NOISE IMPACT ASSESSMENT

Rear Of 821 St Albans Road Watford WD25 0LE

7th April 2024

ISSUE 01

Email: enquiries@daagroup.co.uk Tel: 0207 101 9669 Mobile: 07957 553188 Company Registration No. 0249971

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Author	Date	Checked	Date	Description
L. Jennings Tec. IOA	07/04/2024	M.Austin I.Eng. MIOA	10/04/2024	Information.

1.0 INTRODUCTION

DAA Group has been appointed to carry out a Noise Impact Assessment at Rear Of 821 St Albans Road Watford WD25 0LE to support Planning Application Ref: 19/00623/LDC for the Lawful Development Certificate for existing storage and distribution use within Use Class B8 of the Town and Country Planning (Use Classes) Order 1987 (as amended).

The purpose of the survey is to ensure that the development does not prejudice the amenities of occupiers of nearby premises in accordance with the provisions of:

- The National Planning Policy Framework, the Noise Policy Statement for England (NPSE)
- The World Health Organisation Guidelines for Community Noise 1999 (WHO)
- Watford Local Plan

The technical content of this assessment has been provided by a Tech member of the Institute of Acoustics.

The Institute of Acoustics is the UK's professional body for those working in Acoustics, Noise and Vibration.

2.0 NOISE CRITERIA

2.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

The Department for Communities and Local Government introduced the National Planning Policy Framework (NPPF) in March 2012. The latest revision of the NPPF is dated March 2021.

The NPPF sets out the Government's planning policies for England and how these are expected to be applied. It provides a framework where local Councils can produce their own local and neighbourhood plans which reflect the needs of their communities.

In conserving and enhancing the natural environment, the planning system should prevent both new and existing development from contributing to, or being put at, unacceptable risk from environmental factors including noise.

Planning policies and decisions should aim to avoid noise giving rise to significant adverse impacts on health and quality of life as a result of new development. Conditions may be used to mitigate and reduce noise to a minimum so that adverse impacts on health and quality of life are minimised. It must be recognised that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them. Reference is made within NPPF to the Noise Policy Statement for England (NPSE) as published by DEFRA in March 2010.

2.2 NOISE POLICY STATEMENT FOR ENGLAND (NPSE)

The long-term vision of the NPSE is stated within the documents scope, 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'. The policy aims are stated to:

- 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.

The application of NPSE should mean that noise is properly taken into account at the appropriate time (for example in planning applications or appeals) where it must be considered alongside other relevant issues. The guiding principles of Government policy on sustainable development should be used to assist in the implementation of the NPSE.

The NPSE should apply to all types of noise apart from occupational noise in the workplace. The types of noises defined in the NPSE includes:

- Environmental noise from transportation sources;
- Neighbourhood noise which includes noise arising from within the community; industrial premises, trade and business premises, construction sites and noise in the street

The Noise Policy Statement England (NPSE) outlines observed effect levels relating to the

above, as follows:

- **NOEL – No Observed Effect Level**

o 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**

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

• **SOAEL – Significant Observed Adverse Effect Level**

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

As stated in The Noise Policy Statement England (NPSE), it is not currently possible to have a single objective based measure that defines SOAEL that is applicable to all sources of noise in all situations. Specific noise levels are not stated within the guidance for this reason, and allow flexibility in the policy until further guidance is available.

2.3 ProPG: PLANNING AND NOISE

As outlined above, the National Planning Policy Framework encourages improved standards of design, although it provides no specific noise levels which should be achieved on site for varying standards of acoustic acceptability, or a prescriptive method for the assessment of noise.
ProPG: Planning and Noise was published in May 2017 in order to encourage better acoustic design for new residential schemes in order to protect future residents from the harmful effects of noise. This guidance can be seen as the missing link between the current NPPF and its predecessor, PPG24 (Planning Policy Guidance 24: Planning and Noise), which provided a prescriptive method for assessing sites for residential development, but without the nuance of 'good acoustic design' as outlined in ProPG.
ProPG allows the assessor to take a holistic approach to consider the site's suitability, taking into consideration numerous design factors which previously may not have been considered alongside the noise level measured on site, for example the orientation of the building in relation to the main source of noise incident upon it.
It should be noted this document is not an official government code of practice, and neither replaces nor provides an authoritative interpretation of the law or government policy, and therefore should be seen as a good practice document only.

2.4 BRITISH STANDARD 4142: 2014

British Standard (BS) 4142:2014 "Methods for rating and assessing industrial and commercial sound" describes methods for assessing the likely effects of sound on premises used for residential purposes.
It includes the assessment of sound from industrial and manufacturing processes, M&E plant and equipment, loading and unloading of goods and materials, and mobile plant/vehicles on the site. It can be used to assess sound from proposed, new, modified or additional industrial/commercial sources, at existing or new premises used for residential purposes.
The method described in BS4142: 2014 use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.
The standard describes methods to measure and determine ambient, background and residual sound levels, and the rating levels of industrial/commercial sound. BS 4142: 2014 requires consideration of the level of uncertainty in the data and associated calculations.
BS 4142 is not intended to be used for the derivation or assessment of internal sound levels, or for the assessment of non-industrial / commercial sources such as recreational

activities, motorsport, music and entertainment, shooting grounds, construction and demolition, domestic animals, people, and public address systems for speech.
The Reference Time Interval, T, is defined in the standard as the "specified interval over which the specific sound level is determined", which is 1 hour during the daytime (07:00 to 23:00 hours) and 15 minutes during the night (23:00 to 07:00 hours).
Ambient sound is defined in BS 4142: 2014 as "totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far". It comprises the residual sound and the specific sound when present.
Residual sound is defined in BS 4142: 2014 as "ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound".
The background sound level is the LA90, T of the residual sound level, and is the underlying level of sound. Measurements of background sound level should be undertaken at the assessment location where possible or at a comparable location.
The measurement time interval should be sufficient to obtain a representative value (normally not less than 15 minutes) and the monitoring duration should reflect the range of background sound levels across the assessment period. The background sound level used for the assessment should be representative of the period being assessed.
The specific sound level is the LAeq,T of the sound source being assessed over the reference time interval, Tr. BS 4142: 2014 advises that Tr should be 1 hour during the day and 15 minutes at night.
The rating level is the specific sound level plus any adjustment for the characteristics of the sound (tone, impulse, intermittent or other acoustic feature). The standard describes subjective and objective methods to establish the appropriate adjustment. The adjustments for the different features and assessment methods are summarised in the table below.

Acoustic Feature Corrections in BS4142: 2014

Acoustic Feature	Adjustment for Acoustic Feature		
	Subjective Methods	Objective Methods	
Tonality	+2 dB if just perceptible +4 dB if clearly perceptible +6 dB if highly perceptible	Third Octave Analysis	Narrow Band Analysis
		+6 dB if tones identified	Sliding scale of 0 to +6 dB depending on audibility of tone
Impulsivity	+3 dB if just perceptible +6 dB if clearly perceptible +9 dB if highly perceptible	Sliding scale of 0 to +9 dB depending on prominence of impulsive sound	
Intermittency	+ 3 dB if intermittency is readily distinctive	n/a	
Other	+ 3 dB if neither tonal nor impulsive, but otherwise readily distinctive	n/a	

Where tonal and impulsive characters are present in the specific sound within the same reference period then these two corrections can both be taken into account. If one feature is dominant, it might be appropriate to apply a single correction. The rating level is equal to the specific sound level if there are no features present.

The level of impact is assessed by comparing the rating level of the specific sound source with the background sound level. Typically the greater the difference the greater the magnitude of the impact, depending on the context.

Other factors that may require consideration include the absolute level of sound, the character and level of the residual sound compared to the specific sound, and the sensitivity of the receptor and scope for mitigation.

When the rating level is above the background sound level, a difference of around +5 dB is likely to indicate an adverse impact and a difference of around +10 dB or more is likely to indicate a significant adverse impact, depending on the context.

The lower the rating level with respect to the background sound level, the less likely it is that the specific sound source will have an 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.

3.0 SITE SURVEYS

3.1 SITE DESCRIPTION

The site is situated at the rear of 821 St Albans Road. The area is a mix of residential and commercial units. It is typical of an urban cityscape environment, with the dominant source being road traffic noise from the surrounding roads. (See Figure 3.1)

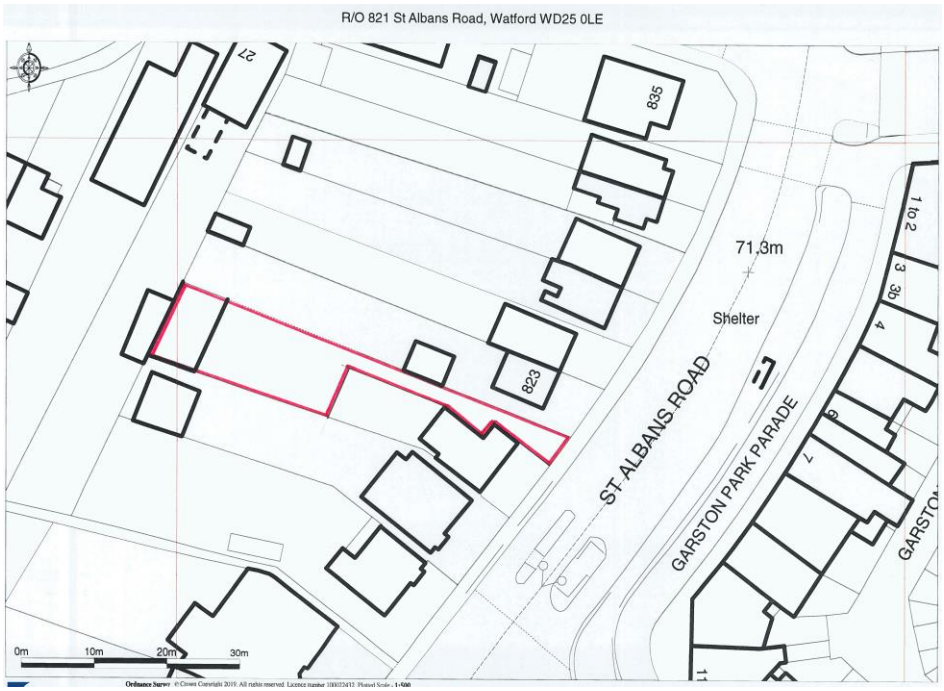


Figure 3.1 – Site Location

3.2 ENVIRONMENTAL SITE SURVEY PROCEDURE

In order to characterise the sound profile of the area at the closest sensitive receptor (NSR), an environmental sound survey has been carried out from 04/04/2024 to 05/04/2024. The monitoring position was chosen in order to collect representative sound levels at the NSR and the noise emissions from the activity of the site.
Noise Measurements were carried out Free Field, over 1.5m from the ground. The monitoring location is shown in Figure 5.2.

3.3 EQUIPMENT

Instrument manufacturer	**Cirrus**
Model	**CR:247 Invictus**
Serial Number	**V069182**
Microphone Type	**MK: 224**
Serial Number	**217360D**
Calibrator	**NC-74**
Serial Number	**34494274**
Cirrus CK: 675 Outdoor Kit	

All equipment used during the survey was field calibrated at the start and end of the measurement period with a negligible deviation of ≤0.5 dB. All sound level meters are calibrated every 24 months and all calibrators are calibrated every 12 months, by a third-party calibration laboratory. All microphones were fitted with a protective windshield for the entire measurements period.

See Appendix D for Copies of Calibration certificates.

3.4 METEOROLOGICAL CONDITIONS

As the environmental noise survey was carried out over a long un-manned period no localized records of weather conditions were taken. However, during the set up and collection of the monitoring equipment, the weather conditions have been documented in the following table. All measurements have been compared with met office weather data of the area, specifically the closest weather station, the data from the weather station is outlined in the table below. When reviewing the time history of the noise measurements, any scenarios that were considered potentially to be affected by the local weather conditions have been omitted. The analysis of the noise data includes statistical and percentile analysis and review of minimum and maximum values, which aids in the preclusion of any periods of undesirable weather conditions. The weather conditions were deemed suitable for the measurement of environmental noise in accordance with BS7445 Description and Measurement of Environmental Noise. The table below presents the average temperature, wind speed and rainfall range for each 24-hour period during the entire measurement.

Weather Conditions – Northolt Weather station				
Time Period	**Air Temp (◦C)**	**Rainfall mm/h**	**Prevailing Wind Direction**	**Wind Speed (m/s)**
04/04/2024 – 14:00 – 23:59	9- 15	0.0	S	8 - 10
05/04/2024 – 00:00 – 14:00	8 - 15	0.1	SSE	9 - 10

Table 3.4 – Weather Summary

4.0 NOISE SURVEY

The following free-field sound levels have been derived for assessment of noise break-in. A maximum value is provided for each night-time measurement period. Based on the World Health Organisation interpretation that for a noise to be regular it needs to occur several (i.e. more than two) times per hour; the LAmax(f) noise needs to be based upon an average of 10-15 events that are typical in nature. The aim of protecting against maximum noise levels is to ensure protection against typical intermittent noise levels rather than one-off events; whereby an arithmetic average of the 15 typical maximum events across each night period is used to determine values of dB LAmax(f) reported below. Average LAeq levels and Representative LA90 levels have been used for our calculations. These have been summarised in table 4.0 below.

Period	LAeq,T	$L_{AMAX,(f)}$	$L_{A90,\ 15}$
07:00 – 23.00	53dB	68dB	46dB
23:00 – 07:00	48dB	61dB	39dB

Table 4.0 Measurement Levels

4.1 SUBJECTIVE IMPRESSION & CONTEXT

Whilst on-site, it was noted that the surrounding acoustic environment was moderate. Road traffic from St Albans Road, was noticed to be the primary contributor to the noise profile of the area.

4.2 UNCERTAINTY

BS4142:2014 section 10.0 states that uncertainty in the calculation of sound levels during the assessment process can arise from both the measured values and calculation methods. To ensure the accuracy of the assessment consideration has been taken for the level of uncertainty in the measured data and associated calculations in the proposed methodology used to undertake the assessment.

Where the level of uncertainty could affect the conclusion, reasonably practicable steps have been taken to minimise the level of uncertainty. Where the level of uncertainty is excessive, additional measurements and site visits have been conducted to increase the confidence in the results. In all instances the following steps have been taken to address the uncertainty;

1) Measured Values; A detailed understanding of the source of noise under investigation has been conducted including consideration for the complexity, variability over time and location, the character and effect of the residual sound level in comparison with the source, the measurement location, quantity of measurements and distance/intervening ground conditions, measurement time interval and the range of times measurement were taken, the suitability of weather conditions, the level of rounding and the classification of the instrumentation used to conduct the assessment.

2) Calculation Methods; Consideration has been taken for the accuracy of the measured sound levels, the character of the sound emissions in question, the calculation method and the simplification of the real situation to “fit” the modelled situation. Recognised standards and validated methods and processes have been used to establish accurate values during the calculation process.

For the avoidance of doubt, the level of uncertainty will not be quantified. If appropriate consideration is taken for points 1 and 2 during the collection of data and analysis thereof, then the influence of uncertainty in the final result is at its lowest practical value.

5.0 NOISE IMPACT ASSESSMENT

5.1 SITE ACTIVITY

The application site is already operating and it is understood the operating hours are:
Monday – Saturday – 9am -6pm.

It operates a tyre repair and sales service. It is understood on average, one – two cars attend the site per day. The primary activity of the business is mobile tyre fitting. Mobile fitting service at the customer's location, such as their office or home. At the moment, the yard is mainly used for parking vehicles. Therefore the outcome of this report is worst case scenario.

There is one building structure used to house equipment:

- 1 x Air Compressor
- 1 x Tyre Replacement Machine
- 1 x Tyre Balancing Machine

The building is made up of a corrugated steel shed. Measurements were taken 1m away from the equipment to assess the noise emissions for our calculations. The results are summarised below in table 5.1.

Equipment	LAeq (dB)	LAFMax (dB)	31.5 Hz (dB)	63 Hz (dB)	125 Hz (dB)	250 Hz (dB)	500 Hz (dB)	1 kHz (dB)	2 kHz (dB)	4 kHz (dB)	8 kHz (dB)	16 kHz (dB)
Air Compressor	76.7	83.1	73.1	79.2	71.2	76.2	74.3	70.8	67.8	66.9	61.3	52.7
Tyre Balancing Machine	65.6	87	71.2	68.9	63.2	60.2	61.1	58.6	60.2	57.5	49.9	35.5
Tyre Changing Machine	62.1	77.9	62	56.9	68.9	63.2	60.3	57.2	52.5	44.8	38.6	30

Table 5.1 – Equipment Noise Emissions

Figure 5.1.1 -Inside the plant room and tire store.

5.2 CLOSEST NOISE SENSITIVE RECEIVER

The closest noise sensitive receiver to the site (821 St Albans Road) located approximately 15meters away. This is the Noise Sensitive receptor in direct line to the open door as shown below in figure 5.2.

Figure 5.2

●	Tyre Changing Site
●	Nearest Residential Noise Sensitive Receptor
●	Measurement Location

5.3 NOISE EMMISSION CRITERION

It is understood that the operating hours are between 09.00 and 18:00.
We have used the representative background noise level when the site was not in operation.

The criterion has been set as shown in Table 5.3 in order to comply with the Local Authority requirements.

Time Period	Noise Criterion at Nearest Residential Receiver
09.00 – 17.00	**<44dB**

Table 5.4.3 - Proposed noise emissions criterion – LA90

5.4 BREAKOUT NOISE LEVEL

The acoustic performance of the building structure was modelled in Insul 9.0 Software and the resulting Rw can be seen in the following table. A 3 dB correction has been applied to account for uncertainty within the modelling software.
It is understood from the Client that doors are closed whilst using the machinery. No plant is used outside of the building, only a wheel brace is used outside.
The noise level of the structure has been calculated using the following formula: Internal Noise Level – Rw of façade – 6 (correction for internal reverberant conditions to external non-reverberant conditions). The façade level of the noise breaking out of the walls/ roof of the structure can be seen in the table below.

Description	$L_{Aeq,t}$
Internal Measurement	**77**
Rw of Façade	**10**
Reverberant Conditions Correction	**6**
Predicted Façade Noise Level	**56**

Table 5.4.5 - Table Internal to External Noise Calculation

5.5 BS4142 ASSESSMENT OF TYRE FITTING

5.5.1 RATING PENALTY ASSESSMENT

Considering the requirements of the rating penalty, an assessment of the various sound sources associated with the Proposed Development, in terms of whether any rating penalties are applicable, and has been detailed in the following table.

Source	Tonality	Impulsivity	Intermittency	Other Sound Characteristics	Discussion
Tyre Fitting	+2	+3	+3	--	On/ off nature of works being undertaken, power tools generating impulsive sounds and tonal components to car engines.

Table 5.5.1 – Rating Penality Assessment

5.5.2 BS4142 ASSESSMENT

BS4142:2014 Assessment	
Source Operating Period	Tyre Changing (Inside Workshop) 09.00 – 18:00
Reference Time Interval (Tr)	15 minutes
Element	Level (dB)
Specific Sound Level	32
Representative Background Noise Level (LA90)	44
Acoustic feature correction	8
Rating Level	40
Excess of Rating over Background Sound Level	-4

Detailed calculations are shown in Appendix B.

5.6 MITIGATION MEASURES

As can be seen in the assessment above, the noise emissions associated with the development - with the doors closed – at the closest NSR, do not exceed the prevailing background sound level. This indicates the likelihood of ' no adverse impact, depending on context' on the amenity of the residents at the surrounding NSRs according to NPSE. Doors must be kept shut during the operation of the equipment.

6.0 CAR ACTIVITY

It is understood there will be approximately 1– 2 customers per day.

The impact of vehicle activity noise on the surrounding environment will depend on several factors, including (but not limited to) the time of day, frequency of occurrence and type of vehicle used.

Consideration is given towards the proposed hours of between 09:00 to 18:00.

It is recognised that there are no approved guidelines or standards for the assessment of arrival / departure noise. The standard BS4142:2014 Methods for rating and assessing industrial and commercial sound is not appropriate when dealing with noise generated from vehicle movements outside of a site, as the scope of this document does not cover this noise source.

One method that can be used to estimate road traffic noise impacts is the Calculation of Road Traffic Noise (CRTN, 1988). This typically describes a method used to accompany Transport Assessments, when used to describe larger developments and associated impacts. Traffic flow information to be used CRTN calculation is the maximum expected between 06:00 hours and 24:00 hours on a normal working day within a period of 15 years after opening to traffic. The estimate is based upon the Annual Average Weekday Traffic (AAWT) obtained for the base year and growth forecast, considering local conditions and differences through development.

One limitation of the CRTN methodology, being based on the LA10, T parameter, is that there is a minimum traffic flow required to generate valid levels. For the 18-hour period, this threshold is 1,000 vehicles. Where predicted flows are below this level then no predictions have been made and it can be assumed that road traffic noise is not particularly significant.

The traffic generation caused by the development is significantly below CRTN lower limits.

The impact of an increase or reduction in noise level from road traffic is provided in a variety of documents including The Institute of Environmental Management and Assessment – Guidelines for Environmental Noise Impact Assessment (IEMA, 2014). The magnitude of the impact should be considered different in the short and long term. A change in road traffic noise of 1 dB LA10,18h in the short term is the smallest that is considered perceptible. In the long term, typically 15 years after the project opening, a 3 dB LA10,18h change is considered perceptible. The subjective response to changes in road traffic noise is largely restricted to daytime periods, as applicable in this case.

The impact of changes is provided in the below classification of noise impacts, which has been equated to an approximate change in road traffic volume.

Short Term Noise Change dB LA10,18h	Long Term Noise Change dB LA10,18h	Magnitude of Impact dB LA10,18h	Approximate change in Road Traffic Volume
Negligible	Negligible	≥ 0 dB and < 1 dB	< 26%
Minor		≥ 1 dB and < 3 dB	≥ 26% and < 100%
Moderate	Minor	≥3 dB and < 5dB	≥100% and < 315%
Major	Moderate	≥5 dB and < 10 dB	≥315% and < 1000%
	Major	≥10 dB	≥1000%

Table 5.1– Classification of magnitude of noise impacts based on short- and long-term periods.

The Noise Change due to the customers entering and leaving the site will be negligible.

7.0 SUMMARY AND CONCLUSIONS

DAA Group has been appointed to carry out a Noise Impact Assessment at Rear Of 821 St Albans Road Watford WD25 0LE. The purpose of the survey was to assess the level of noise emanating from the proposed Change of use from storage/distribution to tyre sales and fitting and to advise on the level and type of mitigation that will be required.

It has been confirmed that the equipment is housed within a workshop and doors will be closed during use of the equipment.

The BS4142:2014 assessment was undertaken to assess the noise levels incident on the nearest noise sensitive receptor produced by the tire fitting. The assessment showed that the noise emissions from the development do not exceed the prevailing background noise which equates to a ' No Adverse Effect Level' according to NPSE and NPPF.

APPENDIX A ACOUSTIC TERMINOLOGY

B.1 WEIGHTED DECIBEL, dB(A)

The unit generally used for measuring environmental, traffic or industrial noise is the A-weighted sound pressure level in decibels, denoted dB(A). The weighting is based on the frequency response of the human ear and has been found to correlate well with human subjective reactions to various sounds. An increase or decrease of approximately 10 dB corresponds to a subjective doubling or halving of the loudness of a noise, and a change of 2 to 3 dB is subjectively barely perceptible.

B.2 EQUIVALENT CONTINUOUS SOUND LEVEL, LAeq

Another index for assessment for overall noise exposure is the equivalent continuous sound level, L_{Aeq}. This is a notional steady level which would, over a given period, deliver the same sound energy as the actual time-varying sound over the same period.

B.3 MAXIMUM NOISE LEVEL, LAmax

The maximum noise level identified during a measurement period. Experimental data has shown that the human ear does not generally register the full loudness of transient sound events of less than 125 ms in duration.

B.4 NOISE RATING, NR

Noise ratings are used as a single figure criterion for specifying services noise in buildings. Each noise rating value has an associated spectrum of defined values in each third or octave frequency band. To determine the noise rating of a room the measured spectrum is compared to a set of noise rating curves. The highest NR curve that crosses any single frequency band of the measurement determines the noise rating for the room. The single figure noise rating is read at the 1 kHz band.

B.5 SOUND LEVEL DIFFERENCE (D)

The sound insulation required between two spaces may be determined by the sound level difference needed between them. A single figure descriptor which characterises a range of frequencies, the weighted sound level difference, D, is sometimes used (BS EN ISO 717-1). This parameter is not adjusted to reference conditions.

The standardized level difference, Dn, T is a measure of the difference in sound level between two rooms, in each frequency band, where the reverberation time in the receiving room has been normalised to 0.5 s. This parameter measures all transmission paths, including flanking paths.

The weighted standardized level difference, DnTw, is a measure of the difference in sound level between two rooms, which characterises a range of frequencies and is normalised to a reference reverberation time

B.6 SOUND REDUCTION INDEX (R)

The sound reduction index (or transmission loss) of a building element is a measure of the loss of sound through the material, i.e. its attenuation properties. It is a property of the component, unlike the sound level difference which is affected by the common area between the rooms and the acoustic of the receiving room. The weighted sound reduction index, Rw, is a single figure description of sound reduction index characterising a range of frequencies, which is defined in BS EN ISO 717-1: 1997. The Rw is calculated from measurements in an acoustic laboratory

B.7 STATISTICAL NOISE LEVELS (L_{A90}, (T) L_{A1}, (T) L_{A10}, (T) etc.)

For levels of noise that vary widely with time, for example road traffic noise, it is necessary to employ an index which allows for this variation. The L_{A10} is the level exceeded for ten per cent of the time under consideration, has historically been
adopted in the UK for the assessment of road traffic noise. The LA90 is the level exceeded for ninety per cent of the time, has been adopted to represent the background noise level. The L_{A1} the level exceeded for one per cent of the time, is representative of the maximum levels recorded during the sample period. A weighted statistical noise levels are denoted LA10, dB LA90, dB. etc. The reference time (T) is normally included, e.g. LA10, (5min), & LA90, (8hr).

B.8 TYPICAL NOISE LEVELS

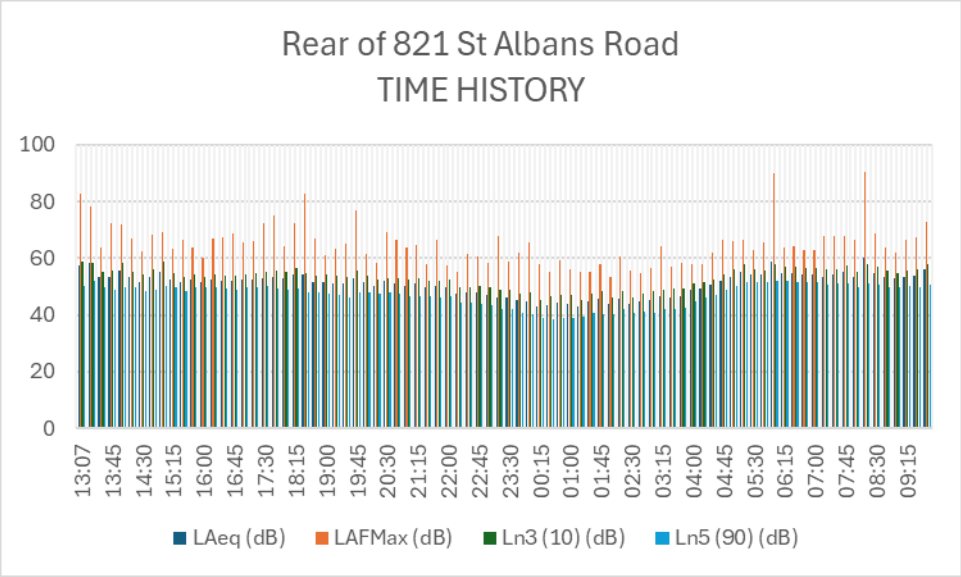
Typical noise levels are given in the following table.

Noise Level dB(A)	Example
130	Threshold of pain
120	Jet aircraft take-offs at 100 m
110	Chain saw at 1 m
100	Inside disco
90	Heavy lorries at 5 m
80	Kerbside of busy street
70	Loud radio (in typical domestic room)
60	Office or restaurant
50	Domestic fan heaters at 1m
40	Living room
30	Ventilation Noise in Theatre
20	Remote countryside on still night
10	Sound insulated test chamber
0	Threshold of hearing.

APPENDIX B CALCULATIONS

NOISE EMISSION CALCULATION														
ITEM	**PARAMETER**			**HZ**		**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dBA**
1	**Schedule of Plant**	Qty												
2														
3	Air Compressor	1	Spl	dB	+	79	71	76	74	71	68	67	61	77
	Tyre Balancing Machine	1	Spl	dB	+	69	63	60	61	59	60	58	50	66
4	Tyre Changing Machine	1	Spl	dB	+	57	69	63	60	57	53	45	39	62
5	Reverberant Conditions Corrections			dB	-	6	6	6	6	6	6	6	6	6
6	Predicted Open Door Noise Level	1	Spl	dB	+	73	68	70	68	66	63	62	55	71
7	Predicted Closed Door Noise Level	1	Spl	dB	+	63	58	60	58	56	53	52	45	61
8														
9														
10														
11	Distance to nearest receptor Metres:	15		dB	-	-24	-24	-24	-24	-24	-24	-24	-24	-24
12	$SPL=L1-20\log_{10}(r2/r1)$	1												
13														
14	Barrier Effect			dB	-	5	5	5	5	5	5	5	5	5
15														
16	Spl at receptor Open Door			dB	+	44	39	41	39	37	34	33	26	42
17	Spl at receptor Closed Door			dB	+	34	29	31	29	27	24	23	16	32
18														
19	Tonality	2		dB	+	2	2	2	2	2	2	2	2	2
20	Intermittant noise correction	3		dB	+	3	3	3	3	3	3	3	3	3
21	Impulsivity	3		dB	+	3	3	3	3	3	3	3	3	3
22														
23	Specific noise level at receptor			dB	+	52	47	49	47	45	42	41	34	50
24	(1m outside noise sensitive window)													-40
25	**Lowest Background Noise Levels:(L_{A90})**													
26	**Day time (07:00 - 23:00)**													**44**
27	**Difference:** (Assessment level)			dB	-									**6**
28	**E&OE**													**(-4)**

APPENDIX C MEASUREMENTS


Rear of 821 St Albans Road
TIME HISTORY
100
80
60
40
20
0
13:07
13:45
14:30
15:15
16:00
16:45
17:30
18:15
19:00
19:45
20:30
21:15
22:00
22:45
23:30
00:15
01:00
01:45
02:30
03:15
04:00
04:45
05:30
06:15
07:00
07:45
08:30
09:15
LAeq (dB)
LAFMax (dB)
Ln3 (10) (dB)
Ln5 (90) (dB)