# JD NORTHWEST LTD

# 129 WILBRAHAM ROAD, MANCHESTER

# NOISE ASSESSMENT FOR PLANNING

**4 September 2025**

**AEC REPORT: P5658/R01a/WJK**

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# 1.0 INTRODUCTION

1.1 Acoustic & Engineering Consultants Limited (AEC) has been appointed by JD Northwest Ltd to undertake a noise assessment of the proposed ground floor extension to the existing commercial premises and first floor extension to create 2no. apartments at 129 Wilbraham Road, Manchester.

1.2 As part of the works, there are to be 3no. mechanical vent wall units relocated on the rear wall on the roof of the new ground floor extension. This noise assessment is required as part of the associated planning application for the development.

1.3 This report details the noise levels measured onsite, the assessment criteria and details of the assessment undertaken regarding the implications of the noise levels on the acoustic design of the proposed dwellings. It includes the glazing performance and ventilation strategy required to meet appropriate internal noise level limits. The report also provides an assessment of the potential noise impact associated with the relocation of the external plant units.

1.4 Acoustic terminology used throughout the report is described in Appendix A.

# 2.0 SITE AND PROPOSED DEVELOPMENT

2.1 The development site is an existing convenience store located on the junction of Wilbraham Road (A6010), which runs along the northern elevation of the site, and Yew Tree Road which runs along the eastern boundary. The area is predominantly residential with some commercial premises and offices to the west along Wilbraham Road.

2.2 The proposed scheme incorporates a single storey extension at the rear of the existing premises with 3no. condenser units installed on the roof and the extension and conversion of the existing first floor storage space to form 2no. apartments. It is understood that the condenser units only operate during the daytime period (0700-2300h).

2.3 A location plan showing the proposed development is provided in the following Figure 2.1

**Figure 2.1 – Site Location Plan**



# 3.0 BASIS OF ASSESSMENT

## National Planning Policy Framework

3.1 Current national planning policies are set out in the National Planning Policy Framework (NPPF) published by the Department for Communities and Local Government, in March 2012, and revised most recently in December 2024.

3.2 The planning policies which relate specifically to noise are reproduced below:

*"187. Planning policies and decisions should contribute to and enhance the natural and local environment 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 life;*

*(b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

*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."*

3.3 Further to the above, the Governments Planning Practice Guidance (PPG) published in March 2014 and updated in September 2023 states:

*'Noise needs to be considered when development may create additional noise, or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced). When preparing plans, or taking decisions about new development, there may also be opportunities to make improvements to the acoustic environment. Good acoustic design needs to be considered early in the planning process to ensure that the most appropriate and cost-effective solutions are identified from the outset.'*

3.4 In addition, the guidance indicates that, whilst noise can override other planning concerns, it is important to look at noise in the context of the wider characteristics of a development proposal, its likely users and its surroundings, as these can have an important effect as to whether or not noise is likely to pose a concern.

## Internal Noise Levels

3.5 The requirements for noise assessments to accompany planning applications is provided in the Manchester City Council '*Planning & Noise – Technical Guidance'* (2022) (PNTG).

3.6 Section 3.7.1.1 states "*The Council has adopted the following noise limits for residential properties*:

- *Bedroom (night-time – 23.00 – 07.00) 30dB$L_{Aeq}$ (individual noise events should not normally exceed 45dB$L_{Amax,F}$ by more than 15 times);*
- *Living Rooms (daytime – 07.00 – 23.00) 35dB$L_{Aeq}$.*"

3.7 The above noise limits are based on guidance presented in British Standard 8233:2014 '*Guidance on sound insulation and noise reduction for buildings'* (BS8233) and The Association of Noise Consultants (ANC) document Professional Practice Guidance on Planning and Noise '*New Residential Development*' (2017) (ProPG).

## Ventilation Provision

### Whole Dwelling Ventilation

3.8 The above internal noise level limits should be achieved whilst whole dwelling ventilation is being provided. Whole dwelling ventilation is a continuous low-rate ventilation as defined in Approved Document F '*Ventilation*' (2021) of the Building Regulations and is typically achieved either via trickle ventilators, partially open windows or by mechanical means.

3.9 To achieve appropriate internal noise levels when whole dwelling ventilation is being provided by a partially open window, the highest allowable external noise levels are shown in the following Table 3.1. These limits are based on a slightly open window providing a reduction in external to internal noise levels of 15dB, as defined in ProPG.

**Table 3.1 – Noise Limits to Allow Whole Dwelling Ventilation Provision via a Partially Open Window**

| Location | External Free-Field Noise Limit, dB | | |
|---|---|---|---|
| | Daytime 0700 – 2300h $L_{Aeq,16h}$ | Night-Time 2300 – 0700h | |
| | | $L_{Aeq,8h}$ | $L_{Amax,F}$ |
| Living Room | 50 | - | - |
| Bedroom | 50 | 45 | 60 |

### Purge Ventilation

3.10 In relation to purge ventilation, ProPG suggests that as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food), the internal desired noise levels are not generally applicable. Therefore, internal noise levels due to windows being opened for purge ventilation has not been considered further.

### Control of Overheating Strategy

3.11 Paragraph 0.3 of Approved Document O of the Building Regulations 2010 '*Requirement 01: Overheating Mitigation Regulations 40B*' (ADO) states that the "*document applies to new residential buildings only*". Therefore, as this is a conversion of an existing building, and based on PNTG, the guidance provided in the Association of Noise Consultants '*Acoustics, Ventilation and Overheating: Residential Design Guide (2020) (AVO)* for daytime and night-time internal noise levels has been considered.

3.12 AVO is a design guide only and not a statutory document and the Local Authority may have their own requirements.

3.13 Table 3.3 of AVO presents guidance for allowable noise from transportation sources whilst windows are open for the control of overheating. With reference to this, it is proposed that windows can be utilised in the control of overheating provided that the resultant internal ambient noise levels are below approximately 50dB$L_{Aeq,16h}$ during the daytime, and 42dB$L_{Aeq,8h}$ and 65dB$L_{Amax,F}$ during the night-time.

3.14 These internal noise levels are the upper end of the medium risk category for adverse effects. Where these internal noise levels would be exceeded, AVO states that "*noise causes a material change in behaviour (e.g., having to keep windows closed most of the time)*". In this situation, it is suggested that alternative means for the control of overheating are considered, which do not rely on open windows.

3.15 AVO states that where transportation is the main source of noise, *"it is assumed that a partially open window will provide an outside-to-inside level difference of 13dB and is considered representative of typical domestic rooms with simple façade openings of around 2% of the floor area"*.

3.16 Considering the above, the maximum allowable external noise levels where summertime heating via opening windows can be controlled are shown in the following Table 3.2. This is based on simple façade openings to around 2% of the floor area.

**Table 3.2 – External Free-Field Noise Level Limits for the Control of Overheating via Openable Windows**

| Activity | Location | Noise Level Limit, dB | | |
|---|---|---|---|---|
| | | Daytime 0700 – 2300h $L_{Aeq,16h}$ | Night-Time 2300 – 0700h | |
| | | | $L_{Aeq,8h}$ | $L_{Amax,F}$ |
| Resting | Living Room | 63 | - | - |
| Sleeping (daytime resting) | Bedroom | 63 | 55 | 78 |

3.17 The above limits are subject to agreement with the Local Authority.

## Noise from Ground Floor Commercial Premises to Dwellings Above

3.18 There is currently no separating floor between the proposed dwellings on the first floor and the ground floor commercial unit. In order to comply with the 2010 Building Regulations, the separating floor between the ground floor unit and first floor apartments should comply with the minimum sound insulation performance requirements of Approved Document E (ADE). This requirement would be suitable for the current ground floor use as a convenience store.

3.19 The separating floor will be developed at the design stage.

## Atmospheric Plant Noise Emissions

3.20 The assessment of noise from mechanical services plant in Manchester city centre is outlined in Manchester City Council's (MCC) document '*Planning and Noise – Technical Guidance'* (PNTG) issued in October 2022. PNTG states that noise from industrial sources should be assessed using British Standard 4142: 2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' (BS4142).

3.21 Section 3.7.1.5 'Industrial / commercial developments' of PNTG states "*The development should be designed so as to achieve a rating level of 5dB ($L_{Aeq}$) below the typical background ($L_{A90}$) level at the nearest noise sensitive location.*"

### BS4142: 2014+A1:2019

3.22 BS4142:2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' (BS4142), provides methods for rating and assessing industrial and commercial sound by comparing the specific sound level (that directly attributable to the industrial/commercial sound) to the prevailing background sound level ($dBL_{A90,T}$) over relevant periods that the commercial/industrial activities occur.

3.23 It is necessary to determine the specific sound level from the industrial/commercial activities over a period of one hour during the daytime, normally considered to be over the period 0700 to 2300 hours. The specific sound level relates to the specific commercial/industrial sound source only and has to be corrected to take account of other sound sources generally in the area, residual sound.

3.24 BS4142, in Section 9, identifies that certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where present at the assessment location, such features are taken into account by adding a correction to the specific sound level to obtain the rating level. A correction should be applied if one or more of the following features occur, or are expected to be present for new or modified sound sources:

*Tonality-* for sound ranging from not tonal to prominently tonal a correction of 0 to 6dB should be considered

*Impulsivity-* A correction of up to 9dB can be applied for sound that is highly impulsive, considering both the rapidity and overall change in sound level.

*Other* – Where a sound features characteristics that are neither tonal nor impulsive but are readily distinctive against the residual environment a penalty of 3dB can be applied.

*Intermittency-* If Intermittency is distinctive against the residual environment a penalty of 3dB can be applied.

3.25 With regard to undertaking the assessment, BS4142 indicates that the context of the sound must be taken into consideration.

# 4.0 BASELINE NOISE LEVELS

4.1 Attended daytime and night-time baseline noise measurements were undertaken by AEC at ground floor level on the northern and eastern elevations of the existing building from 2300h on Thursday 14 August to 0030h on Friday 15 August 2025 and from 1345h to 1515h on Monday 18 August 2025. The measurement locations are shown as A, B (night-time) and C (daytime) on Figure 4.1 below.

**Figure 4.1 – Measurement Locations**




**Imagery @2025 Google, Imagery @2025 Infoterra Ltd & Bluesky, Maxar Technologies, The Geoinformation Group, Map Data @2025**

4.2 The noise measurements were carried out under free-field conditions and in general accordance with BS7445-1: 2003 *'Description and measurement of environmental noise. Guide to quantities and procedures.'*

4.3 Full details of the noise surveys are provided in Appendix B. The measured noise levels are shown in Table 4.1 below.

**Table 4.1 –Summary of Measured Daytime and Night-time Noise Levels**

| Date | Start Time | Location | Period | Duration | Noise Level | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $dBL_{Aeq,T}$ | $dBL_{A10,T}$ | $dBL_{A90,T}$ | $dBL_{AMax,F}$ | |
| 18/08/2025 | 13:45 | C | Day | 00:15:00 | 70.4 | 70.1 | 57.8 | - | Road traffic / delivery to convenience store |
| 18/08/2025 | 14:00 | | | 00:15:00 | 69.9 | 71.7 | 57.3 | - | |
| 18/08/2025 | 14:15 | | | 00:15:00 | 71.4 | 71.3 | 58.6 | - | |
| 18/08/2025 | 14:30 | | | 00:15:00 | 66.9 | 70.0 | 57.7 | - | |
| 18/08/2025 | 14:45 | | | 00:15:00 | 67.2 | 70.2 | 58.4 | - | |
| 18/08/2025 | 15:00 | | | 00:15:00 | 69.6 | 70.6 | 56.2 | - | |
| **Average** | | | | | **70** | - | **58** | - | |
| 14/08/2025 | 23:07 | A | Night | 00:10:00 | 62.7 | - | 51.4 | 81.8 | Road traffic dominant noise source |
| 14/08/2025 | 23:40 | | | 00:10:00 | 63.5 | - | 49.7 | 73.8 | |
| 14/08/2025 | 23:51 | | | 00:10:00 | 63.7 | - | 51.9 | 78.5 | |
| **Average** | | | | | **63** | - | **51** | **81.8** | |
| 14/08/2025 | 23:19 | B | Night | 00:10:00 | 65.4 | - | 55.9 | 75.9 | |
| 14/08/2025 | 23:30 | | | 00:10:00 | 65.5 | - | 54.3 | 79.8 | |
| 15/08/2025 | 00:02 | | | 00:10:00 | 64.1 | - | 49.3 | 84 | |
| **Average** | | | | | **65** | - | **53** | **84.0** | |

4.4 At all locations during both the daytime and night-time periods, the dominant noise source was observed to be road traffic. There was also a delivery to the convenience store during the daytime period between 1400h and 1430h.

# 5.0 ASSESSMENT OF PROPOSED DEVELOPMENT

## External Noise Levels

5.1 British Standard (BS) 8233:2014 '*Guidance on sound insulation and noise reduction for buildings'* (BS8233) describes how noise levels can be determined and assessed from different sources in chapters 6.2 to 6.7.

5.2 In relation to road traffic noise, BS8233 states that the noise from road traffic can be determined using the Department of Transport Welsh Office document '*Calculation of Road Traffic Noise'* issued in 1988 (CRTN). CRTN presents the shortened measurement procedure which can be used to convert the arithmetic mean of the measured $L_{A10,T}$ levels (measured over 3 consecutive hours during the period 1000h to 1700h) into an 18-hour $L_{A10}$ level by subtracting 1dB.

5.3 BS8233 suggests that the conversion of the $L_{A10,18h}$ to $L_{Aeq,16h}$ can be achieved by the (approximate) relationship of $L_{Aeq,16h} = L_{A10,18h} – 2dB$. Therefore, the daytime ambient noise level can be determined by subtracting 3dB from the arithmetic mean of the $L_{A10,T}$ levels measured on-site over 3 consecutive hours (between 1000 and 1700h).

5.4 However, in this case, given that the measured ambient noise level is higher than the calculated ambient noise level, the measured noise level has been used in order to provide a more robust assessment.

5.5 For the night-time period, the average measured ambient and maximum noise level have been used in the assessment.

5.1 The following Table 5.1 shows the determined daytime ambient and night-time ambient and maximum noise levels used in the noise assessment.

**Table 5.1 – Determined Daytime and Night-time Assessment Noise Levels**

| Noise Level, dB | | |
|---|---|---|
| **Daytime 0700-2300, $L_{Aeq,16h}$** | **Night-Time** | |
| | **2300-0700h, $L_{Aeq,8h}$** | **Maximum, $L_{Amax,F}$** |
| 70 | 65 | 84 |

## Glazing and Ventilation Requirements

5.2 The maximum allowable external noise levels for properties to have whole building ventilation provided via a partially open window, is $50dBL_{Aeq,16h}$ during the daytime and $45dBL_{Aeq,8h}$ and $60dBL_{Amax,F}$ at night.

5.3 A comparison of the external noise levels presented in Table 5.1 above with the allowable external noise levels demonstrates that all habitable rooms will need to be provided with alternative means of background ventilation in order that the requirements of BS8233 and ProPG can be achieved with windows closed.

5.4 Noise break-in calculations have been carried out to determine the acoustic requirements of the glazing and ventilation to achieve appropriate internal noise levels. Calculations are based on the measured noise spectrum and room and glazing sizes provided by the client. The minimum required glazing and ventilator performances and an example glazing build-up are provided in Table 5.2, below.

**Table 5.2 –Minimum Glazing and Ventilation Sound Insulation Requirements**

| Period | Glazing Requirement | Ventilator |
|---|---|---|
| Day (Living Rooms) | $41dBR_w$ and $35dBR_w + C_{tr}$ | 44dB $D_{n,e,w}$* |
| Night (Bedrooms) | $41dBR_w$ and $35dBR_w + C_{tr}$ | 46dB $D_{n,e,w}$* |

*Ventilator specification can be achieved either with a through the wall vent or mechanical ventilation

5.5 Specific product test data should be obtained, and checked by an acoustician for compliance with the specification in Table 5.2, prior to procurement and installation. The ventilator requirements are specified in the open position.

5.6 All ventilation requirements have been based on the use of a single ventilator per room. If more than one unit is required, such as may be required to satisfy Building Control requirements, the performance of each unit would need to be increased.

5.7 Windows can be openable provided that they are effectively acoustically sealed when closed and it is important that any frames and seals do not downgrade the sound insulation performance of the glazing.

## Control of Overheating

5.8 A comparison between the determined noise levels shown in Table 5.1 and those provided in Table 3.2, indicates that windows to habitable rooms would require windows to be closed and the control of overheating provided by alternative means during both the daytime and night-time periods. Depending on ceiling heights, cooling may be achieved by the introduction of ceiling fans. This will require development.

## Noise from External Mechanical Plant

### Existing Properties

5.9 The existing external wall units are to be relocated from the eastern wall to the new rear wall of the on the roof of the ground floor extension, as shown in the following Figure 5.1.

**Figure 5.1 – Plant Location**




**Imagery @2025 Google, Imagery @2025 Infoterra Ltd & Bluesky, Maxar Technologies, The Geoinformation Group, Map Data @2025**

### Source Noise Levels

5.10 The source noise level of all existing units operating simultaneously was measured and determined to be 59dB$L_{Aeq,T}$ at a distance of 3m.

5.11 The measured source noise level has been used to calculate the noise impact resulting from the relocation of the units at the nearest existing noise sensitive property to the south on Yew Tree Road. The predicted noise level based on all three units operating simultaneously is provided in the following Table 5.3.

**Table 5.3 – Predicted Noise Level at Nearest Existing Noise Sensitive Receptor**

| Cumulative Measured Source Noise Level, dBA | Reference Distance, m | Approximate Receiver Distance, m | Predicted Noise Level, dBA |
|---|---|---|---|
| 59 | 3 | 8 | 50 |

### Background Sound Level

5.12 A representative background noise level for the daytime period (0700-2300h) has been determined based on the average daytime background noise level during the daytime period at Location A and the night-time period at Location C.

### BS4142 Sound Character Penalty

5.13 Given that there is already a clear line of sight from the closest noise sensitive property to the units in the existing location, it is not considered necessary to apply any noise character penalty to the specific sound level to determine the rating level.

### BS4142 Rating Level Assessment

5.14 The following Table 5.4 shows the specific sound level, background noise level and rating level. The difference between the rating level and background noise level has also been provided.

**Table 5.4 – BS4142 Assessment (Existing Properties)**

| Sound Level, dB | | | | |
|---|---|---|---|---|
| Specific Sound Level, $L_{Aeq,Tr}$ | Character Correction | Rating Level, $L_{Ar,Tr}$ | Representative Background Noise Level, $L_{A90,T}$ | Excess of Rating Over Background |
| 50 | 0 | 50 | 55 | -5 |

5.15 The above assessment indicates that noise from the operation of the units would be 5dB below the representative background noise level for the daytime period (0700-2300h) and would achieve the Manchester City Council requirement for plant noise.

## Proposed Properties

5.16 In addition to the above, the measured source noise level has been used to calculate the noise impact resulting from the relocation of the units on the nearest proposed dwelling associated with the development. The predicted noise level based on all three units operating simultaneously is provided in the following Table 5.5.

**Table 5.5 – Predicted Noise Level at Nearest Proposed Noise Sensitive Receptor**

| Cumulative Measured Source Noise Level, dBA | Reference Distance, m | Approximate Receiver Distance, m | Predicted Noise Level, dBA |
|---|---|---|---|
| 59 | 3 | 2 | 63 |

5.17 The ambient noise level at the closest proposed noise sensitive property to the units at location A was determined to be 63dB$L_{Aeq,T}$ during the night-time period. The glazing and ventilation requirements have been determined to achieve an internal noise limit of 30dB$L_{Aeq,T}$ for the night-time period. Therefore, in meeting this requirement for ambient noise levels, and based on the predicted noise level from the units, the recommended internal noise levels for the daytime period would also be achieved.

# 6.0 SUMMARY AND CONCLUSION

6.1 Acoustic & Engineering Consultants Limited (AEC) has been appointed by JD Northwest Ltd Management to undertake a noise assessment as part of the planning application for the proposed ground floor extension to the existing commercial premises and first floor extension to create 2no. apartments at 129 Wilbraham Road, Manchester.

6.2 This assessment considers the glazing performance and ventilation strategy required to meet appropriate internal noise level limits and the sound insulation performance of the existing separating floor between the ground and first floors.

6.3 This report also provides an assessment of the potential noise impact associated with the relocation of 3no. mechanical vent wall units from the eastern wall of the existing building to the rear wall on the roof of the newly formed ground floor extension.

6.4 Attended daytime and night-time baseline noise surveys were undertaken by AEC at ground floor level on the northern and eastern elevations of the existing building from 2300h on Thursday 14 August to 0030h on Friday 15 August 2025 and from 1345h to 1515h on Monday 18 August 2025

6.5 The dominant noise source during both the daytime and night-time periods was observed to be road traffic.

6.6 Based on the noise assessment, mitigation measures are required to control internal noise levels to meet the levels provided in BS8233 and ProPG in all habitable rooms during both the daytime and night-time periods of the proposed development. The mitigation measures are in the form of acoustic ventilators and enhanced acoustic glazing as discussed in Section 5.0 of this report.

6.7 The separating floor between the ground floor unit and first floor apartments should comply with the minimum sound insulation performance requirements of Approved Document E (ADE). This would be suitable for the current use as a convenience store.

6.8 An assessment of the potential noise impact resulting from the relocation of the existing mechanical wall vent units at the nearest existing and proposed noise sensitive properties has been undertaken based on the source noise level of the existing units.

# APPENDIX A – Acoustic Terminology

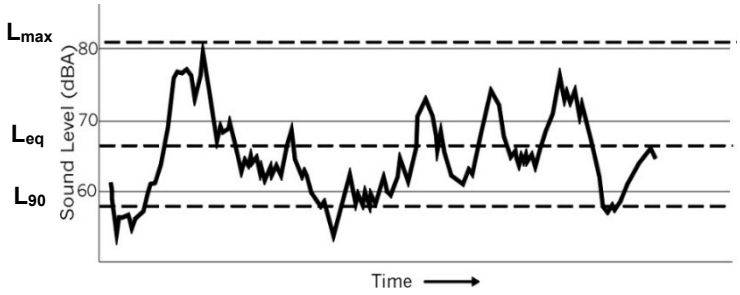
## General

Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The rate at which the pressure fluctuations occur determines the pitch or *frequency* of the sound. The frequency is expressed in Hertz *(Hz)*, that is, cycles per second. The human ear is sensitive to sounds from about 20 Hertz to 20,000 Hertz. Although sound can be of one discreet frequency - a 'pure tone' - most noise is made up of many different frequencies.

The human ear is more sensitive to some frequencies than others, and modern instruments can measure sound in the same subjective way. This is the basis of the A-weighted sound pressure level *dBA,* normally used to assess the effect of noise on people. The dBA weighting emphasizes or reduces the importance of certain frequencies within the audible range

## Sound / Noise Units

The figure below shows an example of sound level varying with time. Because of this variation over time the same period of noise can be described by several different levels. The most common of these are described below.




| Commonly Used Descriptors for Sound / Noise | |
|---|---|
| $L_{Amax,F/S}$ | The maximum (A-weighted) sound level measured during a given time. 'Fast' or 'Slow' meter response should be cited. |
| $L_{Aeq,T}$ | The equivalent continuous (A-weighted) sound level. It may be thought of as the "average" sound level over a given time, T. It is used for assessing noise from various sources: industrial and commercial premises, construction sites, railways and other intermittent noises. **It can be considered as the "ambient" noise level.** |
| $L_{A90,T}$ | The (A-weighted) sound level exceeded for 90% of a measurement period. **It is the value often used to describe the "background" noise.** |
| $L_{A10,T}$ | The (A-weighted) sound level exceeded for 10% of a measurement period. It is the value often used to describe traffic noise. |
| **Free-field Level** | This refers to the sound level measured outside, away from reflecting surfaces. |
| **Façade Level** | This refers to the sound level measured outside, at 1m from a hard reflecting surface, typically 3dB greater than the free-field level. |
| $R_w$ | Single number rating used to describe the laboratory airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz. |

| | |
|---|---|
| **$R'_w$** | Apparent sound reduction index - Single number rating used to describe the sound reduction index of an on-site construction over a range of frequencies, typically 100-3150Hz. |
| **$D_w$** | Single number rating used to describe the on-site airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz. |
| **$D_{nT,w}$** | Weighted standardized level difference. A single number rating used to describe the on-site airborne sound insulation performance properties of a material or building element over a range of frequencies, typically 100-3150Hz. Standardized to a reference reverberation time of 0.5s (unless otherwise stated). |
| **$D_{n,e,w}$** | Element normalised level difference. Single number rating used to describe the sound insulation performance of small elements |
| **$C_{tr}$** | A road traffic spectrum adaptation term which is used to describe the low frequency sound insulation performance of building elements. |

# APPENDIX B – Noise Survey Details

| | | | | | |
|---|---|---|---|---|---|
| **Date & Time of Survey:** | 2300h Thursday 14 to 0030h Friday 15 August 2025.<br>1345-1515h Monday 18 August 2025. | | | | |
| **Personnel:** | Paul Knowles (AEC).<br>Liam Harrison (AEC). | | | | |
| **Equipment Used:** | B&K 2260 Real Time Analyser (AEC Kit 2).<br>NTI XL2-TA Sound Level Meter (AEC Kit 6). | | | | |
| **Calibration:** | The sound level analyser, which conforms to BS EN 61672-1: 2013 *'Electroacoustics – Sound level meters - Part 1 Specifications'* for Class 1 Type Z meters, was in calibration and check calibrated before and after the measurement periods using a Brüel & Kjær type 4231 (94dB) calibrator. There was no significant drift of calibration. Calibration certificates are available on request. | | | | |
| **Weather Conditions:** | **Date** | **Period** | **Wet/Dry** | **Avg Temp°C** | **Wind Direction** |
| | 14-15/08/2025 | Night | Dry | 16°C | 1m/s southerly |
| | 18/08/2025 | Day | Dry | 19°C | 3m/s east/north/easterly |
| **Measurement Locations:** | Measurements were undertaken at three locations around the development site shown as A, B and C on Figure 4.1 and described below.<br><br>A – 2m from nearest carriageway of Yew Tree Road.<br>B – 2m from nearest carriageway of Wilbraham Road.<br>C - 2m from nearest carriageway of Yew Tree Road. | | | | |
| **Measurement Details:** | Measurements were undertaken over 15-minute periods in terms of and $L_{eq}$, $L_{10}$, $L_{90}$ and, $L_{max}$. | | | | |
| **Façade / Free-Field:** | Free-field | | | | |
| **Measured Data:** | Results are shown in Table 4.1.<br>Full octave band centre frequency data was obtained for all measurements. | | | | |