



**MEC**  
Consulting Group

# ACOUSTIC AIR



**Land at Kirkby Road, Desford**  
Acoustics Assessment  
September 2025

**Report Ref: 24490-ENV-0401**

# Land at Kirkby Road, Desford

## Acoustics Assessment

### September 2025

REPORT REF: 24490-ENV-0401

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## 1.0 INTRODUCTION

- 1.1 MEC Consulting Group Ltd (MEC) has been commissioned by Davidsons Developments Ltd to undertake an Acoustics Assessment to discharge a planning condition for a proposed residential development at Kirkby Road, Desford (hereafter referred to as ‘the Site’).

### Existing Site

- 1.2 The Site, comprised of grassland, is bound by Kirkby Road to the east and south; existing residential to the north and grassland to the west.
- 1.3 The principal source of noise affecting the Site will be from local road traffic using Kirkby Road.
- 1.4 An approximate redline boundary is presented in Figure 1.1.

**Figure 1.1: Approximate Redline Boundary**



### Development Proposals

- 1.5 The development proposals comprise of a planning application for the erection of up to 120 residential dwellings and associated infrastructure, with access via Kirkby Road.
- 1.6 The planning layout is provided in **Appendix A**.

### Assessment Scope

- 1.7 Hinckley and Bosworth Borough Council have granted planning permission with the following condition:
- 1.8 *“Development shall not begin until a scheme for protecting the proposed dwellings from noise from the nearby road network has been submitted to and approved in writing by the Local Planning Authority. All works which form part of the scheme shall be completed before any of the permitted dwellings are first occupied.”*
- 1.9 The aim of this assessment is to discharge the above planning condition.
- 1.10 In consideration to this, the following scope of works has been undertaken:
- An Environmental Sound Survey has been undertaken within the Site in order to determine the prevailing acoustic conditions;
  - An acoustic model has been created in order to predict sound level across the Site based upon the measured sound level data;
  - Embedded façade mitigation measures in the form of glazing and whole-dwelling ventilation specifications have been provided to demonstrate compliance with the guidance contained within ProPG<sup>1</sup>, BS 8233<sup>2</sup>; and AVOG<sup>3</sup>; and
  - Where required, appropriate mitigation measures have been provided to demonstrate compliance with the relevant standards.
- 1.11 The conclusions of this report aim to demonstrate to Local Authority that internal acoustic conditions will be compliant with the relevant British Standards and Acoustics Guidance.

### Disclaimer

- 1.12 MEC has completed this report for the benefit of the individuals referred to in Paragraph 1.1 and any relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use or rely upon the contents of this report unless explicit written approval has been gained from MEC.
- 1.13 MEC accepts no responsibility or liability for:
- The consequence of this documentation being used for any purpose or project other than that for which it was commissioned;
  - The issue of this document to any third party with whom approval for use has not been agreed.

<sup>1</sup> Professional Practice Guidance on Planning and Noise, May 2017.

<sup>2</sup> BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'

<sup>3</sup> Acoustics Ventilation and Overheating, Residential Design Guide, V1.1. January 2020.

## 2.0 STANDARDS AND GUIDANCE

### General

2.1 An acoustics glossary is provided in **Appendix B** to assist the reader.

### Summary of Guidance and Standards

2.2 The following guidance and standards relevant to the assessment are outlined below:

- National Planning Policy Framework (NPPF) 2024;
- Noise Policy Statement for England (NPSE) 2010;
- Professional Practice Guidance on Planning and Noise (ProPG) 2017;
- BS 8233:2014 '*Guidance on sound insulation and noise reduction for buildings*'; and
- Acoustics Overheating and Ventilation Guide (AVOG) 2020.

2.3 For conciseness, the guidance and standards most appropriate to this assessment are summarised in this section.

#### Professional Practice Guidance on Planning and Noise (ProPG)

2.4 ProPG seeks to secure good acoustic design for new residential developments. The guidance includes a framework to enable situations where noise is not an issue but to help identify the extent of risk at noisier sites. The guidance does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy.

2.5 The guidance is restricted to sites that are exposed predominantly to noise from transportation sources. Where industrial or commercial noise is present on the site but is "not dominant", its contribution may be included in the noise level used to establish the degree of risk. However, if the industrial/commercial source is dominant, an assessment in accordance with BS 4142<sup>4</sup> should be conducted.

2.6 A two-stage approach is considered whereby:

- Stage 1 – an initial noise risk assessment of the proposed development site is undertaken;
- Stage 2 – a systematic consideration of internal and external noise levels is considered ensuring good acoustic design and consideration of other relevant issues is recognised.

2.7 ProPG also references the World Health Organisation (WHO) guidance on maximum noise levels at night. Guidance from the WHO states that indoor sound pressure levels should not exceed approximately 45 dB L<sub>AFmax</sub> more than 10 – 15 times per night. ProPG indicates that individual noise events do not exceed 45 dB L<sub>AFmax</sub> more than 10 times a night and therefore this is considered as criteria in addition to that outlined in Table 2.1.

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<sup>4</sup> BS 4142:2014 +A1:2019 '*Methods for rating and assessing industrial and commercial sound.*'

- 2.8 Whilst ProPG does not define a measurement interval for the assessment of  $L_{AFmax}$  levels, research undertaken by Paxton et al<sup>5</sup> indicates that, for Maximum Event Level assessments, a sampling interval of between 1 and 3 minutes relates most closely to how awakening events are experienced by people in reality when compared to longer sampling periods.
- 2.9 For brevity, within the study, the majority of people (circa 75-85%) under test returned to a sleep state by approximately 2.5 minutes after the initial awakening event.
- 2.10 In summary, a longer sampling period can result in the under assessment of the 10<sup>th</sup> highest maximum level, therefore, based upon research and the recommendation of the Institute of Acoustics (IOA), a sample measurement of 1 minute has been used to inform this assessment.
- 2.11 Upon completion of the ProPG's Stage 1 and 2 assessments, the findings should enable one of four possible recommendations to be presented to the decision maker, namely to grant permission without conditions, grant with conditions 'avoid' or 'prevent'.

BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'

- 2.12 BS 8233 provides recommendations for the control of noise in and around buildings.
- 2.13 The guidance provided includes appropriate internal and external noise level criteria which are applicable to residential buildings exposed to steady external noise sources. It is stated in the British Standard that it is desirable for internal ambient noise levels to not exceed the criteria set out in Table 2.1.

**Table 2.1: BS 8233: 2014 Table 4 – Indoor Ambient Noise Levels for Dwellings**

| Activity                   | Location         | 07:00 – 23:00<br>$L_{Aeq, 16hr}$ dB | 23:00 – 07:00<br>$L_{Aeq, 8hr}$ dB |
|----------------------------|------------------|-------------------------------------|------------------------------------|
| Resting                    | Living Room      | 35                                  | -                                  |
| Dining                     | Dining Room/Area | 40                                  | -                                  |
| Sleeping (daytime resting) | Bedroom          | 35                                  | 30                                 |

- 2.14 Additional guidance in BS 8233 indicates that appropriate ventilation should be provided, if relying on closed windows to meet the guide values, and that such ventilation should not compromise the façade insulation and resulting noise levels.
- 2.15 BS 8233 additionally includes guidance on external amenity areas whereby it states that external noise levels should not exceed 50 dB  $L_{Aeq, T}$ , with an upper guideline of 55 dB  $L_{Aeq, T}$  which would be acceptable in noisier environments.
- 2.16 Furthermore, due to the nationwide difficulty in satisfying the external criteria outlined above, the standard provides an over-arching consideration of how to treat external amenity areas as follows:

<sup>5</sup> Paxton et al., Assessing  $L_{max}$  for residential development: The AVO Guide Approach, Institute of Acoustics, 2019

*“... it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.”*

Acoustics Overheating and Ventilation Guide (AVOG)

- 2.17 The AVOG was published by the Association of Noise Consultants (ANC) and The Institute of Acoustics (IOA) in 2020. The guide outlines a methodology for the assessment of airborne sound during overheating conditions, and emphasises the co-dependency of acoustics, ventilation and overheating design.
- 2.18 Many developments require closed windows to provide good internal acoustic conditions. This is in direct contrast to the fact that residents typically open windows in order to keep a building cool. These opposing requirements are becoming a major issue in the design of buildings, in particular for housing, especially as the aim is to avoid widespread use of mechanical ventilation and cooling systems.
- 2.19 AVOG prescribes a two-level assessment procedure, as follows:
- Level 1 – Site Risk Assessment, based on external free-field noise levels (similar to that of ProPG); and
  - Level 2 – Assessment of Adverse Effect, based on internal ambient noise level and duration.
- 2.20 An AVOG Level 2 assessment gives consideration to internal noise levels on a sliding scale depending on the likelihood and duration of overheating.
- 2.21 This report considers an AVOG Level 1 assessment.

### 3.0 ENVIRONMENTAL SOUND SURVEY

- 3.1 An environmental sound survey was undertaken between Tuesday 5<sup>th</sup> and Wednesday 6<sup>th</sup> August 2025 to monitor noise emanating from road traffic on Kirkby Road.
- 3.2 The survey was undertaken in full accordance with the guidance set out in BS 7445<sup>6</sup>.
- 3.3 A Sound Level Meter (SLM) was installed at one location, as follows:
- Continuous Measurement 1 (CM1): on the north-eastern boundary of the Site, approximately 7m from the nearest carriageway edge of Kirkby Road.
- 3.4 A monitoring location plan is provided in Figure 3.1.

**Figure 3.1: Measurement Positions**



#### Equipment

- 3.5 Measurements were taken using a Class 1 integrating/averaging SLM housed in environmental protection apparatus. The SLM was installed in a free field position at a height of 1.5m above local ground level, and field calibrated before and after the survey using a Class 1 calibrator, with no significant drift in calibration noted.
- 3.6 The SLM was set up to capture the following parameters, at a minimum: LAeq, LA90 and LAFmax values, and full details of the equipment used to undertake the survey are presented in Table 3.1.

<sup>6</sup> BS 7445-1:2003 'Description and measurement of environmental noise, Part 1: Guide to quantities and procedures.'

**Table 3.1: Equipment and Calibration Details**

| Measurement Position | Description       | Manufacturer & Type No. | Serial No. | Calibration Due Date |
|----------------------|-------------------|-------------------------|------------|----------------------|
| CM1                  | Sound Level Meter | Type NOR140             | 1407773    | 23/03/2027           |
|                      | Pre-Amplifier     | Type 1209               | 23168      |                      |
|                      | Microphone        | Type 1225               | 413180     |                      |
|                      | Calibrator        | Norsonic 1255           | 125525772  | 18/11/2025           |

## Meteorological Conditions

- 3.7 During the setup of the SLM, weather conditions were dry and overcast, with warm temperatures of 18°C and gusty, south-westerly winds of up to 4.4 m/s. At the time of collection, conditions were sunny and hot (22°C), with clear skies and north-easterly winds of up to 1.2 m/s.
- 3.8 It is therefore considered that there were no adverse weather conditions that would likely have affected the survey outcomes.

## Observations

- 3.9 At CM1, it was observed that the primary source of noise in the area was road traffic on Kirkby Road. However, it is important to note that traffic was minimal, with only one car and two Light-Goods Vehicles (LGVs) observed using Kirkby Road during both set up and collection of the equipment. No heavy goods vehicles (HGVs) were observed during the survey.
- 3.10 Road signage indicates that the road is 'unsuitable for motor vehicles' for the majority of the road at the boundary of the site, which gives explanation to the minimal traffic. At this part of the road, pedestrians were observed using the road for walking. At the section of the road deemed suitable for motor vehicles, the road is subject to a 30-mph speed limit.

## Results

- 3.11 Time history graphs for the continuous measurement positions are provided in **Appendix C**.
- 3.12 Table 3.2 provides a summary of measured assessment appropriate sound levels at CM1.

**Table 3.2: Summary of Measured Sound Levels at CM1, dB**

| Date                                                                                                                               | Daytime<br>07:00 – 23:00 | Night-time<br>23:00 – 07:00 |                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------|-----------------------------------------------------------------------|
|                                                                                                                                    | L <sub>Aeq,T</sub>       | L <sub>Aeq,8hr</sub>        | Typical Maximum Event Level <sup>(a)</sup><br>L <sub>AFmax,1min</sub> |
| 5 <sup>th</sup> August 2025                                                                                                        | 47 <sup>(b)</sup>        | 35                          | 55                                                                    |
| 6 <sup>th</sup> August 2025                                                                                                        | 44                       | -                           | -                                                                     |
| <sup>(a)</sup> Maximum noise level not exceeded more than 10 times per night.<br><sup>(b)</sup> T = 12hr<br><sup>(c)</sup> T = 5hr |                          |                             |                                                                       |

- 3.13 At CM1, the daytime L<sub>Aeq,T</sub> sound levels ranged between 44 and 47 dB (rounding to the nearest whole number for assessment purposes), with a night-time L<sub>Aeq,8hr</sub> sound level of 35 dB.

- 3.14 The two partial daytime measurements have been logarithmically averaged to produce an  $L_{Aeq,16hr}$  sound level of 46 dB, which will therefore be used in the acoustic modelling for the purpose of this assessment.
- 3.15 Analysis of the night-time  $L_{AFmax,1min}$  levels shows that the individual events did not exceed 55 dB more than 10 times during any measured night-time period. Analysis of the audio recordings show that all events above 55 dB were mostly caused by birdsong, with occasional vehicular 'pass-bys' and the slamming of vehicular doors, with no significant low frequency spectral content. Therefore, a value of 55 dB  $L_{AFmax,1min}$  is considered appropriate value for assessment purposes.

## 4.0 ASSESSMENT METHODOLOGY

### Acoustic Modelling

4.1 An acoustic model of the Site and environs has been generated in Datakustik CadnaA® modelling software. CadnaA® considers various inputs, including topography, buildings and road noise sources, and calculates sound levels in accordance with national and international standards; in this case, the relevant UK standards are the procedures set out within ISO 9613-2<sup>7</sup>.

4.2 The modelling assumptions and input information for the acoustic model are as follows:

- Digital Terrain Model – Lidar 1m (Environment Agency, downloaded on 24<sup>th</sup> July 2025);
- Open Street Map data (publicly available);
- Ground absorption for the Site = 0.5 (mixed ground);
- Building heights estimated following site observations or based upon masterplan;
- Buildings set to be reflective only with no absorption coefficient;
- First order reflections included in the modelling;
- Temperature set to 10°C; and
- Relative humidity set to 70%.

### Source Sound Levels

4.3 Based on the environmental sound survey, the sound levels used to calibrate the 3D acoustic model are presented in Table 4.1.

**Table 4.1: Sound Levels Used to Calibrated 3D Acoustic Model, dB**

| Parameter                           | CM1 |
|-------------------------------------|-----|
| Daytime Ambient $L_{Aeq,16hr}$      | 46  |
| Night-time Ambient $L_{Aeq,8hr}$    | 35  |
| Night-time Maximum $L_{AFmax,1min}$ | 55  |

### Modelled Scenarios

4.4 With reference to the noise criteria outlined in Section 2.0, the acoustic model has been used to predict sound levels across the Site in the following scenarios:

- Daytime  $L_{Aeq,16hr}$  external sound levels at ground floor (1.5m) height;
- Night-time  $L_{Aeq,8hr}$  external sound levels at first floor (4m) height; and
- Night-time  $L_{AFmax,2min}$  external sound levels at first floor (4m) height.

<sup>7</sup> ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation.

## 5.0 ACOUSTICS ASSESSMENT

- 5.1 For conciseness, this report tabulates the most exposed receptor overlooking Kirkby Road, to give context to the most stringent mitigation measures. All other receptors are assessed through the sound level contour drawings presented in **Appendix D**.

### ProPG Initial Noise Risk Assessment

- 5.2 As required by the ProPG, an Initial Noise Risk Assessment (INRA) is presented Table 5.1, based on the modelled sound levels.

**Table 5.1: Initial Site Noise Risk Assessment, dB**

| Risk             | Negligible |       | Low     |         | Medium  |         | High |       |
|------------------|------------|-------|---------|---------|---------|---------|------|-------|
| Period           | Day        | Night | Day     | Night   | Day     | Night   | Day  | Night |
| Pro PG Threshold | < 50       | < 40  | 50 – 60 | 40 – 50 | 60 – 70 | 50 – 60 | > 70 | > 60  |
| Plot 1           | 44         | 34    |         |         |         |         |      |       |
| Risk Assessment  | Negligible |       |         |         |         |         |      |       |

- 5.3 Based on the modelled sound levels, the most exposed receptor overlooking Kirkby Road falls within the ProPG risk category of 'Negligible' during both the daytime and night-time periods, for which the guidance states that *“development is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.”*
- 5.4 This report is considered to form the basis of the 'Acoustic Design Statement', which considers appropriate design measures to achieve suitable acoustic conditions for residential amenity.

### BS 8233 External Amenity Criteria

- 5.5 The acoustics criterion often the most difficult to meet in residential environments situated next to busy transportation sources is BS 8233's criterion of 55 dB  $L_{Aeq,16hr}$  applicable to private external amenity spaces such as gardens.
- 5.6 The daytime  $L_{Aeq,16hr}$  sound level contour map, shown on drawing 24490\_04\_120\_01 presented in **Appendix D**, indicates that based on the site layout, standard mitigation in the form of 1.8m high close boarded timber fencing will enable BS 8233's lower-level criterion of 50 dB  $L_{Aeq,16hr}$  to be satisfied across the Site.

### BS 8233 Internal Acoustic Criteria

- 5.7 Table 5.2 presents the required external to internal reduction requirements for the most exposed dwellings to Kirkby Road.

**Table 5.2: Required Façade Performance, dB**

| Plot | Parameter                              | External Level | Internal Criteria | Required Reduction |
|------|----------------------------------------|----------------|-------------------|--------------------|
| 1    | Daytime Ambient<br>$L_{Aeq,16hr}$      | 44             | 35                | 9                  |
|      | Night-time Ambient<br>$L_{Aeq,8hr}$    | 34             | 30                | 4                  |
|      | Night-time Maximum<br>$L_{AFmax,2min}$ | 54             | 45                | 9                  |

- 5.8 For the most exposed dwellings, the results in Table 5.2 show that a sound reduction of up to 9 dB will be required to achieve the internal  $L_{Aeq,16hr}$  criterion during the daytime.
- 5.9 Façade performance for bedrooms is driven by the night-time maximum scenario, with a sound reduction of up to 9 dB required to achieve the 45 dB  $L_{AFmax}$  criteria.
- 5.10 It should be noted that the required reduction needed to achieve the  $L_{AFmax}$  criterion from road traffic will similarly enable the criterion to be met further into the Site, where maximum events were predominantly caused by birdsong and vehicular ‘pass-bys’.

### AVOG Level 1 Assessment

- 5.11 AVOG prescribes a two-stage assessment. Level 1 looks to determine if overheating needs to be considered further, based on the predicted external façade levels for the most exposed receptors.
- 5.12 The initial Level 1 assessment is presented in Table 5.3.

**Table 5.3: AVOG Level 1 Assessment**

| Plot | Parameter                        | Predicted External Level dB | Level 1 Risk Grading | Level 2 Advised? |
|------|----------------------------------|-----------------------------|----------------------|------------------|
| 1    | Daytime Ambient $L_{Aeq,16hr}$   | 44                          | Negligible           | Not required     |
|      | Night-time Ambient $L_{Aeq,8hr}$ | 34                          | Negligible           | Not required     |

- 5.13 The results demonstrate that at the most exposed receptors, an AVOG Level 2 assessment is not required due to the low sound levels.

## 6.0 MITIGATION

### External Sound Levels

- 6.1 Based on the site layout, BS 8233's lower-level criterion of 50 dB  $L_{Aeq,16hr}$  will likely be satisfied at all garden locations on the Site through the provision of standard 1.8m high close boarded timber fencing.

### Internal Sound Levels

- 6.2 Acoustic modelling has demonstrated potential façade sound levels and, in accordance with BS 8233, ProPG and AVOG, sound reduction performance requirements of the façade have been determined.
- 6.3 In terms of acoustics, windows and ventilation strategies are the 'weakest' acoustics point in any façade and subsequently, the composite sound reduction performance is typically dominated by these elements. Therefore, minimum performance requirements to be provided by the glazing and ventilation elements at all dwellings are presented herein.
- 6.4 Drawing on the above, and the acoustic modelling undertaken, Table 6.1 provides typical reduction requirements and potential glazing and ventilation solutions across the Site in order to demonstrate compliance with the internal sound level criteria outlined in BS 8233, ProPG, and the ventilation requirements of AD-F<sup>8</sup>.
- 6.5 However, for the avoidance of doubt, all habitable rooms across the Site can comply with the relevant acoustic criteria through standard double glazing and direct airpath window mounted trickle ventilators.
- 6.6 This table should be read in conjunction with the drawing 24490\_04\_120\_04 in **Appendix E**, which shows corresponding colour coded mitigation references. For each reference in Table 6.1, the sound reduction performance requirements, in octave band and weighted reduction format, are presented in **Appendix F**.

<sup>8</sup> The Building Regulations 2010, Ventilation, Approved Document F, 2021 Edition.

Table 6.1: Suggested Internal Mitigation Measures

| Mitigation Ref. | Example Glazing Solution                                                                               | Example Whole Dwelling Ventilation Solution (AD-F)                                                                                                                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ref. A-1        | <p>4mm pane</p> <p>12mm air space</p> <p>4mm pane</p> <p>Approx. <math>R_w + C_{tr} = 27</math> dB</p> | <p><u>Standard Non-Acoustic Trickle Vent</u></p> <p>Slots typically located in the window frame.</p>  <p>Approx. <math>D_{n,e,w} + C_{tr} = 32</math> dB</p> |

## 7.0 CONCLUSIONS

- 7.1 MEC has been commissioned by Davidsons Developments Ltd to undertake an Acoustic Assessment for a proposed development at Kirkby Road, Desford.
- 7.2 Detailed assessments of the Site, during typical conditions, have been undertaken in accordance with BS 8233 and ProPG criteria whilst giving consideration to typical condition ventilation requirements in AD-F.
- 7.3 Acoustic modelling has demonstrated that, based on the site layout, BS 8233's lower-level criterion of 50 dB  $L_{Aeq,16hr}$  will be satisfied at all garden locations on the Site through the provision of standard 1.8m high close boarded timber fencing.
- 7.4 With regards to internal acoustic conditions, the most exposed dwellings will satisfy the criteria in BS 8233 and ProPG through the provision of standard thermal double glazing and direct airpath window mounted trickle ventilators to achieve the whole-dwelling ventilation requirements of AD-F.
- 7.5 When considering the planning guidance outlined in AVOG, an open window acoustics strategy is likely permissible during periods of overheating. However, further consideration to overheating may be required at a later stage.
- 7.6 Nevertheless, as a detailed acoustics led overheating assessment is not an outline planning consideration, the application should not be delayed on these grounds.
- 7.7 In conclusion, it is considered that with the implementation of the recommended mitigation strategy, the Site is suitable for residential development.

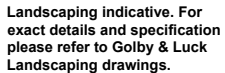


**MEC**  
Consulting Group

# APPENDICES



## APPENDIX A



| <b>LEGEND -</b> |                                                                    | <b>Own Market Schedule:</b>        |                                 |
|-----------------|--------------------------------------------------------------------|------------------------------------|---------------------------------|
|                 | - Site Boundary                                                    | <b>Housing No. of Bedrooms</b>     | <b>No.</b>                      |
|                 | - Indicates Standard GRP Chimney<br>(Same Brick As The House)      | DH219G-5                           | - 2 Bedroom Bungalow 2          |
|                 | - Indicates Standard Chimney Removed                               | DH32B-5                            | - 3 Bedroom Semi Detached 8     |
|                 | - Indicates Standard Chimney Proposed                              | DH32B-5                            | - 3 Bedroom Detached 5          |
|                 | - Indicates Standard Chimney Improved<br>(Same Brick As The House) | DH32B-5                            | - 3 Bedroom Detached 2          |
|                 | - Screen Wall (SW) - 1.8m High,                                    | DH32B-5                            | - 3 Bedroom Semi Detached 2     |
|                 | - 0.45m Pyramid Top Timber Posts & Chain                           | DH32B-5                            | - 3 Bedroom Detached 6          |
|                 | - Proposed Trees                                                   | DH32B-5                            | - 4 Bedroom Detached 1          |
|                 | - Screen Fence (SF) - 1.8m High Close Boarded                      | DH32B-5                            | - 4 Bedroom Detached 9          |
|                 | - 0.45m Timber Post                                                | DH32B-5                            | - 4 Bedroom Detached 2          |
|                 | - Solar Bollard                                                    | DH32B-5                            | - 4 Bedroom Detached 4          |
|                 | - Herringbone Block Paved Feature Area                             | DH32B-5                            | - 4 Bedroom Detached 1          |
|                 | - Tegula Block Paved Feature Area                                  | DH32B-5                            | - 5 Bedroom Detached 6          |
|                 | - BP - 552 x 552 Brick pier with coping                            | DH32B-5                            | - 5 Bedroom Detached 2          |
|                 | - Affordable Housing - Affordable Rent                             | Sub Total                          | 72                              |
|                 | - Affordable Housing - Shared Ownership                            | <b>Affordable Schedule:</b>        |                                 |
|                 | - Affordable Housing - First Time Homes                            | <b>Housing No. of Bedrooms</b>     | <b>No.</b>                      |
|                 | - 2m Vis Splays                                                    | Affordable Rent                    |                                 |
|                 | - 2.4m x 5.5m Parking Bay                                          | AHUGA-5                            | - 1 Bedroom Maisonette 2        |
|                 | - Plot Specific Working Drawing                                    | AHUGA-5                            | - 1 Apartment 6                 |
|                 | - Buildings to be Demolished                                       | AHUGA-5                            | - 2 Bedroom Ter/Semi Detached 7 |
|                 |                                                                    | AHUGA-5                            | - 2 Bedroom Ter/Semi Detached 1 |
|                 |                                                                    | AHUGA-5                            | - 3 Bedroom Ter/Semi Detached 3 |
|                 |                                                                    | AHUGA-5                            | - 3 Bedroom Ter/Semi Detached 1 |
|                 |                                                                    | Total                              | 27                              |
|                 |                                                                    | <b>Affordable Shared Ownership</b> |                                 |
|                 |                                                                    | AHUGA-5                            | - 2 Bedroom Ter/Semi Detached 4 |
|                 |                                                                    | AHUGA-5                            | - 2 Bedroom Ter/Semi Detached 1 |
|                 |                                                                    | AHUGA-5                            | - 3 Bedroom Semi Detached 1     |
|                 |                                                                    | AHUGA-5                            | - 3 Bedroom Semi Detached 1     |
|                 |                                                                    | AHUGA-5                            | - 3 Bedroom Semi Detached 2     |
|                 |                                                                    | Total                              | 9                               |
|                 |                                                                    | <b>Affordable First Time Homes</b> |                                 |
|                 |                                                                    | AHUGA-5                            | - 1 Bedroom Maisonette 4        |
|                 |                                                                    | AHUGA-5                            | - 2 Bedroom Semi Detached 1     |
|                 |                                                                    | AHUGA-5                            | - 2 Bedroom Semi Detached 1     |
|                 |                                                                    | AHUGA-5                            | - 2 Bedroom Semi Detached 1     |
|                 |                                                                    | AHUGA-5                            | - 2 Bedroom Ter/Semi Detached 2 |
|                 |                                                                    | AHUGA-5                            | - 2 Bedroom Ter/Semi Detached 1 |
|                 |                                                                    | AHUGA-5                            | - 3 Bedroom Detached 1          |
|                 |                                                                    | Total                              | 12                              |
|                 |                                                                    | Sub Total                          | 120                             |
|                 |                                                                    | <b>Overall Total:</b>              | <b>148</b>                      |



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# APPENDICES



## APPENDIX B

## GLOSSARY OF TECHNICAL TERMS

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurements, and the levels are denoted as dB(A) or  $L_{Aeq}$ ,  $L_{A90}$  etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

### Typical sound levels found in the environment

| Sound Level      | Location                   |
|------------------|----------------------------|
| 0 dB(A)          | Threshold of hearing       |
| 20 to 30 dB(A)   | Quiet bedroom at night     |
| 30 to 40 dB(A)   | Living room during the day |
| 40 to 50 dB(A)   | Typical office             |
| 50 to 60 dB(A)   | Inside a car               |
| 60 to 70 dB(A)   | Typical high street        |
| 70 to 90 dB(A)   | Inside a factory           |
| 100 to 110 dB(A) | Burglar alarm at 1m away   |
| 110 to 130 dB(A) | Jet aircraft taking off    |
| 140 dB(A)        | Threshold of pain          |

| Descriptor               | Terminology                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sound Pressure           | Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.                                                                                                                                                                                                                                                                                                   |
| Sound Pressure Level     | The sound level is the sound pressure relative to a standard reference pressure of $20\mu\text{Pa}$ ( $20 \times 10^{-6}$ Pascals) on a decibel scale.                                                                                                                                                                                                                                         |
| Decibel (dB)             | A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds $s_1$ and $s_2$ is given by $20 \log_{10} (s_1 / s_2)$ . The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is $20\mu\text{Pa}$ . |
| A-weighting (dB(A))      | The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.                                                                                                                                                                                                                                           |
| Noise Level Indices      | Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.                                                                                                                |
| $L_{eq, T}$              | A noise level index called the equivalent continuous noise level over the time period, $T$ . This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.                                                                                                                                     |
| $L_{AFmax, T}$           | A noise level index defined as the maximum noise level during the measurement period. $L_{Max}$ is sometimes used for the assessment of discrete loud noises, which may have little effect on the overall $L_{eq}$ noise level but will still affect the noise environment. It is typically measured using the 'fast' sound level meter response.                                              |
| $L_{90, T}$              | A noise level index. The noise level exceeded for 90% of the time over the period, $T$ . $L_{90}$ can be considered to be the "average minimum" noise level and is often used to describe the background noise.                                                                                                                                                                                |
| $L_{10, T}$              | A noise level index. The noise level exceeded for 10% of the time over the period, $T$ . $L_{10}$ can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.                                                                                                                                                                                    |
| Free-Field               | Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m.                                                                                                                                                                                                                                                                                    |
| Façade                   | At a distance of 1m in front of a large sound reflecting object such as a building facade.                                                                                                                                                                                                                                                                                                     |
| Fast/Slow Time Weighting | Averaging times used in sound level meters.                                                                                                                                                                                                                                                                                                                                                    |
| Octave Band              | A range of frequencies whose upper limit is twice the frequency of the lower limit                                                                                                                                                                                                                                                                                                             |
| One-third Octave Band    | A frequency band in which the upper limit is $2^{1/3}$ times the frequency of the lower limit.                                                                                                                                                                                                                                                                                                 |
| Rating Level             | The specific sound level, plus any adjustment for characteristic feature of sound in BS 4142.                                                                                                                                                                                                                                                                                                  |
| Specific Sound Level     | The A-weighted $L_{eq}$ sound level produced by a sound source during a specified period of time. Commonly known as the sound source under investigation as defined in BS 4142.                                                                                                                                                                                                                |
| Typical Maximum Level    | The 90 <sup>th</sup> percentile maximum event level ( $L_{AFmax}$ ) measured during a period. Used for assessing night-time maximum levels under typical and overheating conditions.                                                                                                                                                                                                           |



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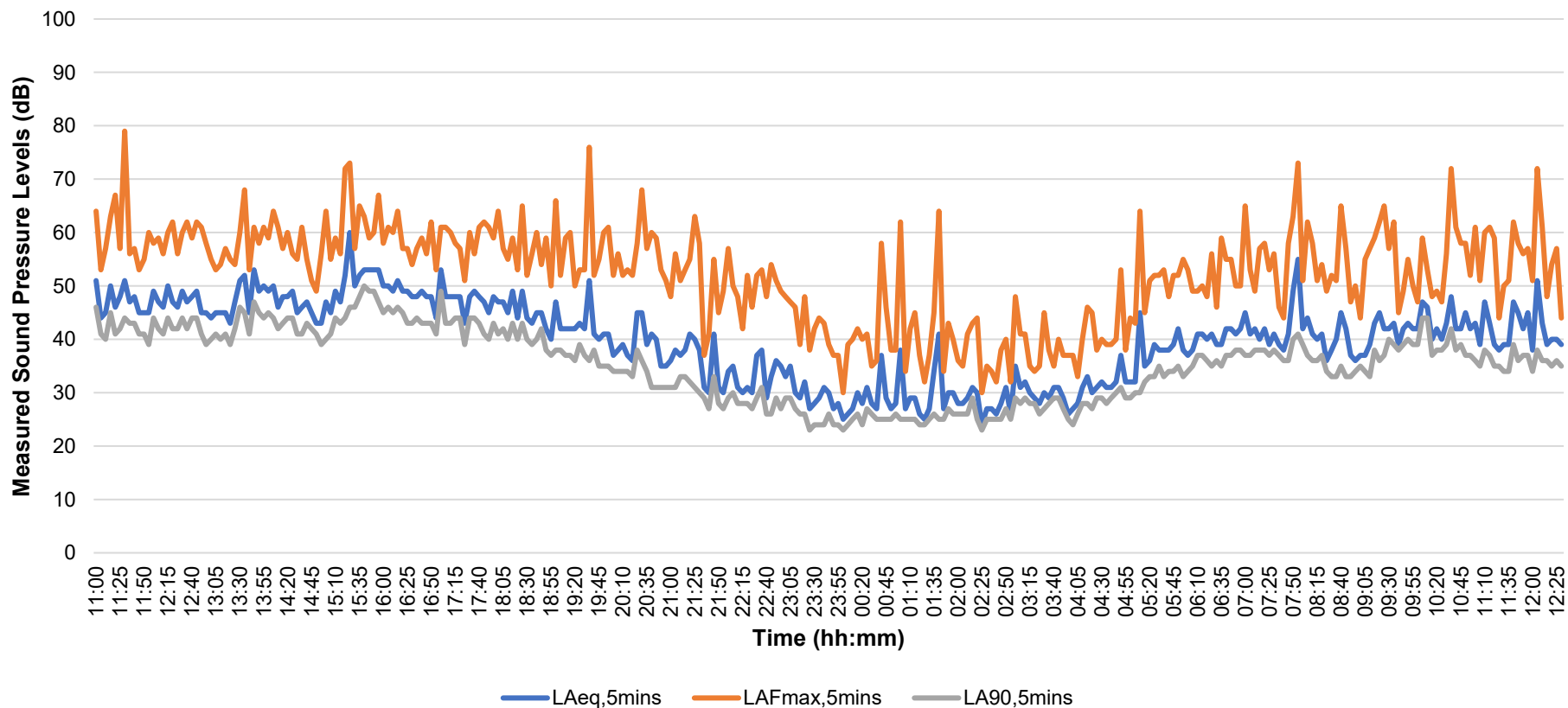
# APPENDICES



## APPENDIX C

**Kirkby Road, Desford - CM1**  
**Environmental Noise Monitoring Survey Results**

**$L_{Aeq,5mins}$ ,  $L_{AFmax,5mins}$  &  $L_{A90,5mins}$  Measured Sound Levels - 5<sup>th</sup> to 6<sup>th</sup> August 2025**





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# APPENDICES



## APPENDIX D



**NOTES:**

1. DO NOT SCALE THIS DRAWING.

**KEY**

|  |            |
|--|------------|
|  | 0–50dB(A)  |
|  | 50–55dB(A) |
|  | 55–60dB(A) |
|  | 60–65dB(A) |
|  | 65–70dB(A) |
|  | 70–75dB(A) |
|  | 75–80dB(A) |
|  | >80dB(A)   |

|                                                                                                                            |             |                                                                                                                                                                                       |     |               |          |
|----------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------|----------|
| FIRST ISSUE                                                                                                                |             | CP                                                                                                                                                                                    | EW  | TR            | 02.09.25 |
| REV.                                                                                                                       | AMENDMENTS: | DRN                                                                                                                                                                                   | CHK | APP           | DATE:    |
| PROJECT: KIRKBY ROAD,<br>DESFORD                                                                                           |             |                                                                                                                                                                                       |     |               |          |
| DRAWING TITLE:<br>DAYTIME AMBIENT SOUND LEVELS<br>LAeq,16hour                                                              |             |                                                                                                                                                                                       |     |               |          |
| CLIENT: DAVIDSONS DEVELOPMENTS LTD                                                                                         |             |                                                                                                                                                                                       |     |               |          |
| DRAWING NUMBER:<br>24490_04_120_01                                                                                         |             |                                                                                                                                                                                       |     |               |          |
| REVISION:<br>-                                                                                                             |             | SHEET SIZE:<br>A3                                                                                                                                                                     |     | SCALE:<br>NTS |          |
| STATUS: FOR INFORMATION / APPROVAL                                                                                         |             |                                                                                                                                                                                       |     |               |          |
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1. DO NOT SCALE THIS DRAWING.

**KEY**

|  |            |
|--|------------|
|  | 0–50dB(A)  |
|  | 50–55dB(A) |
|  | 55–60dB(A) |
|  | 60–65dB(A) |
|  | 65–70dB(A) |
|  | 70–75dB(A) |
|  | 75–80dB(A) |
|  | >80dB(A)   |

|                                                                     |                   |                                                                                                                                                                                       |     |     |          |
|---------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----------|
| REV.                                                                | FIRST ISSUE       | CP                                                                                                                                                                                    | EW  | TR  | 02.09.25 |
| REV.                                                                | AMENDMENTS:       | DRN                                                                                                                                                                                   | CHK | APP | DATE:    |
| PROJECT: KIRKBY ROAD,<br>DESFORD                                    |                   |                                                                                                                                                                                       |     |     |          |
| DRAWING TITLE: NIGHT-TIME AMBIENT SOUND LEVELS<br>LAeq,8hour        |                   |                                                                                                                                                                                       |     |     |          |
| CLIENT: DAVIDSONS DEVELOPMENTS LTD                                  |                   |                                                                                                                                                                                       |     |     |          |
| DRAWING NUMBER: 24490_04_120_02                                     |                   |                                                                                                                                                                                       |     |     |          |
| REVISION:<br>-                                                      | SHEET SIZE:<br>A3 | SCALE:<br>NTS                                                                                                                                                                         |     |     |          |
| STATUS: FOR INFORMATION / APPROVAL                                  |                   |                                                                                                                                                                                       |     |     |          |
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NOTES:

1. DO NOT SCALE THIS DRAWING.

KEY

|                                                                                     |            |
|-------------------------------------------------------------------------------------|------------|
|  | 0–50dB(A)  |
|  | 50–55dB(A) |
|  | 55–60dB(A) |
|  | 60–65dB(A) |
|  | 65–70dB(A) |
|  | 70–75dB(A) |
|  | 75–80dB(A) |
|  | >80dB(A)   |

|                                                                     |  |                   |  |                                                                                                                                                                                       |     |     |          |
|---------------------------------------------------------------------|--|-------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----------|
| REV:                                                                |  | FIRST ISSUE       |  | CP                                                                                                                                                                                    | EW  | TR  | 02.09.25 |
| REV:                                                                |  | AMENDMENTS:       |  | DRN                                                                                                                                                                                   | CHK | APP | DATE:    |
| PROJECT: KIRKBY ROAD,<br>DESFORD                                    |  |                   |  |                                                                                                                                                                                       |     |     |          |
| DRAWING TITLE:<br>NIGHT-TIME MAXIMUM SOUND LEVELS<br>LAFmax,T       |  |                   |  |                                                                                                                                                                                       |     |     |          |
| CLIENT: DAVIDSONS DEVELOPMENTS LTD                                  |  |                   |  |                                                                                                                                                                                       |     |     |          |
| DRAWING NUMBER:<br>24490_04_120_03                                  |  |                   |  |                                                                                                                                                                                       |     |     |          |
| REVISION:<br>-                                                      |  | SHEET SIZE:<br>A3 |  | SCALE:<br>NTS                                                                                                                                                                         |     |     |          |
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## APPENDIX E



- NOTES:
1. DO NOT SCALE THIS DRAWING.
  2. PLEASE REFER TO REPORT REFERENCE 24490-ENV-0401 FOR DETAILS ON THE PROPOSED GLAZING AND VENTILATION REFERENCES.

KEY

Ref. A-1

|                                                                     |                   |      |                                                                                                                                                                                       |      |          |
|---------------------------------------------------------------------|-------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|
| REV: FIRST ISSUE                                                    |                   | CP   | EW                                                                                                                                                                                    | TR   | 02.09.25 |
| REV: AMENDMENTS:                                                    |                   | DRN: | CHK:                                                                                                                                                                                  | APP: | DATE:    |
| PROJECT: KIRKBY ROAD,<br>DESFORD                                    |                   |      |                                                                                                                                                                                       |      |          |
| DRAWING TITLE: MITIGATION REFERENCE FOR<br>ALL HABITABLE ROOMS      |                   |      |                                                                                                                                                                                       |      |          |
| CLIENT: DAVIDSONS DEVELOPMENTS LTD                                  |                   |      |                                                                                                                                                                                       |      |          |
| DRAWING NUMBER: 24490_04_120_04                                     |                   |      |                                                                                                                                                                                       |      |          |
| REVISION:<br>-                                                      | SHEET SIZE:<br>A3 |      | SCALE:<br>NTS                                                                                                                                                                         |      |          |
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## APPENDIX F

## Reference A Performance Requirements

| Façade Element        | Sound Insulation Performance Requirements (dB) in Octave Band Centre Frequencies (Hz) |     |     |    |    |    | $R_w / D_{n,e,w}$ (dB) | $C_{tr}$ (dB) |
|-----------------------|---------------------------------------------------------------------------------------|-----|-----|----|----|----|------------------------|---------------|
|                       | 125                                                                                   | 250 | 500 | 1k | 2k | 4k |                        |               |
| Glazing               | 22                                                                                    | 20  | 26  | 36 | 39 | 31 | 31                     | -4            |
| Ventilation (Trickle) | 32                                                                                    | 32  | 31  | 33 | 31 | 31 | 32                     | 0             |

The glazing reduction requirements can typically be found in a configuration of 4/12/4, where the information is presented in terms of the thickness of one pane of glass in mm, followed by the size of the air gap in mm, followed by the thickness of the second pane of glass in mm.

The background ventilation requirements can be found in standard window mounted non-acoustic trickle ventilators.



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