

*derived as the 10th percentile of the relevant L_{A90} dataset

**derived as the 90th percentile of the relevant L_{AFmax} dataset

6.2.3 The underlying background sound levels at the most affected receptors are dominated by road traffic flows on the A27, a thoroughfare, along with some contributions from local vehicle activity on North Street for dwellings in proximity. Due to continuous traffic flows from the A27 and later opening times on the weekend days, background sound levels are consistent across both weekday and weekend operational periods.

6.2.4 The results of the attended survey measurements at positions MP1 & MP2 evidence the acoustic screening effects of the elevated railway line on the environmental sound levels at the receptors to the south on Sultan Road & Malvern Mews. It was still, however, observed, that road traffic noise from the A27 held a dominant position in the soundscape and would be expected to determine the background sound levels at these receptor locations.

- 6.2.5 Measurements at position MP1 indicate that background sound levels on Sultan Road are ca. 10dB lower than those measured at position LT1. Measurements at position MP2 indicate that background sound levels on Malvern Mews are ca. 8dB lower than those measured at position LT2.
- 6.2.6 On the contrary, there were no observed acoustic screening affects from road traffic noise on the A27 to the receptors to the north on Northlands Park. Measurements at position MP3 indicate that background sound levels recorded at position LT2 are suitably representative of these dwellings.
- 6.2.7 Table 6.2, below, provides the representative Background Sound levels for the identified noise-sensitive receptors, to be used within the subsequent BS4142 assessment. These levels are illustrative of both weekday and weekend operational periods.

Receptor Location	Representative Background Level L_{A90}
Dwellings on Sultan Road	50 dB
Dwellings on Malvern Mews	45 dB
Dwellings on Northlands Park	53 dB

Table 6.2: Representative background sound levels (L_{A90}) for use in BS4142 assessment

7.0 FIXED PLANT ASSESSMENT CRITERIA

- 7.1 On the basis of achieving a Rating Level that does not exceed the representative background sound level, future mechanical plant installations should not exceed the criteria set out in Table 7.1 at nearby noise-sensitive receptors during the daytime operational hours.

Receptor Location	Sound Emissions Criteria ($L_{A,Tr}$)
Dwellings on Sultan Road	50 dB
Dwellings on Malvern Mews	45 dB
Dwellings on Northlands Park	53 dB

Table 7.1: Sound emissions criteria at nearby noise-sensitive receptors during daytime operations

8.0 BS4142 ASSESSMENT – EXTERNAL OPERATIONS

- 8.1 The following assessment summarises the impact of external noise sources associated with the development, including commercial vehicle movements from LGV's and loading activity within the storage yards.

TRICS Data

- 8.2 The project transport consultant, Bellamy Roberts, has provided CSA with a breakdown of predicted vehicle movements using Trip Rate Information Computer System (TRICS) data, assuming daytime-only use of the industrial / commercial units and storage yards. The TRICS data is provided on the assumption that all 14no. units fall under Light Industrial use (which has been advised covers both Class E & Class B2), and that the storage yards are operating at maximum capacity under Commercial Storage (Class B8).
- 8.3 For the purposes of the TRICS exercise, a trip rate specifically for offices was provided, however this use will be ancillary to the industrial / commercial floor space and consist of only passenger vehicles.
- 8.4 Table 8.1 summarises the predicted trip generations for total traffic flows, which is inclusive of both passenger vehicles and commercial LGVs.

Hours	Trip Generation		
	Arrivals	Departures	Two-way
Light Industrial (Flexible Class E & Class B2)			
Morning Peak (08:00 – 09:00)	21	9	30
Evening Peak (17:00 – 18:00)	5	17	21
Offices			
Morning Peak (08:00 – 09:00)	7	1	8
Evening Peak (17:00 – 18:00)	1	7	8
Commercial Storage (Class B8 Storage Yards)			
Morning Peak (08:00 – 09:00)	4	2	6
Evening Peak (17:00 – 18:00)	1	4	5

Table 8.1: Predicted trip generation during peak hours

- 8.5 On the basis of the TRICS data, the highest level of potential noise impact due to commercial vehicular activity associated with the proposed uses could be expected to occur between 08:00 – 09:00 hours, exceeding the evening peak hour between 17:00 – 18:00 hours.
- 8.6 It has been advised by the transport consultant that LGV's would make up 15-20% of the total trip generation figures shown in Table 7.1. To provide a robust assessment, it is assumed that the 20% split only applies to the Light Industrial vehicle movements, where the majority of Commercial Storage movements would consist of LGVs.

8.7 Due to the limited size of the units and 3.5m height restrictions at the bridges either side of the site entrance, the largest vehicle entering site representative of a LGV, would be a 7.5 tonne panel van.

8.8 Subsequent calculations have been undertaken assuming that the generated trips for mixed use would be distributed across each of 14no. units (i.e. not all occurring at a single unit).

8.9 BS4142 INITIAL ASSESSMENT

Sound Source Data

8.9.1 Specific Sound Levels are calculated based on CSA measured library data held for the anticipated sound sources as summarised in Table 8.2. It is acknowledged that vehicle movements can cover a wide range of sound levels, and to enable a robust evaluation, values at the upper end of CSA's measurement data library have been used for the assessment.

8.9.2 As requested by the Environmental Health Officer, loading activity has considered forklift truck (FLT) movements, included within the utilised data. For completeness, the use of reversing alarms as part of FLT movements is also assessed.

Source	Unit	Frequency (Hz), dB								dB(A)
		63	125	250	500	1k	2k	4k	8k	
7.5T Panel Van (Arrival)	L _p @ 10m	74	64	63	63	61	59	63	45	66
7.5T Panel Van (Departure)	L _p @ 10m	76	67	64	65	61	58	62	49	68
Loading / Unloading (including FLT)	L _p @ 10m	70	61	56	53	50	47	50	43	57
FLT with reversing alarm	L _p @ 10m	76	65	57	57	53	47	43	29	59

Table 8.2: Source sound data

Calculation of Specific Sound Level

8.9.3 A summary of the Specific Sound Level calculations is given in Appendix C.

8.9.4 The calculations include propagation losses between the commercial vehicles and identified noise-sensitive receptors, including distance losses and intermediary screening effects of the elevated railway line and A27 dual-carriageway.

8.9.5 Due to the topography of the site, higher levels of acoustic attenuation can be expected at ground floor receptor windows than at 1st floor. As the proposed operating hours are daytime-only, screening calculations have been undertaken based on the ground floor receptor positions which follows the BS4142 methodology.

8.9.6 On-time corrections have been provided on the basis of the length of time in which vehicle movements are expected to occur, with respect to the BS4142 assessment period, namely 1-hour for daytime use.

BS4142 Assessment

8.9.7 The results of the BS4142 assessment are presented in Table 8.3, below.

8.9.8 Reversing alarms from commercial vehicle movements and forklift activity within the storage yards may be just perceptible at the receptor locations. An acoustic character correction of +2dB is, therefore, applied to account for tonality.

Daytime Assessment	Malvern Mews	Sultan Road	Northlands Park
Specific Sound Level ($L_{Aeq,1hr}$)	36 dB	40 dB	32 dB
Acoustic Character Corrections	+2 dB	+2 dB	+2 dB
Rating Level ($L_{A,Tr}$)	38 dB	42 dB	34 dB
Background Sound Level (L_{A90})	45 dB	50 dB	53 dB
Assessment Level	-9 dB	-10 dB	-21 dB

Table 8.3: BS4142 Initial Assessment

8.9.9 BS4142 states that “where the rating level does not exceed the background sound level, this is an indication of the specific sound have a low impact, depending on context”.

Weekend Operations

8.9.10 It has been advised by Bellamy Roberts that there would be reduced commercial vehicle activity during weekend operational hours, with vehicle trip rates less than 50% of weekday trips in a peak hour period.

8.9.11 It follows that the Specific Sound Levels from commercial vehicle activity could, be expected to be at least 3dB lower in the peak hour assessment period when compared to the weekday equivalent.

8.9.12 As presented in Section 6.2, background sound levels are consistent across both weekday and weekend operational hours and, therefore, the noise impact of commercial vehicles would be expected to be lower still during Saturday and Sunday operational hours.

8.10 CONTEXTUAL DISCUSSION

- 8.10.1 The predicted sound levels are based upon the peak hours of commercial vehicle & loading activity. Lower numbers of commercial vehicles would be expected to access the site throughout the rest of the daytime and night-time periods, and the resultant level of impact is expected to be lower.
- 8.10.2 Similarly, the assessment has been undertaken to Malvern Mews, Sultan Road and Northlands Park, the most impacted receptors. Other residential dwellings to the east on Lumley Road would benefit from higher levels of distance propagation and elevated background sound levels due to closer proximity to the A27.
- 8.10.3 Noise emissions from commercial vehicles will be controlled to levels below the representative background sound levels at the receptor locations. Where the Rating Level does not exceed the background sound level, BS4142 states that this is “*an indication of...a low impact*”.
- 8.10.4 The Background Sound Level is determined by road traffic using the A27, with influence from North Street for the dwellings along Sultan Road and Northlands Park. No material increase in road traffic noise emissions is expected as a result of the proposals, and vehicular activity along the access road will be in keeping with the character of the locale.
- 8.10.5 Considering the initial impact estimate and the relevant contextual factors, it is unlikely that adverse impact will be experienced by the nearby residential receptors due to commercial vehicle activity.

8.11 UNCERTAINTY

- 8.11.1 As per the requirements of BS4142:2014+A.1:2019, 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 this assessment.
- 8.11.2 Use of calibrated Class 1 sound level meters reduces measurement instrumentation error to insignificant levels as compared to environmental variations.
- 8.11.3 Sound levels associated with the typical operation of the proposed uses have been based on library data of relevant sources measured by CSA.
- 8.11.4 The range of sound levels associated with vehicle movements can be wide and to present a robust assessment, the upper end of CSA's measurement range has been used.
- 8.11.5 The assessment uses peak numbers of vehicles from the TRICS data, adapted for a mixed-use Class E & Class B2 scenario, that errs towards the higher traffic count when considering industrial or commercial use cases.
- 8.11.6 As a cautious approach has been taken regarding noise levels and trip generation figures, lower resultant noise levels could generally be expected, accounting for the inherent uncertainty. The uncertainty is therefore not expected to be sufficiently high to change the assessment outcome.

9.0 INTERNAL NOISE BREAKOUT – OPERATIONAL NOISE

- 9.1 Whilst specific tenants and potential activity associated with potential B2 Use are still to be determined, a high-level assessment has been undertaken to determine the efficacy of the base-build building fabric with respect to noise breakout at nearby noise-sensitive receptors.
- 9.2 The external building fabric of the proposed commercial / industrial units will be constructed from a panel system, typically capable of sound reduction indices in the low to mid 20's dB R_w . As modern thermal double glazing will be used, glazed curtain walling might provide a similar airborne sound reduction to the lightweight panelling.
- 9.3 The most impactful industrial / commercial warehouse units to nearby noise-sensitive receptors are Units 06-12, in the northern parcel of the site. Whilst Units 13 & 14 are closer to receptors on Malvern Mews & Sultan Road, the effects of decreased distance propagation losses are expected to be counteracted by increased screening losses due to the closer proximity of the units to the elevated railway line.
- 9.4 For the purposes of a high-level assessment noise breakout from the entirety of the closest façade to each receptor has been considered.
- 9.5 An assessment has been undertaken on the basis of internal noise levels of 80dB $L_{p,rev}$ being generated inside Units 06-12 simultaneously for the duration of a 1-hour assessment period. For context, in accordance with The Control at Work Regulations 2005, sustained internal noise levels above 80 dB(A) ($L_{EP,d}$) would require a noise risk assessment and training, with hearing protection becoming mandatory above 85 dB(A) ($L_{EP,d}$).
- 9.6 The calculations have demonstrated that the base-build and subsequent propagation losses are capable of controlling noise breakout to the following sound pressure levels at the identified noise-sensitive receptors:
 - Malvern Mews: $L_{Aeq,T}$ 21 dB;
 - Sultan Road: $L_{Aeq,T}$ 15 dB;
 - Northlands Park: $L_{Aeq,T}$ 16 dB.
- 9.7 When compared to the representative Background Sound Levels summarised in Table 5.2, noise breakout through the façade is controlled significantly below the representative Background Sound Levels. This is considered to be consistent with an impact at or below the NOEL.
- 9.8 As roller shutter doors could be open during operations, this scenario is also considered. Units 06-12 have roller shutter doors on the southern façade, facing the dwellings on Malvern Mews and Sultan Road.
- 9.9 Distance propagation losses between the central B2 unit and relevant noise-sensitive receptors have been incorporated into the calculations. The differing propagation attenuation afforded by the altered distance between the closest and furthest unit effectively cancel each other out.
- 9.10 Screening losses afforded by the adjacent elevated railway line and A27 dual carriageway have also been accounted for.

- 9.11 A 3dB feature correction accounting for the B2 use being incongruent with the residual acoustic environment acoustic has been incorporated into the calculations.
- 9.12 A summary of the initial BS4142 impact estimate is shown in Table 8.1. Please note that values have been rounded to the nearest single figure.

Daytime Assessment	Malvern Mews	Sultan Road	Northlands Park
Sound Source Level ($L_{p,rev}$)	80 dB	80 dB	80 dB
Correction for No. of Units	$10 \cdot \log(7) = +8 \text{ dB}$	$10 \cdot \log(7) = +8 \text{ dB}$	$10 \cdot \log(7) = +8 \text{ dB}$
Rev to Direct Correction	-6 dB	-6 dB	-6 dB
Distance Propagation Loss	-35 dB	-36 dB	-37 dB
Screening Loss	-6 dB	-6 dB	-6 dB
Specific Sound Level ($L_{Aeq,1hr}$)	41 dB	40 dB	40 dB
Acoustic Character Corrections	+3 dB	+3 dB	+3 dB
Rating Level ($L_{A,Tr}$)	44 dB	43 dB	43 dB
Background Sound Level (L_{A90})	45 dB	50 dB	53 dB
Assessment Level	-1 dB	-7 dB	-10 dB

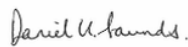
Table 9.1: BS4142 initial impact estimate for B2 units

- 9.13 The absolute levels of the Specific Sound sources are low, below the pre-existing residual sound climate and also below the representative background sound levels for the daytime period. Whilst Specific Sound sources may occasionally be audible at the Malvern Mews and Sultan Road receptors, they should not unduly attract attention.

- 9.14 Considering the initial impact estimate and the relevant contextual factors, it is unlikely that adverse impact will be experienced by the nearby residential receptors and this would be consistent with an impact at or below the LOAEL.
- 9.15 The assessment demonstrates that the base build, with roller shutter doors open and closed, is capable of controlling noise breakout from a wide range of internal activity to the extent that internal reverberant noise levels would be approaching mandatory requirements for hearing protection.
- 9.16 Where internal noise levels are likely to regularly exceed $L_{p,rev}$ 80 dB, it may be necessary for a future tenant to enhance the acoustic performance of the building fabric accordingly and/or implement effect noise management strategies but only where roller shutter doors need to be open for normal operations. It is expected, however, that B2 processes which might generate higher noise levels than assumed in this pessimistic assessment would not be suitable for this site due to its access restrictions and the limited size of the units.

10.0 CONCLUSIONS

- 10.1 Clarke Saunders Acoustics (CSA) has undertaken an environmental sound survey and assessment of the potential noise emissions from commercial vehicle which would access the site as part of the proposals. The assessment is based on library sound data for commercial vehicles and vehicle trip generation data provided by Bellamy Roberts.
- 10.2 A numerical and contextual assessment were undertaken following procedures in BS4142:2014+A.1:2019² (BS4142), where the resultant impact is expected to be low at nearby noise-sensitive receptors.
- 10.3 Environmental sound survey data has also been used to set plant noise emissions criteria for any future fixed mechanical plant items.
- 10.4 Specific tenants and potential activity are still to be determined, however a high-level yet robust assessment has been undertaken with respect to noise breakout from B2 use. This has shown that the site is suitable for a large range of Use Class B2 activities, with the potential impact on nearest noise-sensitive receptors expected to be low.
- 10.5 The assessment concludes that the development proposals result in potential noise impacts which are at or below the Lowest Observed Adverse Effect Level (LOAEL) set out in relevant noise policy.
- 10.6 No further mitigation measures are necessary.



Daniel Saunders MIOA
CLARKE SAUNDERS ACOUSTICS

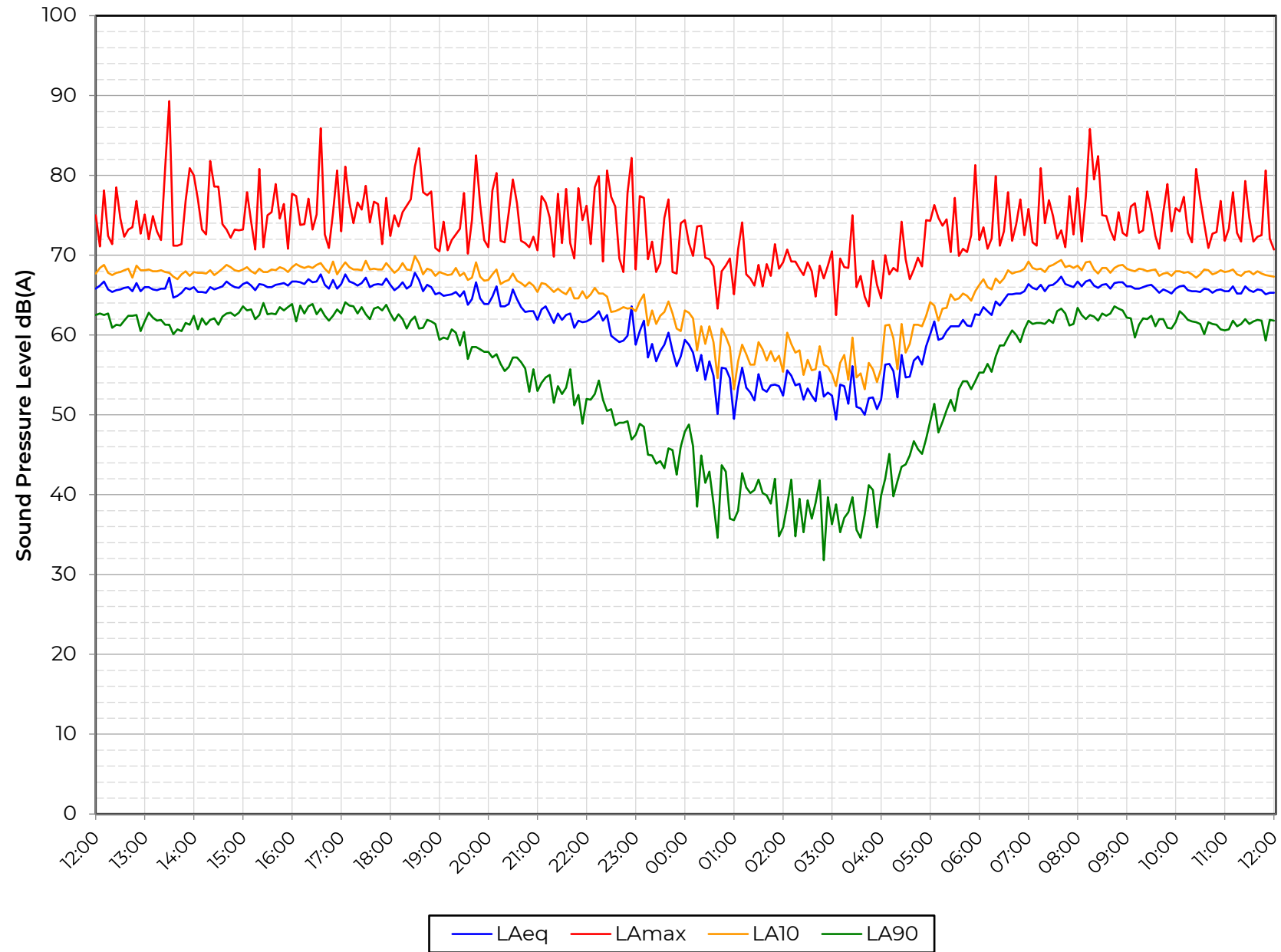
² BS4142:2014+A.1:2019 *Methods for rating and assessing industrial and commercial sound*



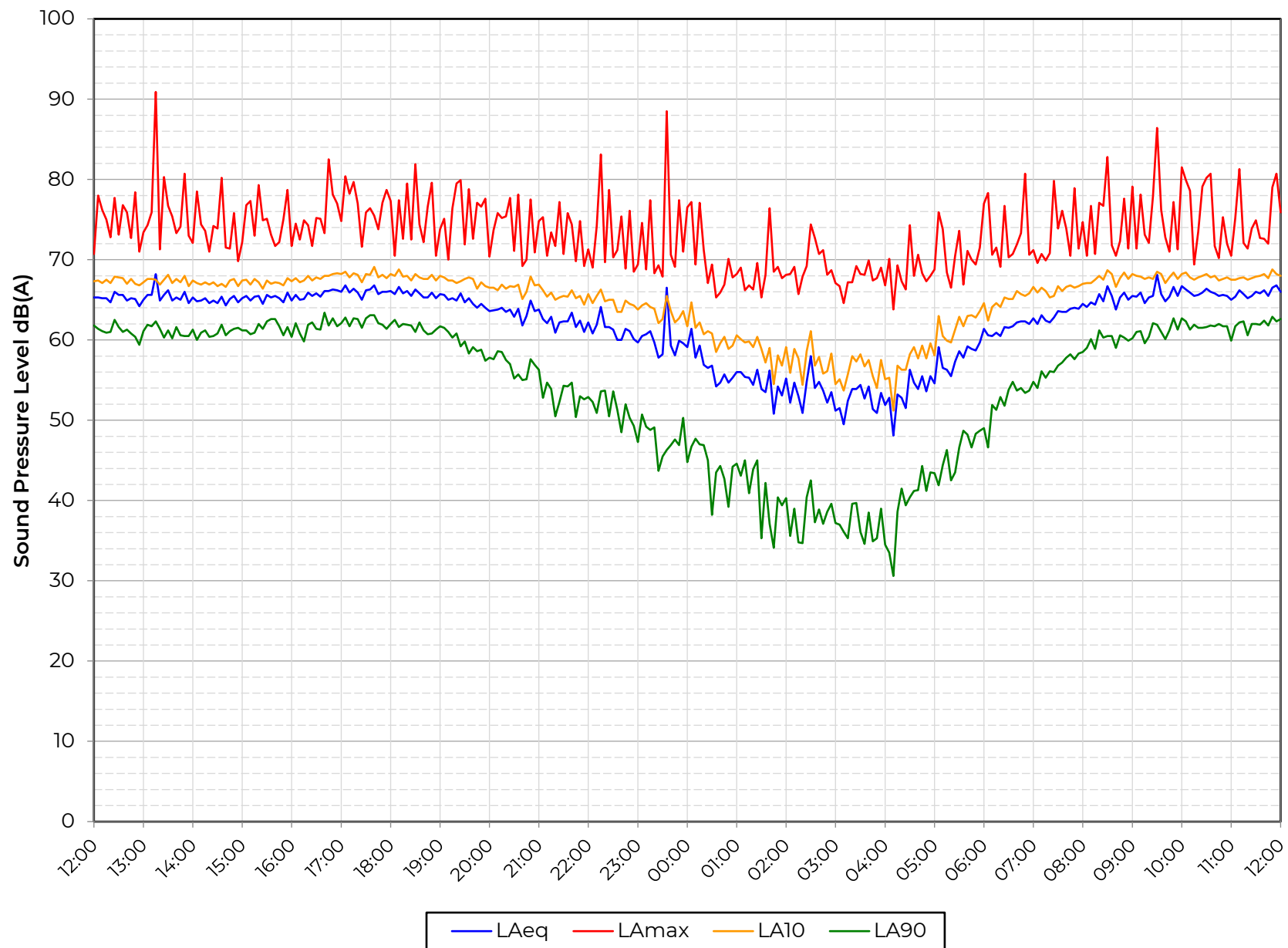
Indicative Site Plan

Figure AS14674/SP1

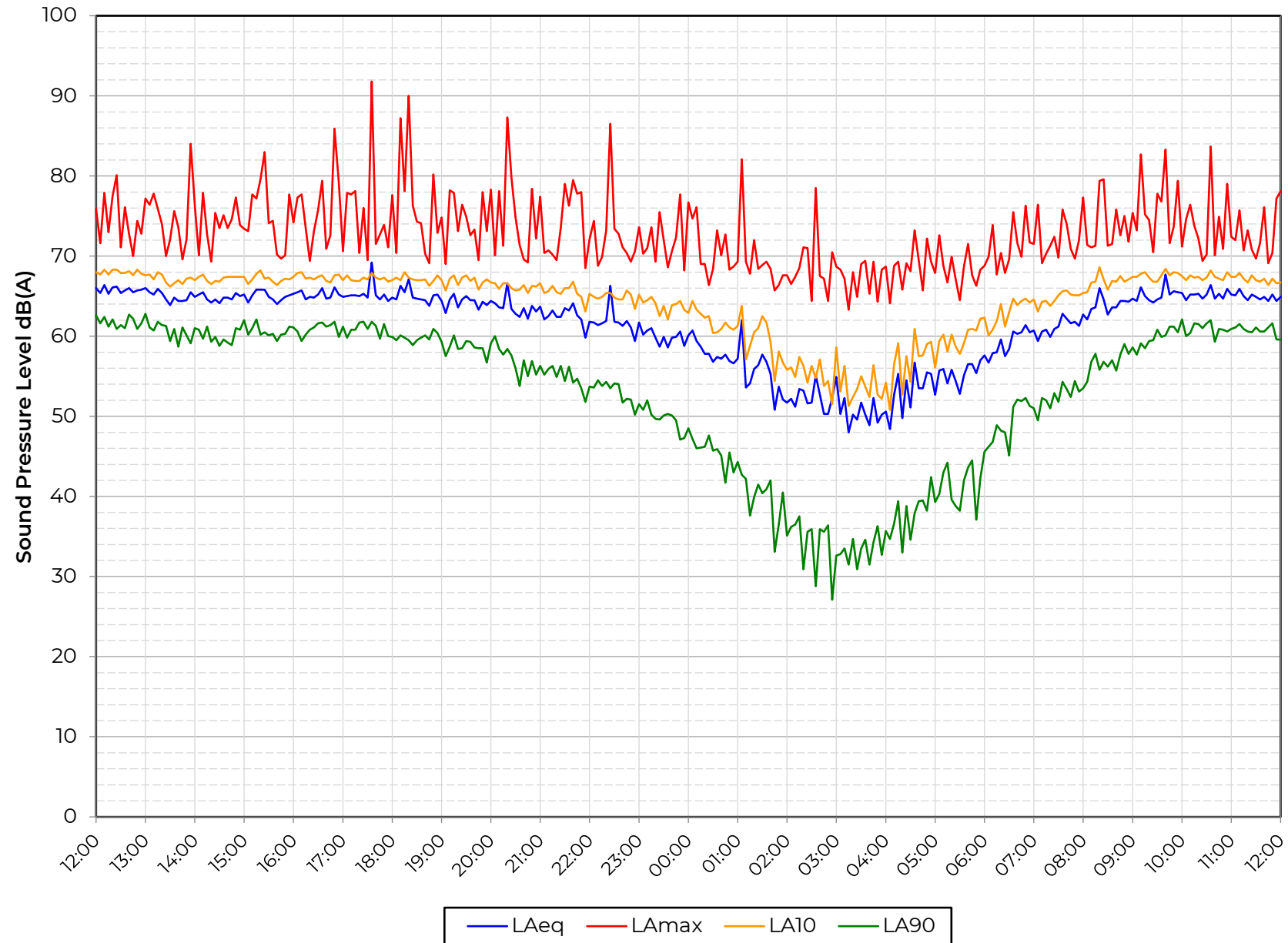
Position LTI



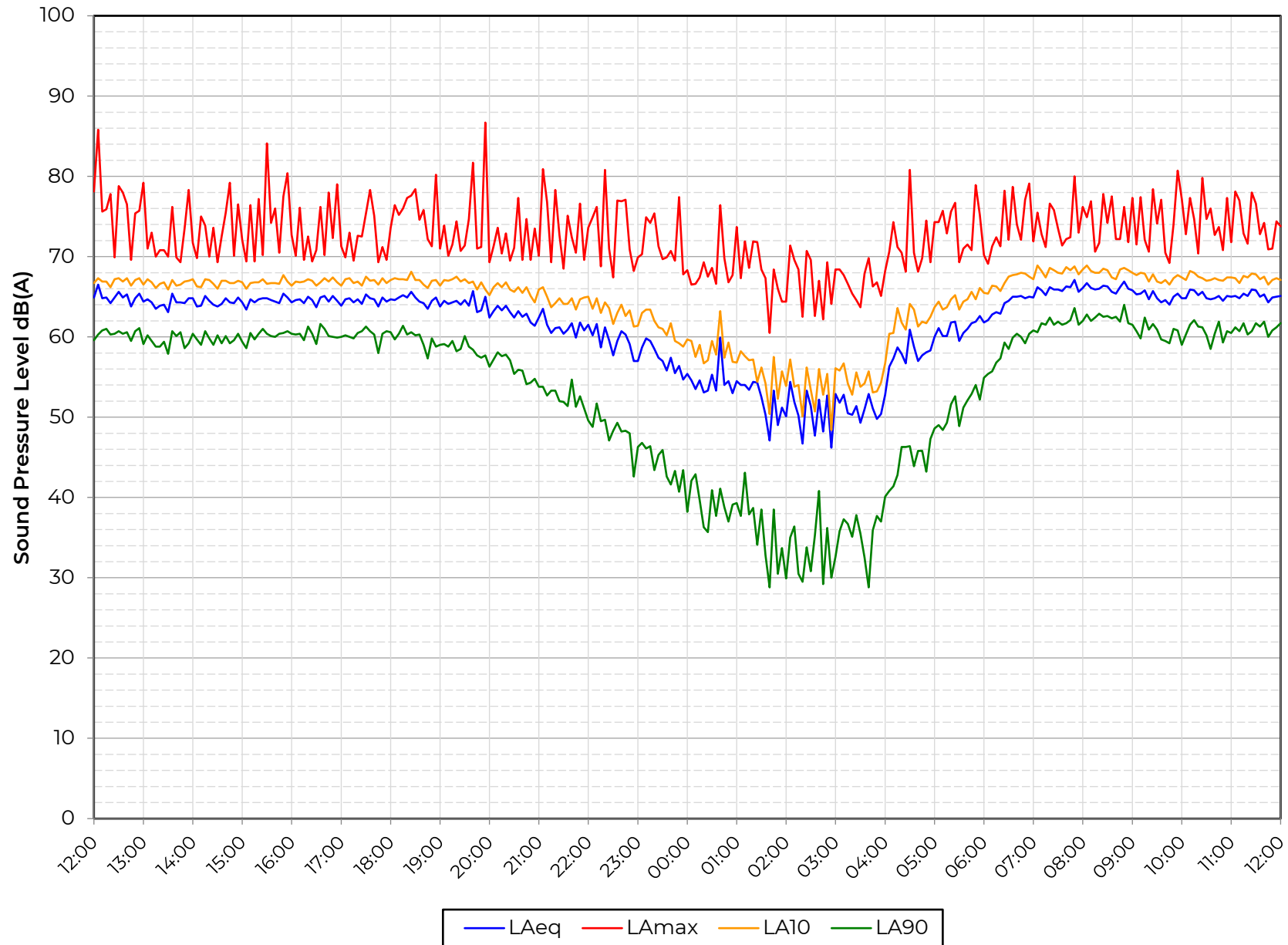
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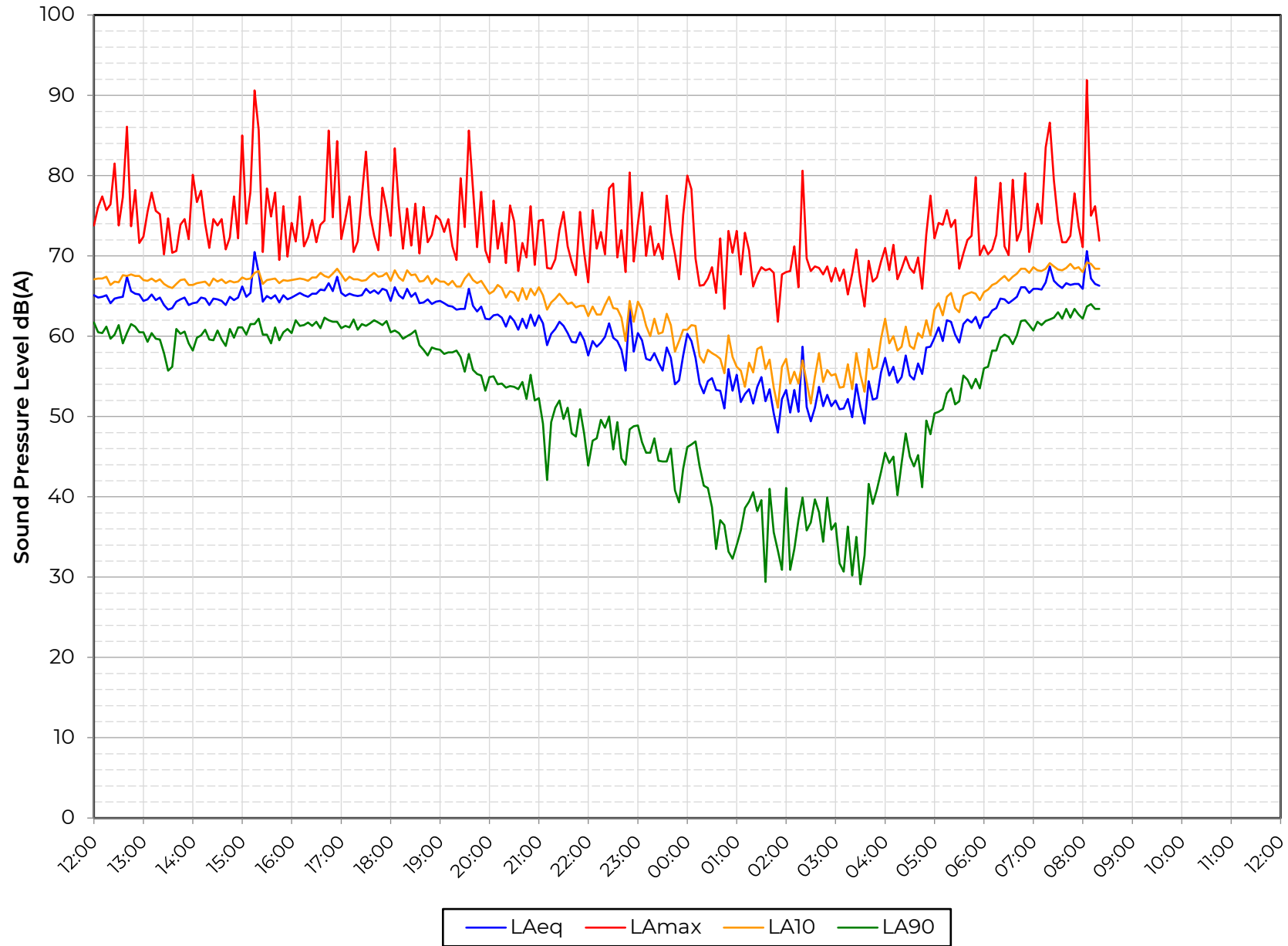
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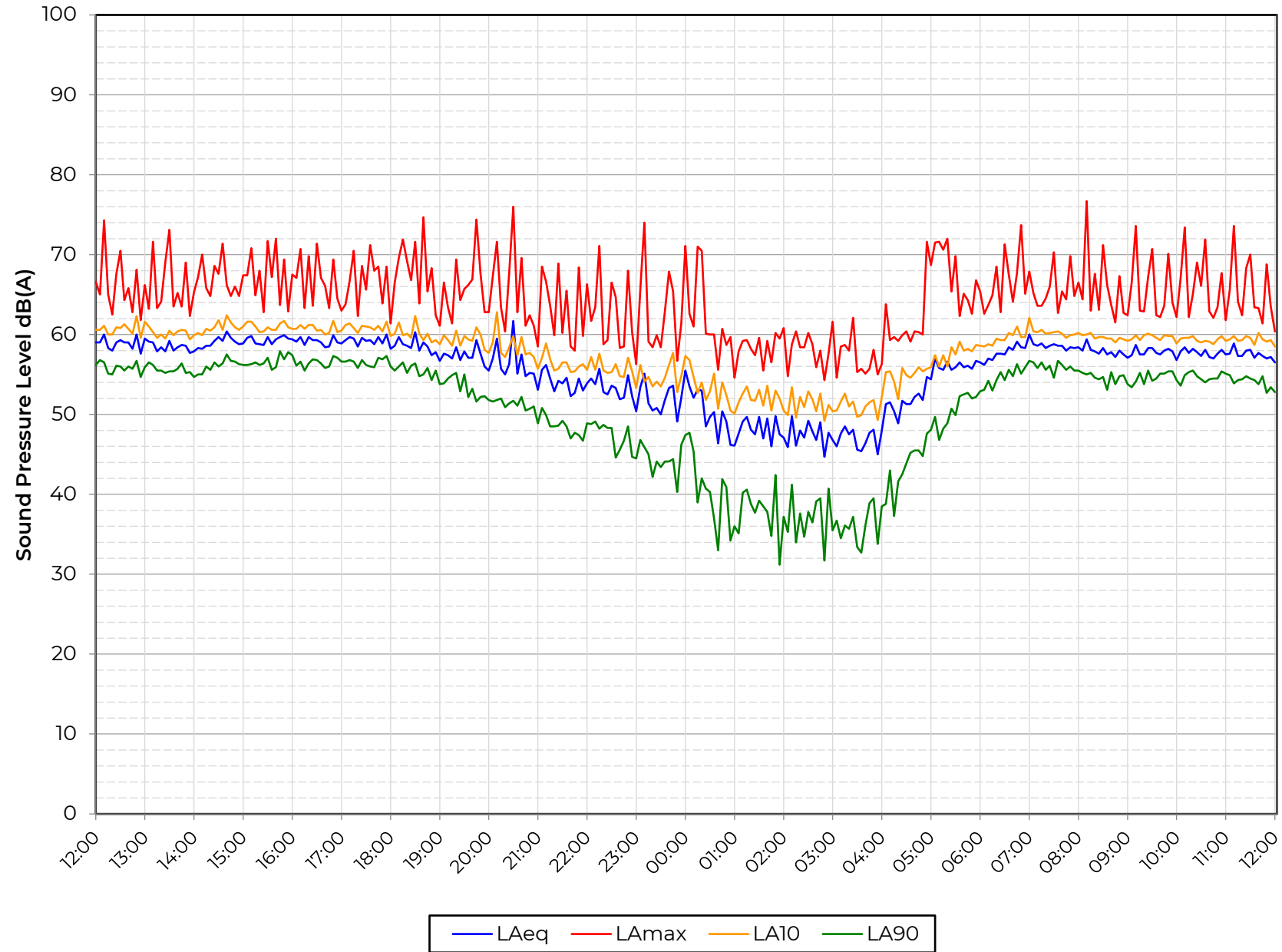
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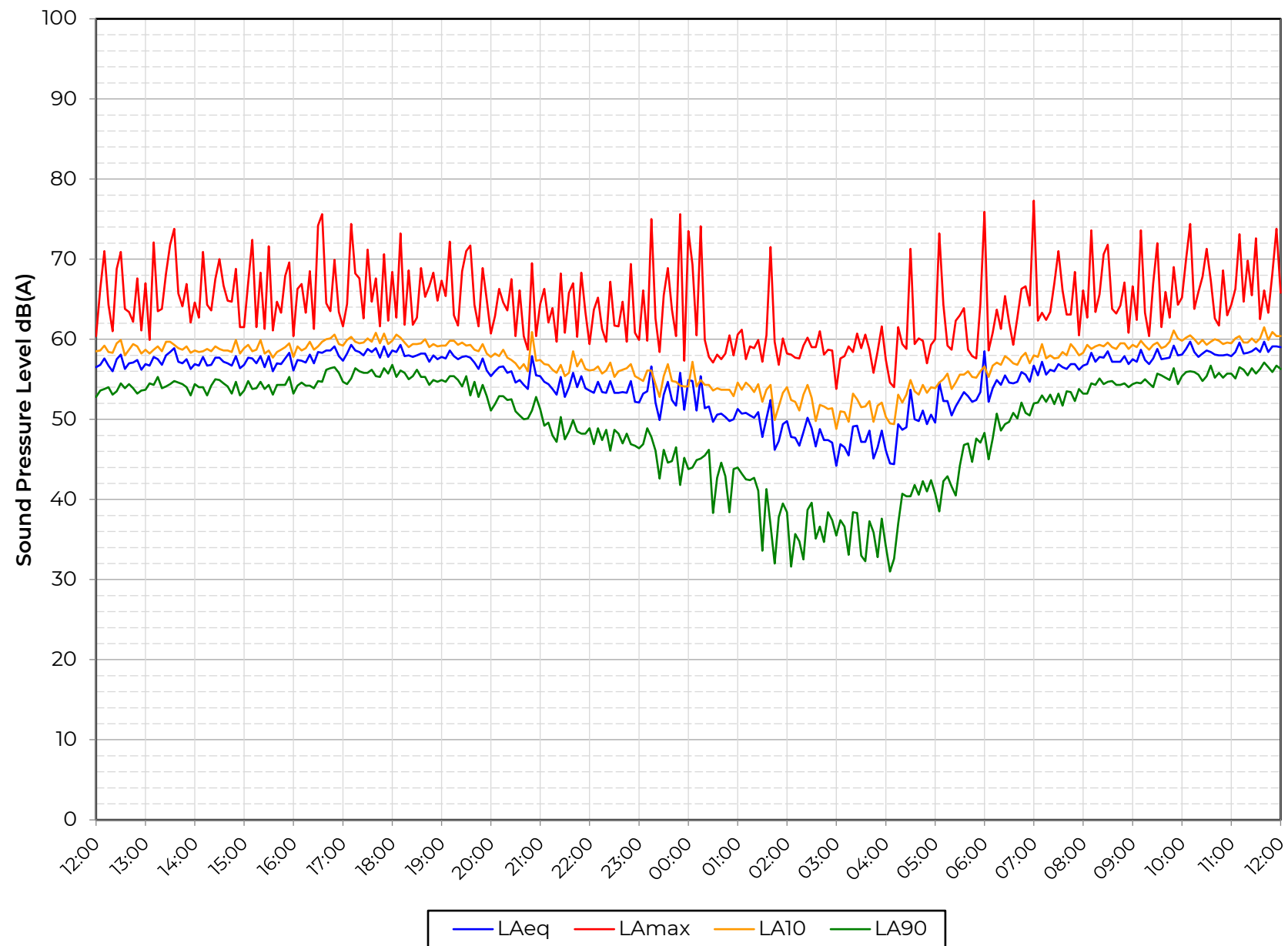
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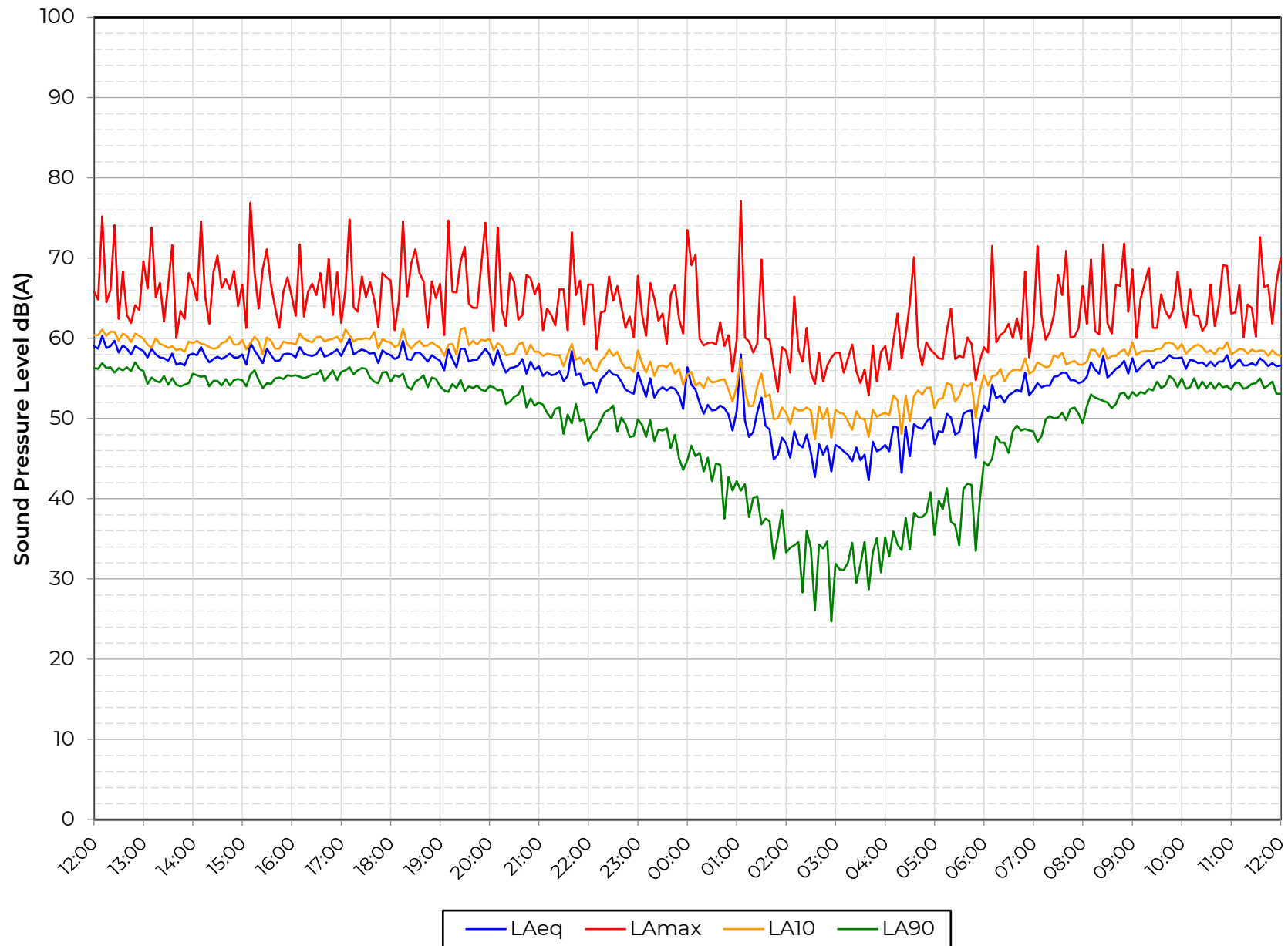
Position LT2



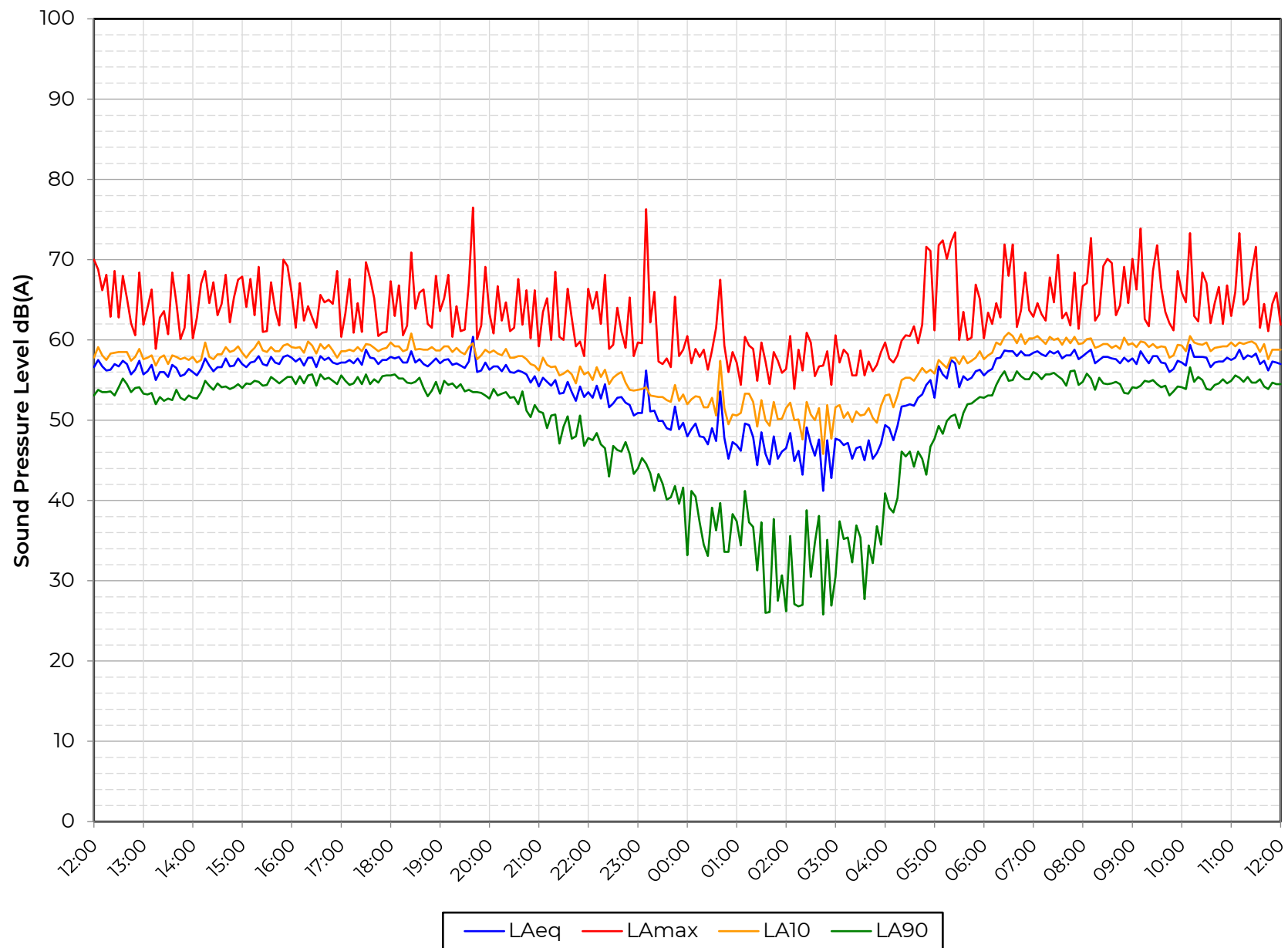
Position LT2



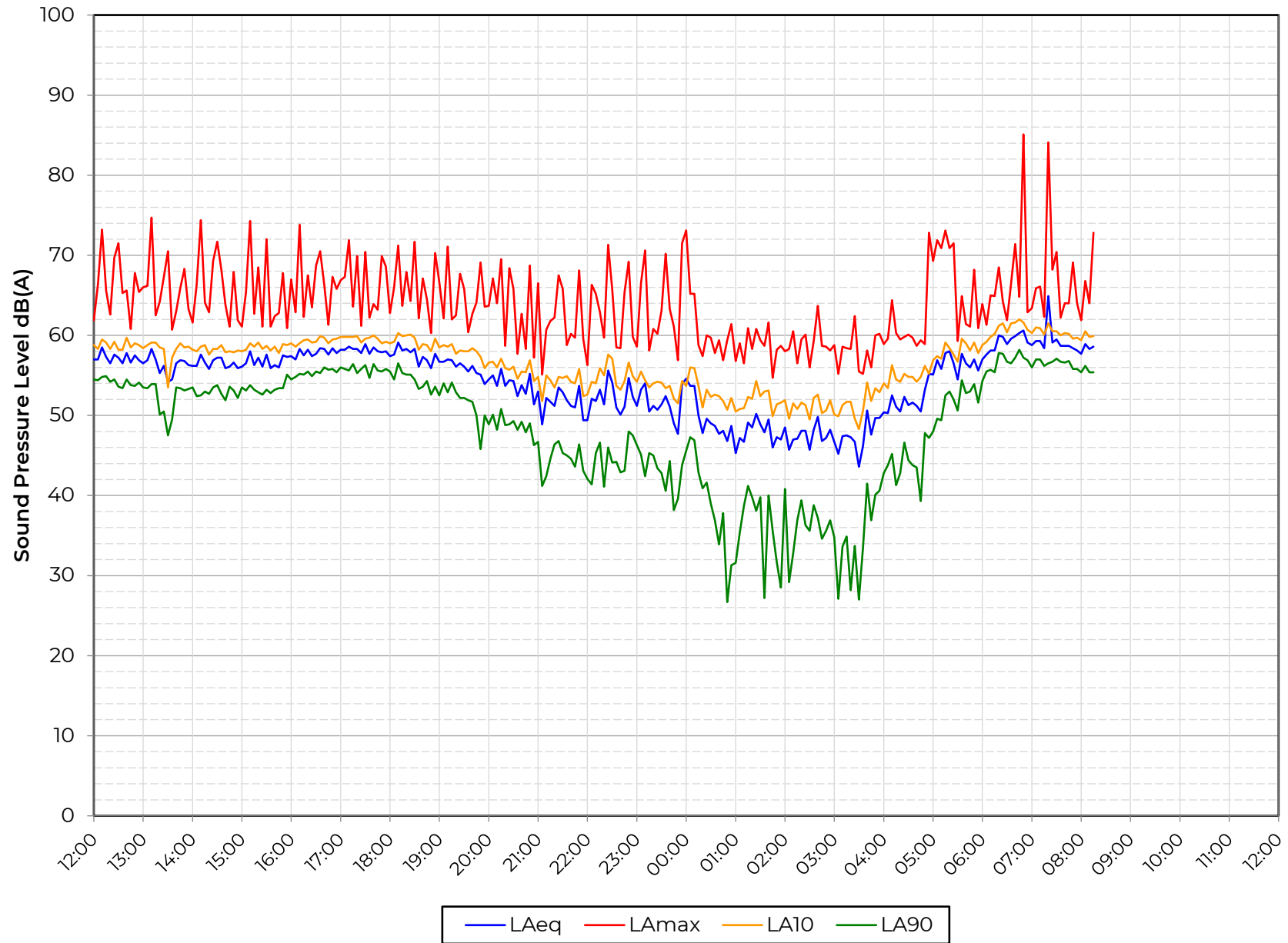
Position LT2



Position LT2



Position LT2



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:

- 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

AS14674 - Interbridges, New Brighton Road, Emsworth SUMMARY OF VEHICLE SOUND CALCULATIONS

TO MALVERN MEWS

VEHICLE SOUND TO MALVERN MEWS		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
Light Industrial (Flexible Class E & Class B2 Uses)										
7.5T Panel Van - Arrival	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.75	-	-	-	-	-	-	-	-	
Time Correction		-11	-11	-11	-11	-11	-11	-11	-11	
7.5T Panel Van - Arrival	L _{Aeq} ,1hr	63	53	52	51	49	48	42	35	54
Distance Loss	70m	-17	-17	-17	-17	-17	-17	-17	-17	
Screening Loss		-10	-10	-10	-10	-10	-10	-10	-10	
Specific Sound Level at Receptor	L _{eq} ,1hr	36	26	25	24	23	21	15	8	28
7.5T Panel Van - Departure	Lp @ 10m	76	67	64	65	61	58	62	49	68
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.5	-	-	-	-	-	-	-	-	
Time Correction		-13	-13	-13	-13	-13	-13	-13	-13	
7.5T Panel Van - Departure	L _{Aeq} ,1hr	63	54	51	52	48	45	49	36	55
Distance Loss	70m	-17	-17	-17	-17	-17	-17	-17	-17	
Screening Loss		-6	-7	-9	-11	-13	-16	-19	-21	
Specific Sound Level at Receptor	L _{eq} ,1hr	40	30	26	25	18	13	13	0	26
Specific sound level at receptor	L_{eq},1hr	42	32	28	28	24	21	17	9	30

VEHICLE SOUND TO MALVERN MEWS		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
Commercial Yard (Class B8 Use) - Vehicle Movements										
7.5T Panel Van - Arrival	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.75	-	-	-	-	-	-	-	-	
Time Correction		-11	-11	-11	-11	-11	-11	-11	-11	
7.5T Panel Van - Arrival	L _{Aeq} ,1hr	63	53	52	51	49	48	42	35	54
Distance Loss	50m	-14	-14	-14	-14	-14	-14	-14	-14	
Screening Loss		-10	-10	-10	-10	-10	-10	-10	-10	
Specific Sound Level at Receptor	L _{eq} ,1hr	39	29	28	27	25	24	18	11	30
7.5T Panel Van - Departure	Lp @ 10m	76	67	64	65	61	58	62	49	68
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.5	-	-	-	-	-	-	-	-	
Time Correction		-13	-13	-13	-13	-13	-13	-13	-13	
7.5T Panel Van - Departure	L _{Aeq} ,1hr	63	54	51	52	48	45	49	36	55
Distance Loss	50m	-14	-14	-14	-14	-14	-14	-14	-14	
Screening Loss		-7	-8	-10	-13	-15	-18	-21	-24	
Specific Sound Level at Receptor	L _{eq} ,1hr	42	32	27	26	19	13	14	0	27
Specific sound level at receptor	L_{eq},1hr	44	34	31	30	26	24	20	11	32

APPENDIX C

AS14674 - Interbridges, New Brighton Road, Emsworth SUMMARY OF VEHICLE SOUND CALCULATIONS

VEHICLE SOUND TO MALVERN MEWS		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
Commercial Yard (Class B8 Use) - Yard Activity										
Loading/Unloading	Lp @ 10m	70	61	56	53	50	47	50	43	57
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (mins)	10	-	-	-	-	-	-	-	-	
Time Correction		-3	-3	-3	-3	-3	-3	-3	-3	
Loading/Unloading	LAeq,1hr	67	58	53	50	47	44	47	40	54
Distance Loss	50m	-14	-14	-14	-14	-14	-14	-14	-14	
Screening Loss		-10	-10	-10	-10	-10	-10	-10	-10	
Specific Sound Level at Receptor	Leq,1hr	43	34	29	26	23	20	23	16	30
Forklift Reversing with Alarm	Lp @ 10m	76	65	57	57	53	47	43	29	59
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (mins)	5	-	-	-	-	-	-	-	-	
Time Correction		-6	-6	-6	-6	-6	-6	-6	-6	
Forklift Reversing with Alarm	LAeq,1hr	70	59	51	51	47	41	37	23	53
Distance Loss	50m	-14	-14	-14	-14	-14	-14	-14	-14	
Screening Loss		-7	-8	-10	-13	-15	-18	-21	-24	
Specific Sound Level at Receptor	Leq,1hr	49	36	27	24	17	9	2	0	27
Specific sound level at receptor	L_{eq} 1hr	50	38	31	28	24	20	23	16	32

Cumulative sound level at Malvern Mews	L _{eq} 1hr	51	40	35	33	30	27	25	18	36
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APPENDIX C

AS14674 - Interbridges, New Brighton Road, Emsworth SUMMARY OF VEHICLE SOUND CALCULATIONS

TO SULTAN ROAD

VEHICLE SOUND TO SULTAN ROAD		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
Light Industrial (Flexible Class E & Class B2 Uses)										
7.5T Panel Van - Arrival	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.75	-	-	-	-	-	-	-	-	
Time Correction		-11	-11	-11	-11	-11	-11	-11	-11	
7.5T Panel Van - Arrival	L _{Aeq} ,1hr	63	53	52	51	49	48	42	35	54
Distance Loss	55m	-15	-15	-15	-15	-15	-15	-15	-15	
Screening Loss		-5	-5	-5	-5	-5	-5	-5	-5	
Specific Sound Level at Receptor	L _{eq} ,1hr	43	33	32	31	30	28	22	15	35
7.5T Panel Van - Departure	Lp @ 10m	76	67	64	65	61	58	62	49	68
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.5	-	-	-	-	-	-	-	-	
Time Correction		-13	-13	-13	-13	-13	-13	-13	-13	
7.5T Panel Van - Departure	L _{Aeq} ,1hr	63	54	51	52	48	45	49	36	55
Distance Loss	55m	-15	-15	-15	-15	-15	-15	-15	-15	
Screening Loss		-6	-7	-8	-10	-12	-15	-17	-20	
Specific Sound Level at Receptor	L _{eq} ,1hr	43	33	29	28	21	16	16	1	28
Specific sound level at receptor	L_{eq},1hr	46	36	34	33	30	28	23	15	36

VEHICLE SOUND TO SULTAN ROAD		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
Commercial Yard (Class B8 Use) - Vehicle Movements										
7.5T Panel Van - Arrival	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.75	-	-	-	-	-	-	-	-	
Time Correction		-11	-11	-11	-11	-11	-11	-11	-11	
7.5T Panel Van - Arrival	L _{Aeq} ,1hr	63	53	52	51	49	48	42	35	54
Distance Loss	55m	-15	-15	-15	-15	-15	-15	-15	-15	
Screening Loss		-5	-5	-5	-5	-5	-5	-5	-5	
Specific Sound Level at Receptor	L _{eq} ,1hr	43	33	32	31	30	28	22	15	35
7.5T Panel Van - Departure	Lp @ 10m	76	67	64	65	61	58	62	49	68
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.5	-	-	-	-	-	-	-	-	
Time Correction		-13	-13	-13	-13	-13	-13	-13	-13	
7.5T Panel Van - Departure	L _{Aeq} ,1hr	63	54	51	52	48	45	49	36	55
Distance Loss	55m	-15	-15	-15	-15	-15	-15	-15	-15	
Screening Loss		-6	-7	-9	-11	-13	-16	-18	-21	
Specific Sound Level at Receptor	L _{eq} ,1hr	42	32	28	27	20	15	16	0	28
Specific sound level at receptor	L_{eq},1hr	46	36	34	33	30	28	23	15	35

APPENDIX C

AS14674 - Interbridges, New Brighton Road, Emsworth SUMMARY OF VEHICLE SOUND CALCULATIONS

VEHICLE SOUND TO SULTAN ROAD		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
Commercial Yard (Class B8 Use) - Yard Activity										
Loading/Unloading	Lp @ 10m	70	61	56	53	50	47	50	43	57
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (mins)	10	-	-	-	-	-	-	-	-	
Time Correction		-3	-3	-3	-3	-3	-3	-3	-3	
Loading/Unloading	LAeq,1hr	67	58	53	50	47	44	47	40	54
Distance Loss	55m	-15	-15	-15	-15	-15	-15	-15	-15	
Screening Loss		-5	-5	-5	-5	-5	-5	-5	-5	
Specific Sound Level at Receptor	Leq,1hr	48	38	33	30	27	24	27	20	34
Forklift Reversing with Alarm	Lp @ 10m	76	65	57	57	53	47	43	29	59
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (mins)	5	-	-	-	-	-	-	-	-	
Time Correction		-6	-6	-6	-6	-6	-6	-6	-6	
Forklift Reversing with Alarm	LAeq,1hr	70	59	51	51	47	41	37	23	53
Distance Loss	55m	-15	-15	-15	-15	-15	-15	-15	-15	
Screening Loss		-6	-7	-9	-11	-13	-16	-18	-21	
Specific Sound Level at Receptor	Leq,1hr	49	37	28	25	19	11	3	0	28
Specific sound level at receptor	L_{eq} 1hr	51	40	34	32	28	24	27	21	35

Cumulative sound level at Sultan Road	L_{eq} 1hr	53	43	39	37	34	32	30	23	40
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APPENDIX C

AS14674 - Interbridges, New Brighton Road, Emsworth SUMMARY OF VEHICLE SOUND CALCULATIONS

TO NORTHLANDS PARK

VEHICLE SOUND TO NORTHLANDS PARK		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
Light Industrial (Flexible Class E & Class B2 Uses)										
7.5T Panel Van - Arrival	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.75	-	-	-	-	-	-	-	-	
Time Correction		-11	-11	-11	-11	-11	-11	-11	-11	
7.5T Panel Van - Arrival	L _{Aeq} ,1hr	63	53	52	51	49	48	42	35	54
Distance Loss	90m	-19	-19	-19	-19	-19	-19	-19	-19	
Screening Loss		-10	-10	-10	-10	-10	-10	-10	-10	
Specific Sound Level at Receptor	L _{eq} ,1hr	34	24	23	22	20	18	13	6	25
7.5T Panel Van - Departure	Lp @ 10m	76	67	64	65	61	58	62	49	68
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.5	-	-	-	-	-	-	-	-	
Time Correction		-13	-13	-13	-13	-13	-13	-13	-13	
7.5T Panel Van - Departure	L _{Aeq} ,1hr	63	54	51	52	48	45	49	36	55
Distance Loss	90m	-19	-19	-19	-19	-19	-19	-19	-19	
Screening Loss		-6	-7	-8	-10	-12	-14	-17	-20	
Specific Sound Level at Receptor	L _{eq} ,1hr	38	29	24	23	17	12	12	0	24
Specific sound level at receptor	L_{eq},1hr	40	30	27	26	22	19	16	7	28

VEHICLE SOUND TO NORTHLANDS PARK		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
Commercial Yard (Class B8 Use) - Vehicle Movements										
7.5T Panel Van - Arrival	Lp @ 10m	74	64	63	63	61	59	53	46	66
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.75	-	-	-	-	-	-	-	-	
Time Correction		-11	-11	-11	-11	-11	-11	-11	-11	
7.5T Panel Van - Arrival	L _{Aeq} ,1hr	63	53	52	51	49	48	42	35	54
Distance Loss	95m	-20	-20	-20	-20	-20	-20	-20	-20	
Screening Loss		-10	-10	-10	-10	-10	-10	-10	-10	
Specific Sound Level at Receptor	L _{eq} ,1hr	33	23	22	22	20	18	13	5	25
7.5T Panel Van - Departure	Lp @ 10m	76	67	64	65	61	58	62	49	68
Number in an hour	6	-	-	-	-	-	-	-	-	
Time of each movement (mins)	0.5	-	-	-	-	-	-	-	-	
Time Correction		-13	-13	-13	-13	-13	-13	-13	-13	
7.5T Panel Van - Departure	L _{Aeq} ,1hr	63	54	51	52	48	45	49	36	55
Distance Loss	95m	-20	-20	-20	-20	-20	-20	-20	-20	
Screening Loss		-6	-6	-7	-9	-11	-14	-16	-19	
Specific Sound Level at Receptor	L _{eq} ,1hr	38	28	24	24	17	12	13	0	24
Specific sound level at receptor	L_{eq},1hr	39	30	27	26	22	19	16	7	28

APPENDIX C

AS14674 - Interbridges, New Brighton Road, Emsworth SUMMARY OF VEHICLE SOUND CALCULATIONS

VEHICLE SOUND TO NORTHLANDS PARK		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
Commercial Yard (Class B8 Use) - Yard Activity										
Loading/Unloading	Lp @ 10m	70	61	56	53	50	47	50	43	57
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (mins)	10	-	-	-	-	-	-	-	-	
Time Correction		-3	-3	-3	-3	-3	-3	-3	-3	
Loading/Unloading	LAeq,1hr	67	58	53	50	47	44	47	40	54
Distance Loss	95m	-20	-20	-20	-20	-20	-20	-20	-20	
Screening Loss		-10	-10	-10	-10	-10	-10	-10	-10	
Specific Sound Level at Receptor	Leq,1hr	38	28	23	21	18	14	17	11	25
Forklift Reversing with Alarm	Lp @ 10m	76	65	57	57	53	47	43	29	59
Number in an hour	3	-	-	-	-	-	-	-	-	
Time of each movement (mins)	5	-	-	-	-	-	-	-	-	
Time Correction		-6	-6	-6	-6	-6	-6	-6	-6	
Forklift Reversing with Alarm	LAeq,1hr	70	59	51	51	47	41	37	23	53
Distance Loss	95m	-20	-20	-20	-20	-20	-20	-20	-20	
Screening Loss		-6	-6	-7	-9	-11	-14	-16	-19	
Specific Sound Level at Receptor	Leq,1hr	45	33	24	22	16	8	1	0	24
Specific sound level at receptor	L_{eq} 1hr	46	34	27	24	20	15	17	11	27

Cumulative sound level at Northlands Park	L_{eq} 1hr	47	36	31	30	26	23	21	13	32
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