

CONCORDE METALS LIMITED, BELVEDERE

NOISE IMPACT ASSESSMENT

Bespoke Environmental Permit Application

Operator: Concorde Metals Limited

Address: Euro Trade Centre, Crabtree Manorway
North, Belvedere DA17 6AZ

For: Concorde Metals Limited

By: Chris Wood MSc MIOA

Permit Ref. Standard rules SR2015 No16

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1. INTRODUCTION AND SUMMARY

- 1.1 Chris Wood Acoustics has been commissioned to undertake a noise impact assessment to support an application to the Environment Agency for a bespoke permit. The site address is **Euro Trade Centre, Crabtree Manorway North, Belvedere DA17 6AZ**, whilst the requested changes to the current permit include (of relevance to this report) **an increase in the total quantity of waste from (less than) 25,000 tonnes per year to (less than) 35,000 tonnes per year**. No changes are proposed in terms of the site boundary, activities or equipment.
- 1.2 Key to note, therefore, is that: the application is for the expansion potential of up to 40% compared to existing operations, on what is largely an enclosed site, which has been operational since 2008, with no history of complaints, and is part of a wider industrial estate; and whilst there are dwellings in the vicinity (in the form of an established Traveller site), this residential use is very much in the minority and part of the industrial estate. The normal hours of the site are 07:30-17:30 Monday to Friday, thus avoiding potentially more noise-sensitive evening and night-time periods, with no working on weekends and bank holidays.
- 1.3 An assessment has been requested by the Environment Agency, which is to be undertaken in accordance with **BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound** and the Environment Agency's guidance. It is the Environment Agency's position that the site should be assessed against conditions as if it didn't exist, and not just in terms of any changes to existing conditions, but where the relevant contextual factors will be considered when determining the potential significance of sound emissions in practice and the decision whether to approve the application.
- 1.4 Accordingly, the site has been visited on two occasions, and short-term attended and longer-term unattended sound level measurements have been made on the site. The site visits and measurements reveal that the site was operating appropriately, and thus in a controlled and expected manner. The handling of waste material, especially hard metals, is, however, inherently loud, whereby sound emissions beyond the site boundary are somewhat inevitable. In this instance, however, with the vast majority of activities occurring within a building, including the loudest operations, the sound audible outside is surprisingly limited.
- 1.5 The site operations essentially comprise two key elements: the import and export of the unsorted and sorted material via mix of vehicles, including heavy vehicles; and the sorting, shearing, baling, temporary storage and loading (ready for export) of material, primarily involving (in addition to the delivery and collection vehicles) a small shear, balers, a handler (with grab attachment), a skid-steer loader, and two forklift trucks. In addition to which, there is the maintenance of the vehicles and machinery, and minor works associated with cutting some materials and dismantling components.
- 1.6 In terms of the busiest hours in a typical day, the requested increase in tonnage will have no effect, but rather the site could be as busy more often. Since, however, the site was found to be infrequently and minimally audible in the vicinity of the nearest properties, this should not make a material difference in terms of the risk of noise impact.
- 1.7 In terms of soundscape at the nearest properties, this is largely dominated by a mix of sources beyond the site, in keeping with the largely industrial nature of the wider area. Typically, there were no noisy activities immediately surrounding the site/nearest properties, but rather sources located further afield; although, there frequent lorry movements on the neighbouring site in similar proximity to the properties. The mix also included road traffic noise, and, when on approach to London City Airport, notable and regular aircraft movements overhead. Under the slightly breezy conditions at the times of the site visits, there was also the sound from leaves of the tall trees on the boundaries of both the site and the nearest properties.
- 1.8 Consequently, together with the intervening screening, and despite the lack of separation, there is little scope for the sound from the site to be impactful. Indeed, it was found to be only briefly and occasionally audible, and mostly barely so, without being measurable. This is a strong indication that assessment isn't required; however, for completeness, together with measurements undertaken on and off the site over a number of days, the activities on site have been measured in proximity, the potential significance considered in light of the guidance in **BS 4142**.

- 1.9 In the main, the site sound levels (accounting for any relevant characteristics) are expected to be well below the background sound levels typically, whereby no adverse impact is to be expected. Even in terms of the very worst case conditions recorded during the week-long monitoring, the site sound levels should still be below the background sound levels, whereby, subject to further consideration of context, no more than a low impact would be expected. In practice, given the higher ambient sound levels, and the nature of the location and soundscape, it is considered that there would be no impact even in terms of worst case scenarios.
- 1.10 Accordingly, based on the wording in the **National Planning Policy Framework's** guidance, and since the site may be audible at times, if only barely so, it is considered that there should be **No Observed Adverse Effect**, whereby "Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life."
- 1.11 No specific steps are recommended by the author, but where, in any case, the site will be operated based on the separate Noise Management Plan in order to keep sound emissions to a practicable minimum.
- 1.12 Accordingly, it is considered that noise need not be a barrier to the Environment Agency approving the permit application.
- 1.13 This report is set out as follows: Statements of the surveyor and author's credentials are presented in **Section 2**. Policy and assessment requirements are presented in **Section 3**. Descriptions of the site and nearest receptors are given in **Section 4**. The baseline survey and on-site measurement details and results are given in **Sections 5 and 6**. **Section 7** presents the assessment of the operational sound levels in keeping with the guidance in **BS 4142**. **Section 8** presents discussion on control measures, whilst conclusions and next steps, where applicable, are given in **Section 9**. A glossary of terms is presented as **Appendix A**, details of the national noise policy is given in **Appendix B**, the sound level measurement equipment calibration certificates are presented in **Appendix C**, and the unattended survey results are tabulated in **Appendix D**.

2. STATEMENT OF QUALIFICATIONS, COMPETENCY, PROFESSIONAL MEMBERSHIPS AND EXPERIENCE

- 2.1 The survey and the preparation of this report have been undertaken by Mr Chris Wood. Chris has over 30 years' relevant experience in acoustics, sound, noise and vibration. He is a Corporate Member of the Institute of Acoustics (MIOA), and has the Diploma and Master of Science Degree from the IOA in Acoustics and Noise Control. He has undertaken a number of surveys and assessments for similar schemes, and for many other industrial and commercial schemes, whilst following the relevant guidance.

3. POLICY AND ASSESSMENT REQUIREMENTS

NATIONAL POLICY

- 3.1 The current national policy regarding “noise” is presented in **Appendix B**. Since the associated documentation doesn’t include detailed assessment methodology or criteria, it is still necessary to refer to applicable guidance documents, as presented below. However, the **National Planning Policy Framework (NPPF)** does include helpful descriptions in terms examples of outcomes based on different levels of noise exposure, which have been referred to in this report.

ENVIRONMENT AGENCY REQUIREMENTS

NOISE AND VIBRATION MANAGEMENT: ENVIRONMENTAL PERMITS (UPDATED 31 JANUARY 2022)

- 3.2 The Environment Agency, together with the Scottish Environment Protection Agency (SEPA), Natural Resources Wales and Northern Ireland Environment Agency, has produced the guidance **Noise and vibration management: environmental permits** (Updated 31 January 2022) to help holders and potential holders of permits apply for, vary, and comply with their permits.

- 3.3 It includes the following statements:

Operators must prevent significant pollution and also comply with the requirements to use ‘appropriate measures’ (Waste Framework Directive 2018/851) or ‘best available techniques’ (BAT) to prevent or minimise noise pollution.

Noise impact assessments should be carried out to an appropriate standard and by competent personnel, for example, holders of either an Institute of Acoustics... Diploma in Acoustics and Noise Control... Certificate of Competence in Environmental Noise Measurement...

‘BS 4142: Methods for rating and assessing industrial and commercial sound’... must be used ...to quantify the level of environmental noise impact from industrial processes.

- 3.4 The following four steps are outlined:

Step 1: desktop risk assessment

Step 2: off-site monitoring survey

Step 3: source assessment

Step 4: BAT or appropriate measures justification

- 3.5 For the most part, following the guidance in **BS 4142**, as outlined further below, is the main requirement. In terms items specific to the Environment Agency guidance, there is reference under **Step 3** to the following:

- Unacceptable level of audible or detectable noise. It is stated that, “The closest corresponding BS 4142 descriptor is ‘significant adverse impact’ (following consideration of the context).”
- Audible or detectable noise. “The closest corresponding BS 4142 descriptor is ‘adverse impact’ (following consideration of the context).”
- No noise, or barely audible or detectable noise. “The closest corresponding BS 4142 descriptor is ‘low impact or no impact’ (following consideration of context).”

- 3.6 Also specific to the EA guidance, Step 4 briefly covers the requirement to demonstrate BAT (best available techniques) or appropriate measures, which are interchangeable terms within the guidance. It is stated that, “The BAT justification is the critical part of any noise impact assessment submitted to the environment agencies.” Indeed, whilst not covered by **BS 4142**, this is a natural and important extension to the **BS 4142** assessment.

3.7 The guidance goes onto cover the following topics to some extent. The relevance in this instance is noted as follows:

- **Noise impact on other species.** Understandably, the guidance is limited in this regard, and where the assessment of which is outside the scope of **BS 4142**. Other than the horse training area located to the north of the wider site area, behind Sunny Acres, 18 Reigate Road, which is reasonably remote and physically screened from the main site – it was also constructed in recent years – there is anticipated to be little, if any, need for an assessment in this regard; but where, in any case, it is assumed that the assessment presented in terms of human receptors would provide an adequate guide to the potential impact on other species.
- **Vibration impact assessments.** We see no reason for vibration to be an issue under normal operational conditions, and so this is not considered further.
- **How the context affects an assessment.** The advice, which is similar to that in **BS 4142** in any case, is considered within the assessment presented in **Section 7.2**.
- **Dealing with uncertainty.** The advice, which is, again, similar to that within **BS 4142**, is considered within the assessment presented in **Section 7.3**.
- **Soundscape assessment.** This is not to be confused with the assessment of tranquillity, which is not mentioned in the guidance, and not considered relevant here. Soundscape is defined as the “acoustic environment as perceived or experienced and/or understood by a person or people, in context”¹. The aim being to fully describe and/or account for all sounds present when considering the outcome from a human perspective. This should, however, be adequately covered by considering “context” as part of the **BS 4142** assessment, whereby it is not considered necessary to cover this separately.
- **Noise conditions in permits.** As section **3.3 Noise and vibration**, the current permit includes the following generic requirements:
 - 3.3.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan, to prevent or where that is not practicable, to minimise, the noise and vibration.
 - 3.3.2 The operator shall:
 - (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan;
 - (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- **Appropriate measures to meet permit conditions.** This section includes generic good practice guidance on appropriate measures to reduce or control noise. This is considered within **Sections 7 and 8**.
- **Noise management plans (NMP).** Advice is provided on preparing a NMP. The Noise Management Plan for the site has been prepared by others.
- **Engaging with neighbours.** Advice is provided on engaging with neighbours, including in terms of responding to complaints. This is not relevant to this report, but where the advice on responding to complaints is followed in the Noise Management Plan.
- **Monitoring.** A brief overview of the monitoring methods is provided. As above, this is accounted for in the Noise Management Plan.
- **Suggested noise impact assessment (NIA) report structure.** The advice is reflected in the structure of this report, with the required information having been provided.

3.8 Notably, being based around the **BS 4142** methodology, where conditions are to be judged on a case-by-case basis, no sound level thresholds or other acoustic-based criteria are presented in the Environment Agency guidance. We are aware, however, of example cases where background levels were exceeded by up +20 dB, which were considered acceptable by the Environment Agency at the time in context.

¹ BS ISO 12913-1 Acoustics — Soundscape — Part 1: Definition and conceptual framework

METHOD IMPLEMENTATION DOCUMENT (MID) FOR BS 4142

- 3.9 In addition to the above, the Environment Agency published **Method implementation document (MID) for BS 4142 (MID4142)** in March 2023 (updated December 2023), which “explains how to use 'BS 4142 Method for rating and assessing industrial and commercial sound' when monitoring sound for an environmental permit.” This has been followed as far as considered necessary for the preparation of this report.

BAT REFERENCE DOCUMENTS

- 3.10 The above Environment Agency guidance requires consideration of BAT (best available techniques), which is the consideration of the available techniques best for preventing or minimising emissions and impacts on the environment. In this regard, the European Commission (EC) produces BAT reference documents (BREFs) for installations.
- 3.11 Applicable to this site, there are BREFs for ferrous and non-ferrous metals processing, refs. BREFBATC (11.2022) and BREFBATC (06.2016), respectively. Brief, generic guidance is provided in the latter, covered in the Environment Agency guidance in any case, whilst the following table is provided in the former (referred to in the BREF as BAT 33). The table is preceded by the statement: “In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of the techniques given below.”

Table 3.1: BAT 33 table from BREFBATC (11.2022)

Technique		Description	Applicability
a.	Appropriate location of equipment and buildings	Noise levels can be reduced by increasing the distance between the emitter and the receiver, by using buildings as noise screens and by relocating the exits or entrances of the buildings.	For existing plants, the relocation of equipment and the exits or entrances of the buildings may not be applicable due to a lack of space and/or excessive costs.
b.	Operational measures	These include techniques such as: <ul style="list-style-type: none"> — inspection and maintenance of equipment; — closing of doors and windows of enclosed areas, if possible; — equipment operation by experienced staff; — avoidance of noisy activities at night, if possible; — provisions for noise control, e.g. during production and maintenance activities, transport and handling of feedstock and materials. 	Generally applicable.
c.	Low-noise equipment	This includes techniques such as direct drive motors, low-noise compressors, pumps and fans.	
d.	Noise and vibration control equipment	This includes techniques such as: <ul style="list-style-type: none"> — noise reducers; — acoustic and vibrational insulation of equipment; — enclosure of noisy equipment (e.g. scarfing and grinding machines, wire drawing machines, air jets); — building materials with high sound insulation properties (e.g. for walls, roofs, windows, doors). 	Applicability to existing plants may be restricted by a lack of space.
e.	Noise abatement	Inserting obstacles between emitters and receivers (e.g. protection walls, embankments and buildings).	Only applicable to existing plants, as the design of new plants should make this technique unnecessary. For existing plants, the insertion of obstacles may not be applicable due to a lack of space.

3.12 The above represents good practice guidance, therefore, but where, perhaps to be expected, no specific guidance, criteria or examples are given. Key, however, is the recognition that space and cost constraints are to be taken into account.

BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

- 3.13 As per the title, **BS 4142** provides methods for rating and assessing sound/noise of an industrial or commercial nature in relation to residential premises. The assessment methodology evaluates the “**specific sound level**” of each industrial or commercial sound source, corrects, where required, for distinguishable features to derive the “**rating level**”, and compares this with the “**background sound level**”.
- 3.14 The advice is that the background sound level ($L_{AF90,T}$) should be derived from continuous measurement of normally not less than 15 minute intervals over the period of interest, and that it should not be the lowest level, but representative of typical conditions at the noise-sensitive receiver(s) relevant to the period(s) of operation.
- 3.15 The specific sound level ($L_S = L_{Aeq,Tr}$) is obtained (by measurement or calculation) over a reference period of 1 hour in terms of the daytime (07:00 to 23:00) and 15 minutes during the night-time (23:00 to 07:00).
- 3.16 The rating level ($L_{Ar,Tr}$) is the specific sound level corrected to account for any acoustic features present in the sound in question, as experienced at the receptor, such as distinguishable, discrete, continuous note (a whine, hiss, screech or hum etc.) or distinct impulses (bangs, clatters or thumps etc.). Where no correction is warranted, the rating level is equal to the specific sound level.
- 3.17 The “**subjective method**” to calculate the rating level incorporates the following corrections (particularly appropriate for new sources that cannot be measured in-situ):
- up to +6 dB due to tonality, subjectively this might be +2 for a tone that is just perceptible, +4 where it is clearly perceptible and +6 where it is highly perceptible;
 - up to +9 dB for impulsivity, subjectively this might be +3 for impulsivity that is just perceptible, +6 where it is clearly perceptible and +9 where it is highly perceptible; and
 - up to +3 dB for other acoustic features that are neither tonal nor impulsive, though readily distinctive at the receptor.
- 3.18 An “**initial estimate**” of the impact of the specific sound is calculated by subtracting the background sound level from the rating level. The following advice applies:
- a) Typically, the greater this difference, the greater the magnitude of the impact.
 - b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
 - c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
 - d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
- 3.19 Key is the statement “**depending on context**”, since the significance of the sound in question depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur.

3.20 Where the initial estimate of the impact needs to be modified due to the context, the assessment should take into account all pertinent factors, including:

- the absolute level of sound;
- the character and level of the residual sound compared to the character and level of the specific sound; and
- the sensitivity of the receptor and whether dwellings will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

3.21 Helpfully, **BS 4142** includes some example assessments, one of which includes the following statement:

...the residual acoustic environment varies considerably with time, which also tends to mask sound from the source, reducing its relative significance...

3.22 An assessment, therefore, is effectively in two parts. The first part results in an initial indication of the impact, which is subsequently considered in terms the context unique to the situation at hand; and where this second part may require consideration of alternative guidance and metrics. Alternatively, the context can be considered upfront and a specific threshold (or set of thresholds) determined accordingly in place of the default values presented in points a) to d) quoted above.

BS 8233 GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

3.23 The core method in **BS 4142** (outlined above) compares the sound in question with the background conditions (i.e. part one of an assessment). When it comes to part two – taking into account context – it is in keeping with the **BS 4142** guidance to also consider the significance of the absolute level of the commercial/industrial sound. This is typically done in terms of the absolute noise thresholds given in **BS 8223**. This provides guideline values for internal and external noise levels for dwellings.

3.24 It states that, “In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values in Table 4.” This table is reproduced as Table 4.2 below.

Table 3.2: BS 8233 indoor ambient noise levels for dwellings

Activity	Location	07-23 (Daytime)	23-07 (Night-time)
Resting	Living room	35 dB $L_{Aeq,16h}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$

3.25 For habitable rooms, the lower guideline value is 35 dB $L_{Aeq,16h}$ during the daytime period, and where the value for bedrooms at night is 30 dB $L_{Aeq,8h}$. Assuming a partially open window providing 15 dB (during use for cooling, for example), the equivalent external level/limit would be in the order of 50 dB during the daytime period and 45 dB during the night-time period. This is a free-field level unaffected by any façade-reflected sound.

3.26 In respect of sound levels within outdoor amenity areas, the guidance in **BS 8233** suggests that, “it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments...”

3.27 BS 8233 does caution that the internal guideline values are for sources without a specific character, and that where any such characteristics are present, “lower noise levels might be appropriate.” Accordingly, when it comes to internal conditions and commercial/industrial sound of any nature, some reduction in the standard values would be considered prudent, subject to context, but where sufficient attenuation would likely be achieved by closing windows should the occupants prefer to do so. Either way, external levels of no more than 50 dB during the day can be seen to be relatively low, with 55 dB being acceptable in noisier environments.

GUIDANCE SUMMARY

- 3.28 Based on the guidance in **BS 4142** for an “initial estimate of impact”, a rating level the same as the background sound level is an indication of a low impact, depending on the context.
- 3.29 Whilst, based on the guidance in **BS 8233**, as referenced in **BS 4142**, external levels of no more than 55 dB during the day would meet the upper external noise criteria for dwellings.
- 3.30 Ultimately, therefore, the judgement of noise impact/the potential significance of sound depends on a combination of the background sound level(s), the site-specific contextual factors and/or the absolute sound levels. Accordingly, these are considered in **Section 7**.

4. THE SITE AND ENVIRONS

THE SITE AND NEAREST RECEPTOR LOCATIONS

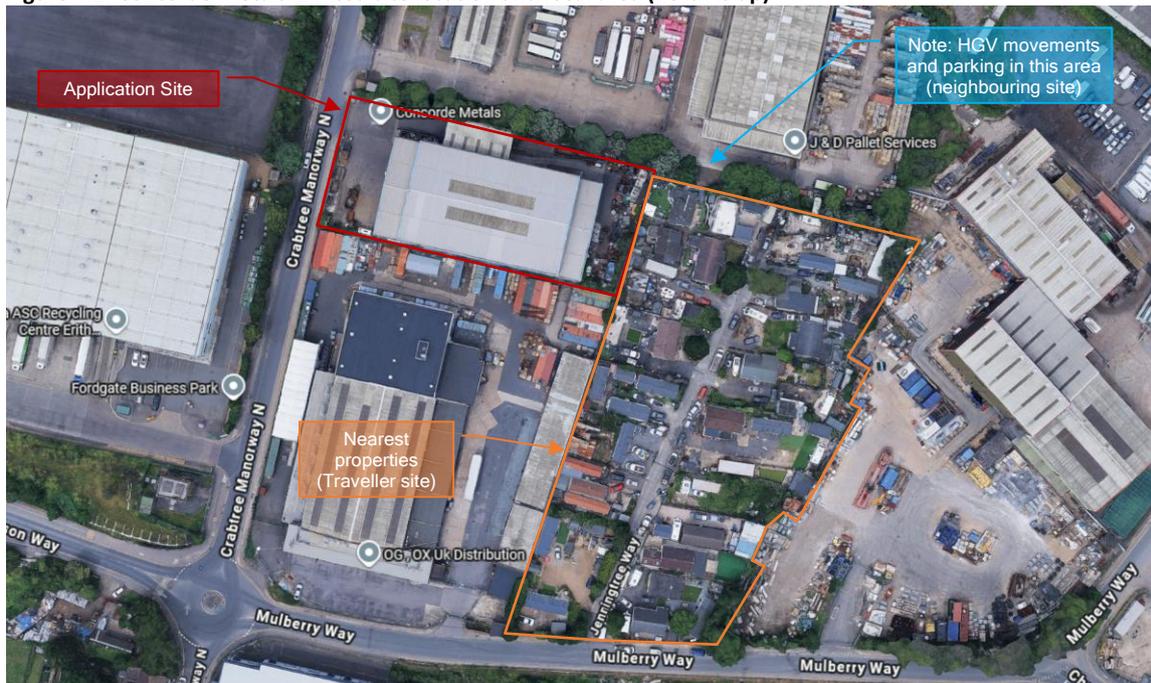
- 4.1 The site and nearest noise-sensitive receptors are shown in the figures below. Note, the operations on site are described in the following subsection.

Figure 4.1: Concorde Metals Limited site location and wider area (north is up)



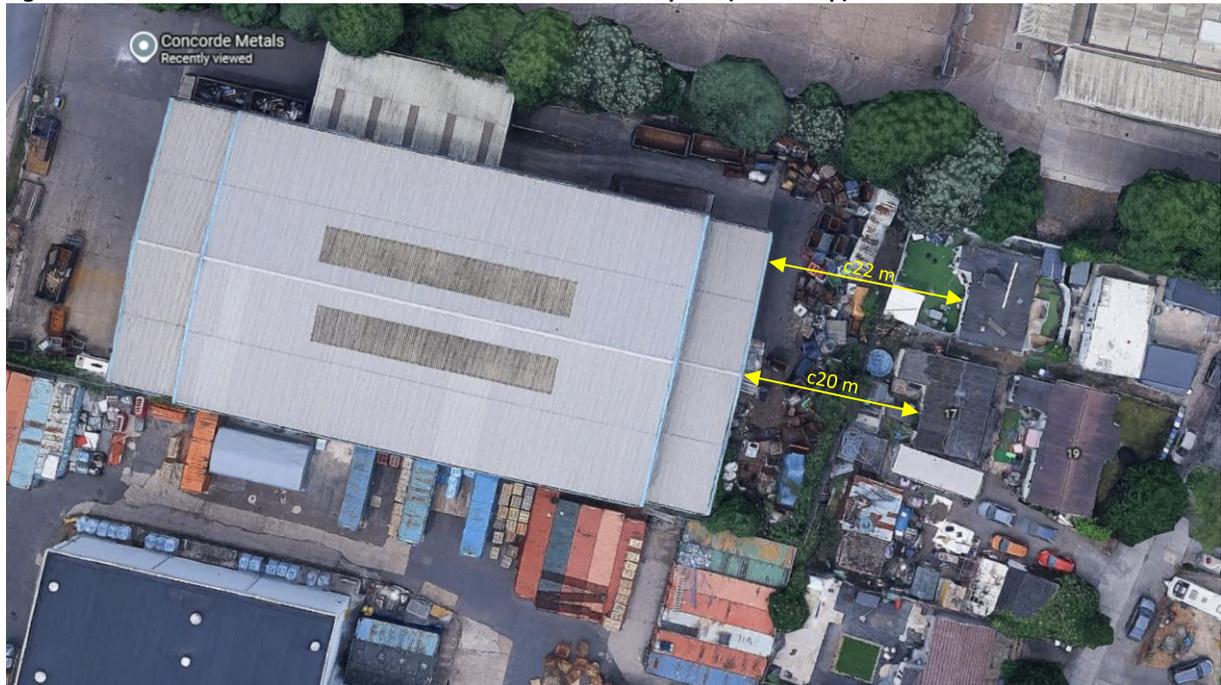
Source: Imagery ©2025 Google (annotated by Chris Wood Acoustics).

Figure 4.2: Concorde Metals Limited site location and local area (north is up)



Source: Imagery ©2025 Google (annotated by Chris Wood Acoustics).

Figure 4.3: Concorde Metals Limited site location and nearest receptors (north is up)



Source: Imagery ©2025 Google (annotated by Chris Wood Acoustics).

Figure 4.4: 3D aerial image of Concorde Metals Limited site location and nearest receptors (looking north)



Source: Imagery ©2025 Google.

4.2 The nearest residential properties, therefore, are the single-storey properties at the end of Jenningtree Way, which are part of a private² Travelling Community site or Gypsy encampment³ (see **Figure 4.2**). It is understood the site was established prior to Concorde Metals Limited's time on site. For privacy purposes, no site photographs showing the properties are presented.

² https://www.royalgreenwich.gov.uk/sites/default/files/2025-07/Gypsy_and_Traveller_Needs_Assessment.pdf

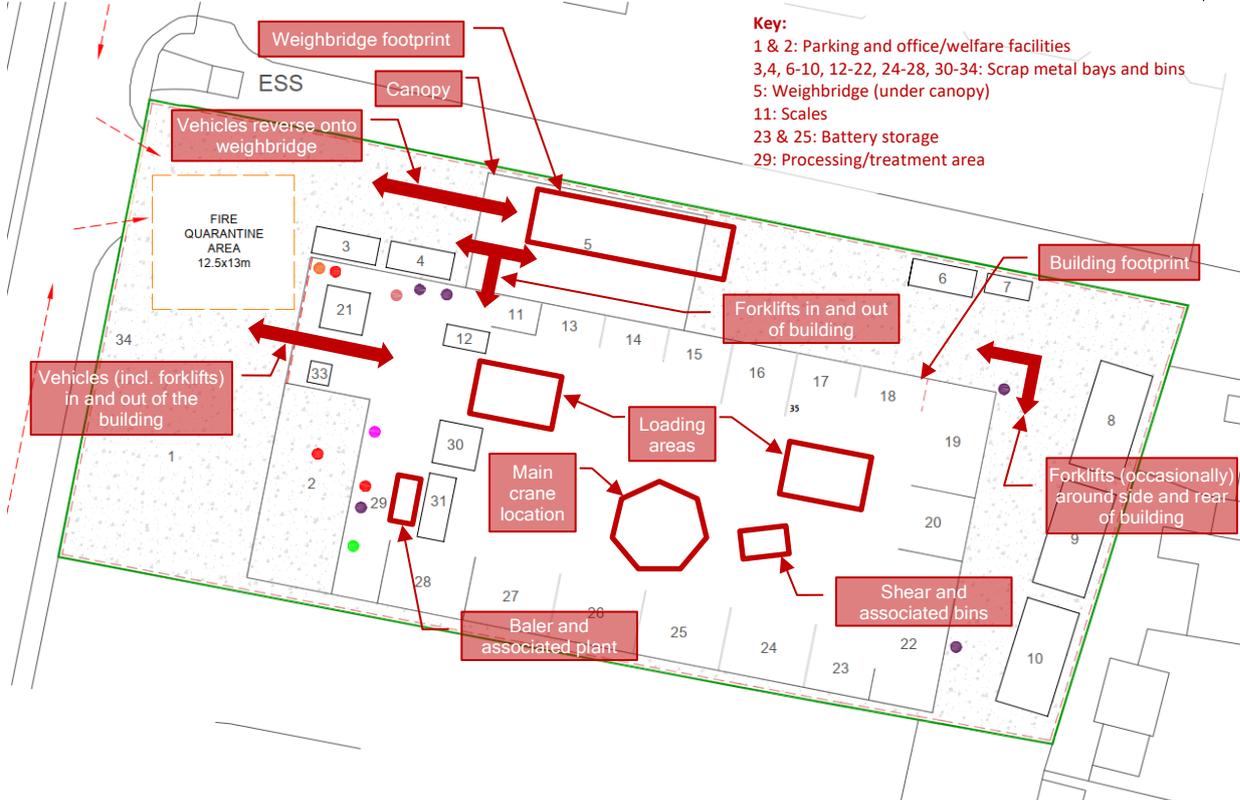
³ <https://www.travellerstimes.org.uk/features/gypsies-belverdere-marshes>

THE SITE OPERATIONS

EXISTING (LESS THAN 25,000 TONNES PER YEAR)

- 4.3 The general operation of the site is described in **Section 1**. The key areas and items of plant are listed below and their location indicated in **Figure 4.5** (see also the site photographs presented in **Section 6**):

Figure 4.5: Key activity areas and plant (north is up)



Source: Shane Tasker (annotated by Chris Wood Acoustics).

- 4.4 Delivery and collection vehicle movements are spread out between (typically) 8 am and 4.30 pm. There are up to 20 movements per day (typically no more than 17), with up to around one-third of these being HGVs (which use the weighbridge and enter the building). The rest are typically 3.5 tonne trucks/vans that are unloaded outside (towards the front of the site).
- 4.5 The vehicles using the weighbridge manoeuvre at the front of the site and (the articulated lorries, at least) reverse onto the weighbridge, before then pulling forward and reversing into the front of the building. Small lorries (such as skip lorries) may drive on forwards and reverse off. They are then loaded or unloaded within the building, before revisiting the weighbridge.
- 4.6 The loading and unloading depend on the type of trailer/container. If an open-top trailer, then the handler (with grab attachment) is used. If an open-ended container (with doors), then a large metal ramp is placed up to the rear of the container that the skid-steer loader uses for access. When loading, the handler places the material on the ramp, behind the container, which the loader then pushes into the container. This was witnessed when the material was crumpled lead sheets, which didn't themselves generate sound, whereby the sounds generated were a combination of the handler and loader engines, and from the interaction of the loader and the ramp.
- 4.7 The location of the loading/unloading depends on the material and where this is stored within the building, with the two main areas identified in **Figure 4.5** above.

- 4.8 The loudest activity generally is associated with the movement of the hard metal items within the bays identified by the numbers 19 and 20 in **Figure 4.5** (actually bays 5 and 6 in practice). This results in the metallic crashing/shattering sound synonymous with metal recycling sites. As reported in **Section 6**, however, this was still barely audible outside the building, and not judged to be significant (even on the site-side of the boundary fence).
- 4.9 The shear is a mobile diesel-powered alligator shear (relatively small), which is used to cut up copper pipes (as fed by hand). The sound from which is essentially that of a small diesel engine, but where there is also the sound from the resultant pieces being placed in storage bins. This activity occurs for most of the time, together with the stripping of electrical cables, which generated limited sound, unlike the majority of other activities, which occur sporadically.
- 4.10 There are two balers located towards the front end of the building, near the office and welfare facilities. A larger (Harris) one, and a smaller (McIntyre) one. They are used for a day a week, typically. They are electrically and hydraulically powered, resulting in sound from the electric motor, a general whir/whine sound, sound from the metal (e.g. copper water tanks) as it is placed in the baler opening, then 'clunk' and 'chonk' sounds as the opening cover closes and opens. In the scheme of other sources and activities, baling is not particularly significant.
- 4.11 There are two forklift trucks: one diesel; and one electric. The latter is in regular use in and around the building, helping load and unload outside, move storage bins, and unload material (from bins) in to the storage bays. The diesel forklift is used on occasion. Likewise, the loader.
- 4.12 The majority of activity, therefore, happens within the building. Second to this is the unloading at the front of the site. Next is the use of the weighbridge, typically no more than 10 times per day. There is limited activity at the rear of the site, with this being used for longer-term storage, including in terms of seldom used equipment.

PROPOSED (LESS THAN 35,000 TONNES PER YEAR)

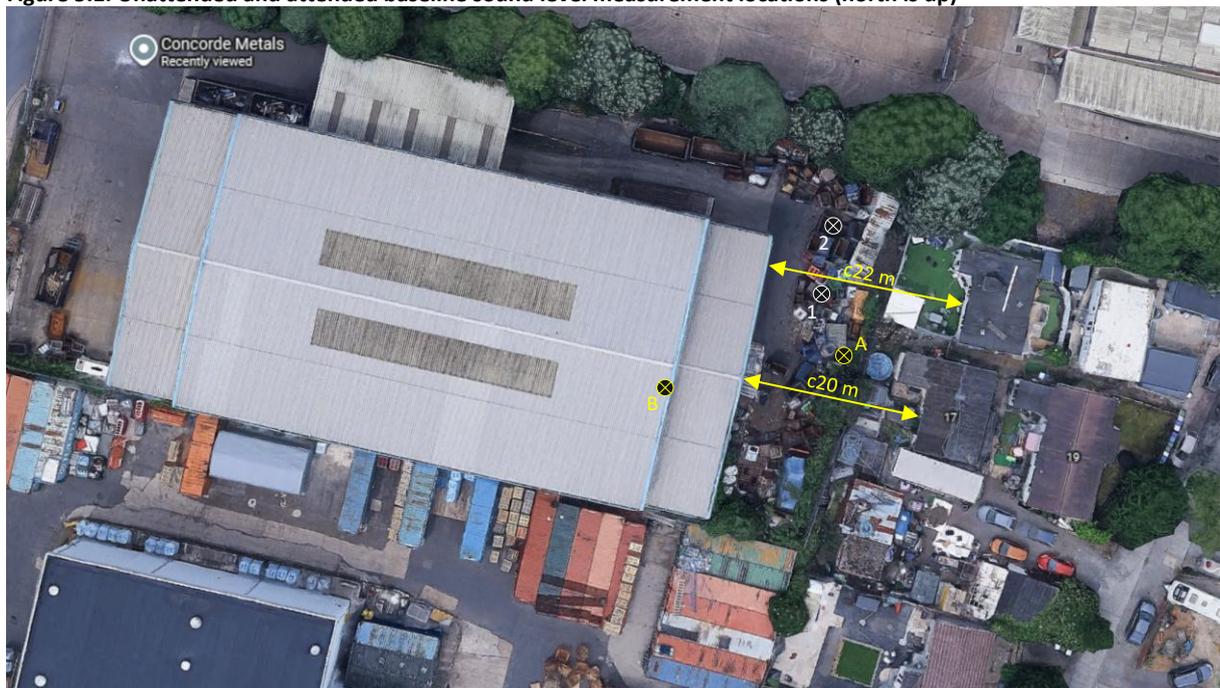
- 4.13 In upping the annual tonnage allowance from (less than) 25,000 to 35,000, there could, naturally, be more deliveries and collections, and with the plant in more regular use, but where this is unlikely to change the conditions in terms of the site's current busy times. In any case, in the absence of different plant or activities, there will be no change in the nature of the conditions.
- 4.14 Viewing it simply, if all activity on site were to increase by a factor of 35,000/25,000 (i.e. 1.32), the increase in overall sound level would be around 1 dB. Even if the site were the dominant sound source, which it isn't, such a change (without any character change) is highly unlikely to be noticeable. With the site not being dominant, therefore, there is considered to be no risk of the change resulting in an impact.

5. BASELINE SOUND LEVEL MEASUREMENTS

TIMING, LOCATION AND EQUIPMENT DETAILS

- 5.1 In order to describe the existing acoustic environment at the noise-sensitive receptors, a combination of attended and unattended sound levels measurements were made. The latter (at Position A) over a one-week period between 14:30 hours on Wednesday 5th and 13:00 hours on Wednesday 12th November 2025. The former (attended measurements, at Positions 1 and 2) during the day before the unattended measurements.
- 5.2 The positions are shown in the figures below. Due to the general lack of activity at the rear of the site, and for access and security purposes, it was considered appropriate to undertake the measurements on the site itself, rather than within the Traveller site. In terms of the background (L_{A90}) sound levels (against which sound from the site is compared), which are generally due to remote sources (such as road traffic and other sites in the wider area), it is considered that Position A is sufficiently representative of the nearest properties (on the other side of the boundary fence). The same is likely to be true of the ambient (L_{Aeq}) sound levels for the majority of the time, with the exception of the brief and occasional times that activity occurs at the rear of the site, and where Position A wouldn't be as affected, if at all, by sources associated with the Traveller site, such as vehicle movements, and with dog barking heard briefly, for example.
- 5.3 A second sound level meter was installed within the building on site (Position B, for the same one-week period). The monitoring, therefore, acts as a control to determine when the building was active, which represents the bulk of the operations at the site. All data is reviewed in detail within this section to consider its relevance and suitability for use in the assessment.

Figure 5.1: Unattended and attended baseline sound level measurement locations (north is up)



Source: Imagery ©2025 Google (annotated by Chris Wood Acoustics)

Figures 5.2 and 5.3: Position A



Source: Chris Wood Acoustics (images captured 5th November 2025)

Figures 5.4 and 5.5: Position B



Source: Chris Wood Acoustics (images captured 5th November 2025)

Figures 5.6 and 5.7: Position 1



Source: Chris Wood Acoustics (images captured 5th November 2025)

Figure 5.8: Positions 1 and 2



Source: Chris Wood Acoustics (image captured 5th November 2025)

- 5.4 As can be seen, the microphones were protected with windshields, and where Positions A, 1 and 2 were broadly in ‘free-field’ conditions (i.e. generally away from acoustically reflective surfaces, other than the ground), with Position B within the reverberant conditions of the building (and also largely away from surfaces). Positions A and 2 were c1.5 m above the local ground, Position 1 was c2 m above the ground (to provide some separation from the local surfaces), whilst Position B was c3 m high (to provide clear sight to the main areas of activity, and some separation from the local surface).
- 5.5 The equipment details are presented in **Table 5.1** below, and where the meters were set to store the 15-minute L_{Aeq} (“ambient”), L_{AF90} (“background”) and L_{AFmax} (“maximum”) levels, together with the corresponding unweighted frequency spectra in the one-third octave-bands between 20 Hz and 20,000 Hz. The sound pressure levels (L_{Aeq} and L_{eq} in one-third octave-bands) were also obtained at a resolution of 1 second.
- 5.6 Each measurement chain was field-calibrated before the survey using an acoustic calibrator to generate a level of 114.0 dB at 1 kHz. The level was checked at the end of the survey. The drift in levels were less than 0.1 dB in all instances, which is not significant. The meters and calibrator hold valid laboratory calibration certificates, as presented **Appendix B**.

Table 5.1: Survey equipment details

Equipment (ID / Positions)	Make & Model	Serial No.
Sound level meter (SLM1 / Position B and 2 (and all other attended measurements on site)) Microphone / Preamplifier	Svantek 971A ACO 7152 / Svantek SV 18A	121136 84699 / 113784
Sound level meter (SLM2 / Position A and 1) Microphone / Preamplifier	Svantek 971A ACO 7152 / Svantek SV 18A	131651 85537 / 139344
Sound level calibrator	SV33B	140764

WEATHER CONDITIONS

- 5.7 Other than by observation during the site visits, the weather conditions during the monitoring have been determined as shown in **Table 5.2** based on forecasts on the BBC website, which were checked and noted daily.

Table 5.2: Summary of daytime weather conditions

Date (Aug. '25)	General description (according to BBC website)	Predominant wind direction and speed (mph)		Temperature (degrees Celsius)		Rain?
		Day	Night	High	Low	
Wed 5 th	Sunny intervals and a gentle breeze			17	13	None forecast
Thu 6 th	Light rain showers and light winds			17	13	Moderate chance in the morning and early afternoon
Fri 7 th	Drizzle and a gentle breeze	  	 	15	11	Slight to moderate chance all day
Sat 8 th	Sunny intervals and light winds			14	6	None forecast
Sun 9 th	Sunny intervals and a gentle breeze	 		15	12	Moderate to high chance in the late evening/night
Mon 10 th	Thundery showers and a gentle breeze			14	8	Moderate to high chance most of the day
Tue 11 th	Light cloud and a moderate breeze	 		15	13	Slight chance in the morning, then high chance at night
Wed 12 th	Light rain and a gentle breeze		-	16	13	Moderate chance in the morning, but likely none in practice

1 Where there was a notable variation in conditions during the day, multiple entries are shown.

- 5.8 At this time of year, there was inevitably some rain, together with some periods of moderate winds, but where the survey period was purposely long enough to account for this, whilst the day of attended measurements was selected accordingly.
- 5.9 In terms of wind speeds, which can affect the microphone directly and/or result in sound from trees, for example, these were typically below 11 mph, which is equivalent to the limit of 5 m/s recommended in **BS 4142**, whereby the majority of the data should not be adversely affected in this regard. It is only during the afternoon of the Tuesday (and at night, but which is not relevant) that speeds were forecast to be above 11 mph, whereby data during this time is viewed with caution.
- 5.10 In terms of wind direction, which can influence the propagation of sound from major sources (such as roads), especially over large distances, it can be seen that the direction was largely southerly (i.e. from the south, and thus towards the north). Whilst this isn't the prevailing condition, which is west-southwest, in terms of the location of sound sources that could be influenced in this regard (with no major roads in the vicinity), both directions would seem broadly similar, whereby similar outcomes are expected. In any case, it would typically be the night-time conditions that are more susceptible to change in this regard, which are not relevant to this assessment.
- 5.11 Given the site is roughly in line with London City Airport, which some 6+ km to the west, it could be that aircraft sound levels are higher during easterly conditions (as the aircraft are on approach to land), but where, given the site's distance from the airport, and that it's not as busy as Gatwick or Heathrow, the effect on the soundscape is likely to be limited.

5.12 In terms of rain, which can result in sound from local surfaces, for example, amongst other effects, it is only the first day/afternoon and the Saturday when no rain was forecast, by where the chances are actual occurrences of rain were limited in practice. Indeed, the author lives close to the site and where, until the Monday, rain didn't materialise in the majority of instances. In any case, the data is reviewed in this regard (further below) with the aim of selecting suitable data for the assessment.

5.13 Generally speaking, therefore, with the survey covering a number of days, and with limited adverse conditions, it is considered that sufficient sound level data have been obtained for the purposes of a robust assessment.

OBSERVATIONS

5.14 Across the author's two visits, over five hours were spent on site, whilst numerous audio recordings were obtained during the unattended on-site monitoring.

5.15 The site was very orderly with sufficient space for the plant and activities to operate around each other.

5.16 Up until around 3 pm, the site was generally active in some form, with typically a delivery or collection occurring, split being inside and outside the building (towards the front), a forklift truck on the move, and shearing ongoing (within the building). After 3 pm, there was less chance of a delivery or collection, with activities generally winding down until closure by around 4.30 pm.

5.17 The loudest times were during a collection within the building, especially when associated with hard metals, resulting in the combined use of the loader and handler, together with the sounds from the interaction of the metal elements.

5.18 Despite the relatively high sound levels inside the building during such times, any sound was barely audible, if at all, outside. This was largely due to, seemingly, the high degree of sound insulation of the building envelope, but where there was also a reasonable degree of other sounds (from other sites and the roads, plus notable aircraft movements when on approach to London City Airport), thus providing masking.

5.19 The most audible sounds from the site (at the rear of the site) were from external activities, such as from unloading (towards the front of the site), vehicles reversing (with reversing alarm) onto the weighbridge, and the few times that trips are made by forklift truck to the rear of the site. It is only the latter than could be said to be notable in the event, however, but which occur too seldom to be of significance, and where the nearest properties are further protected by the boundary fencing. Whilst, in terms of the other activities, the degree of audibility very much depends on the point of listening. It is only part of one property (at the end of Jenningtree Way) that is in line with the side of the building (albeit, behind the boundary fencing). In all other instances, therefore, the external activities are screened by the building (as well as the fence), whereby they are unlikely to be audible, and not, either way, a cause of adverse noise impact.

5.20 As a result, with the survey confirming that the highest levels of sound were witnessed during the attended periods, even on the site itself, let alone on the other side of the boundary fence, the sound from the site was judged to be acceptable.

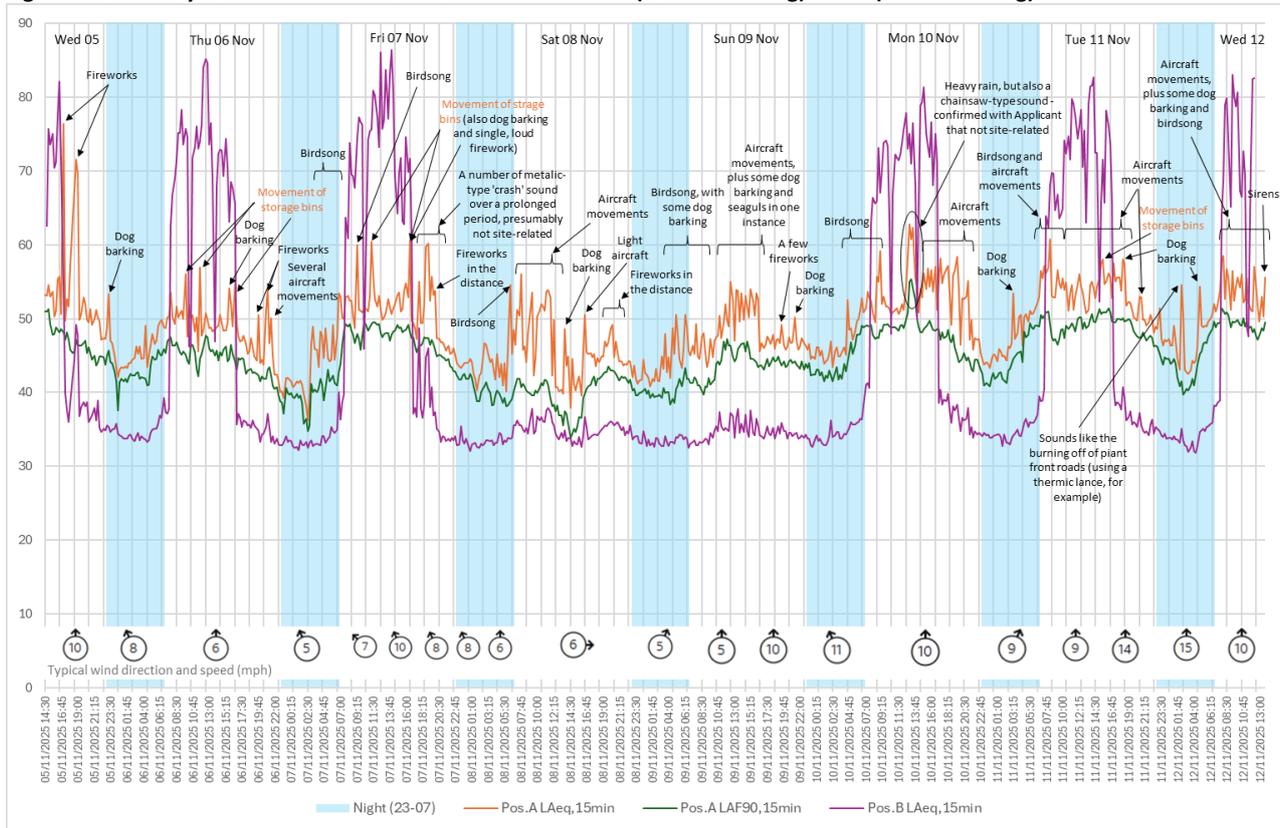
UNATTENDED DATA

RAW DATA AND INITIAL DISCUSSION

5.21 In the first instance, the 15-minutely data from the measurements at the two longer-term positions are presented in graphical/time-history form in **Figure 5.9** overleaf. It is considered most helpful to compare the two sets of $L_{Aeq,15min}$ (energy average, "ambient") levels, whilst also presenting the $L_{AF90,15min}$ (90th percentile, "background") levels at Position A (as largely relevant to the nearest properties. At this stage in the report, it is a case of attempting to best understand the data and how they may or may not interrelate, and/or be a factor of the weather conditions, for example. Key observations are highlighted and discussed subsequently.

5.22 The notes provided with the data are based on brief audio recordings that were triggered at Position A (outside) based on a threshold of 65 dB $L_{Aeq,1s}$. In the event, there were 475 recordings, with the majority of these due to non-site-based activities (such as fireworks (as per the time of year), a dog barking, birdsong, and aircraft movements (when on approach to London City Airport). The most key events are noted on the chart below. The notes in orange font relate to activity on site (which was primarily associated with the few occasions of the movement of storage bins at the rear of the site). There were no recordings due to activities inside the building. All other notes (in black font) related to non-site-based sounds.

Figure 5.13: Survey results in 15-minute intervals – Positions A (behind building) and B (inside building)



5.23 When viewing the data it should be noted that: they are in terms of 15-minute periods; that the orange and purple lines represent the “energy average” (L_{Aeq}) levels (often referred to as the “ambient” conditions); that the green line represents the “background” (L_{A90}) (i.e. 90th percentile) levels (at Position A only); and where brief (especially ‘loud’) events are likely to influence the ambient levels, but not necessarily the background levels, which respond more to regular/continuous events/sources. It should also be borne in mind that, due to the measurements being undertaken on the site itself, some activities (on site) could have occurred very close to either microphone, whereby some events may have resulted in high sound levels due to proximity rather than necessarily being inherently loud (such as the movement of storage bins at the rear of the site).

5.24 The following are observed from the data:

- The periods of operation inside the building are clear to see (from the purple line), starting at around 07:45 and finishing by 17:00, with no activity on the Saturday and Sunday.
- There is no clear relationship between the Position A (outside) and Position B (inside) sound levels. Whilst it is true that the L_{Aeq} and L_{A90} levels are generally higher during the site’s hours of operation, these, of course, coincide with when sound levels would typically be higher due to other sources (such as other sites and road traffic).
- The highest peaks in the L_{Aeq} levels at Position A (orange line) due to activity on site (namely the movement of storage bins) are no higher than examples due to other sources, such as bird song and aircraft movements, and where this is despite the proximity of the microphone to the on-site activities (with the properties being further away and screened by the boundary fence).
- Due to the generally variable nature of the sound levels at Position A (despite largely consistent wind conditions, at least), any variations that could be due to the weather (including periods of rain) are not necessarily clear to identify. Rain was clearly audible during audio recordings on the Monday afternoon, but which also corresponded with a time of unknown activity (thought to be off-site tree surgery-related). One feature of interest is how low the L_{A90} sound levels go on the Saturday, which coincides with the only period of westerly conditions (and where the wind speed was also on the low side). Whilst south-westerly conditions are the prevailing condition, this period is expected to be an abnormality, nonetheless, rather than representing conditions typically.

5.25 The survey data are processed and considered further below.

PROCESSED AMBIENT (LAEQ) AND BACKGROUND (LAF90) SURVEY DATA

- 5.26 In keeping with **BS 4142** methodology, the measured $L_{AF90,15min}$ levels have been analysed to determine what could be considered the typical/representative background sound level(s) per periods of interest. It is also useful, however, to consider the ambient conditions, for which hourly periods are more commonly of interest (in keeping with the **BS 4142** period applicable to specific and rating levels).
- 5.27 Accordingly, for Position A (as most relevant to the nearest properties), the $L_{Aeq,1h}$ and $L_{AF90,15min}$ levels are presented in the tables overleaf. The $L_{Aeq,1h}$ levels are also presented for Position B as, apart from showing the levels that could be useful for calculation purposes, where required, they show when (at least in hourly terms, and in terms of the inside operations) the site was operational.
- 5.28 The hourly levels have been determined in the normal way by logarithmically averaging the $L_{Aeq,15min}$ levels per hour. In addition to the 15-minutely/hourly and daily averages, the minimum and mode (most commonly occurring) values have been determined for $L_{A90,15min}$ levels. Where more than one mode was found per day, the lowest is presented.
- 5.29 The $L_{Aeq,1h}$ levels are presented for the period 06:00 to 19:00, thus including the normal hours of operation (i.e. 07:30-17:30 weekdays), plus the shoulder hours before and after. Similarly, the $L_{AF90,15min}$ levels are presented for the period 07:00 to 19:00 hours, thus including at least two 15-minute periods before and after any activities would have started.
- 5.30 The levels have been condition formatted in Microsoft Excel using the default Red – Yellow – Green colours to show the range in levels across the hours and days. They are not related to any particular thresholds – just a comparison of the data presented. Each table has been formatted separately.

Table 5.3: Summary of the ambient ($L_{Aeq,1h}$) sound levels (quasi free-field) – Position A (outside, at the rear of the site)

Day (Nov. '25)	06	07	08	09	10	11	12	13	14	15	16	17	18	Mean (07-17)
Wed 05									53	53	54	70 ¹	67 ¹	53
Thu 06	49	51	50	53	50	52	49	49	50	51	52	47	46	51
Fri 07	50	52	52	55 ²	51	57 ³	52	51	52	53	56 ⁴	51	55 ⁵	53
Sat 08	50	52	46	50	51	53	45	44	43	41	47	45	44	47
Sun 09	48	47	47	45	47	50	52	52	52	52	51	47	47	50
Mon 10	51	53	54	55 ²	51	51	55 ⁶	61 ⁶	53	56 ⁷	55 ⁷	56 ⁷	55 ⁷	55
Tue 11	52	56 ²	57 ²	55 ²	54	53	55	52	54	57 ⁸	55 ⁷	56 ⁷	56 ⁷	55
Wed 12	51	54	56 ⁹	54	55 ⁷	53	54	53						54
Wkday Ave.	50	53	54	54	52	53	53	53	52	54	54	53	53	53

1. Fireworks; 2. Notable birdsong; 3. Movement of storage bins, but also dog barking; 4. Movement of storage bins, but also dog barking and a single, loud firework; 5. A number of metallic-type 'crash' sound not associated with the site; 6. Heavy rain, but also off-site activity (thought to be tree surgery-related); 7. Aircraft movements (on approach); 8. Movement of storage bins, but also aircraft movements; 9. Aircraft movements plus birdsong and do barking.

Table 5.4: Summary of the ambient ($L_{Aeq,1h}$) sound levels (reverberant) – Position B (inside, at the rear of the building)

Day (Nov. '25)	06	07	08	09	10	11	12	13	14	15	16	17	18	Mean (08-17)
Wed 05										74	78	49	45	76
Thu 06	37	57	72	76	70	74	84	73	72	71	66	36	36	73
Fri 07	37	52	52	55	51	57	52	51	52	53	56	51	55	53
Sat 08	50	36	35	36	36	37	35	34	33	33	35	34	35	35
Sun 09	34	33	33	34	35	36	36	36	36	35	35	35	34	35
Mon 10	37	57	69	72	69	72	75	74	76	77	74	39	38	73
Tue 11	37	58	68	65	73	78	76	78	80	67	75	39	39	73
Wed 12	37	58	77	80	76	68	83							77
Wkday Ave.	40	56	68	70	68	70	74	69	70	68	70	43	43	70

5.31 The following are observed from the above data:

- From **Table 5.4**, the main hours of operation (within the building, at least) can be seen to be between 08:00 and 17:00. It can also be seen that there was partial effect on the levels at 07:00, since operations tended to start at around 07:45.
- From **Table 5.3**, it can be seen that the weekday sound levels at Position A between 08:00 and 17:00 ranged from 49 to 57 dB, excluding the highest level due to heavy/other activity. Whilst two of the three levels at 57 dB included on-site activity at the rear of the site, the levels were also influenced by other sources, namely dog barking, birdsong and, in one instance, a firework. Whilst, the microphone was closer to the site activity than the nearest properties.
- It is interesting that the highest level inside of 84 dB corresponded with a below average level outside (of 49 dB). Whilst the highest level might be due to activity particularly close to the microphone (Position B), since this was at the end nearest the properties (and Position A), it remains poignant that an elevated level externally didn't result.
- The effect of the aircraft movements on approach to London City Airport can be seen, typically raising the weekday levels up to around 56 dB, from around 53 dB, typically
- The levels at the weekend were typically quieter, but still up to 53 dB, primarily due to aircraft movements.

5.32 The $L_{AF90,15min}$ data tables are presented next.

- 5.34 In terms of selecting a value to use in a **BS 4142** assessment to represent the background conditions typically for comparison with the sound from the site, this could be argued to depend on whether the existing operation of the site was deemed the norm, bearing in mind its operation under similar conditions for many years. As stated in the introduction, however, it is the Environment Agency's position that the site should be assessed against conditions as if it didn't exist, but where the relevant contextual factors will be taken into account when determining the potential significance of sound emissions in practice. Although, it is not expected that the site very often, if at all, influences the background conditions in any case. Likewise in terms of the ambient conditions, typically.
- 5.35 Based on the weekday averages of the of the mean and (lowest) mode values presented in **Table 5.5**, such a value would appear to be in the region of 48 ($L_{AF90,15min}$), typically.
- 5.36 In terms of the ambient conditions, based on the levels presented in **Table 5.3**, these could be said to be in the region of 53 dB ($L_{Aeq,1h}$), typically.
- 5.37 Whilst these values were obtained site-side of the boundary fence, they are expected to be representative of the conditions outside the nearest properties (largely discounting any sound generated by the properties/the Traveller site).

ATTENDED DATA

- 5.38 The results of the measurements at positions 1 and 2 are presented at the end of **Section 6**, together with the activity specific measurements, to aid in the understanding of the influence or otherwise of sound from the typically activities on site on the conditions at the rear of the site/at the nearest properties.

6. ACTIVITY SOUND LEVEL MEASUREMENT

UNATTENDED MEASUREMENTS AT POSITION B

- 6.1 The hourly data from Position B (inside the building) are presented in **Table 6.1** (as also presented in **Table 5.4** earlier).

Table 6.1: Summary of the ambient ($L_{Aeq,1h}$) sound levels (reverberant) – Position B (inside, at the rear of the building)

Day (Nov. '25)	06	07	08	09	10	11	12	13	14	15	16	17	18	Mean (08-17)
Wed 05										74	78	49	45	76
Thu 06	37	57	72	76	70	74	84	73	72	71	66	36	36	73
Fri 07	37	52	52	55	51	57	52	51	52	53	56	51	55	53
Sat 08	50	36	35	36	36	37	35	34	33	33	35	34	35	35
Sun 09	34	33	33	34	35	36	36	36	36	35	35	35	34	35
Mon 10	37	57	69	72	69	72	75	74	76	77	74	39	38	73
Tue 11	37	58	68	65	73	78	76	78	80	67	75	39	39	73
Wed 12	37	58	77	80	76	68	83							77
Wkday Ave.	40	56	68	70	68	70	74	69	70	68	70	43	43	70

- 6.2 Bearing in mind some activities (including some of the loudest ones) would have been relatively close to the microphone (down to around 4 m), but where the reverberant nature of the building will have an equalising effect to some extent, the levels can be seen to be around 73 dB on average, typically, and up to 84 dB $L_{Aeq,1h}$.

ACTIVITY SPECIFIC MEASUREMENTS (VARIOUS POSITIONS)

- 6.3 In addition to the unattended data presented above, brief measurements were undertaken in proximity to the main activities and sources. The monitoring serves a dual purpose of obtaining data that could be used in acoustic modelling, where required, and to observe how the activities were being performed and the plant operated.
- 6.4 The results are presented overleaf. Based on the estimated distances between the microphone and the nearest part of the plant/source(s) in question, and assuming hemispherical wave radiation, the equivalent A-weighted sound power levels (L_{AW}) have been determined. In this way, the relative sound emissions from the various sources can be compared. It should be borne in mind that these are just estimates, however, and where some measurements were influenced by other sources in the background and/or the acoustic environment (more than normal for outdoor measurements, that is). Whilst the perceived sound level in practice, and the potential for noise impact, will depend on factors including the nature of the sound and the duration of occurrence.
- 6.5 The equivalent frequency data are presented following the overall dBA levels.

Table 6.1: Summary of inside activity measurement results

ID/Description	Site photo	Dur. T (mm:ss)	L _{Aeq,T} (dB)	Main distance (m)	L _{AW} (dB)
1. Handler (at c7m) and loader (at c10-15m) loading container with lead (via ramp to the rear)		22:17	84	10	112
2. Metal being sheared (at c4m) and placed in storage bin (at c3m)		06:01	78	4	98
3. Loader shovelling loose (hard) metals in corner/end bay (at c5m)		03:10	90	5	112
4. Bin of metal being emptied by FLT into bay (at c11m)		01:25	82	11	111
5. Baler (large, baling copper water tanks) (at 4m, with motor at c7m)		2:56	78	5	100
6. Handler loading trailer (from the top) (at 6m to both handler and metal pile, as measured at Position B)		19:21	83	6	106

Notes: The inside sound levels are subject to the reverberant conditions of the building, and are thus at least several dB higher than the equivalent external levels.

The sound power levels (final column) are condition formatted together with those of **Table 6.2** below.

Table 6.2: Summary of outside activity measurement results

ID/Description	Site photo	Dur. T (mm:ss)	L _{Aeq,T} (dB)	Main distance (m)	L _{AW} (dB)
7. Lorry idling on weighbridge (at c5m, semi-reverberant)		02:05	75	5	97
8. Lorry reversing onto weighbridge with alarm (bleeper) towards mic (at 5m at closest point)		01:05	74	5	96
9. Lorry driving off weighbridge away from mic (at 5m at closest point)		00:33	72	5	94
10. Lorry reversing onto weighbridge without alarm towards mic (at 5m at closest point)		00:40	69	5	91
11. Skip lorry driving forwards onto weighbridge towards mic (at 4m at closest point)		00:15	76	4	96
12. Skip lorry reversing off weighbridge away from mic (at 4m at closest point)		00:35	75	4	95
13. Skip lorry reversing onto weighbridge towards mic (at 4m at closest point)		00:36	77	4	97
14. FLT unloading unusual/poorly loaded bins etc. plus voices (at c4m, with reversing bleeper)		09:05	74	4	94
15. Lorry trailer being unloaded (from the side) at the front of the site by both FLT's (at c4m) (lorry idling behind, plus aircraft movement)		04:01	72	4	92

Notes: The sound levels of the lorry idling (item 5) are also subject to a degree of reflected sound due to the canopy and building elevation.

The sound power levels (final column) are condition formatted together with those of **Table 6.1** above.

Table 6.3: Linear (un-weighted) sound levels in one-third octave-bands (and equivalent dBA level) from the activity measurements

ID/Position/Source/Description	20 Hz	25 Hz	31.5 Hz	40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1.25 kHz	1.6 kHz	2 kHz	2.5 kHz	3.15 kHz	4 kHz	5 kHz	6.3 kHz	8 kHz	10 kHz	12.5 kHz	16 kHz	20 kHz	dBA
1. Handler (at c7m) and loader (at c10-15m) loading container with lead (via ramp to the rear)	63	69	71	73	72	72	78	73	78	73	75	75	76	76	80	75	74	75	72	72	72	71	70	68	65	62	59	55	51	45	38	84
2. Metal being sheared (at c4m) and placed in storage bin (at c3m)	53	60	64	66	68	70	75	63	69	66	64	67	73	70	68	67	69	68	67	67	67	68	68	66	64	61	58	54	50	42	33	78
3. Loader shovelling loose (hard) metals in corner/end bay (at c5m)	63	65	69	75	75	77	84	80	79	76	78	79	78	79	80	80	78	80	78	79	79	78	78	77	76	75	74	73	70	67	61	90
4. Bin of metal being emptied by FLT into bay (at c11m)	56	59	58	67	68	66	72	79	74	71	74	72	73	71	69	68	68	68	68	69	70	72	71	73	71	71	69	67	65	59	54	82
5. Baler (large, baling copper water tanks) (at 4m, with motor at c7m)	60	72	71	72	65	68	67	68	71	70	67	69	71	69	70	69	68	68	66	66	66	65	64	63	63	62	60	58	55	53	49	78
6. Handler loading trailer (from the top) (at 6m to both handler and metal pile, as measured at Position B)	64	66	64	62	65	63	63	63	72	64	66	68	69	70	77	69	70	70	71	72	72	72	71	72	71	70	68	64	58	52	35	83
7. Lorry idling on weighbridge (at c5m, semi-reverberant)	58	68	61	58	63	60	66	66	60	60	65	64	62	63	68	66	64	65	66	66	64	61	61	55	50	47	43	43	44	39	31	75
8. Lorry reversing onto weighbridge with alarm (bleeper) towards mic (at 5m at closest point)	61	65	73	61	62	67	67	67	68	59	58	58	59	58	60	62	59	59	60	63	61	68	59	58	58	62	61	59	56	54	38	74
9. Lorry driving off weighbridge away from mic (at 5m at closest point)	63	63	72	59	59	66	62	63	58	57	58	59	59	59	61	62	60	60	61	63	61	61	59	57	56	57	56	55	51	49	34	72
10. Lorry reversing onto weighbridge without alarm towards mic (at 5m at closest point)	66	71	81	65	64	69	74	67	62	72	62	57	59	57	58	59	59	58	59	58	57	55	55	54	52	52	51	43	39	34	19	69
11. Skip lorry driving forwards onto weighbridge towards mic (at 4m at closest point)	66	64	67	61	65	71	71	71	72	68	64	66	63	65	68	65	65	66	66	66	65	66	65	64	62	60	59	55	51	47	31	76
12. Skip lorry reversing off weighbridge away from mic (at 4m at closest point)	62	69	66	60	66	70	67	68	71	67	63	64	62	62	65	63	64	65	64	65	65	67	64	62	59	57	55	52	47	43	24	75
13. Skip lorry reversing onto weighbridge towards mic (at 4m at closest point)	60	64	63	58	60	63	63	63	65	59	56	65	68	58	63	60	59	62	71	69	67	68	64	61	61	53	50	46	43	39	22	77
14. FLT unloading unusual/ poorly loaded bins etc. plus voices (at c4m, with reversing bleeper)	59	71	68	68	70	64	62	65	67	66	66	65	67	68	68	66	64	64	64	64	63	61	59	57	55	52	50	46	42	37	31	74
15. Lorry trailer being unloaded (from the side) at the front of the site by both FLT's (at c4m) (lorry idling behind, plus aircraft movement)	60	76	70	62	64	70	70	62	61	62	61	60	61	61	63	62	63	63	65	62	59	60	58	55	52	50	47	45	43	39	33	72

Note: The measurements were taken at different distances, whereby the levels (per activity) are not necessarily directly comparable. See the L_{AW} (sound power levels) in **Tables 6.1** and **6.2** for a better means of comparison.

1.

COMPARISON OF ATTENDED MEASUREMENTS

POSITION 1 VS POSITION 2

- 6.6 Prior to the unattended measurements at Position A, measurements (with the same meter) were undertaken at Position 1 (close by), as shown in **Figure 5.1**. Since it was appreciated that, when there was activity to the side of the building (such as use of the weighbridge and unloading), the sound levels to the rear of the building depended on the location (whether screened by the building or not), measurements (using the second meter) were made at Position 2. The results during unloading towards the front of the site are presented in the following table.

Table 6.3: Comparison of sound levels during unloading at positions 1 and 2 (at the rear of the site)

Item	Duration, T (min)	$L_{Aeq,T}$ (dB)	$L_{AF90,T}$ (dB)
Position 1 data	14	55	52
Position 2 data		58	52
Difference		3	0

- 6.7 It can be seen that with the background (L_{AF90}) levels remaining consistent, the ambient (L_{Aeq}) level at Position 2, which had a line of sight down the side of the building, was 3 dB higher than at Position 1. The fact that the difference is only 3 dB is due to the sound from the unloading not being the dominant sound.
- 6.8 Indeed, it was determined from Position A that the sound levels without influence from the site are typically at least 53 dB, but also up to around 55 dB, as is considered applicable to the time of the measurements above. This suggests that the sound level from the unloading alone at Position 2 were also around 55 dB (since $55 \text{ dB} + 55 \text{ dB} = 58 \text{ dB}$). At Position 1, the unloading sound levels are likely to have been at least 10 dB below, and more likely at least 15 dB below, and so no more than 45 dB.
- 6.9 Either way, in context, and bearing in mind these levels are without accounting for the boundary screening, the sound from site is considered to be acceptable in terms of the neighbouring residential amenity.

POSITION 1 VS ACTIVITY MEASUREMENTS

- 6.10 A similar exercise is carried out for the activity measurements. The equivalent data from Position 1 has been determined for the same periods as the activity measurements (during the first site visit), but where, in this instance, the background sound levels are of no relevance.

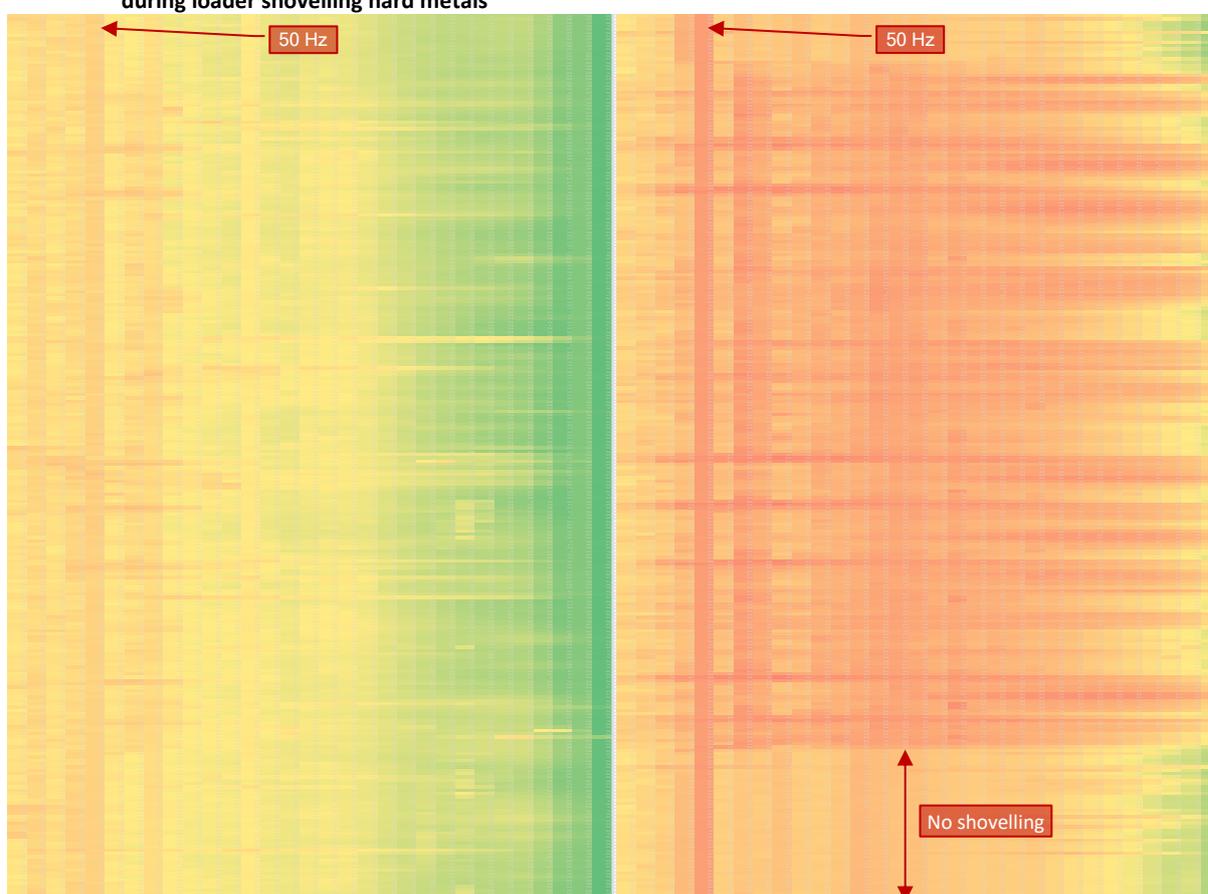
Table 6.4: Comparison of Position 1 and activity measurement sound levels

Activity	Duration, T (min)	Position 1 $L_{Aeq,T}$ (dB)	Activity $L_{Aeq,T}$ (dB)	Diff. (dB)
Metal being sheared (at 4m) and placed in storage bin (at 3m)	04:29	55	78	23
Lorry idling on weighbridge (at 5m, semi-reverberant)	06:01	54	75	21
Loader shovelling loose (hard) metal in corner/end bay	02:05	56	90	34
Between break in loader shovelling	03:24	54	74	20
FLT unloading unusual/poorly loaded bins etc. plus voices (at 4m, with reversing bleeper)	01:46	53	74	21
Bin of metal being emptied by FLT into bay (at 11m)	09:05	55	82	27

- 6.11 It can be seen that the Position 1 levels range from 53 to 56 dB. As per the subsection above, these are in keeping with the typical (non-site) sound levels, confirming that there is little, if any, influence on the measured sound levels by the activities on site (at least behind the site building).
- 6.12 The highest level of 56 dB can be seen to coincide with the loudest activity, which was also the closest activity (within the building). It could be said that this shows an influence from the activity, but a small one.

- 6.13 These two results could be taken to provide an indication of the level difference between the inside and outside sound level, and thus the sound insulation performance of the building envelope. The difference being 34 dB. This, in itself, is a reasonably high level for a relatively thin/light-weight structure, but where, on account of the influence from the non-site external sound levels, the actual performance is likely to be higher. This good level of sound insulation is considered to be due to additional insulation type panels applied to the inside of the end wall of the building, together with the heavy-weight/thick steel sheets that make up the sides and backs of the storage bays, with there being an air gap in front of the end wall.
- 6.14 In addition to the single-figure dBA levels presented above, a further way to view the data is in terms of the sound levels per frequency band. For the noisiest activity of the loader shovelling the hard metals, the unweighted (linear) sound levels per second and per one-third octave-band between 20 Hz and 20 kHz (the range of good human hearing) for the inside and outside positions are represented in the figure below. The figure has been generated by condition formatting the values in the same way as adopted above.

Figure 6.1: Condition formatted outside (Position 1) and inside sound levels every second per 1/3 OB (20 Hz to 20 kHz) during loader shovelling hard metals



- 6.15 It can be seen that whilst there is some indication of the inside sound level (right) influencing the outside sound level (left), primarily at the lower frequencies, it is pretty subtle. The sound levels/the colours of the outside data (left) are largely the same when there was no shovelling occurring. Of particular note, it can be seen that the levels at 50 Hz remain the same. This (low) frequency band is often associated with electricity. There were also times when levels at the 40 Hz band were also prominent. The source(s) were not identified during the survey, with levels varying during the unattended survey, but where it should be borne in mind that the levels are unweighted. The A-weighting corrections (to represent human hearing sensitivity) at 40 Hz and 50 Hz are -35 dB and -30 dB, which are large amounts. The corrections at 500 Hz and 1 kHz, for example, are 3 dB and 0 dB, respectively. In other words, whilst levels at the 50 Hz frequency band stand out in the figure above, together with other low-frequency bands at times, this is not to say that they are significant.

7. NOISE IMPACT ASSESSMENT

7.1 Given that it was possible to witness the activities in proximity to the nearest receptors, and where it is the author's experienced opinion that an adverse noise impact is highly unlikely, a full assessment (which would require acoustic modelling) is considered unnecessary. The following is provided as further justification of the author's opinion.

MAIN/INTERNAL ACTIVITIES

- 7.2 The main activities are located within the building, which largely contains the sound. Only during the loudest moments of the loudest activities, which occur infrequently in terms of the daily activities, was sound just audible at the rear of the building. And whilst the 3 m tall boundary fence may not render all such sound inaudible (on the resident-side), the level of sound was not considered to be significant in any case.
- 7.3 Indeed, when looking at the $L_{Aeq,1h}$ levels inside and outside the building presented in **Tables 5.3** and **5.4**, it happens that the loudest level recorded inside (notably so) corresponds with the lowest level measured outside hours during the hours of operation. Similarly, it is shown at the end of **Section 6** that there is little difference, if any, between the outside sound levels with and without the loader shovelling the loose (hard) metals just inside the building (with an indoor activity sound level of 90 dB $L_{Aeq,2min}$). This is a combination of the good sound insulation performance of the building and the level of sound from other sources in the wider area.
- 7.4 Based on the indoor and outdoor measurements, the sound insulation is estimated to be at least 34 dBA. Based on the highest indoor level of 84 dB (as per **Tables 5.4** and **6.1**), the resultant level outside would be no more than 50 dB ($L_{Aeq,1h}$). Typically, however, levels inside the building are in region of 73 dB, which is equivalent to no more than 39 dB outside. Given the additional distance and screening to the nearest receptors, the equivalent levels would be somewhat lower, whilst bearing in mind the degree of sound insulation is considered an underestimation.
- 7.5 As per **paragraph 5.35**, the typically background and ambient sound levels are considered to be 48 dB ($L_{AF90,15min}$) and 53 dB ($L_{Aeq,1h}$). It is to be expected, therefore, that even the very worst case sound levels at the properties would be below both these values, with levels more typically well below. And whilst any audible sound may be subject to a character correction (as per the **BS 4142** methodology), a small correction, as most is considered to apply, since the sound would be barely audible, and experienced within a variable and characterful soundscape.
- 7.6 In conclusion, it is considered that the equivalent worst case rating levels would be below the background sound levels typically, whereby there would be no more than a low impact in this (worst case) regard. In practice, given the higher ambient sound levels, and the nature of the location and soundscape, it is considered that there would be no impact.
- 7.7 In terms of the conditions more commonly, the rating levels would be well below the background sound levels, whereby no impact is expected.

OTHER/EXTERNAL ACTIVITIES

- 7.8 Following the internal activities in terms of frequency of occurrence are the use of the weighbridge and the external loading and unloading activities. The use of the weighbridge is only of interest since it is located outside the building, and the closest source of regular activity to the properties (albeit still remote and screened from the properties). Whilst the lorries either reverse onto the weighbridge or off of the weighbridge, with some use of reversing alarms. Either way, however, events are relatively brief, with use reasonably limited during the day. Whilst, therefore, the reversing alarms are audible at the rear of the site, they would be less so once screened by the boundary screening, and only for a brief period. Typically no more than 60 seconds per hour.
- 7.9 As per **Table 6.2**, the highest weighbridge-related sound power level is estimated to be 97 dB. Based on a distance of 48 m to the nearest property, a reduction of -10 dB from the boundary fence, and an event duration of 60 seconds (per hour), the resultant event sound level would be 45 dB ($L_{Aeq,1min}$), but where the equivalent level for the one-hour assessment period would be 28 dB ($L_{Aeq,1h}$).

- 7.10 Such a level is well below the typical background sound level of 48 dB, and whilst the sound may be subject to a character correction, no such correction would change the outcome.
- 7.11 In terms of the unloading activities, whilst louder at times and over longer periods, they occur further away from the properties (and also screened by the on-site building in terms of all but the nearest property).
- 7.12 As per **Table 6.2**, the highest unloading-related sound power level is estimated to be 94 dB. This is actually lower than the highest weighbridge-related sound power level, which is because the forklift trucks move between the lorry and the building, meaning they are not present for all of the time. Based on a distance of 85 m to the nearest property, a reduction of -10 dB from the boundary fence, and an event duration of 30 minutes (per hour), the resultant event sound level would be 37 dB ($L_{Aeq,1min}$), with the equivalent level for the one-hour assessment period would be 34 dB ($L_{Aeq,1h}$) (which is more than for the weighbridge scenario due to the longer duration of occurrence).
- 7.13 Again, such a level is well below the typical background sound level of 48 dB, and where no character correction is likely to be applicable.
- 7.14 It should be noted that in **paragraph 6.8** it was indicated that the sound level from the unloading at attended Position 2 (in line with the unloading) was no more than 55 dB. The equivalent level using the above approach is 50 dB. The difference is expected to be due to a combination of the higher value being an overestimation and based on a shorter period of monitoring, but where, in practice, the measured level at the rear of the site might be more subject to reflected sound. Even if accounting for this difference, however, the resultant sound level at the nearest property (i.e. 39 dB) is still well below the background sound level.
- 7.15 Lastly, there are the activities at the rear of the site, but which are both brief and seldom, whereby, more-or-less regardless of level, they should not represent a risk of noise impact.

FINAL APPRAISAL

- 7.16 Whilst the occasional sounds from the site may well be audible at the nearest properties, this is likely to be barely so, and thus, in context, unlikely to be significant. It is considered, therefore, that the controlled operation of the site should not result in an adverse noise impact.
- 7.17 Based on the wording in the **NPPF's PPG-N** (see **Table B.1 of Appendix B**), since the sound is not expected to result in a need to speak more loudly, for example, and in the absence of disturbance at night, it is considered that there should be **No Observed Adverse Effect**, whereby "Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response."
- 7.18 Accordingly, no specific measures are required necessarily, and it is considered that the operation of the site is in keeping with national noise policy.
- 7.19 Notwithstanding this, together with a separate Noise Management Plan, Noise Management Controls are presented as **Section 8**, in order to assist with keeping operational sound levels to a practicable minimum.

UNCERTAINTY

- 7.20 In all assessments, it is good practice to consider uncertainty, which can arise from a number of different aspects of an assessment. There is a degree of uncertainty associated with: the instrumentation itself; the use of instrumentation; the source data; the sound propagation model, where applicable; and, of course, the subjective response of recipients.
- 7.21 In terms of the measured sound levels, uncertainty due to instrumentation error has been kept to a minimum by the use of the highest standard of field-based instrumentation, and by ensuring that all instrumentation is calibrated before and after each measurement period and is within accepted calibration intervals.
- 7.22 In terms of the baseline data, the management of uncertainty has included carrying out the survey over a number of days, being mindful of the weather conditions, and clearly presenting and reviewing the data.

- 7.23 Regarding the assessment, this has been based on years of experience, with various means of justification provided. Whilst it is a limitation that measurements or listening were not conducted immediately outside the properties, this is justified and also often the case.
- 7.24 On the basis of the above, therefore, whilst the magnitude of uncertainty cannot be quantitatively defined, it is considered that sufficient measures have been taken to minimise this to an acceptable degree.

8. BEST AVAILABLE TECHNIQUES (BAT)

- 8.1 At a surface level, with the use of modern plant, and with activities seemingly being well-controlled during the site visits, not to mention with the majority of activities occurring within a building, it would appear that the BAT approach is being followed. Whilst it should be borne in mind that the site's operational hours avoid evenings and weekends.
- 8.2 In terms of site layout, it is arguably a negative feature that the vehicles need to reverse onto the weighbridge, thus evoking reversing alarms where these are used, rather than being able to manoeuvre round without reversing. However, there isn't the space available in order to change this, whilst it generally makes more sense for the weighbridge to be outside than taking up space inside. At least the weighbridge is generally away from the nearest receptors, screened by the boundary fence in terms of the very closest property, and further screened by the site building in terms of the other properties.
- 8.3 In terms of the internal layout, it is arguably less logical to have one of the loudest parts of the building at the end nearest the properties. In practice, however, the inevitable reverberant nature of the building means that it matters less where activities occur in terms of the overall sound levels. In any case, the sound insulation would seem to be sufficient.
- 8.4 Accordingly, no specific measures are proposed, but where general management control measures are presented within the separate Noise Management Plan in order to keep sound emissions to a practicable minimum.

9. CONCLUSION AND NEXT STEPS

- 9.1 As far as the author has been able to determine, the site is adopting BAT and operating appropriately with respect to sound emissions, and where there is no reason to suspect this won't be the case in the future.
- 9.2 Furthermore, for the vast majority of the time, it would appear the site is inaudible at the nearest dwellings, and only briefly and barely audible on occasion. The author sees no reason why this would change significantly based on the application.
- 9.3 The author does not believe that, especially in context, the resultant sounds and associated sound levels should result in a significant noise impact. Indeed, in terms of the wording in the NPPF's PPG-N (see **Table B.1 of Appendix B**), it is considered that there should be **No Observed Adverse Effect**, whereby "Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life."
- 9.4 In light of the above, no specific steps are recommended by the author, but where, in any case, the site will be operated based on the separate Noise Management Plan in order to keep sound emissions to a practicable minimum.
- 9.5 Accordingly, it is considered that noise should not be a barrier to the permit being granted as proposed.

APPENDIX A: GLOSSARY

Sound can be measured by a sound level meter or other measuring system. Noise is related to a human response, and is routinely described as unwanted sound, or sound that is considered undesirable or disruptive.⁴ Care has been taken in this document to use the most relevant of these terms (whereby 'sound' is used predominantly); however, in most reference documents, and, indeed, generally, 'sound' and 'noise' are used interchangeably. Consequently, just because the term 'noise' is used, doesn't necessarily mean a negative effect exists or will occur, and the context of the accompanying text should be taken into account.

Normal human hearing is able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble), and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain).

The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify sound in a manner that approximates the response of the human ear, a weighting mechanism is used, which reduces the importance of lower and higher frequencies in a similar manner to human hearing.

The weighting mechanism that best corresponds to the response of the human ear (though not necessarily perfectly) is the 'A'-weighting scale. This is widely used for environmental sound measurement, and the levels are denoted as dBA, dB(A) or L_{Aeq} , L_{Amax} etc. according to the metric being measured or determined (see the Definitions below).

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dBA increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dBA is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. Where other changes occur (associated with the change in sound level), such as additional vehicle movements on a road, which can be seen, then these may result in changes in sound level being more noticeable than they might otherwise be.

Further to such visual clues, and any other non-acoustical factors that affect people's response (such as personal characteristics, and social, residential or environmental factors), the subjective response to a sound is dependent not only upon the sound pressure level and component frequencies, but also its intermittency. Consequently, various metrics have been developed to try and correlate people's attitudes to different sounds with the sound level and its fluctuations. The metrics used in this document, as per the relevant guidance, are defined below.

- ✦ Airborne sound: Sound that reaches the point of interest by propagation through air.
- ✦ Ambient sound: Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far.
- ✦ A-weighting, dB(A): The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
- ✦ Background sound: Underlying level of sound over a period, T, which might in part be an indication of relative quietness at a given location.
- ✦ BAT (best available techniques). Means the available techniques that are the best for preventing or minimising emissions and impacts on the environment. The European Commission (EC) produces Best Available Technique reference documents or BREF notes. They contain BAT for some installations. The Environment Agency (EA) see BAT as equivalent to the term 'appropriate measures', whilst it could also be seen as equivalent to best practicable means (BPM), defined in Part III of the **Environmental Protection Act 1990** as: "'Practicable' means reasonably practicable in terms of local conditions/circumstances, the current state of technical knowledge, and financial implications."
- ✦ Calibration: The measurement system/ chain should be periodically calibrated, within a laboratory, against traceable calibration instrumentation, to either National Standards or as UKAS-Accredited, as required. The

⁴ Taken from the Foreword to BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*.

calibration of the system should also be checked in the field using a portable calibrator before and after each short term measurements, and periodically for longer term monitoring.

- ✦ **Class 1:** The Class of a sound level meter describes its accuracy as defined by the relevant international standards – Class 1 is more accurate than Class 2. The older standard **IEC 60651** referred to the grade as "Type", whereas the new standard **IEC 61672** refers to it as the "Class". The most accurate meters used in the field (as opposed to a laboratory) are Class 1. Class 2 meters can be used in some instances; however, Chris Wood Acoustics use Class 1 meters by default, as required by **BS 4142**, for example.
- ✦ **Context:** The circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood. When considering context, pertinent factors include: the absolute level of sound; the character and level of the residual sound compared to the character and level of the specific sound; evidence on human response to the sound; and the sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.
- ✦ **Decibel (dB):** A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds (s_1 and s_2) is given by $20 \log_{10} (s_1/s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is $20 \mu\text{Pa}$.
- ✦ **Dwelling:** A building used for living purposes. A mobile home used for permanent living should be included in an assessment. If calculations are being conducted for compensation purposes, then some mobile homes are dealt with under the Highways Noise Payments and Moveable Homes Regulations.
- ✦ **EA (Environment Agency):** The EA is an executive non-departmental public body, sponsored by the Department for Environment, Food & Rural Affairs (Defra). Within England, it is responsible for: regulating major industry and waste; treatment of contaminated land; water quality and resources; fisheries; inland river, estuary and harbour navigations; conservation and ecology; and managing the risk of flooding from main rivers, reservoirs, estuaries and the sea.
- ✦ **Façade/ Façade Level:** At a distance of 1 m in front of a large sound reflecting object such as a building façade. According to **BS 8233:2014**, "Façade level measurements of L_{pA} are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the façade." The Calculation of Road Traffic Noise (1988) uses 2.5 dB, whilst **BS 5228-1:2009+A1:2014** recommends 3 dB. Owing to the latter examples, together with other historical documents, it is more usual to apply 3 dB.
- ✦ **Fast time-weighting (F):** Averaging time used in sound level meters. Defined in BS EN 61672-2:2013 Electroacoustics. Sound level meters. Pattern evaluation tests.
- ✦ **Hertz (Hz):** The unit of Frequency or Pitch of a sound. One hertz equals one cycle per second. 1 kHz = 1000 Hz, 2 kHz = 2000 Hz, etc.
- ✦ **IOA:** The Institute of Acoustics is the UK's professional body for those working in acoustics, noise and vibration. It was formed in 1974 from the amalgamation of the Acoustics Group of the Institute of Physics and the British Acoustical Society (a daughter society of the Institution of Mechanical Engineers). It is a nominated body of the Engineering Council, offering registration at Chartered and Incorporated Engineer levels.
- ✦ **$L_{AF90,T}$:** The A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time fast time-weighting (F). Generally used to describe the 'background' sound conditions.
- ✦ **L_{AFmax} :** The maximum A-weighted sound pressure level during a given time period. L_{max} is sometimes used for the assessment of occasional loud sounds, which may have little effect on the overall L_{eq} noise level, but could still affect the sound environment. Unless described otherwise, it is measured using the fast time-weighting (F).

- ✦ $L_{eq,T}$: A sound level index called the equivalent continuous sound level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded. Where the value is A-weighted, it will be presented as ' $L_{Aeq,T}$ ' or ' $dBA_{Leq,T}$ ', otherwise it should be an un-weighted (or linear) value.
- ✦ Octave/ octave band: Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit. E.g. the 1000 Hz octave band contains sound energy at all frequencies from 707 to 1414 Hz.
- ✦ Point source: A sound source whose dimensions are small compared to the propagation distances involved. Due to the Inverse Square Law, the sound level pressure level decreases by 6 dB every time the distance between the measurement point and the source is doubled.
- ✦ Rating Level, $L_{Ar,Tr}$: The equivalent continuous A-weighted sound pressure level ($L_{Aeq,T}$, see also Specific Level) of the sound, plus any adjustment for the characteristic features of the sound.
- ✦ Residual Sound: ambient sound remaining at the assessment location when the specific sound source is suppressed (or absent) to such a degree that it does not contribute to the ambient sound.
- ✦ Sound power level, L_W : Sound power measured on a decibel scale, relative to a reference value of 10 12 W.
- ✦ Sound pressure level (sound level), L_p : The sound level is the sound pressure relative to a standard reference pressure of 20 μPa (20×10^{-6} Pascals) on a decibel scale.
- ✦ Specific sound level, $L_s = L_{Aeq,Tr}$: Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr .
- ✦ Specific sound source: Sound source being assessed.

APPENDIX B: NATIONAL NOISE POLICY

B.1 NATIONAL POLICY

The national policy of relevance comprises the Noise Policy Statement for England (NPSE, 2010) and the online National Planning Policy Framework (NPPF, regularly updated) and its associated planning practice guidance on “Noise” (also regularly updated). The guidance is necessarily generic and primarily geared towards local authorities preparing their own policies and associated guidance. The documents are described below.

B.1.1 Noise Policy Statement for England (NPSE, 2010)

The **NPSE** is the Government’s overarching statement on noise policy for England, and applies to all forms of noise other than occupational noise, setting out the long-term vision of Government noise policy, which is to:

“Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.”

Which is supported by the following noise policy aims:

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

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

When discussing the meaning of “significant adverse” and “adverse” within an “**Explanatory Note**”, the **NPSE** states:

“There are two established concepts from toxicology that are currently being applied to noise impacts for example, by the World Health Organisation. They are

“NOEL – No Observed Effect Level - 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 - This is the level above which adverse effects on health and quality of life can be detected.”

To which the **NPSE** added the following related concept:

“SOAEL – Significant Observed Adverse Effect Level - This is the level above which significant adverse effects on health and quality of life occur.”

The **Explanatory Note** continues:

“It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”

The **NPSE** concludes by explaining in a little more detail how the LOAEL and SOAEL relate to the three aims listed above. Logically, it starts with the aim of avoiding significant adverse effects on health and quality of life, then addresses the situation where the noise impact falls between the LOAEL and the SOAEL, when “all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development.” The final aim envisages proactive management of noise to improve health and quality of life, again taking into account the guiding principles of sustainable development.

B.1.2 National Planning Policy Framework (NPPF, 2024)

First published in 2012, and most recently updated in December 2024, the **NPPF** sets out the Government's planning policies for England, and how these are expected to be applied. Noise is referenced within the **NPPF** as follows. These are effectively the **NPPF's** policies on noise.

"187. Planning policies and decisions should contribute to and enhance the natural and local environments by:

"...e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans..."

"198. 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:

"a) 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 life⁷²..."

Reference number 72 of the above quotation points to the **Explanatory Note** to the **NPSE** (see above).

The following policy is also relevant to noise.

"200. 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."

As mentioned above, the Government has published accompanying web-based planning guidance for a number of categories, including noise (see below).

B.1.3 NPPF Planning Practice Guidance, Noise (PPG-N, 2019)

Following initial release in 2014, the **planning practice guidance** now forms part of the **NPPF**, referred to as "relevant planning practice guidance", which includes guidance on the category of "Noise". The guidance is often referred to as **PPG-Noise**, **PPG-N** or **PPG(N)**.

In keeping with the **NPSE** and **NPPF**, no values (in dB) are presented; however, plenty of guidance is provided as to the issues to consider in assessing noise and determining suitable thresholds. Whilst, in keeping with this report, reference is made to **BS 8233**.

A "noise exposure hierarchy table" is provided, which summarises the noise exposure hierarchy based on the likely average response of those affected, and is reproduced below. It includes "examples of outcomes" relevant to the NOEL, LOAEL and SOAEL effect thresholds described in the **NPSE**. These outcomes are in descriptive form; there is no numerical definition of the NOEL, LOAEL and SOAEL.

Table B.1: Noise exposure hierarchy table (as per PPG-N)

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

It is left to other guidance documents (e.g. [BS 4142](#) and [BS 8233](#)) and professional opinion to determine thresholds where required.

APPENDIX C: CALIBRATION CERTIFICATES

SLM1

CALIBRATION CERTIFICATE

Issued By AcSoft Limited Calibration Laboratory

Date Of Issue: 25-07-2025

Certificate No: 1512917-1

Calibrated By: W. Jay

Approved By: W. Jay



CUSTOMER

Chris Wood Acoustics
31 Kedleston Drive
Orpington
Kent
BR5 2DP

INSTRUMENT DETAILS

Manufacturer: SVANTEK
Model: SV971A
Serial No.: 121136
Firmware Version: 1.12.2
Description: Sound Level Meter
Performance Class: 1
Type Approved to IEC 61672-1:2013: No
(If Yes, there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013)

SENSOR DETAILS

Manufacturer:	ACO	SVANTEK
Model:	7152	SV18A
Serial No.:	84699	113784
Description:	Microphone	Preamplifier

P/O NUMBER

N/A

DATE RECEIVED

24-07-2025

DATE CALIBRATED

25-07-2025

CALIBRATION RESULTS

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class Y specifications in IEC 61672-1:2013 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

REPORTED RESULTS

The results contained in this Certificate refer only to the measurements made at the time of test for the instrument detailed above. These results do not reflect the instrument's ability to maintain calibration.

Page 1 of 8

This calibration was performed by AcSoft Ltd, 11 Abbey Court, Fraser Road,
Priory Business Park, Bedford, MK44 3WH
T: 01234 639550 W: www.acsoft.co.uk E: sales@acsoft.co.uk

(AP 12/05/2014 Issue No. 5)

Note: First page presented only for brevity

SLM2

CALIBRATION CERTIFICATE

Issued By AcSoft Limited Calibration Laboratory

Date Of Issue: 25-07-2025

Certificate No: 1512917-2

Calibrated By: W. Jay

Approved By: W. Jay



CUSTOMER

Chris Wood Acoustics
31 Kedleston Drive
Orpington
Kent
BR5 2DP

INSTRUMENT DETAILS

Manufacturer: SVANTEK
Model: SV971A
Serial No.: 131651
Firmware Version: 112.2
Description: Sound Level Meter
Performance Class: 1
Type Approved to IEC 61672-1:2013: No
(If Yes, there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013)

SENSOR DETAILS

Manufacturer:	ACO	SVANTEK
Model:	7152	SV18A
Serial No.:	85537	139344
Description:	Microphone	Preamplifier

P/O NUMBER

N/A

DATE RECEIVED

24-07-2025

DATE CALIBRATED

25-07-2025

CALIBRATION RESULTS

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class Y specifications in IEC 61672-1:2013 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

REPORTED RESULTS

The results contained in this Certificate refer only to the measurements made at the time of test for the instrument detailed above. These results do not reflect the instrument's ability to maintain calibration.

Page 1 of 8

This calibration was performed by AcSoft Ltd, 11 Abbey Court, Fraser Road,
Priory Business Park, Bedford, MK44 3WH
T: 01234 639550 W: www.acsoft.co.uk E: sales@acsoft.co.uk

(AP 12/05/2024 Issue No. 5)

Note: First page presented only for brevity

Calibrator

CALIBRATION CERTIFICATE

Issued By AcSoft Limited Calibration Laboratory
Date Of Issue: 30-06-2025 **Certificate No:** 1512700-1
Calibrated By: W. Jay
Approved By: W. Jay



CALIBRATION CERTIFICATE

Issued By AcSoft Limited Calibration Laboratory
Date Of Issue: 30-06-2025 **Certificate No:** 1512700-1



CUSTOMER
 Chris Wood Acoustics
 31 Kedleston Drive
 Orpington
 Kent
 BR5 2DP

INSTRUMENT DETAILS
Manufacturer: SVANTEK
Model: SV33B
Serial No.: 140764
Description: Acoustic Calibrator accuracy class 1 with nominal level of 114 dB, and nominal frequency of 1000 Hz

P/O NUMBER N/A
DATE RECEIVED 27-06-2025
DATE CALIBRATED 30-06-2025

ENVIRONMENTAL CONDITIONS
Temperature: 19.7 °C
Humidity: 36 %rh
Pressure: 101.6 kPa

CALIBRATION RESULTS The calibrator submitted for testing has successfully completed the Periodic tests of IEC 60942:2003 (BS EN 60942:2003) (Annex B), for class 1 sound calibrators, for the environmental conditions under which the tests were performed.

REPORTED RESULTS The results contained in this Certificate refer only to the measurements made at the time of test for the instrument detailed above. These results do not reflect the instrument's ability to maintain calibration.

MEASUREMENT TRACEABILITY

The instrument under test was calibrated using the following equipment:
 Svantek SV30A Acoustic Calibrator, ACS023, Certificate No. 06397/1
 GRAS 40AG Reference Microphone, ACS009, Certificate No. 06448/2
 LAB-EL LB-706B Thermo-Barometer, ACS029, Certificate No. 1148624

Page 1 of 2

This calibration was performed by AcSoft Ltd, 11 Abbey Court, Fraser Road,
 Priory Business Park, Bedford, MK44 3WH
 T: 01234 639550 W: www.acsoft.co.uk E: sales@acsoft.co.uk

MP 15/09/2024 Issue No. 43

NOTES

1. The information appearing on this certificate has been compiled specifically for this instrument. This calibration certificate is produced with traceable and advanced equipment which permit comprehensive quality assurance verification of all data supplied herein.
2. The measurements in this document are traceable to GUM (Central Office of Measures), Poland
3. This calibration certificate shall not be reproduced except in full, without written permission from AcSoft Ltd.

CALIBRATION RESULTS ARE AS FOLLOWS:

SPL

Measured Level dB	Deviation From Nominal dB	Uncertainty dB	Tolerance (dB)	
			class 1	class 2
114.04	0.04	0.15	±0.25	±0.4

Frequency

Measured Frequency Hz	Deviation From Nominal Hz	Uncertainty Hz	Tolerance (%)	
			class 1	class 2
999.99	-0.01	0.1	±0.7 (±7Hz)	±1.7 (±17Hz)

THD+N

Measured Distortion %	Uncertainty %	Tolerance (%)	
		class 1	class 2
0.37	0.1	2.5	3.0

Page 2 of 2

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 T: 01234 639550 W: www.acsoft.co.uk E: sales@acsoft.co.uk

MP 15/09/2024 Issue No. 43

APPENDIX D: UNATTENDED SURVEY RESULTS

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
05/11/2025 14:30	63	53	51			
05/11/2025 14:45	64	53	51	84	63	42
05/11/2025 15:00	67	55	51	98	76	65
05/11/2025 15:15	71	53	49	95	74	68
05/11/2025 15:30	82	54	48	98	75	68
05/11/2025 15:45	69	50	48	85	70	67
05/11/2025 16:00	69	51	49	91	71	54
05/11/2025 16:15	81	55	49	102	77	52
05/11/2025 16:30	78	56	48	104	82	68
05/11/2025 16:45	59	51	49	96	71	35
05/11/2025 17:00	104	76	48	81	55	34
05/11/2025 17:15	66	50	47	61	40	34
05/11/2025 17:30	73	53	48	62	38	34
05/11/2025 17:45	72	52	47	51	36	33
05/11/2025 18:00	89	57	46	60	39	34
05/11/2025 18:15	93	64	45	64	42	34
05/11/2025 18:30	103	67	46	75	45	34
05/11/2025 18:45	103	72	47	76	49	34
05/11/2025 19:00	102	70	46	76	48	34
05/11/2025 19:15	66	50	46	53	37	34
05/11/2025 19:30	68	51	46	53	38	35
05/11/2025 19:45	71	53	47	54	39	34
05/11/2025 20:00	76	52	47	55	38	34
05/11/2025 20:15	74	50	45	64	39	33
05/11/2025 20:30	70	49	46	51	36	32
05/11/2025 20:45	73	51	45	52	36	32
05/11/2025 21:00	76	49	44	53	37	33
05/11/2025 21:15	81	50	45	58	38	34
05/11/2025 21:30	77	51	44	56	36	33
05/11/2025 21:45	73	50	44	62	39	33
05/11/2025 22:00	68	50	45	57	35	32
05/11/2025 22:15	57	47	45	49	35	33
05/11/2025 22:30	58	47	45	46	35	34
05/11/2025 22:45	64	47	44	54	35	33
05/11/2025 23:00	66	49	45	48	36	33
05/11/2025 23:15	72	53	46	52	35	33
05/11/2025 23:30	64	47	44	50	35	33
05/11/2025 23:45	63	47	44	55	35	33
06/11/2025 00:00	59	45	43	51	35	33

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} dB	Pos.A L _{Aeq,15min} dB	Pos.A L _{AF90,15min} dB	Pos.B L _{AFmax} dB	Pos.B L _{Aeq,15min} dB	Pos.B L _{AF90,15min} dB
06/11/2025 00:15	53	43	42	44	36	34
06/11/2025 00:30	63	42	38	50	34	33
06/11/2025 00:45	53	43	41	44	34	33
06/11/2025 01:00	49	43	42	44	34	33
06/11/2025 01:15	54	43	42	44	34	32
06/11/2025 01:30	54	44	42	43	34	33
06/11/2025 01:45	51	43	41	43	34	32
06/11/2025 02:00	56	44	42	53	34	33
06/11/2025 02:15	54	44	43	42	34	33
06/11/2025 02:30	54	44	42	43	34	32
06/11/2025 02:45	59	45	42	46	33	32
06/11/2025 03:00	62	46	43	47	34	32
06/11/2025 03:15	54	45	43	45	35	33
06/11/2025 03:30	63	46	42	43	34	32
06/11/2025 03:45	56	45	42	45	34	32
06/11/2025 04:00	60	45	42	46	34	32
06/11/2025 04:15	66	49	42	45	34	32
06/11/2025 04:30	55	43	41	44	33	31
06/11/2025 04:45	62	45	41	46	34	32
06/11/2025 05:00	65	46	44	44	35	33
06/11/2025 05:15	59	48	45	47	35	33
06/11/2025 05:30	60	47	44	43	35	33
06/11/2025 05:45	67	47	45	55	35	33
06/11/2025 06:00	61	49	46	45	36	34
06/11/2025 06:15	67	50	45	51	37	35
06/11/2025 06:30	73	50	45	48	37	35
06/11/2025 06:45	72	49	46	60	39	36
06/11/2025 07:00	67	49	45	51	37	35
06/11/2025 07:15	67	50	47	50	37	35
06/11/2025 07:30	66	50	47	56	38	35
06/11/2025 07:45	70	54	48	85	63	36
06/11/2025 08:00	68	50	46	89	67	56
06/11/2025 08:15	66	49	46	86	69	60
06/11/2025 08:30	70	52	47	97	71	59
06/11/2025 08:45	69	50	46	91	75	63
06/11/2025 09:00	79	51	45	94	75	59
06/11/2025 09:15	79	51	45	95	78	56
06/11/2025 09:30	72	50	46	94	74	53
06/11/2025 09:45	85	56	45	98	76	54

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
06/11/2025 10:00	65	48	44	94	75	48
06/11/2025 10:15	77	52	44	60	46	40
06/11/2025 10:30	75	50	46	63	46	40
06/11/2025 10:45	69	50	47	91	72	43
06/11/2025 11:00	65	48	46	88	73	53
06/11/2025 11:15	68	50	43	96	76	55
06/11/2025 11:30	66	46	42	95	73	54
06/11/2025 11:45	81	57	45	101	74	57
06/11/2025 12:00	63	48	45	93	76	69
06/11/2025 12:15	63	48	46	101	84	65
06/11/2025 12:30	67	51	48	104	85	71
06/11/2025 12:45	65	50	48	101	85	69
06/11/2025 13:00	58	49	46	99	74	55
06/11/2025 13:15	65	49	46	98	76	61
06/11/2025 13:30	62	48	46	91	69	41
06/11/2025 13:45	63	49	45	69	47	41
06/11/2025 14:00	72	49	46	90	68	41
06/11/2025 14:15	75	49	44	100	72	48
06/11/2025 14:30	74	51	45	96	73	55
06/11/2025 14:45	74	49	45	94	73	55
06/11/2025 15:00	61	48	46	92	69	49
06/11/2025 15:15	66	48	46	99	74	49
06/11/2025 15:30	77	49	44	94	70	50
06/11/2025 15:45	75	54	45	85	63	51
06/11/2025 16:00	77	52	47	86	68	59
06/11/2025 16:15	70	49	45	89	68	57
06/11/2025 16:30	77	55	44	88	66	39
06/11/2025 16:45	69	49	43	51	36	33
06/11/2025 17:00	58	48	45	54	37	33
06/11/2025 17:15	58	47	44	54	37	34
06/11/2025 17:30	62	47	45	52	35	33
06/11/2025 17:45	70	48	45	57	36	33
06/11/2025 18:00	65	47	43	55	36	33
06/11/2025 18:15	53	45	43	48	36	33
06/11/2025 18:30	59	46	43	50	36	33
06/11/2025 18:45	76	47	43	52	35	33
06/11/2025 19:00	66	46	43	55	36	33
06/11/2025 19:15	59	45	43	46	36	33
06/11/2025 19:30	61	44	43	53	35	32

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
06/11/2025 19:45	73	51	42	50	35	32
06/11/2025 20:00	67	44	42	47	33	31
06/11/2025 20:15	57	44	42	47	34	32
06/11/2025 20:30	53	44	42	50	34	32
06/11/2025 20:45	69	51	42	50	35	32
06/11/2025 21:00	68	54	43	50	37	32
06/11/2025 21:15	64	47	43	51	35	32
06/11/2025 21:30	72	50	42	42	33	32
06/11/2025 21:45	70	45	41	49	34	32
06/11/2025 22:00	54	42	41	40	33	32
06/11/2025 22:15	61	42	41	49	34	32
06/11/2025 22:30	57	41	40	41	33	32
06/11/2025 22:45	45	40	39	42	33	31
06/11/2025 23:00	46	40	39	42	33	32
06/11/2025 23:15	43	39	37	42	33	32
06/11/2025 23:30	48	42	41	48	34	32
06/11/2025 23:45	47	42	40	44	33	32
07/11/2025 00:00	49	42	40	45	34	32
07/11/2025 00:15	52	42	40	43	33	32
07/11/2025 00:30	48	41	39	43	33	31
07/11/2025 00:45	51	41	39	44	33	31
07/11/2025 01:00	51	42	40	45	33	31
07/11/2025 01:15	56	41	39	43	32	31
07/11/2025 01:30	53	42	40	43	34	31
07/11/2025 01:45	57	41	39	44	33	31
07/11/2025 02:00	58	40	36	45	33	31
07/11/2025 02:15	46	38	37	50	33	31
07/11/2025 02:30	48	36	35	50	32	31
07/11/2025 02:45	55	40	36	43	33	31
07/11/2025 03:00	64	47	41	48	34	32
07/11/2025 03:15	70	49	40	44	33	31
07/11/2025 03:30	70	46	40	43	33	31
07/11/2025 03:45	63	46	40	45	33	32
07/11/2025 04:00	59	43	41	47	33	32
07/11/2025 04:15	66	48	42	42	33	31
07/11/2025 04:30	64	48	41	46	34	33
07/11/2025 04:45	62	45	39	45	34	33
07/11/2025 05:00	67	49	41	44	33	31
07/11/2025 05:15	58	45	43	46	34	32

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
07/11/2025 05:30	60	44	42	43	34	32
07/11/2025 05:45	61	44	42	52	35	33
07/11/2025 06:00	62	49	42	49	35	32
07/11/2025 06:15	61	44	41	46	35	33
07/11/2025 06:30	70	48	41	48	35	33
07/11/2025 06:45	73	53	43	63	40	33
07/11/2025 07:00	74	53	44	54	36	34
07/11/2025 07:15	64	50	47	48	39	37
07/11/2025 07:30	67	50	48	44	40	39
07/11/2025 07:45	68	53	49	84	64	39
07/11/2025 08:00	75	53	49	88	61	47
07/11/2025 08:15	73	52	49	102	74	49
07/11/2025 08:30	80	52	48	85	69	56
07/11/2025 08:45	66	50	48	98	69	51
07/11/2025 09:00	59	49	47	91	68	54
07/11/2025 09:15	76	60	48	97	74	62
07/11/2025 09:30	66	51	47	99	77	61
07/11/2025 09:45	72	51	46	96	77	61
07/11/2025 10:00	68	51	48	97	76	41
07/11/2025 10:15	65	51	49	61	46	40
07/11/2025 10:30	63	51	49	86	57	41
07/11/2025 10:45	67	51	48	95	74	61
07/11/2025 11:00	82	53	49	94	75	61
07/11/2025 11:15	86	60	49	94	76	61
07/11/2025 11:30	80	56	50	98	81	63
07/11/2025 11:45	73	53	50	99	80	57
07/11/2025 12:00	61	52	49	98	77	62
07/11/2025 12:15	82	53	49	95	73	61
07/11/2025 12:30	71	51	48	106	86	64
07/11/2025 12:45	69	50	48	98	76	62
07/11/2025 13:00	66	50	48	95	77	67
07/11/2025 13:15	68	51	48	104	84	70
07/11/2025 13:30	74	53	48	95	77	58
07/11/2025 13:45	79	52	47	106	83	64
07/11/2025 14:00	66	51	48	103	86	71
07/11/2025 14:15	65	51	48	100	81	42
07/11/2025 14:30	70	52	48	91	69	39
07/11/2025 14:45	68	53	49	95	64	45
07/11/2025 15:00	83	54	49	97	70	51
07/11/2025 15:15	61	51	49	94	72	54

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
07/11/2025 15:30	71	51	48	82	63	49
07/11/2025 15:45	82	54	48	95	63	50
07/11/2025 16:00	78	55	49	100	75	52
07/11/2025 16:15	76	53	49	95	70	51
07/11/2025 16:30	95	60	48	98	72	46
07/11/2025 16:45	60	50	47	88	61	34
07/11/2025 17:00	60	49	48	57	37	34
07/11/2025 17:15	63	49	46	56	38	33
07/11/2025 17:30	58	47	46	62	37	33
07/11/2025 17:45	80	55	46	74	49	33
07/11/2025 18:00	70	49	46	59	38	33
07/11/2025 18:15	66	49	47	54	37	33
07/11/2025 18:30	76	52	48	59	38	34
07/11/2025 18:45	89	60	47	72	45	33
07/11/2025 19:00	89	60	47	75	46	33
07/11/2025 19:15	76	52	47	60	38	33
07/11/2025 19:30	79	56	47	62	41	34
07/11/2025 19:45	72	53	47	57	37	33
07/11/2025 20:00	73	54	46	61	37	31
07/11/2025 20:15	66	47	45	60	35	32
07/11/2025 20:30	65	47	45	52	35	32
07/11/2025 20:45	58	47	45	54	33	32
07/11/2025 21:00	61	47	45	55	34	32
07/11/2025 21:15	66	46	45	53	34	32
07/11/2025 21:30	55	46	44	46	33	32
07/11/2025 21:45	61	46	45	50	34	32
07/11/2025 22:00	57	45	44	42	33	32
07/11/2025 22:15	56	45	43	44	34	32
07/11/2025 22:30	63	46	43	53	33	32
07/11/2025 22:45	56	45	43	51	34	32
07/11/2025 23:00	50	44	42	42	33	32
07/11/2025 23:15	50	44	42	44	33	32
07/11/2025 23:30	48	43	42	63	35	32
07/11/2025 23:45	49	44	42	54	34	32
08/11/2025 00:00	53	44	43	41	33	32
08/11/2025 00:15	59	44	42	51	34	32
08/11/2025 00:30	53	44	42	52	33	31
08/11/2025 00:45	53	45	43	45	32	31
08/11/2025 01:00	58	44	42	46	33	31
08/11/2025 01:15	56	43	41	43	33	31

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
08/11/2025 01:30	50	42	40	46	33	31
08/11/2025 01:45	46	40	39	45	33	31
08/11/2025 02:00	57	42	39	47	32	31
08/11/2025 02:15	60	43	40	54	33	32
08/11/2025 02:30	60	44	41	49	33	31
08/11/2025 02:45	61	47	41	52	33	31
08/11/2025 03:00	62	46	41	45	34	32
08/11/2025 03:15	62	45	41	47	34	32
08/11/2025 03:30	60	44	40	42	33	32
08/11/2025 03:45	59	45	38	49	34	32
08/11/2025 04:00	60	43	38	50	33	31
08/11/2025 04:15	50	42	40	46	33	32
08/11/2025 04:30	63	45	40	40	33	32
08/11/2025 04:45	60	42	40	63	35	31
08/11/2025 05:00	61	44	39	50	34	31
08/11/2025 05:15	53	41	39	50	33	31
08/11/2025 05:30	62	44	39	42	33	32
08/11/2025 05:45	47	40	38	42	33	31
08/11/2025 06:00	66	46	38	42	34	32
08/11/2025 06:15	75	55	39	41	34	32
08/11/2025 06:30	60	45	39	42	34	32
08/11/2025 06:45	73	48	40	46	36	33
08/11/2025 07:00	68	47	41	51	36	33
08/11/2025 07:15	66	51	42	51	36	33
08/11/2025 07:30	66	50	42	58	36	32
08/11/2025 07:45	74	56	41	47	36	33
08/11/2025 08:00	65	46	41	53	35	33
08/11/2025 08:15	60	46	41	50	35	33
08/11/2025 08:30	58	44	40	54	35	33
08/11/2025 08:45	64	48	40	52	34	32
08/11/2025 09:00	73	51	40	56	37	33
08/11/2025 09:15	71	54	40	60	38	33
08/11/2025 09:30	61	42	40	48	34	33
08/11/2025 09:45	61	45	40	53	35	33
08/11/2025 10:00	68	50	40	52	37	33
08/11/2025 10:15	69	51	41	50	36	33
08/11/2025 10:30	71	52	41	51	37	33
08/11/2025 10:45	72	52	41	51	36	33
08/11/2025 11:00	70	51	42	47	36	33
08/11/2025 11:15	70	54	42	51	38	33

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
08/11/2025 11:30	71	54	41	51	38	33
08/11/2025 11:45	69	53	39	49	37	33
08/11/2025 12:00	62	42	38	61	36	33
08/11/2025 12:15	69	50	38	49	36	32
08/11/2025 12:30	51	41	38	50	34	32
08/11/2025 12:45	55	41	38	50	34	32
08/11/2025 13:00	54	40	37	45	34	32
08/11/2025 13:15	56	40	37	45	34	32
08/11/2025 13:30	64	40	36	45	34	32
08/11/2025 13:45	74	49	38	51	35	32
08/11/2025 14:00	67	44	37	45	33	31
08/11/2025 14:15	69	45	36	51	34	32
08/11/2025 14:30	58	38	34	46	34	31
08/11/2025 14:45	70	45	34	43	33	31
08/11/2025 15:00	64	41	35	44	33	31
08/11/2025 15:15	54	40	35	47	33	31
08/11/2025 15:30	56	41	35	51	33	31
08/11/2025 15:45	57	42	37	51	34	31
08/11/2025 16:00	53	40	37	50	33	31
08/11/2025 16:15	69	46	39	49	34	32
08/11/2025 16:30	71	51	40	56	37	32
08/11/2025 16:45	60	45	41	51	35	32
08/11/2025 17:00	57	45	41	49	34	32
08/11/2025 17:15	65	45	41	48	34	32
08/11/2025 17:30	69	45	42	50	34	32
08/11/2025 17:45	65	45	42	47	34	32
08/11/2025 18:00	58	44	41	44	34	32
08/11/2025 18:15	60	45	42	48	34	33
08/11/2025 18:30	60	44	42	49	35	33
08/11/2025 18:45	59	45	42	48	35	33
08/11/2025 19:00	59	45	43	48	35	33
08/11/2025 19:15	69	47	43	54	36	33
08/11/2025 19:30	63	46	43	52	35	33
08/11/2025 19:45	66	47	44	51	36	34
08/11/2025 20:00	76	49	43	55	36	34
08/11/2025 20:15	74	49	43	52	36	34
08/11/2025 20:30	63	45	43	52	36	34
08/11/2025 20:45	67	47	43	55	36	33
08/11/2025 21:00	64	45	42	50	36	34
08/11/2025 21:15	64	44	42	54	36	33

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
08/11/2025 21:30	52	44	42	46	35	34
08/11/2025 21:45	55	44	42	47	35	34
08/11/2025 22:00	56	44	42	48	34	33
08/11/2025 22:15	51	44	42	48	35	33
08/11/2025 22:30	73	44	41	53	34	33
08/11/2025 22:45	66	44	42	56	36	34
08/11/2025 23:00	61	42	40	47	34	32
08/11/2025 23:15	62	44	41	49	34	32
08/11/2025 23:30	61	42	40	46	34	33
08/11/2025 23:45	47	41	40	49	34	32
09/11/2025 00:00	49	42	40	48	33	31
09/11/2025 00:15	60	42	40	44	33	31
09/11/2025 00:30	69	44	40	56	35	31
09/11/2025 00:45	56	43	41	42	34	31
09/11/2025 01:00	50	42	40	47	33	31
09/11/2025 01:15	56	42	40	46	34	32
09/11/2025 01:30	50	41	39	47	33	31
09/11/2025 01:45	58	42	40	43	33	32
09/11/2025 02:00	59	42	39	44	33	31
09/11/2025 02:15	60	43	40	45	34	32
09/11/2025 02:30	47	42	40	47	34	32
09/11/2025 02:45	51	41	40	43	33	31
09/11/2025 03:00	62	45	39	42	33	31
09/11/2025 03:15	56	43	41	43	33	31
09/11/2025 03:30	64	48	40	53	34	32
09/11/2025 03:45	60	43	40	44	33	32
09/11/2025 04:00	63	45	40	42	33	31
09/11/2025 04:15	62	42	38	41	33	32
09/11/2025 04:30	68	49	39	43	33	32
09/11/2025 04:45	63	45	39	46	33	32
09/11/2025 05:00	71	51	41	46	34	32
09/11/2025 05:15	72	48	41	44	34	31
09/11/2025 05:30	65	45	42	51	34	32
09/11/2025 05:45	51	43	41	44	34	32
09/11/2025 06:00	59	46	42	46	34	32
09/11/2025 06:15	75	51	43	49	34	33
09/11/2025 06:30	74	49	42	52	34	32
09/11/2025 06:45	68	46	42	41	33	31
09/11/2025 07:00	63	45	41	50	33	31
09/11/2025 07:15	62	46	41	44	33	31

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
09/11/2025 07:30	55	45	42	49	34	31
09/11/2025 07:45	72	49	42	42	33	31
09/11/2025 08:00	63	45	41	44	33	31
09/11/2025 08:15	64	45	41	44	33	32
09/11/2025 08:30	65	48	40	51	33	31
09/11/2025 08:45	68	48	40	51	33	30
09/11/2025 09:00	60	45	41	54	34	32
09/11/2025 09:15	55	43	41	53	34	31
09/11/2025 09:30	54	44	42	44	33	32
09/11/2025 09:45	75	47	41	52	35	32
09/11/2025 10:00	58	45	42	50	34	31
09/11/2025 10:15	65	47	42	55	35	32
09/11/2025 10:30	62	47	44	59	35	33
09/11/2025 10:45	56	48	44	55	35	33
09/11/2025 11:00	73	50	44	63	37	33
09/11/2025 11:15	56	47	44	58	35	33
09/11/2025 11:30	63	50	47	45	35	33
09/11/2025 11:45	77	52	46	49	35	33
09/11/2025 12:00	65	50	47	49	35	33
09/11/2025 12:15	61	49	46	48	35	33
09/11/2025 12:30	74	55	46	50	37	32
09/11/2025 12:45	71	52	45	56	37	32
09/11/2025 13:00	59	47	44	47	34	32
09/11/2025 13:15	74	54	45	57	37	33
09/11/2025 13:30	71	54	46	53	38	33
09/11/2025 13:45	57	50	46	49	35	32
09/11/2025 14:00	74	53	47	50	36	33
09/11/2025 14:15	62	50	47	49	35	33
09/11/2025 14:30	72	53	46	54	37	32
09/11/2025 14:45	72	52	47	48	35	33
09/11/2025 15:00	64	50	46	47	34	32
09/11/2025 15:15	73	54	45	54	38	32
09/11/2025 15:30	75	52	45	46	35	32
09/11/2025 15:45	72	50	44	44	34	32
09/11/2025 16:00	71	53	44	51	36	32
09/11/2025 16:15	71	53	43	48	36	32
09/11/2025 16:30	52	46	44	45	34	32
09/11/2025 16:45	67	47	44	45	34	32
09/11/2025 17:00	69	46	43	45	34	32
09/11/2025 17:15	65	46	44	53	35	32

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
09/11/2025 17:30	67	48	45	49	35	32
09/11/2025 17:45	73	47	44	47	34	32
09/11/2025 18:00	63	47	44	47	34	32
09/11/2025 18:15	65	48	45	49	35	32
09/11/2025 18:30	61	46	44	52	34	32
09/11/2025 18:45	63	47	44	47	35	32
09/11/2025 19:00	59	47	45	53	35	32
09/11/2025 19:15	66	47	44	52	34	32
09/11/2025 19:30	81	49	44	59	36	32
09/11/2025 19:45	58	46	44	46	35	33
09/11/2025 20:00	59	46	43	48	35	33
09/11/2025 20:15	62	46	44	51	34	33
09/11/2025 20:30	70	48	44	44	34	33
09/11/2025 20:45	59	47	44	47	35	33
09/11/2025 21:00	68	47	44	52	34	33
09/11/2025 21:15	71	50	44	47	34	33
09/11/2025 21:30	70	47	44	51	35	33
09/11/2025 21:45	53	46	44	39	34	32
09/11/2025 22:00	63	46	43	47	34	32
09/11/2025 22:15	61	47	44	43	34	33
09/11/2025 22:30	67	47	43	41	34	32
09/11/2025 22:45	61	46	44	56	34	33
09/11/2025 23:00	57	46	43	43	34	32
09/11/2025 23:15	59	47	44	43	34	32
09/11/2025 23:30	55	45	42	42	33	31
09/11/2025 23:45	57	45	42	42	33	31
10/11/2025 00:00	53	45	42	43	34	32
10/11/2025 00:15	58	46	43	46	34	32
10/11/2025 00:30	59	46	43	59	33	31
10/11/2025 00:45	53	45	42	51	34	32
10/11/2025 01:00	59	46	43	44	33	32
10/11/2025 01:15	57	44	42	41	33	31
10/11/2025 01:30	54	44	42	41	33	31
10/11/2025 01:45	54	44	42	44	33	31
10/11/2025 02:00	58	45	43	44	34	32
10/11/2025 02:15	57	47	42	46	36	33
10/11/2025 02:30	51	43	42	42	34	33
10/11/2025 02:45	55	46	43	42	34	33
10/11/2025 03:00	57	46	43	46	35	33
10/11/2025 03:15	55	45	42	46	35	33

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
10/11/2025 03:30	57	45	42	45	34	33
10/11/2025 03:45	55	45	42	42	34	32
10/11/2025 04:00	54	46	44	43	34	33
10/11/2025 04:15	55	45	43	43	34	33
10/11/2025 04:30	71	52	44	41	35	33
10/11/2025 04:45	63	49	45	44	35	33
10/11/2025 05:00	56	49	47	42	36	34
10/11/2025 05:15	53	47	45	46	36	33
10/11/2025 05:30	68	48	46	51	36	34
10/11/2025 05:45	62	50	48	43	36	34
10/11/2025 06:00	62	50	48	46	36	34
10/11/2025 06:15	63	51	48	52	36	34
10/11/2025 06:30	69	53	49	56	36	34
10/11/2025 06:45	64	51	49	55	38	34
10/11/2025 07:00	66	51	49	55	41	36
10/11/2025 07:15	67	54	49	64	41	38
10/11/2025 07:30	68	53	49	48	41	39
10/11/2025 07:45	73	52	49	86	63	40
10/11/2025 08:00	71	51	48	92	66	49
10/11/2025 08:15	66	49	47	83	66	60
10/11/2025 08:30	75	56	48	85	66	59
10/11/2025 08:45	72	55	47	99	73	59
10/11/2025 09:00	75	59	49	86	67	61
10/11/2025 09:15	70	52	48	92	70	61
10/11/2025 09:30	68	53	49	99	74	63
10/11/2025 09:45	61	52	49	94	74	63
10/11/2025 10:00	66	52	49	92	73	60
10/11/2025 10:15	68	51	49	85	63	50
10/11/2025 10:30	61	51	49	69	48	40
10/11/2025 10:45	64	51	49	87	67	40
10/11/2025 11:00	65	51	49	95	72	59
10/11/2025 11:15	66	51	49	93	72	59
10/11/2025 11:30	63	51	48	90	71	59
10/11/2025 11:45	60	51	49	93	72	59
10/11/2025 12:00	64	52	49	96	74	57
10/11/2025 12:15	59	51	49	89	76	47
10/11/2025 12:30	63	55	50	96	78	50
10/11/2025 12:45	67	58	51	98	73	54
10/11/2025 13:00	72	63	55	93	75	57
10/11/2025 13:15	68	61	55	96	71	53

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
10/11/2025 13:30	74	62	54	102	76	64
10/11/2025 13:45	68	55	53	93	68	46
10/11/2025 14:00	71	54	50	68	50	42
10/11/2025 14:15	65	51	49	87	66	44
10/11/2025 14:30	73	54	48	102	79	57
10/11/2025 14:45	69	53	48	93	79	61
10/11/2025 15:00	73	56	49	95	81	67
10/11/2025 15:15	71	54	49	94	75	60
10/11/2025 15:30	75	57	49	95	73	61
10/11/2025 15:45	69	54	50	101	72	62
10/11/2025 16:00	79	57	49	98	77	69
10/11/2025 16:15	72	54	49	89	68	60
10/11/2025 16:30	73	57	48	97	75	59
10/11/2025 16:45	63	51	49	92	71	36
10/11/2025 17:00	71	55	49	52	39	35
10/11/2025 17:15	74	58	47	56	40	35
10/11/2025 17:30	73	55	48	54	38	34
10/11/2025 17:45	72	56	47	58	39	34
10/11/2025 18:00	72	57	48	50	39	35
10/11/2025 18:15	72	57	49	56	40	35
10/11/2025 18:30	71	53	47	51	38	35
10/11/2025 18:45	56	49	47	50	36	34
10/11/2025 19:00	72	56	48	49	38	34
10/11/2025 19:15	76	56	46	55	38	34
10/11/2025 19:30	75	58	45	52	38	34
10/11/2025 19:45	73	54	44	50	36	34
10/11/2025 20:00	56	46	44	47	35	33
10/11/2025 20:15	71	53	45	51	37	33
10/11/2025 20:30	72	53	45	49	36	33
10/11/2025 20:45	72	53	44	50	36	33
10/11/2025 21:00	71	55	45	53	38	33
10/11/2025 21:15	58	47	44	42	34	33
10/11/2025 21:30	67	50	43	51	35	33
10/11/2025 21:45	65	46	43	46	34	32
10/11/2025 22:00	58	47	44	50	35	33
10/11/2025 22:15	57	47	44	43	34	33
10/11/2025 22:30	59	47	44	49	34	33
10/11/2025 22:45	57	45	43	45	34	33
10/11/2025 23:00	56	44	43	45	34	33
10/11/2025 23:15	54	44	41	47	35	32

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} dB	Pos.A L _{Aeq,15min} dB	Pos.A L _{AF90,15min} dB	Pos.B L _{AFmax} dB	Pos.B L _{Aeq,15min} dB	Pos.B L _{AF90,15min} dB
10/11/2025 23:30	56	44	41	46	34	32
10/11/2025 23:45	52	44	41	51	34	32
11/11/2025 00:00	52	43	41	50	34	32
11/11/2025 00:15	58	44	42	46	34	32
11/11/2025 00:30	52	45	43	43	34	33
11/11/2025 00:45	56	45	42	44	34	33
11/11/2025 01:00	56	44	42	43	34	33
11/11/2025 01:15	61	46	43	44	34	32
11/11/2025 01:30	56	46	43	48	34	32
11/11/2025 01:45	57	45	42	46	33	31
11/11/2025 02:00	57	45	42	44	34	32
11/11/2025 02:15	55	44	41	44	33	31
11/11/2025 02:30	56	46	43	45	33	32
11/11/2025 02:45	56	46	43	44	33	31
11/11/2025 03:00	55	47	44	41	34	33
11/11/2025 03:15	74	53	45	44	34	33
11/11/2025 03:30	57	47	45	42	34	33
11/11/2025 03:45	57	48	45	44	35	34
11/11/2025 04:00	66	50	45	43	34	33
11/11/2025 04:15	67	51	46	42	34	33
11/11/2025 04:30	53	46	44	46	35	33
11/11/2025 04:45	61	50	48	43	36	34
11/11/2025 05:00	62	51	48	54	36	34
11/11/2025 05:15	54	50	48	42	35	33
11/11/2025 05:30	61	51	49	57	36	34
11/11/2025 05:45	60	51	49	48	36	34
11/11/2025 06:00	66	51	49	50	36	34
11/11/2025 06:15	64	51	49	47	36	34
11/11/2025 06:30	66	52	49	55	37	34
11/11/2025 06:45	72	53	49	57	40	35
11/11/2025 07:00	78	57	51	49	39	36
11/11/2025 07:15	73	55	50	47	39	37
11/11/2025 07:30	74	57	50	50	41	38
11/11/2025 07:45	71	56	51	87	64	39
11/11/2025 08:00	71	57	51	86	62	46
11/11/2025 08:15	77	61	49	85	68	60
11/11/2025 08:30	71	53	48	86	70	59
11/11/2025 08:45	69	53	47	87	70	59
11/11/2025 09:00	70	53	47	85	65	46
11/11/2025 09:15	74	57	47	89	67	47

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
11/11/2025 09:30	72	55	47	85	64	52
11/11/2025 09:45	72	54	49	84	64	49
11/11/2025 10:00	73	55	49	84	65	48
11/11/2025 10:15	72	54	47	98	74	45
11/11/2025 10:30	71	55	49	97	72	41
11/11/2025 10:45	74	51	49	94	75	50
11/11/2025 11:00	72	53	49	91	72	57
11/11/2025 11:15	73	55	49	102	80	62
11/11/2025 11:30	71	51	49	102	79	70
11/11/2025 11:45	70	53	48	99	77	69
11/11/2025 12:00	73	55	50	99	74	55
11/11/2025 12:15	74	56	50	98	76	58
11/11/2025 12:30	68	54	50	100	78	63
11/11/2025 12:45	72	54	49	99	71	61
11/11/2025 13:00	66	52	50	96	75	54
11/11/2025 13:15	63	51	49	82	63	49
11/11/2025 13:30	60	51	49	98	79	54
11/11/2025 13:45	72	55	50	92	81	76
11/11/2025 14:00	73	55	51	98	82	66
11/11/2025 14:15	75	54	50	101	83	74
11/11/2025 14:30	68	53	50	89	72	51
11/11/2025 14:45	74	54	50	87	72	47
11/11/2025 15:00	72	56	51	69	52	46
11/11/2025 15:15	87	57	51	88	66	49
11/11/2025 15:30	83	58	51	96	72	62
11/11/2025 15:45	73	55	51	83	66	61
11/11/2025 16:00	73	55	51	97	78	63
11/11/2025 16:15	75	56	51	94	76	62
11/11/2025 16:30	72	56	51	96	74	60
11/11/2025 16:45	68	53	50	84	66	35
11/11/2025 17:00	74	57	50	57	41	35
11/11/2025 17:15	76	55	50	55	38	35
11/11/2025 17:30	71	56	50	60	39	35
11/11/2025 17:45	74	56	50	52	38	35
11/11/2025 18:00	66	54	50	51	38	34
11/11/2025 18:15	73	58	50	54	41	35
11/11/2025 18:30	75	57	50	56	39	34
11/11/2025 18:45	61	52	50	51	36	34
11/11/2025 19:00	59	52	50	51	37	35
11/11/2025 19:15	59	52	50	51	38	34

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
11/11/2025 19:30	57	51	49	51	36	34
11/11/2025 19:45	60	50	48	52	36	34
11/11/2025 20:00	59	50	48	48	36	34
11/11/2025 20:15	56	50	48	48	35	34
11/11/2025 20:30	74	53	47	57	37	33
11/11/2025 20:45	75	53	48	51	36	33
11/11/2025 21:00	56	50	48	45	35	33
11/11/2025 21:15	64	50	48	45	35	33
11/11/2025 21:30	58	49	47	47	35	33
11/11/2025 21:45	58	49	48	40	34	33
11/11/2025 22:00	67	50	48	54	36	34
11/11/2025 22:15	60	50	47	47	36	34
11/11/2025 22:30	58	48	46	44	34	33
11/11/2025 22:45	61	49	46	47	35	33
11/11/2025 23:00	55	49	46	55	35	33
11/11/2025 23:15	72	51	45	43	35	33
11/11/2025 23:30	63	47	44	46	34	32
11/11/2025 23:45	56	46	44	45	34	31
12/11/2025 00:00	59	47	45	44	34	32
12/11/2025 00:15	59	47	45	44	34	32
12/11/2025 00:30	59	47	45	42	34	32
12/11/2025 00:45	57	46	44	48	34	32
12/11/2025 01:00	55	46	44	46	34	32
12/11/2025 01:15	69	49	45	46	34	32
12/11/2025 01:30	63	47	44	48	34	32
12/11/2025 01:45	56	45	42	44	34	32
12/11/2025 02:00	52	43	41	43	33	31
12/11/2025 02:15	72	55	42	47	35	31
12/11/2025 02:30	65	51	40	47	34	30
12/11/2025 02:45	52	43	40	43	33	31
12/11/2025 03:00	52	43	41	44	33	31
12/11/2025 03:15	50	43	40	44	32	30
12/11/2025 03:30	53	43	41	44	33	31
12/11/2025 03:45	58	44	42	44	33	31
12/11/2025 04:00	54	44	41	43	32	30
12/11/2025 04:15	56	44	42	40	32	30
12/11/2025 04:30	57	46	44	43	33	31
12/11/2025 04:45	74	54	45	44	35	32
12/11/2025 05:00	60	49	46	49	35	32
12/11/2025 05:15	63	49	47	48	35	33

Date & Time (Start)	Outside			Inside		
	Pos.A L _{AFmax} , dB	Pos.A L _{Aeq,15min} , dB	Pos.A L _{AF90,15min} , dB	Pos.B L _{AFmax} , dB	Pos.B L _{Aeq,15min} , dB	Pos.B L _{AF90,15min} , dB
12/11/2025 05:30	68	49	47	45	35	33
12/11/2025 05:45	58	49	47	51	35	33
12/11/2025 06:00	62	50	48	48	35	34
12/11/2025 06:15	59	50	48	45	36	34
12/11/2025 06:30	61	51	49	42	36	34
12/11/2025 06:45	64	52	50	53	38	35
12/11/2025 07:00	65	51	49	48	38	36
12/11/2025 07:15	61	52	49	51	39	36
12/11/2025 07:30	70	54	49	52	39	36
12/11/2025 07:45	74	58	51	88	64	38
12/11/2025 08:00	73	59	51	90	69	56
12/11/2025 08:15	67	53	51	97	79	69
12/11/2025 08:30	75	57	51	95	80	76
12/11/2025 08:45	73	56	51	89	74	53
12/11/2025 09:00	62	51	49	86	65	48
12/11/2025 09:15	85	56	50	106	83	68
12/11/2025 09:30	69	52	50	98	80	60
12/11/2025 09:45	73	54	50	102	79	55
12/11/2025 10:00	73	56	50	98	81	57
12/11/2025 10:15	70	54	49	91	67	51
12/11/2025 10:30	72	56	49	94	67	51
12/11/2025 10:45	67	52	50	96	73	52
12/11/2025 11:00	69	53	49	92	69	50
12/11/2025 11:15	73	55	50	66	49	40
12/11/2025 11:30	69	52	49	63	48	41
12/11/2025 11:45	61	51	49	92	72	49
12/11/2025 12:00	65	51	48	104	82	70
12/11/2025 12:15	80	57	49	103	83	70
12/11/2025 12:30	73	55	48			
12/11/2025 12:45	85	52	47			
12/11/2025 13:00	58	50	48			
12/11/2025 13:15	78	53	49			
12/11/2025 13:30	65	50	48			
12/11/2025 13:45	77	56	50			

REPORT END