



# **KIER SHARSTON LIMITED**

**SHARSTON ROAD, WYTHENSHAW**

**NOISE IMPACT ASSESSMENT FOR PLANNING PURPOSES**

**04 August 2025**

**AEC REPORT: P5645/R1/AGB**

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## DOCUMENT STATUS

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## 1.0 INTRODUCTION

- 1.1 Acoustic and Engineering Consultants Limited (AEC) has been instructed by Kier Sharston Limited to undertake a noise impact assessment in relation to a new industrial development, Sharston Industrial Estate, Wythenshawe. The assessment is to be submitted in support of a full Planning Application for the development.
- 1.2 This report presents details of the on-site baseline noise measurements undertaken by AEC, identifies the potential noise sources associated with the development and presents an assessment of the noise potentially impacting on the nearest residential properties, with reference to appropriate guidance.
- 1.3 The Planning Application is for the creation of a Class B2/B8 development with ancillary office space at first floor with associated external works for servicing and parking. The proposed use is for 24 hours per day 7 days per week with no restrictions on servicing hours.
- 1.4 Acoustic terminology used throughout this report is described in brief in Appendix A.

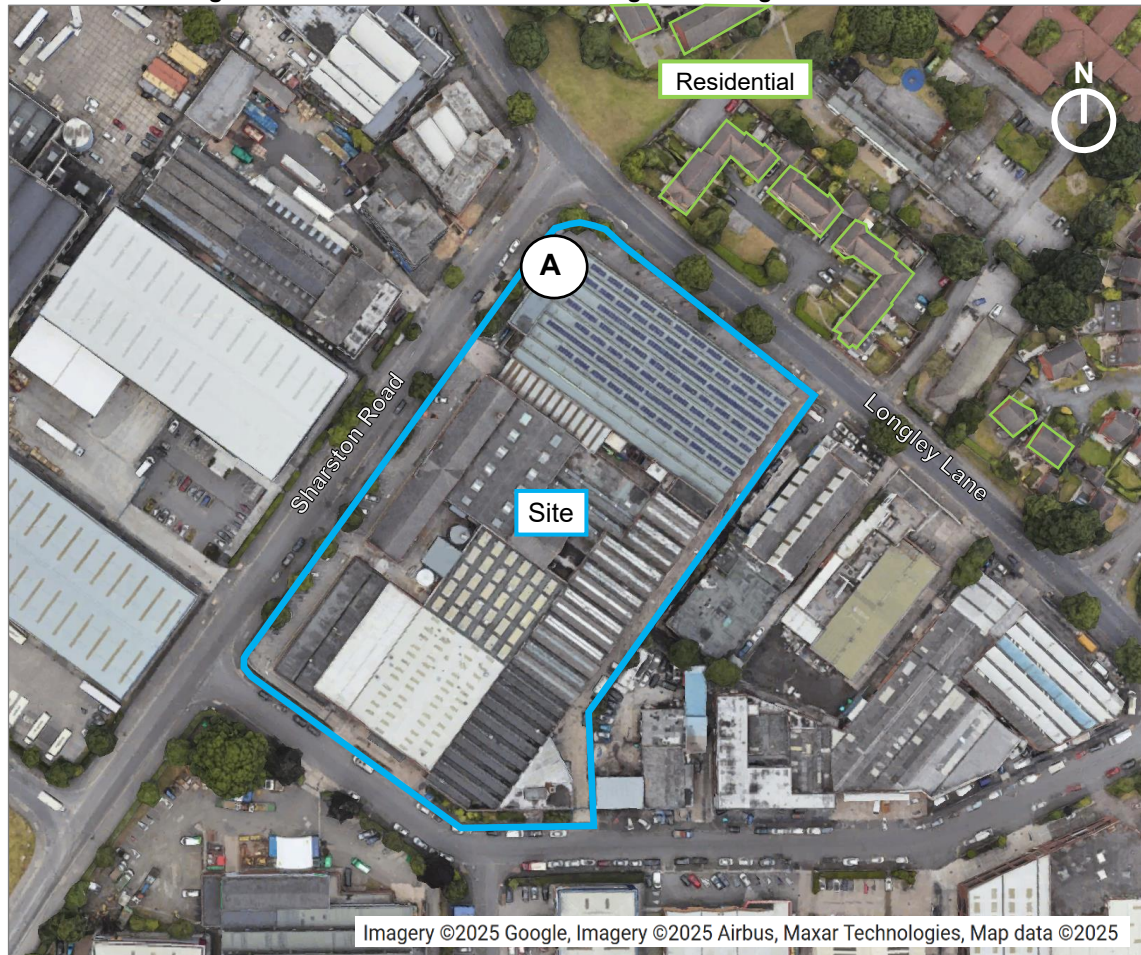
## 2.0 SITE AND DEVELOPMENT DESCRIPTION

- 2.1 The development site is located at the intersection of Sharston Road and Longley Lane in Manchester as identified by the blue line showing the approximate border on Figure 3.1, below.
- 2.2 The site is currently occupied by several ageing industrial units which are proposed to be demolished as part of the redevelopment. It lies within an area characterised predominantly by commercial and industrial uses.
- 2.3 As identified on Figure 3.1, the site is surrounded on most sides by existing commercial buildings including light industrial and warehouse units, which act as a buffer in terms of acoustics.
- 2.4 The nearest residential receivers are located directly north of the site on Longley Lane directly opposite the site. Other residential receivers are some 450m to the west and then some 450m to the south beyond the M56.
- 2.5 The proposed development will consist of a larger unit to the south then two rows of adjoining units with central servicing and car parking. The northern most row will provide a significant acoustic buffer to the nearest residential properties to the north. The proposed site layout is attached as Figure A at the end of the report.
- 2.6 The main noise associated with the development will be delivery noise and noise from potential external mechanical services plant. There is no heavy industry associated with the development and, as such, internal noise break-out is not considered to be an issue, although this element is discussed further below.

### 3.0 BASELINE NOISE CLIMATE

- 3.1 A logging sound level meter was installed at a single location identified as A on Figure 3.1. Noise levels were continuously logged from approximately 1400h on Tuesday 22 July 2025 to 1100h on Friday 25 July 2025.

Figure 3.1 – Site Location Plan Showing Monitoring Locations



- 3.2 All measurements were undertaken in accordance with guidance presented in BS 4142:2014 *'Methods for rating and assessing industrial and commercial sound'*. Full details of the measurement procedure are attached as Appendix B with the measured data presented in Figure B.1 of Appendix B.
- 3.3 Background noise levels in the area were largely due to the motorways within around 400m of the site including the M60 to the northeast and M56 to the south and northwest. In summary, the typical measured background noise levels are presented in the Table 3.1.

Table 3.1 – Summary of Typical Free-field Noise Levels

| Period              | Noise Level, dB                   |                                      |
|---------------------|-----------------------------------|--------------------------------------|
|                     | Ambient<br>L <sub>Aeq,15min</sub> | Background<br>L <sub>A90,15min</sub> |
| Night (2300h-0700h) | 50                                | 40                                   |
| Day (0700h-2000h)   | 63                                | 53                                   |
| Eve (2000h-2300h)   | 60                                | 47                                   |

## 4.0 ASSESSMENT METHODOLOGY

### National Planning Policy Framework

- 4.1 Current national planning policies are set out in the National Planning Policy Framework (NPPF) published by the Department for Communities and Local Government, dated March 2012, and revised most recently in December 2024.
- 4.2 The planning policies which relate specifically to or are considered relevant to noise, are presented in paragraphs 187, 198, 200 which 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.*

- 4.3 Further to the above, the Governments ‘*Planning Practice Guidance*’ (PPG) published on 6 March 2014 and most recently 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.’*

- 4.4 In addition, with regard to the potential for noise to override other planning concerns, the Planning Practice Guidance states:

*It can, but neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation,*

*separately from the economic, social and other environmental dimensions of proposed development.*

4.5 When considering the acoustic environment in relation to plan-making and decision making, the Planning Practice Guidance states that Local Authorities should take into account:

- whether or not a significant adverse effect is occurring or is likely to occur;
- whether or not an adverse effect is occurring or likely to occur; and
- whether or not a good standard of amenity can be achieved.

4.6 The terms '*significant adverse*' and '*adverse*' above are referenced to the Noise Policy Statement for England (NPSE), published by Department for Environment, Food and Rural Affairs (DEFRA) dated March 2010. One of the main aims of this policy is also to avoid significant adverse effects on health and quality of life.

4.7 With respect to the two terms above, the explanatory note for the NPSE introduces two concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation (WHO). 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.*

*Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.*

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

## **Manchester City Council**

4.3 Manchester City Council's (MCC) "*Planning and Noise - Technical Guidance*" document, dated October 2022 provides technical guidance in relation noise related planning issues.

4.4 With regard to noise from commercial / industrial developments, MCC states that guidance in BS4142:2014 '*Methods for rating and assessing industrial and commercial sound*' (BS4142) should be used. Details of the guidance are discussed below.

MCC indicates that:

*'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'.*

4.5 Where this criterion cannot be achieved, the various noise control measures considered as part of the assessment should be fully explained (i.e. relocation of noise sources, use of quieter equipment, enclosures, screening, restriction of the hours of operation) and the achievable noise level should be identified. This information will allow a judgement to be made concerning the application and its likely impact on the surrounding area.

4.6 In addition to the above, maximum noise levels should also be adequately controlled. Where particular uses generate high noise levels of a short duration (e.g. loud bangs) on a regular basis, these should aim to be controlled so as not to exceed 60 dB ( $L_{Amax}$ ) at the façade of noise sensitive premises nearby in accordance with the recommendations of the WHO.

- 4.7 Deliveries and collections are usually controlled by restricting operational hours but depending on the extent of these activities, a Noise Management Plan (NMP) may be requested, which would include an assessment of noise. This would usually involve assessing the noise upon arrival, loading/unloading period and then departure.
- 4.8 The NMP may also need to include controls such as acoustically sealed delivery bays, and restrictions on vehicle mounted refrigeration units and audible alarm systems. Where applicable, the noise assessment will take account of multiple noise sources operating simultaneously and report the cumulative impact.

## BS4142: 2014

- 4.9 To assess potential atmospheric plant noise, consideration has been given to BS 4142:2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' (BS4142). This standard describes methods for rating and assessing industrial and commercial sound by comparing the specific sound level, that is directly attributable to the industrial/commercial sound, to the prevailing background sound level (dBL<sub>A90, T</sub>) over relevant periods that the activities occur.
- 4.10 It is necessary to determine the specific sound level from the proposed mechanical plant over a period of one hour during the daytime and/or 15 minutes during the night-time periods. Daytime is normally considered to be over the period 0700 to 2300 hours and night-time 2300 to 0700 hours.
- 4.11 Section 9 of BS4142 identifies that certain acoustic features can increase the significance of the 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 noise 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.

| Character                                          | Correction |
|----------------------------------------------------|------------|
| Tonality                                           | 0 to 6dB   |
| Impulsivity                                        | Up to 9dB  |
| Other (neither tonal or impulsive but distinctive) | 3dB        |
| Intermittency                                      | 3dB        |

- 4.12 The significance of the potential impact is indicated by subtracting the background sound level from the noise rating level. Typically, the greater this difference, the greater the magnitude of the impact as described below.

| Difference       | Impact                                                                                 |
|------------------|----------------------------------------------------------------------------------------|
| +10dB or greater | Likely indication of significant adverse impact depending on the context               |
| ≈ +5dB           | Likely to be an indication of an adverse impact, depending on the context.             |
| 0dB              | indication of the specific sound source having a low impact, depending on the context. |

- 4.13 Furthermore, BS4142 states that the context of the noise will affect the overall significance of adverse impacts.

- 4.14 Section 11 of BS4142, indicates that where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night. For the purposes of this assessment, it is considered that background noise levels below about 30dB and rating levels below about 35dB are low.
- 4.15 Based on the above, it is considered that any mechanical plant and ancillary equipment should be designed in order that the noise rating level is no greater than the typical background noise level minus 5 dB over the period that the plant would be operational. As a worst-case situation, this would have a low adverse effect.

## 5.0 ASSESSMENT

### General

- 5.1 As discussed above, to make the site viable, flexibility is required so the proposals are to allow for 24/7 operation.
- 5.2 The noise associated with the future site will be due to:
- Deliveries;
  - Noise break-out from within the units;
  - Mechanical plant serving the units;

Each of these noise sources are discussed in further detail below.

### Delivery Noise

#### Source Data for Noise Prediction

- 5.3 Based on extensive noise level measurements undertaken by, the anticipated noise levels due to HGV and Van deliveries are presented in Table 5.1, below.

**Table 5.1 – Previously Measured Noise Levels for Van & HGV Loading/Unloading Activities at 10m**

| Activity               | Noise Level at 10m, dB |                  |                   |
|------------------------|------------------------|------------------|-------------------|
|                        | L <sub>AE</sub>        | L <sub>Aeq</sub> | L <sub>Amax</sub> |
| <b>Van Noise</b>       |                        |                  |                   |
| Van manoeuvring        | 76                     | -                | 66                |
| Van Idling             | -                      | 54               | -                 |
| Loading / Unloading    | -                      | 53               | 65                |
| Van pass-by            | 74                     | -                | -                 |
| <b>HGV Noise</b>       |                        |                  |                   |
| HGV arriving / pass-by | 84                     | -                | 75                |
| HGV manoeuvring        | 86                     | -                | 72-79             |
| HGV idling             | -                      | 63               | -                 |
| Loading/unloading      | -                      | 60               | 76-80             |

#### Process for Delivery

- 5.4 The assessment is based on the following van unloading process:
- Van enters the site and drives to unit, travelling at no greater than 15mph;
  - Van reverses to the unit up roller shutter door, which is opened to the height of the vehicle only (free area circa 10m<sup>2</sup>) and internal noise levels no greater than 75dB(A);
  - Van is unloaded / loaded;
  - Engine is switched off during the loading process;
  - Van drives off the site via the same route that it entered.

5.5 For HGV deliveries, the following process has been used in the assessment:

- HGV arrives at site and drives to unit at no greater than 15mph;
- HGV turns into the service yard and manoeuvres into position to reverse onto the HGV loading bay, travelling at no greater than 10mph (and any bay could be used during the night-time and the daytime);
- Roller shutter is open to the height of the vehicle only (circ 10m<sup>2</sup>) and internal noise levels no greater than 75dB(A);
- HGV is unloaded / loaded;
- HGV is switched off during the loading process;
- HGV drives off the site via the same route.

5.6 To produce the model for night-time delivery noise, it has been assumed that in the worst-case single 15-minute assessment period, the following loading activities could occur.

|             |                                                   |
|-------------|---------------------------------------------------|
| Unit 1      | 1 HGV entering or leaving, 1 HGV being unloaded.  |
| Units 2 – 5 | 1 HGV entering or leaving, 1 HGV being unloaded.  |
| Units 6 – 9 | 1 Van entering or leaving, 1 vans being unloaded. |

5.7 For the daytime it has been assumed that in the worst-case 1-hour assessment period, the following loading activities could occur.

|             |                                                       |
|-------------|-------------------------------------------------------|
| Unit 1      | 1 HGV entering, 1 HGV leaving, 2 HGVs being unloaded. |
| Units 2 – 5 | 1 HGV entering, 1 HGV leaving, 2 HGVs being unloaded. |
| Units 6 – 9 | 1 Van entering, 2 van leaving, 2 vans being unloaded. |

5.8 It is important to note that the above is considered to represent a 'worst-case' 15-minute period for night-time deliveries and in reality, it is unlikely that this scenario would occur and it certainly should be not considered as a normal scenario.

### **Noise Map of Deliveries ( $L_{Aeq}$ Noise Levels)**

5.9 With reference to the above, noise levels affecting the nearest residential properties have been modelled using our CadnaA® noise mapping software which predicts environmental noise levels in accordance with guidance in ISO 9613-2:1996 '*Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation*'.

5.10 The predicted noise levels are presented on Figure B for the daytime period and Figure C for the night-time period. The levels predicted relate to a 1-hour period during the daytime and a 15-minute period during the night-time. It is important to note that the noise levels presented are considered to represent a 'worst-case'.

5.11 A BS4142 assessment, based on the calculated delivery noise levels for the worst affected residential property is presented in Table 5.2 below.

5.12 As the existing residential properties around the site are already affected by relatively high traffic noise levels from the surrounding roads and there are already deliveries occurring in the area as a result of a significant number of existing retail and commercial premises, it is considered that the site should be considered in this context i.e. the residential properties are already subjected to noise from the types of sources that will be associated with the development.

**Table 5.2 – BS4142 Assessment of Delivery Noise Levels**

| Description                                | Royle Green Road |
|--------------------------------------------|------------------|
| <b>Daytime (1-hour period)</b>             |                  |
| Specific Noise Level (dBL <sub>Aeq</sub> ) | 32               |
| Character adjustment                       | +3               |
| Rating Noise Level, dB                     | 35               |
| Background (dBL <sub>A90</sub> )           | 53               |
| <b>Rating Minus Background</b>             | <b>-18</b>       |
| <b>Night-time (15-minute period)</b>       |                  |
| Specific Noise Level                       | 34               |
| Character adjustment                       | +3               |
| Rated Noise Level                          | 37               |
| Background                                 | 40               |
| <b>Background Minus Rated</b>              | <b>-3</b>        |

- 5.13 With reference to the delivery noise assessment presented in Table 5.2, during the daytime in all instances, the rating level is more than 10dB below the background level which is a clear indication that there would be no observed adverse effects. The daytime rating level of 35dBL<sub>Aeq,1hour</sub> is also 12dB below the evening background noise level of 47dBL<sub>A90,1hour</sub>.
- 5.14 Furthermore, the noise levels are in line with MCC's requirements. Lastly in terms of context, as identified above there are already a large number of retail / commercial properties in the area of the residential properties. As such, potential daytime noise levels are considered to be acceptable.
- 5.15 In terms of the night-time in all instances the rated delivery noise levels should be no higher than the background level minus -3dB. This is considered to represent a low observed effect level. Furthermore, the noise levels are approximately in line with MCC's requirements. Lastly in terms of context, as identified above there are already a large number of retail / commercial properties in the area of the residential properties. As such, potential worst case night-time noise levels are considered to be acceptable.
- 5.16 The above is considered to clearly demonstrate that the units could be serviced 24-hours per day, 7 days per week with no observed effect, or, as a worst-case situation, a low observed effect level at night. As such, 24-hour servicing should be deemed acceptable within the constraints laid out above.

#### Maximum Noise Levels Due to Deliveries

- 5.17 With reference to the maximum noise levels presented in Table 5.1 above, the predicted night-time maximum noise levels inside bedrooms of Royle Green Road (the worst-case affected residential properties) are presented in Table 5.3, below.
- 5.18 The -13dB noise reduction across an open window that is used in Table 5.5 is based on guidance in the Association of Noise Consultants (ANC) '*Acoustics Ventilation and Overheating - Residential Design Guide*' Ver 1.1 January 2020 (AVO). It relates to a window that is open to approximately 2% of the floor area to control summertime overheating.

**Table 5.3 – Anticipated Maximum Noise Levels Due to Deliveries (2300h to 0700h)**

| Source             | L <sub>Amax</sub><br>@10m | Approx.<br>Distance<br>To<br>Residential | Distance<br>Attenuation | Screening<br>Attenuation | Window<br>Attenuation | Internal<br>Level<br>L <sub>Amax</sub> |
|--------------------|---------------------------|------------------------------------------|-------------------------|--------------------------|-----------------------|----------------------------------------|
| HGV<br>Manoeuvring | 79                        | 120                                      | -22dB                   | 0dB                      | -13dB                 | 44dB                                   |
| HGV Unloading      | 80                        |                                          |                         |                          |                       | 45dB                                   |
| Van<br>Manoeuvring | 71                        | 100                                      | -20dB                   | -10dB                    |                       | 28dB                                   |
| Van Unloading      | 69                        |                                          |                         |                          |                       | 26dB                                   |

- 5.19 As stated in the World Health Organisation's (WHO) 'Guidelines for Community Noise' (1999), maximum noise levels should not regularly exceed 45dBL<sub>Amax</sub> in bedrooms during the night-time period (2300h to 0700h) in order to minimise the risk of sleep disturbance.
- 5.20 The resultant worst-case internal maximum noise levels due to delivery noise, as presented in Table 5.3 are below the WHO night-time maximum noise limit, with the majority of maximum events being lower. This further demonstrates that night-time deliveries are acceptable in terms of noise.

## Noise Break-out

### Assumed Internal Noise Level

- 5.21 It is assumed that reverberant noise levels inside light industrial uses would be no greater than 75dBL<sub>Aeq,T</sub>. This is considered a reasonable assumption and in reality, noise levels in warehouses would typically be lower.

### External Envelope

- 5.22 Based on the assumption that the roof, side, and rear facades of the buildings would be constructed from a twin metal skin with mineral wool in the cavity, with reference to Speedeck data, this construction should provide a sound insulation performance of approximately 37dBR<sub>w</sub>.
- 5.23 Based on the above, a noise break-out calculation has been undertaken to the worst-case affected properties on Longley Lane, approximately 30 metres from the closest units, which demonstrate that noise levels would be no greater than 26dB(A) (assuming 75dB(A) internally). The calculation sheet is included in Appendix C.

### Closed Roller Shutter Doors

- 5.24 In terms of roller shutter doors, a basic door provides a sound insulation performance of around 17dBR<sub>w</sub> and an insulated door would normally provide a higher acoustic performance. Based on an internal noise level of no greater than 75dBL<sub>Aeq</sub> as an internal reverberant level, the noise levels at Longley Lane would be no greater than around 23dBL<sub>Aeq</sub> due to breakout from roller shutters from all units combined.
- 5.25 As such, assuming roller shutter doors were closed, the combined break-out noise level would be some 17dB below the night-time background noise levels. Even allowing for noise character, a BS4142 assessment indicates that this would represent no impact or, as a worst-case situation, a low impact.
- 5.26 This clearly demonstrates that with roller shutter doors closed and a reasonable internal noise limit set, noise break-out from the units would be controlled to an appropriate level even during the night-time periods.

### **Open Roller Shutter Doors**

- 5.27 Assuming the roller shutter doors to all units are open, all operating at internal noise levels of  $75\text{dB}_{\text{LAeq,T}}$ , calculations indicate that the noise levels affecting the nearest residential properties would be some  $41\text{dB}_{\text{LAeq,T}}$ .
- 5.28 Assuming a +3dB character correction the resultant noise rating level of  $44\text{dB(A)}$  minus the daytime background noise level of  $53\text{dB}_{\text{LA90,T}}$  is some -9dB. This indicates no impact or a low impact in the day, and should be deemed acceptable.
- 5.29 In terms of the night-time, the noise rating level minus the background noise level of  $40\text{dB}_{\text{LA90,T}}$  results in a +4dB difference. Based on this it is considered that the shutters should not remain open for extended periods during the night-time. However, it is considered acceptable to open the roller shutter doors during night-time deliveries as the HGV or van in question would screen the noise break-out and, furthermore, the likelihood of all units having a delivery at the same time is practically zero, meaning that the noise levels affecting the residential properties would be significantly lower than stated above.

### **Plant Noise Levels**

- 5.30 In terms of mechanical plant, each unit may have an external item of plant, however these will be located away from the residential properties on Longley Lane and therefore should be screened.
- 5.31 Based on the night-time background noise level of  $40\text{dB}_{\text{LA90,15mins}}$ , the combined noise level of all external plant should be controlled to not exceed  **$35\text{dB}_{\text{LAeq,15mins}}$**  at the nearest residential properties on Longley Lane. This will meet MCC's requirements.
- 5.32 Assuming full screening (no line of sight to plant items from the residential properties), then, as an indication, the individual plant items could be approximately  $58\text{dB}_{\text{LAeq,T}}$  at 3 metres. This is an indicative noise limit only assuming one item per unit, and this will need to be reviewed when final plant locations and selections are being made. However, this is not an overly onerous limit and should be readily achievable with careful plant selection, and additional attenuation where appropriate.

## 6.0 CONCLUSIONS

- 6.1 Based on HGV and van deliveries, the predicted daytime (07:00-23:00h) night-time (23:00 to 07:00h) noise levels are presented on Figures B and C, respectively. Using these noise levels, a BS4142 assessment has been undertaken as presented in Table 5.4 above. The assessment demonstrates that noise level limits set by MCC would be achieved at all noise sensitive receivers in the day. At night the noise levels at the worst-case receptor is -3dB below background. This is considered to represent a low observed effect level. Furthermore, the noise levels are approximately in line with MCC's requirements.
- 6.2 Assuming the building envelope achieves a minimum sound insulation performance of around 37dBR<sub>w</sub> which can be achieved with a twin metal skin system incorporating mineral wool insulation, to comply with MCC's requirements, allowable internal noise levels will be in the order of 75dBL<sub>Aeq</sub> which is considered to be appropriate operational for light industrial activities.
- 6.3 With roller shutter doors open to each unit, assuming an operating noise level of 75dBL<sub>Aeq,T</sub> the predicted noise level at the nearest residential properties is 41dBL<sub>Aeq,T</sub>. Allowing a +3dB noise character adjustment, the rating level would be some -9dB below the daytime background noise levels indicating that leaving roller shutter doors open should be acceptable during the daytime periods.
- 6.4 With regard to the night-time, the noise rating level minus the background level would be some +4dB, meaning that ideally not remain open for extended periods during the night-time. However, as described above, it would be acceptable to open the roller shutters to receive deliveries when the vehicle would screen internal activities and, furthermore, as only a small number of units are likely to receive deliveries at the same time, the noise levels affecting the properties would be significantly lower.
- 6.5 The night-time noise levels from all external building services plant needs to be controlled to 35dBL<sub>Aeq,T</sub>, free-field at the residential properties. This should provide a manageable noise level limit for the individual plant items.
- 6.6 In summary, in terms of noise and the details discussed above, the assessment demonstrates:
- 24hr operation of the units is acceptable;
  - 24hr deliveries area acceptable;
  - 24hr plant can be acceptable;
  - Roller shutter doors can remain open in each unit during the daytime (based on a reasonable internal noise level assumption);
  - During the night-time, roller shutters could be opened to receive deliveries but should ideally not remain open for extended periods.
- 6.7 Based on the above, noise should not be considered a determining factor in relation to the planning permission being sought. Furthermore, the assessment demonstrates that 24/7 operation should be a viable option.



**Figure B – Noise Map Showing Daytime Predicted Noise Levels  $\text{dBL}_{\text{Aeq}, 1\text{hr}}$  at the Residential Properties**

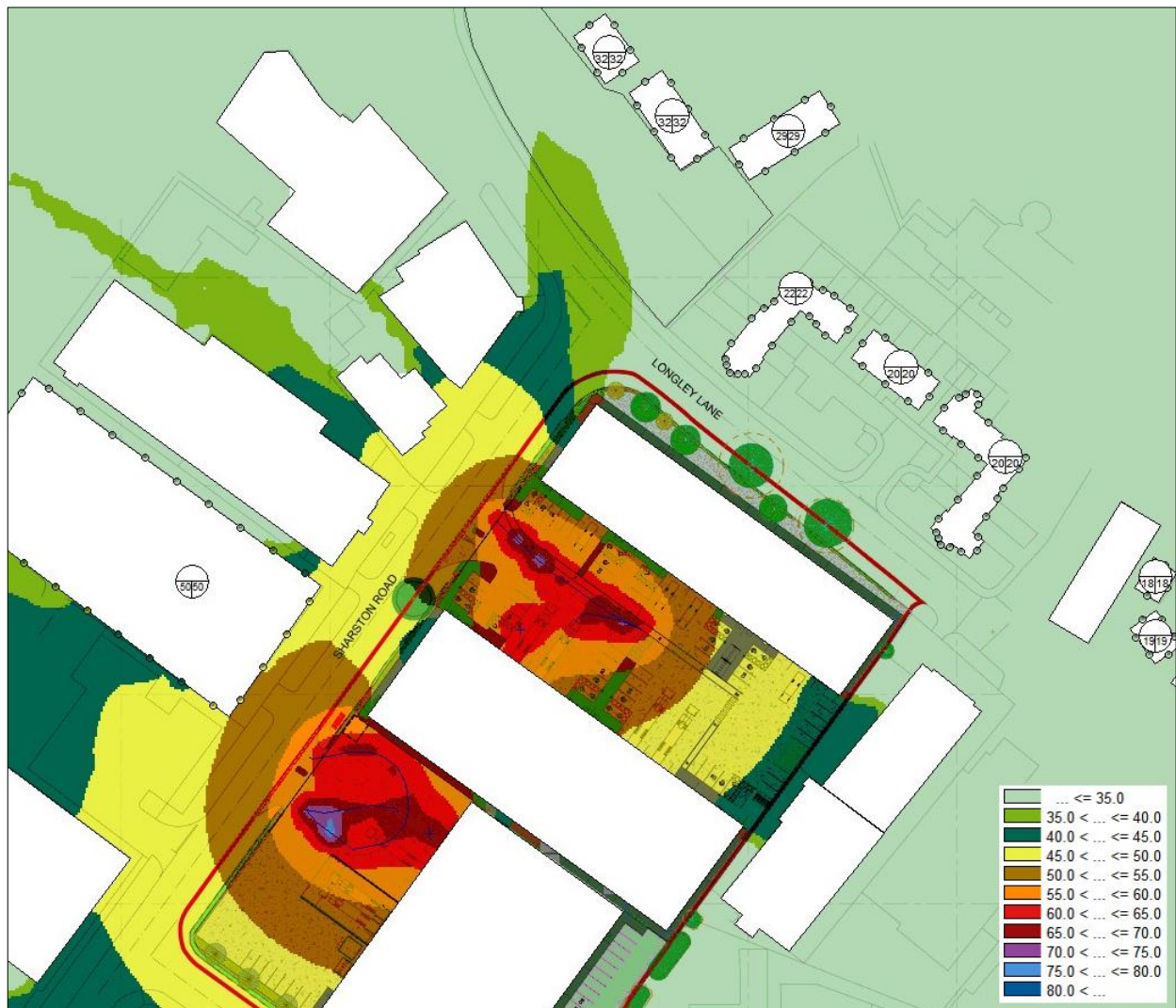
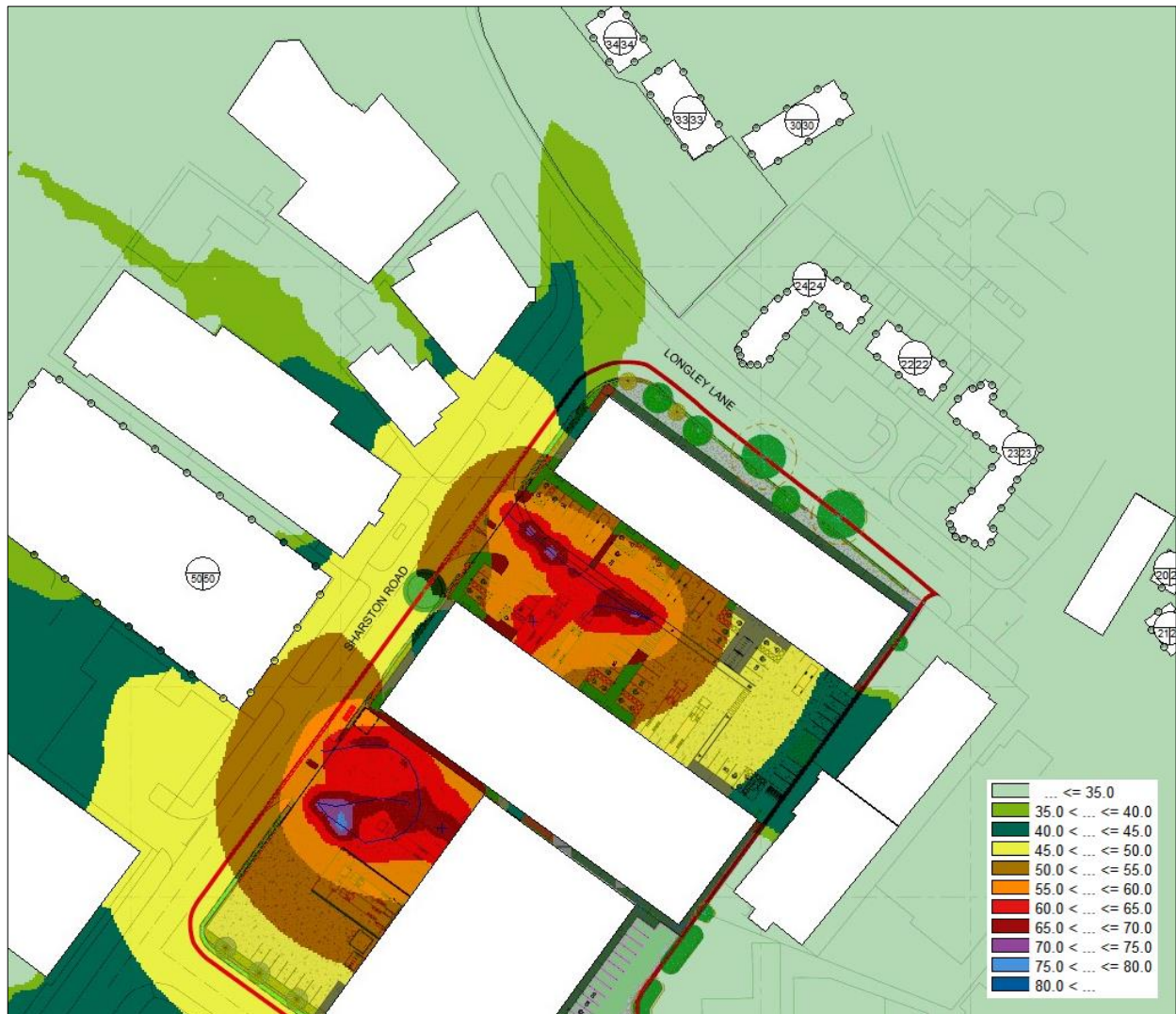


**Figure C – Noise Map Showing Night-time Predicted Noise Levels  $\text{dBL}_{\text{Aeq}, 15\text{min}}$  at the Residential Properties**



## Appendix A - Acoustic Terminology in Brief

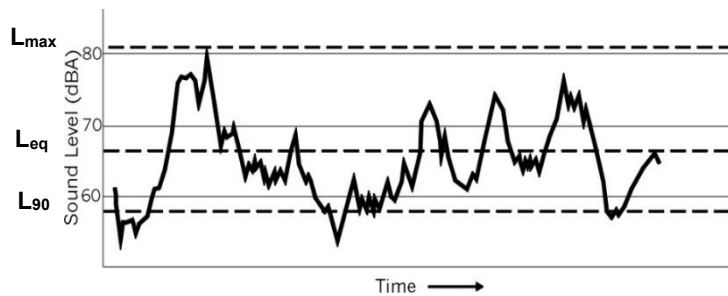
### General

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 discrete 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

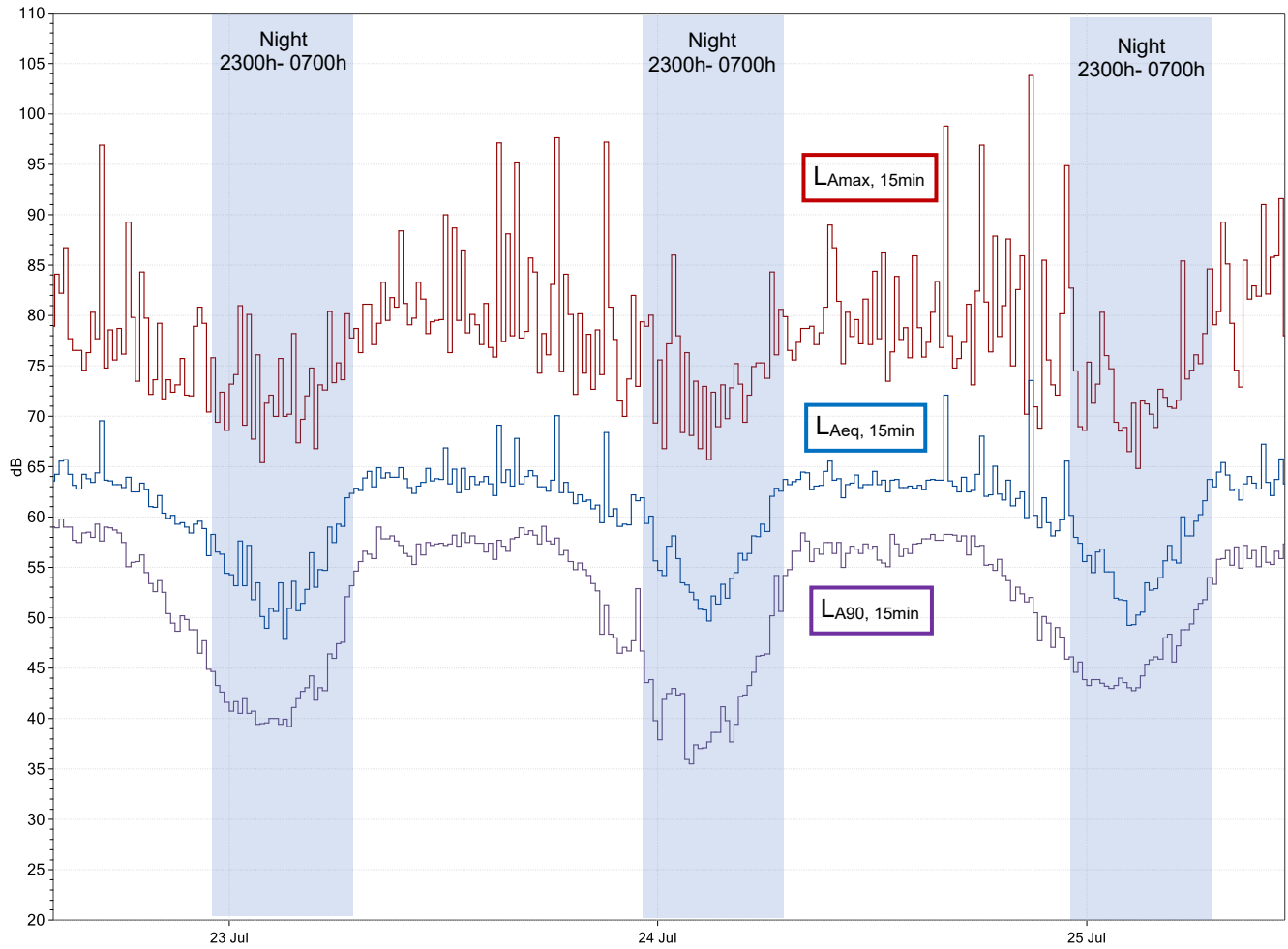
|                                 |                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><math>L_{Amax, T}</math></b> | The maximum (A-weighted) sound level measured during a given time. 'Fast' or 'Slow' meter response should be cited.                                                                                                                                                                                                                                |
| <b><math>L_{Aeq, T}</math></b>  | The equivalent continuous (A-weighted) sound level. It may be thought of as the "average" sound level over a given time, <i>T</i> . It is used for assessing noise from various sources: industrial and commercial premises, construction sites, railways and other intermittent noises. <b>It can be considered as the "ambient" noise level.</b> |
| <b><math>L_{A90, T}</math></b>  | The (A-weighted) sound level exceeded for 90% of a measurement period. <b>It is the value often used to describe the "background" noise.</b>                                                                                                                                                                                                       |
| <b><math>L_{A10, T}</math></b>  | The (A-weighted) sound level exceeded for 10% of a measurement period. It is the value often used to describe traffic noise.                                                                                                                                                                                                                       |
| <b><math>L_{A1, T}</math></b>   | The (A-weighted) sound level exceeded for 1% of a measurement period. It is the value generally used to indicate a 'typical' maximum noise level.                                                                                                                                                                                                  |
| <b><math>L_{AE}</math></b>      | The sound exposure level is a notional noise level and describes the average $L_{Aeq}$ noise level of an event over a given time period as if it occurred during a one second period. This allows the $L_{Aeq}$ to be determined over a time period with a number of distinct events                                                               |
| <b>Free-field Level</b>         | This refers to the sound level measured outside, away from reflecting surfaces.                                                                                                                                                                                                                                                                    |

|                                           |                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Façade Level</b>                       | This refers to the sound level measured outside, at 1m from a hard reflecting surface, typically 3dB greater than the free-field level.                                                                                                                                                                             |
| <b>Other Common Acoustics Descriptors</b> |                                                                                                                                                                                                                                                                                                                     |
| <b>R<sub>w</sub></b>                      | Single number rating used to describe the <u>laboratory</u> airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz.                                                                                                                               |
| <b>R'<sub>w</sub></b>                     | 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.                                                                                                                                      |
| <b>D<sub>w</sub></b>                      | 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.                                                                                                                                         |
| <b>D<sub>nT,w</sub></b>                   | 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). |
| <b>C<sub>tr</sub></b>                     | A road traffic spectrum adaptation term which is used to describe the low frequency sound insulation performance of building elements.                                                                                                                                                                              |

## APPENDIX B – Measurement Procedure – Logging Location A

|                                   |                                                                                                                                                                                                                                                                                                                                                       |                      |                |               |                                   |                    |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------|---------------|-----------------------------------|--------------------|
| <b>Date &amp; Time of Survey:</b> | 1400h on Tuesday 22 to 1100h Friday 25 July.                                                                                                                                                                                                                                                                                                          |                      |                |               |                                   |                    |
| <b>Personnel:</b>                 | Warren King (AEC) (Installation and collection)                                                                                                                                                                                                                                                                                                       |                      |                |               |                                   |                    |
| <b>Equipment Used:</b>            | NTI XL2 Analyser (AEC Kit 6).                                                                                                                                                                                                                                                                                                                         |                      |                |               |                                   |                    |
| <b>Calibration:</b>               | The sound level analyser, which conforms to BS EN 61672-1: 2013 ' <i>Electroacoustics – Sound level meters - Part 1 Specifications</i> ' 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. |                      |                |               |                                   |                    |
| <b>Weather Conditions:</b>        | <b>Date</b>                                                                                                                                                                                                                                                                                                                                           | <b>Period</b>        | <b>Wet/Dry</b> | <b>Temp°C</b> | <b>Wind Speed &amp; Direction</b> | <b>Cloud Cover</b> |
|                                   | 22.07.2025                                                                                                                                                                                                                                                                                                                                            | Day (1400 - 2300h)   | Dry            | 18°C          | SE <1m/s                          | 60%                |
|                                   | 22 to 23.07.2025                                                                                                                                                                                                                                                                                                                                      | Night (2300 - 0700h) | Dry            | 14°C          | SE <1m/s                          | 30%                |
|                                   | 23.07.2025                                                                                                                                                                                                                                                                                                                                            | Day (0700 - 2300h)   | Dry            | 19°C          | NE <1m/s                          | 30%                |
|                                   | 23 to 24.07.2025                                                                                                                                                                                                                                                                                                                                      | Night (2300 - 0700h) | Dry            | 14°C          | Negligible                        | 30%                |
|                                   | 24.07.2025                                                                                                                                                                                                                                                                                                                                            | Day (0700 - 2300h)   | Dry            | 22°C          | SE <1m/s                          | 20%                |
|                                   | 24 to 25.07.2025                                                                                                                                                                                                                                                                                                                                      | Night (2300 - 0700h) | Dry            | 13°C          | SE <1m/s                          | 20%                |
|                                   | 25.07.2025                                                                                                                                                                                                                                                                                                                                            | Day (0700 - 1100h)   | Dry            | 24°C          | SW <1m/s                          | 20%                |
| <b>Measurement Location:</b>      | <b>A</b> – logging position was free-field and ground level (1.5m above ground)                                                                                                                                                                                                                                                                       |                      |                |               |                                   |                    |
| <b>Measurement Details:</b>       | Measurements were undertaken over various periods in terms of $L_{eq}$ , $L_{90}$ , and $L_{max}$ .                                                                                                                                                                                                                                                   |                      |                |               |                                   |                    |
| <b>Façade / Free-Field:</b>       | Measurements were undertaken in free-field conditions.                                                                                                                                                                                                                                                                                                |                      |                |               |                                   |                    |
| <b>Measured Data:</b>             | The measured noise levels are presented in Graph B.1, below                                                                                                                                                                                                                                                                                           |                      |                |               |                                   |                    |

**Graph B.1 – Measured Noise Levels from 1400h on Tuesday 22 to 1100h on Friday 25 July 2025**



## APPENDIX C – Noise Break-out Calculation

|                                                                                   |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------|------|------------|------|--------------------|--------|-----|-----|----|
|  | <b>Contract No:</b>                                                | P5645                                                                        |      |            |      | <b>Date:</b>       | 14-Jul |     |     |    |
|                                                                                   | <b>Client:</b>                                                     | Kier                                                                         |      |            |      |                    |        |     |     |    |
|                                                                                   | <b>Project:</b>                                                    | Sharston Road, Wythenshawe                                                   |      |            |      | <b>Consultant:</b> | AGB    |     |     |    |
| <b>NOISE BREAK OUT TO OUTSIDE</b>                                                 |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
| <b>Noise Source</b>                                                               | Internal activity                                                  |                                                                              |      |            |      |                    |        |     |     |    |
|                                                                                   | Corrections to obtain Lp at element ?<br>(eg distance/directivity) |                                                                              |      |            |      |                    |        |     |     |    |
| <b>Building &amp; Element</b>                                                     | Twin skin Roof & Walls                                             |                                                                              |      |            |      |                    |        |     |     |    |
| Area (S)                                                                          | 750 m <sup>2</sup>                                                 | Width(a)=                                                                    | 75 m | Height(b)= | 10 m |                    |        |     |     |    |
| Position Directivity (Q)                                                          | 2                                                                  | (=4 for a wall, 2 for a roof)                                                |      |            |      |                    |        |     |     |    |
| Additional Directivity                                                            |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
| <b>Receiver</b>                                                                   | Longley Lane                                                       |                                                                              |      |            |      |                    |        |     |     |    |
| Distance (R) from element                                                         | 30 m                                                               |                                                                              |      |            |      |                    |        |     |     |    |
| Propagation Corrections                                                           |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
| Barrier                                                                           | 0                                                                  |                                                                              |      |            |      |                    |        |     |     |    |
| Façade                                                                            | 0                                                                  |                                                                              |      |            |      |                    |        |     |     |    |
| <b>Calculation</b>                                                                |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
| Frequency, Hz                                                                     | 63                                                                 | 125                                                                          | 250  | 500        | 1k   | 2k                 | 4k     | 8k  | dBA |    |
| Internal Level, dB                                                                | 68                                                                 | 68                                                                           | 68   | 68         | 68   | 68                 | 68     | 68  | 75  |    |
| Internal Corrections, dB                                                          |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
| Corrected Internal Level, Lin, dB                                                 | 68                                                                 | 68                                                                           | 68   | 68         | 68   | 68                 | 68     | 68  | 75  |    |
| <b>SRI of Element, dB</b>                                                         | 10                                                                 | 13                                                                           | 25   | 43         | 52   | 52                 | 50     | 50  |     |    |
| Additional Directivity, dB                                                        |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
| Propagation Corrections                                                           |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
| Barrier, dB                                                                       |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
| Façade, dB                                                                        |                                                                    |                                                                              |      |            |      |                    |        |     |     |    |
| Level (1) at Receiver                                                             | dB                                                                 | 43                                                                           | 40   | 28         | 10   | 1                  | 1      | 3   | 3   | 26 |
| Level (2) at Receiver                                                             | dB                                                                 | 41                                                                           | 38   | 26         | 8    | -1                 | -1     | 1   | 1   | 24 |
| <b>Criterion</b>                                                                  | dB                                                                 | 45                                                                           | 42   | 40         | 37   | 36                 | 32     | 25  | 21  | 40 |
| Shortfall (1)                                                                     | dB                                                                 | -2                                                                           | -2   | -12        | -27  | -35                | -31    | -22 | -18 |    |
| Shortfall (2)                                                                     | dB                                                                 | -4                                                                           | -4   | -14        | -29  | -37                | -33    | -24 | -20 |    |
| Calculation Method                                                                | (1)                                                                | Lp = Lin - R - 6 + 10Log(S) - 20Log(R) - 11 + 10Log(Q)                       |      |            |      |                    |        |     |     |    |
|                                                                                   | (2)                                                                | Lp = Lin - R - 6 + 10Log(ab/(pi <sup>2</sup> *R <sup>2</sup> )) + 10Log(Q/2) |      |            |      |                    |        |     |     |    |