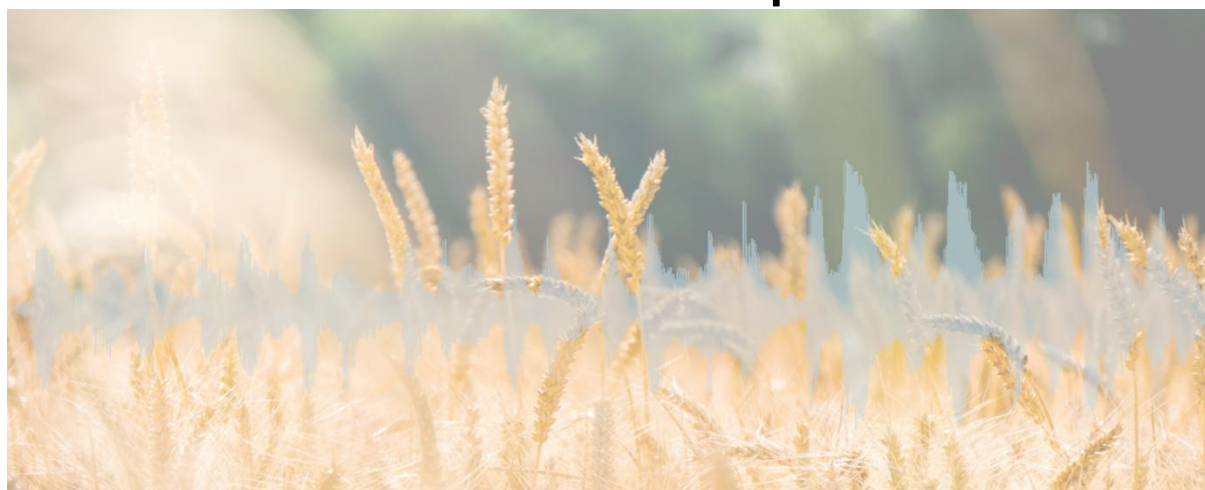




# Environmental Noise Report



Project: Land south of Desford

Client: Bellway Strategic Land Ltd

Revision: E  
Job Number: 2025-07-24 A0223

Date: 23/07/2026  
Written by: CJB

## Table of Contents

|             |                                                        |           |
|-------------|--------------------------------------------------------|-----------|
| <b>1.0</b>  | <b>Introduction</b>                                    | <b>3</b>  |
| <b>2.0</b>  | <b>Assessment Criteria</b>                             | <b>4</b>  |
| <b>3.0</b>  | <b>Site description</b>                                | <b>8</b>  |
| <b>4.0</b>  | <b>Noise survey</b>                                    | <b>9</b>  |
| <b>5.0</b>  | <b>Survey results</b>                                  | <b>14</b> |
| <b>6.0</b>  | <b>Glazing and ventilation Strategy</b>                | <b>15</b> |
| <b>7.0</b>  | <b>Overheating</b>                                     | <b>19</b> |
| <b>8.0</b>  | <b>Outdoor amenity spaces</b>                          | <b>21</b> |
| <b>9.0</b>  | <b>BS4142 and Sport England assessment</b>             | <b>22</b> |
| <b>10.0</b> | <b>Traffic Assessment of Proposed Link Road</b>        | <b>39</b> |
| <b>11.0</b> | <b>Assessment of GP Practice and Sports Facility</b>   | <b>40</b> |
| <b>12.0</b> | <b>Noise emission limits – building services plant</b> | <b>43</b> |
| <b>10</b>   | <b>Uncertainty</b>                                     | <b>44</b> |
| <b>11</b>   | <b>Conclusion</b>                                      | <b>45</b> |
| <b>12</b>   | <b>Appendix</b>                                        | <b>46</b> |

| Revision                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Date of issue | Purpose of issue            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------|
| -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 08/12/2025    | First issue                 |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 05/02/2026    | Addition of some assessment |
| B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 22/06/2026    | Changes to masterplan       |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10/07/2026    | Updates requested by client |
| D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10/07/2026    | Updates to conclusion       |
| E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 23/07/2026    | Updates requested by client |
| © This report is the copyright of Noise Harvest. It has been prepared for the sole and confidential use of Bellway Strategic Land Ltd and cannot be reproduced in whole or in part or relied upon or used by any third party without the express written authorisation of Noise Harvest. If any third party whatsoever comes into possession of this report, they rely on it at their own risk and Noise Harvest accepts no duty or responsibility (including in negligence) to any such third party. |               |                             |

## 1.0 Introduction

### 1.1 Project overview

Noise Harvest has been commissioned by Bellway Strategic Land Ltd to carry out an environmental noise survey in relation to the proposed new development of residential dwellings at the following address:

Land to the South of Bosworth Academy,  
Leicester Ln,  
Desford,  
Leicester  
LE9 9JL

Proposals are for an outline planning application for residential development, including provision of a primary healthcare facility and district centre [E Use Class]; sports facilities; public open space; access from Peckleton Lane and Leicester Lane with a connecting road; sustainable drainage; and associated infrastructure. All matters reserved except for access. All matters reserved except for access. It is understood the proposal are for approximately 550 dwellings.

The proposed development is shown in the figure below.



Figure 1 Proposed Site

## 2.0 Assessment Criteria

### 2.1 BS8233:2014

British Standard 8233: 2014 provides guidance on internal ambient noise levels in residential spaces. The following table summarises this guidance, it should be noted that hours of daytime are from 07:00 to 23:00 hours and night-time is from 23:00 to 07:00 hours:

| Location                                                                                                                                                                                                                                                                                                                                   | Daytime $L_{Aeq,16 \text{ hour}}$ dB | Night time $L_{Aeq,8 \text{ hour}}$ dB |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|
| Living Room                                                                                                                                                                                                                                                                                                                                | $\leq 35$                            | -                                      |
| Dining room                                                                                                                                                                                                                                                                                                                                | $\leq 40$                            | -                                      |
| Bedroom                                                                                                                                                                                                                                                                                                                                    | $\leq 35$                            | $\leq 30$                              |
| <b>Note: these values are the upper limits for daytime 16-hour dB <math>L_{eq}</math> and night-time 8-hour dB <math>L_{eq}</math>. BS 8233:2014 recognises that the levels assume normal diurnal functions in external noise.</b> The levels are also based on annual average data and should exclude occasional events such as fireworks |                                      |                                        |

Table 1 BS 8233:2014 target values

BS 8233 also states that it is desirable that the steady noise level in external amenity areas (such as gardens or outdoor living areas) does not exceed 50 dB  $L_{Aeq,T}$ , with 55 dB  $L_{Aeq,T}$  being acceptable in noisier environments. This is in line with recommendations given in the WHO Guidelines for Community Noise.

However, in the period since the original issue of the WHO guidelines, the Government has set all English Local Planning Authorities specific five-year housing supply targets. This has placed greater emphasis on making efficient use of land resource earmarked for residential development. BS 8233:2014 recognises this, and states that it should be accepted that these values are not achievable in all circumstances where development would be otherwise desirable. The document goes on to suggest that in areas such as city centres, or urban areas adjoining the transport network, a compromise (between elevated external noise levels and ensuring development needs) is warranted.

On this basis, levels lower than 50 dBA will be considered the NOEL, with a level of 55 dBA considered the LOAEL. Levels significantly greater than this would be considered the SOAEL, but would be addressed on a case-by-case basis, and should not necessarily be considered a barrier to development.

### 2.2 BS 4142

BS 4142:2014 provides a method for rating and assessing sound of an industrial and/or commercial nature, which includes sound from industrial and manufacturing processes, fixed services plant, sound generated by the loading and unloading of goods and sound from mobile plant / vehicles associated with industrial / commercial premises (e.g. fork-lift trucks).

The standard utilises various descriptors to assess the likelihood of complaints and the impact of sound associated with proposed industrial / commercial activities.

The magnitude of impact is assessed by subtracting the measured background sound level (dB  $L_{A90}$ ) at a location representative of the nearest noise-sensitive receiver, from the 'rating level' (dB  $L_{Ar,Tf}$ ) – the specific sound source to be introduced into the locality, corrected for acoustically distinguishing characteristics which may make it more subjectively prominent, over a reference time interval of 1 hour during the day and 15 minutes at night.

As a guideline, BS 4142 states that:

"a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

For reference, the following terms are introduced in BS 4142:

- **Specific sound** – the commercial / industrial sound source under consideration;
- **Residual sound** – the sound level at the sound-sensitive receivers in the absence of the specific sound;
- **Ambient sound** – the sound level at the sound-sensitive receivers in the presence of the specific sound (i.e. ambient = residual + specific);
- **Background level** - the sound pressure level which is exceeded by the residual sound for 90% of the measurement period;
- **Rating level** – the specific sound, corrected for acoustically distinguishing characteristics.

## 2.3 HTM 08-01

Health Technical Memoranda (HTMs) gives comprehensive advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare.

This Health Technical Memorandum covers the acoustic design criteria that are important for healthcare premises.

Good acoustic conditions improve patient privacy and dignity, and promote essential sleep patterns. Such conditions are key to healing. Good acoustic design brings other benefits in terms of patient and staff comfort and morale, as well as improved efficiency and usability of equipment.

### 2.3.1 Indoor ambient noise levels (IANL) from external sources

The Table below shows an extract from Table 1 of HTM 08-01 which sets the targets for Internal ambient noise levels from external sources. These targets are made for daytime usage as it is not envisioned that the GP will house patients overnight.

| Room Type         | Example                                                                   | Criteria for noise intrusion to be met inside the spaces from external sources (dB) |
|-------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Small office type | Private offices, small treatment rooms, interview rooms, consulting rooms | 40 L <sub>Aeq,1hr</sub>                                                             |
| Circulation       | Corridors, hospital street, atria                                         | 55 L <sub>Aeq,1hr</sub>                                                             |

| Room Type         | Example          | Criteria for noise intrusion to be met inside the spaces from external sources (dB) |
|-------------------|------------------|-------------------------------------------------------------------------------------|
| Personal, hygiene | Toilets, showers | 55 $L_{Aeq,1hr}$                                                                    |

Table 2 Internal ambient noise level from external sources

## 2.4 World Health Organisation guidelines

Night-time exceedances for sleep disturbance of the World Health Organisation should be included in the assessment of the proposed residential dwelling. The WHO guidelines – 3 Adverse Health Effects of Noise states the following:

*'For good sleep it is believed that indoor sound pressure levels should not approximately exceed 45 dB  $L_{A_{fmax}}$  more than 10-15 times a night.'*

## 2.5 Approved Document Part O

Approved Document Part O is the building regulations document which gives regulations for the requirement to mitigate overheating. The following extract is the area that concerns acoustics.

*'In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*

*Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.*

*40dB  $L_{Aeq,T}$  averaged over 8 hours (between 11pm and 7am).*

*55dB  $L_{AFmax}$  more than 10 times a night (between 11pm and 7am).*

*Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants'*

*Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.'*

The Association of Noise Consultants (ANC) has published the 'Acoustics Ventilation and Overheating' which is a guide to provide a method of assessment for overheating.

## 2.6 Sport England's Artificial Grass Pitch (AGP) Acoustics—Planning Implications' New Guidance for 2015

At the time of writing, the only relevant method of assessing noise from the existing pitches is Sport England's Artificial Grass Pitch (AGP) Acoustics—Planning Implications' New Guidance for 2015 which states:

*'Based on a 15 decibel sound reduction of a partially open window, the noise level outside a residential property during the daytime about 1 metre from façades of living spaces should not exceed 50 dB  $L_{Aeq}$ .*

*The WHO document also provides guidance for outdoor living areas. It states that to avoid 'moderate annoyance' during the daytime and evening the noise level should not exceed 50 dB  $L_{Aeq(T)}$ '*



We feel that this could be too onerous for the assessment in this instance for the following reasons:

The guidance is based on new artificial pitches which are floodlit (although no floodlighting has been proposed at this stage) and used up to 23:00 hours when a 16-hour day time ends. This would be when background noise levels would be lower than at the times when the existing football pitches would be used.

As there are no floodlights for the existing pitches the use of them will only be in times of daylight.

Whilst currently the only club that uses the existing pitches is Desford FC, the local football club, it is understood that the proposed pitches will be open to use by the wider community, however peak usage has been based on the training and game time of Desford FC.

Desford FC, are predominantly active

- Tuesday and Wednesday evening
- Saturday and Sunday day time

The guidance is also designed for new pitches and not existing grass pitches.

We would therefore propose that the noise from the pitches should not exceed the upper limit for outdoor amenity spaces (55 dB  $L_{Aeq,1hour}$ ) in the rear gardens of the proposed properties.

### 3.0 Site description

#### 3.1 General

The proposed site is currently farm land to the south of Desford, Leicester.

It is understood that proposals are for a mix of residential and commercial buildings to be built on the site.

Directly to the north is Bosworth Academy, a large school with sports pitches.

To the east of the site is further farming fields the other side of Leicester Lane.

To the south of the site is further farming fields and multiple industrial sites.

To the west of the site is the residential area in the south of Desford alongside a commercial development.

The area is predominantly a mixture between agricultural, residential and commercial.

The proposed dwellings are shown in the image below together with the larger site.

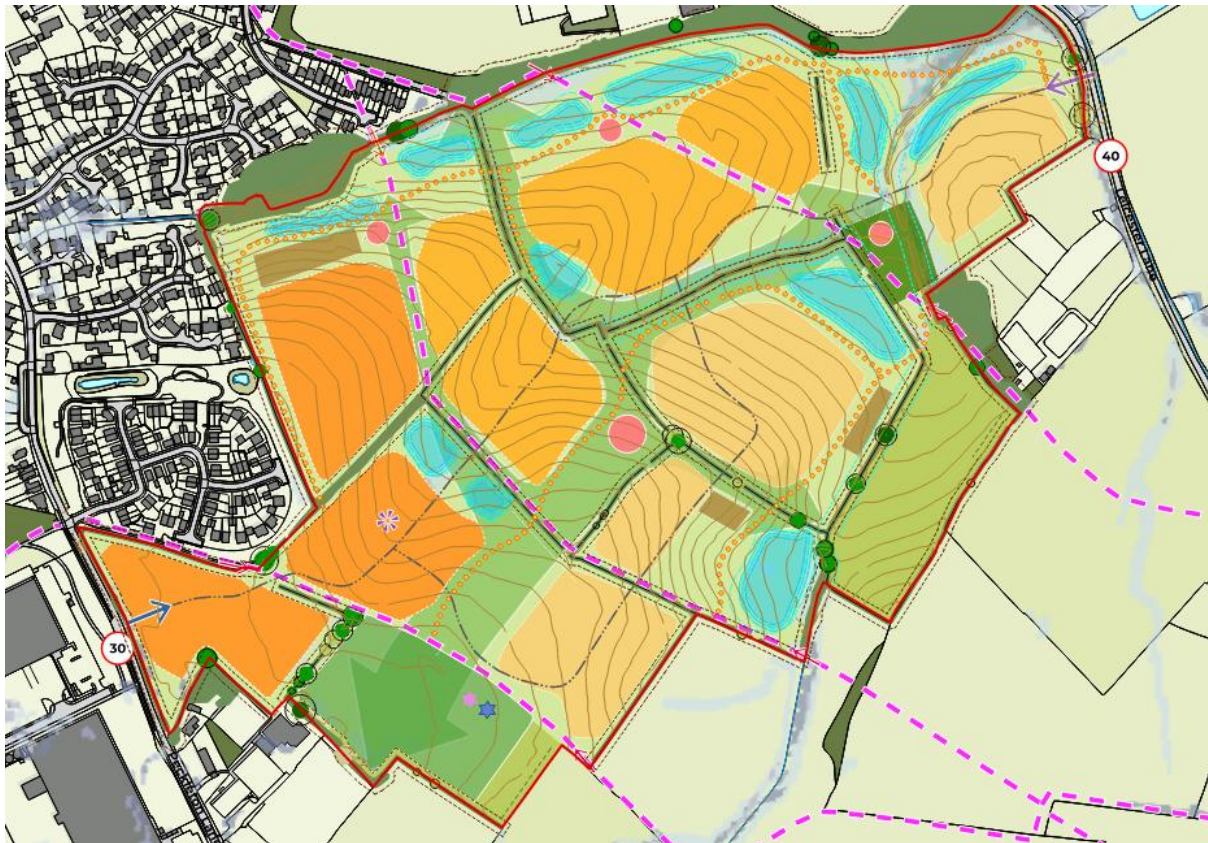


Figure 2 Proposed dwellings plan

## 4.0 Noise survey

### 4.1 Overview

Unattended noise surveys were carried out due to the location of the proposed positions being secure. The surveys were carried out on the following dates and times:

| Position | Date                            | Approximate       |                 |
|----------|---------------------------------|-------------------|-----------------|
|          |                                 | Approximate start | Approximate end |
| 1        | 26-27 <sup>th</sup> August 2025 | 14:00             | 12:30           |
| 2        | 26-27 <sup>th</sup> August 2025 | 13:00             | 12:40           |
| 3        | 27-28 <sup>th</sup> August 2025 | 13:00             | 11:20           |
| 4        | 27-28 <sup>th</sup> August 2025 | 14:00             | 11:30           |

Table 3 Survey times

The engineer who carried out the surveys were Phoebe Pearce who has over two years experience in the field of acoustics and holds the qualification in environmental noise measurement alongside the Institute of Acoustic diploma. Phoebe was overseen by C J Biggs. C J Biggs is a full member of the Institute of Acoustics and holds the Institute of Acoustics diploma and a master's in applied acoustics. He has eighteen years of experience in acoustics.

Additional attended surveys have been carried out to establish specific noise levels for the nearby industry or football pitches. The dates and times of these have been listed in the relevant sections below.

### 4.2 Equipment and measurement locations

Measurements at each position were generally in accordance with the guidance given in BS 7445: 1993. The sound level meters were field-calibrated before and after use at each position with no significant drift witnessed. Laboratory calibration certificates for all measurement equipment used are available upon request.

#### Position 1

The measurement position was chosen to measure the main noise sources of Leicester Lane and the background noise. The meter was at a height of 2 metres from the ground on a pole on the perimeter of the farmers field.

#### Position 2

This measurement position was chosen to assess the noise from Peckleton Lane and capture noise from the nearby industry to the west of the site. The meter was at a height of 2 meters and positioned on a pole on the hedge line on Peckleton Lane.

#### Position 3

This measurement position was chosen to assess the noise from the housing estate within south Desford. The meter was at a height of 2 meters and positioned on a tripod at the perimeter of the farmers field at the top of the site boundary.

#### Position 4

This measurement position was chosen to assess the noise from the school, Bosworth Academy within south Desford. The meter was at a height of 3 meters and positioned on a pole at the perimeter of the farmers field at the top of the site boundary.

The approximate survey locations are indicated below.



Figure 3 Approximate survey locations

The Table below summarises the equipment used and the picture of the equipment in situ.

| Position                              | Make and model                                | Image                                                                                |
|---------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------|
| <b>26/27<sup>th</sup> August 2025</b> |                                               |                                                                                      |
| P1 sound level meter                  | Cirrus CR171B (s/n: G056352)                  |   |
| P2 Sound level meter                  | Sound level meter NTi XL2 (s/n: A2A-19463-E0) |  |
| <b>27-28<sup>th</sup> August 2025</b> |                                               |                                                                                      |

| Position             | Make and model                                | Image                                                                                |
|----------------------|-----------------------------------------------|--------------------------------------------------------------------------------------|
| P3 sound level meter | Sound level meter NTi XL2 (s/n: A2A-19463-E0) |   |
| P4 Sound Level meter | Cirrus CR171B (s/n: G056352)                  |  |

Table 4 List of equipment used

At the start and end of the survey, the engineer noted the following subjective impressions.

- P1- the main noise source was Leicester Lane which is a busy A road outside of Desford
- P2- the main noise source was Peckleton Lane which has local industry located on it
- P3- the location was quiet with no predominant noise source
- P4- The main noise source was children within the playground of the school.

#### 4.3 Weather conditions

The Table below shows the highest and lowest temperatures and if there was precipitation alongside wind measurements.

| Day       | Date       | Temp (°C) |      | Precipitation |
|-----------|------------|-----------|------|---------------|
|           |            | Low       | High |               |
| Tuesday   | 26/08/2025 | 17        | 24   | None          |
| Wednesday | 27/08/2025 | 14        | 22   | None          |
| Thursday  | 28/08/2025 | 12        | 19   | None          |

Table 5 Recorded weather

Further details of the weather can be found in the appendix.

Wind measurements were taken at each position and images of these are shown below



Position 1



Position 2



Position 3



Position 4

Figure 4 Onsite wind measurements

## 5.0 Survey results

### 5.1 Noise survey

The Table below shows a summary of the daytime and night-time ambient noise levels. The values are the logarithmically averaged  $L_{Aeq}$ , the maximum  $L_{AF,max}$  and the typical  $L_{A90}$ . All figures have been rounded to the nearest integer value (as fractions of a decibel are imperceptible).

| Period (date)                                        | $L_{Aeq}$ (dB) | $L_{AF,max}$ (dB) | $L_{A90}$ (dB) |
|------------------------------------------------------|----------------|-------------------|----------------|
| <b>Position 1 (Leicester Lane)</b>                   |                |                   |                |
| Daytime 07:00-23:00 hours (26/08/2025 to 27/08/2025) | 64             | 92                | 49             |
| Night-time 23:00 – 07:00 (26/08/2025 to 27/08/2025)  | 57             | 80                | 26             |
| <b>Position 2 (Peckleton Lane)</b>                   |                |                   |                |
| Daytime 07:00-23:00 hours (26/08/2025 to 27/08/2025) | 60             | 86                | 46             |
| Night-time 23:00 – 07:00 (26/08/2025 to 27/08/2025)  | 54             | 78                | 34             |
| <b>Position 3 (Housing Estate)</b>                   |                |                   |                |
| Daytime 07:00-23:00 hours (27/08/2025 to 28/08/2025) | 45             | 75                | 34             |
| Night-time 23:00 – 07:00 (27/08/2025 to 28/08/2025)  | 36             | 72                | 22             |
| <b>Position 4 (School)</b>                           |                |                   |                |
| Daytime 07:00-23:00 hours (27/08/2025 to 28/08/2025) | 48             | 92                | 41             |
| Night-time 23:00 – 07:00 (27/08/2025 to 28/08/2025)  | 39             | 71                | 28             |

Table 6 Summary of measured noise levels

As can be seen, the noise climate is moderately high on Leicester Lane, and moderate a Peckleton Lane.

## 6.0 Glazing and ventilation Strategy

### 6.1 BS8233 Calculation

Based on guidance given in BS 8233:2014, it is proposed that the external building fabric for residential dwellings be designed such that a maximum steady-state internal night-time noise level of  $L_{Aeq,T} 30$  dBA and a daytime level of  $L_{Aeq,T} 35$  dBA can be achieved within habitable rooms.

For a reasonable standard in bedrooms, BS 8233:2014 also recommends that individual noise events should not disturb sleep patterns. The WHO guidelines interpret this as an internal level of  $L_{AF,max} 45$  dB being exceeded no more than 15 times per night.

It is generally accepted that glazing and ventilation openings within external façades will be the weakest elements acoustically.

It is considered that suitable glazing and ventilation attenuation can be provided to habitable rooms for the proposed dwelling, such that internal average noise levels would be within acceptable limits, as per BS 8233.

Calculation procedures to determine a suitable building envelope specification for the most affected façades have been undertaken following the “more rigorous calculation method” outlined in BS 8233: 2014, based on the following equation<sup>1</sup> :

$$L_{eq,2} = L_{eq,ff} + 10 \log_{10} \left( \frac{A_0}{S} 10^{\frac{-D_{se}}{10}} + \frac{S_{wi}}{S} 10^{\frac{-R_{wi}}{10}} + \frac{S_{ew}}{S} 10^{\frac{-R_{ew}}{10}} + \frac{S_{tr}}{S} 10^{\frac{-R_{tr}}{10}} \right) + 10 \log_{10} \left( \frac{S}{A} \right) + 3$$

Equation 1 BS 8233:2014 equation

The following bullet points summarise data used in calculations:

- Room volume, façade elements areas etc: taken from the area and volume from the calculation within BS 8233:2014
- Reverberation time within dwelling: 0.5 seconds;
- Noise levels incident on the façade are the representative, 1 hour during the daytime hours  $L_{Aeq,1hour}$  and 15 minutes during the night time, 15-minute  $L_{Aeq,15mins}$  values recorded.
- Day time levels were taken from the highest predicted noise on each façade to calculate a worst case scenario
- Night-time levels were taken from the highest predicted noise on each façade for both  $L_{Aeq}$  and 10 highest  $L_{AFmax,15mins}$ .
- It is understood the rooms will be naturally ventilated.

<sup>1</sup> Ref: Equation G.1, Section G.2.1, BS 8233: 2014.

## 6.2 Proposed Glazing

The following table shows the proposed glazing for the proposed site.

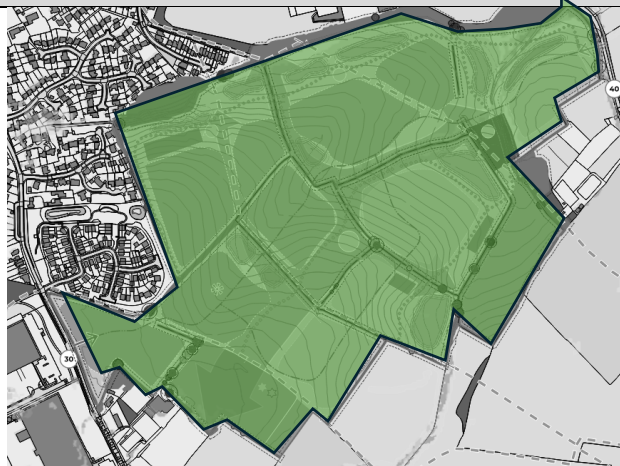
| Location                                                  | Location of glazing                                                                 | Proposed Glazing                                                                                                                                                                                                                          |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Residential dwellings directly adjacent to Peckleton Lane |   | <p>Glazing should achieve the following:</p> <p><math>\geq 30 \text{ dB } R_w + C_{tr}</math><br/>(<math>\geq 35 \text{ dB } R_w</math>)</p> <p>Using the following construction</p> <p>10 mm pane<br/>6mm to 20mm void<br/>4 mm pane</p> |
| Remaining residential dwellings                           |  | <p>Glazing should achieve the following:</p> <p><math>\geq 25 \text{ dB } R_w + C_{tr}</math><br/>(<math>\geq 29 \text{ dB } R_w</math>)</p> <p>Using the following construction</p> <p>4 mm pane<br/>12 mm void<br/>4 mm pane</p>        |

Table 7 Proposed glazing

By using the above glazing for habitable rooms within the dwellings the target values in BS 8233:2014 will be met. This will also meet the requirements prescribed by WHO guidelines for sleep disturbance.

### 6.3 Ventilation

The following table shows the proposed ventilation for the initial 100 dwellings.

| Location                                                                | Location of ventilation                                                             | Proposed Ventilation                                                                                                                                                                   |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Houses directly on Peckleton Lane and houses directly on Leicester lane |   | Acoustic trickle vent (TVES4dB has been calculated)<br><br>Acoustic trickles capable of achieving $\geq 39 \text{ dB D}_{\text{new}}$<br><br>These can be achieved by Pasivent TVES4dB |
| Remaining houses                                                        |  | Non acoustic trickle vent                                                                                                                                                              |

Table 8 Proposed ventilation

As the dwellings with a direct line of sight to Peckleton lane and Leicester Lane will experience higher noise levels it is recommended that acoustic trickle vents are used to meet targets outlined in BS 8233 and WHO guidance for sleep disturbance.

It is recommended that windows are openable for purge ventilation.

### 6.4 General glazing notes

All windows should be well sealed when closed. It is imperative that the frame does not compromise the performance of the glazing. It is therefore recommended that the frames be of uPVC, hardwood or aluminium constructions and be well sealed into the apertures. No gaps should be visible around the frame from the exterior.

Softwood windows could also be used, providing guarantees are given by the manufacturer that acoustic properties will be maintained for the life of the windows.

All glazing should meet with minimum requirements under Part L of Building Regulations.

## **6.5 Building envelope**

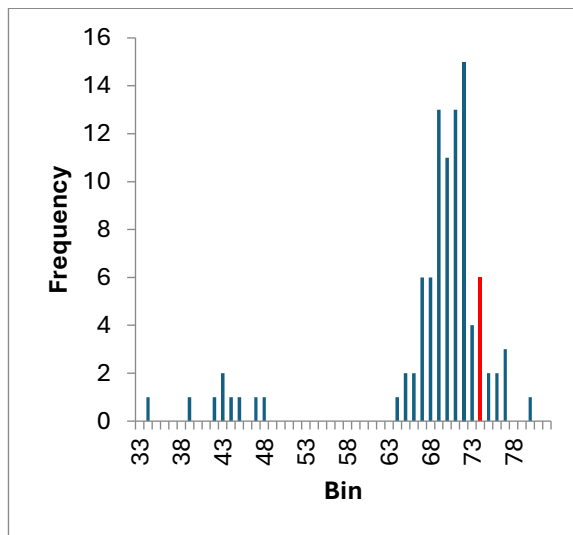
The building envelope should provide an attenuation of at least 15 dB over the required glazing performance. This requirement should be easily achieved by the current façade construction.

## 7.1 Approved Document Part O

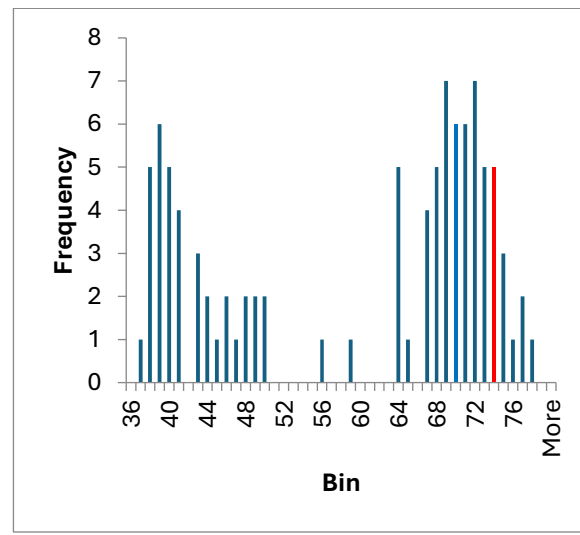
Whilst meeting the requirements of Approved Document Part O is not required for planning approval it will however affect the design of the façade and therefore its impact should be considered at the early part of the design stage. In order to assess the impact of noise on over-heating the measured  $L_{Aeq}$  has been used together with the measured night time  $L_{Aeq,8hour}$  and 10th highest  $L_{Amax}$  based on the histograms shown below for each of the positions of the survey.

An overheating assessment has taken place at the measurement positions as a preliminary evaluation. Further overheating assessment at the proposed dwellings will be undertaken when the site layout has been confirmed.

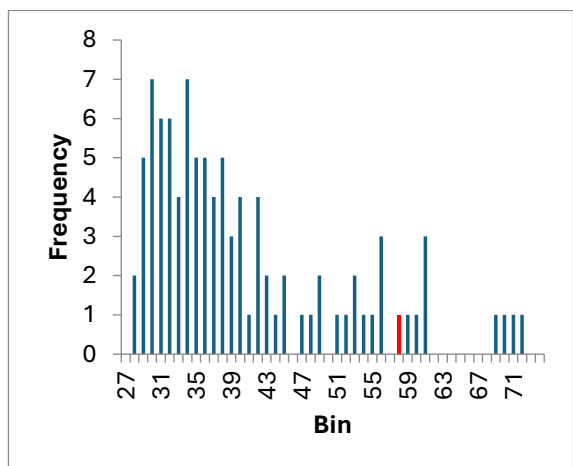
**Position 1**



**Position 2**



**Position 3**



**Position 4**

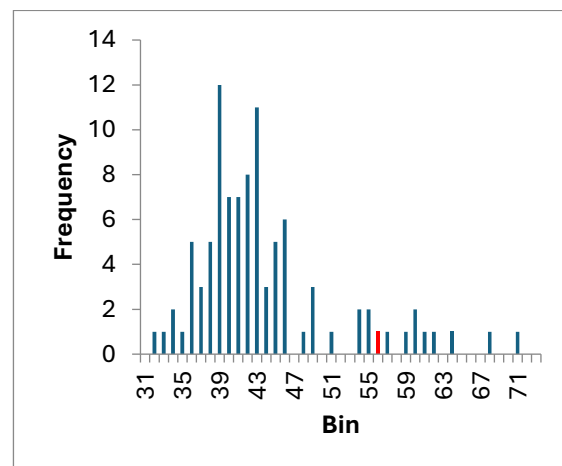


Figure 5 10th  $L_{AFmax}$  levels

It is understood that a partially open window can attenuate the noise up to 14 dB.

The table below shows the measured position, the  $L_{Aeq}$ , the 10th highest  $L_{AFmax}$ , the anticipated attenuation and their respective attenuation.

| Position | Before attenuation     |                    | Attenuation | After Attenuation      |                    |
|----------|------------------------|--------------------|-------------|------------------------|--------------------|
|          | L <sub>Aeq,8hour</sub> | L <sub>AFmax</sub> |             | L <sub>Aeq,8hour</sub> | L <sub>AFmax</sub> |
| 1        | 57                     | 74                 | 14          | 43                     | 60                 |
| 2        | 54                     | 74                 | 14          | 40                     | 60                 |
| 3        | 36                     | 58                 | 14          | 22                     | 44                 |
| 4        | 39                     | 56                 | 14          | 25                     | 42                 |

Table 9 Overheating assessment

As can be seen from the Table above the predicted noise after the attenuation of a partially open window the noise levels will exceed the targets prescribed in Approved Document O at positions 1 and 2, however this will be reassessed when the site plan is finalised.

## 8.0 Outdoor amenity spaces

As detailed in Section 2, guidance given in BS 8233:2014 states that the steady noise level in external amenity areas (such as gardens or outdoor living areas) shouldn't exceed 50 dB  $L_{Aeq,T}$ , with 55 dB  $L_{Aeq,T}$  being acceptable in noisier environments.

A majority of the outdoor amenity spaces are to the rear of the dwellings. It has been assumed that all rear gardens will have a 1.8 metre close boarded fence with no gaps.

It is anticipated that due to the mass barrier effect of the buildings noise will be attenuated further into the site. Based on this and assessment of the most exposed outdoor amenity spaces will be carried out.

The houses most exposed to noise have been assessed in regards to their outdoor amenity spaces. They are shown in red on the figure below.



Figure 6 Outdoor amenities assessment areas

The Table below shows the predicted noise levels from the 3D computer model in these spaces.

| Garden position | Predicted noise level $L_{Aeq,T}$ |
|-----------------|-----------------------------------|
| Peckleton Lane  | 41                                |
| Leicester Lane  | 53                                |

Table 10 predicted noise levels in outdoor amenity spaces

As can be seen the predicted noise levels meet the upper limit in some of the outdoor amenity spaces.

## 9.0 BS4142 and Sport England assessment

The following sub-sections provide an assessment of adjacent industrial noise sources as in accordance with BS 4142 and the adjacent football pitches in Sport Desford. It should be noted the this section is still being progress and will be updated when further assessments have been carried out.

### 9.1 Commercial and industrial noise sources

At the time of writing some of the surveys for specific noise measurements of local industries had been conducted.

Attended measurements and investigations were carried out at several industrial and commercial sites around the proposed development site. The table below shows the business name, survey date and a description of the type of noise generated.

| Survey date | Business            | Description                                                           |
|-------------|---------------------|-----------------------------------------------------------------------|
| 13/11/2025  | Highfield Seeds     | Seeds being cleaned and bagged                                        |
| 23/09/2025  | Keswick Trays       | No longer active site                                                 |
| 13/12/2025  | Sport in Desford    | Men's premiership football game                                       |
| N/A         | Caterpillar         | manufacturer of construction and mining equipment (see comment below) |
| N/A         | Preston Contractors | Assessment in line with Example 7 of BS 412                           |

Table 11 List of businesses and activities

### 9.2 Nearest noise sensitive receptor

As stated above the proposal is for houses to be developed to the south of Desford. The houses of which will be the nearest noise sensitive receptors will be selected dependent on those closest to the industry being assessed.

### 9.3 Highfield Seeds

Highfield Seeds is a small seed manufacturing company who specialise in cleaning and distributing seeds. It is understood they have two cleaning lines with gravity separators. The business is located to the south west of the proposed development site. Attended measurements were conducted on the 13<sup>th</sup> November 2025 both within the factory and from the outdoor space.

The location of the industry can be seen in the image below.



Figure 7 Location of Highfield Seeds

It is understood seed cleaning and bagging can take place for up to 2 hours at one time.

It is understood the business has one forklift and 2 tipper lorries. As these items were not active at the time of survey, previous data has been used from a survey at a similar site for the assessment.

The opening times of the business are:

Monday- Friday: 08:30-17:00

Therefore the activities will only be assessed against the daytime scenario.

The table below shows the activities understood to be taking place on site.

| Activity                    | Image                                                                                |
|-----------------------------|--------------------------------------------------------------------------------------|
| Seed Cleaning and bagging   |  |
| Forklift in operation       | From previous survey                                                                 |
| Tipper lorries in operation | From previous survey                                                                 |

Table 12 Description of specific noise levels



Figure 8 Location of specific noises

The following Table show the measured indoor noise level of the seed cleaning and bagging as well as forklift and lorry activities.

| Item                                         | Frequency (Hz)            |      |      |      |      |      |      |      |      |
|----------------------------------------------|---------------------------|------|------|------|------|------|------|------|------|
|                                              | 31                        | 63   | 125  | 250  | 500  | 1000 | 2000 | 4000 | 8000 |
|                                              | Sound Pressure Level (dB) |      |      |      |      |      |      |      |      |
| Seed cleaning and bagging inside measurement | 74.7                      | 77.3 | 82.5 | 80.3 | 80.5 | 81.1 | 81.1 | 82.9 | 84.4 |
| Forklift idling                              | 75.2                      | 70.0 | 64.2 | 63.4 | 68.5 | 69.8 | 64.9 | 54.5 | 46.9 |
| Forklift reverse beeper                      | 78.2                      | 72.3 | 66.5 | 67.1 | 68.7 | 90.5 | 84.2 | 77.1 | 64.0 |
| Tipper lorry                                 | 70.9                      | 67.1 | 65.9 | 66.2 | 65.7 | 66.6 | 65.5 | 60.0 | 54.6 |

Table 13 Measured specific noise levels

As the seed cleaning and bagging was measured inside calculations have been made to establish the noise breakthrough of this activity. Calculations have been based on the façade and roof being a single layer of metal cladding with a noise reduction of 20 dB  $R_w$  shown in the table below.

| Item                | Frequency (Hz) |     |     |     |      |      |      |      |
|---------------------|----------------|-----|-----|-----|------|------|------|------|
|                     | 63             | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 6 mm metal Cladding | 9              | 13  | 16  | 15  | 20   | 25   | 30   | 30   |

Table 14 Measured specific noise levels

The following table shows the calculation steps of the calculation two establish the noise break out

| Step                                        | Frequency (Hz) |       |      |      |      |      |      |      |
|---------------------------------------------|----------------|-------|------|------|------|------|------|------|
|                                             | 63             | 125   | 250  | 500  | 1000 | 2000 | 4000 | 8000 |
| Total sound pressure level                  | 77.3           | 82.5  | 80.3 | 80.5 | 81.1 | 81.1 | 82.9 | 84.4 |
| A weighting                                 | -26.2          | -16.1 | -8.6 | -3.2 | 0    | 1.2  | 1    | -1.1 |
| Total sound pressure level weighted         | 51.1           | 66.4  | 71.7 | 77.3 | 81.1 | 82.3 | 83.9 | 83.3 |
| Sound reduction index façade and roof       | 9              | 13    | 16   | 15   | 20   | 25   | 30   | 30   |
| sound pressure level weighted 1 m at facade | 42             | 53    | 56   | 62   | 61   | 57   | 54   | 53   |

Table 15 Measured specific noise levels

This figure was then used in the calculation.

### 9.3.1 Background level

The Table below shows the typical background level that has been measured (without precipitation) without the site operating together with the histogram.

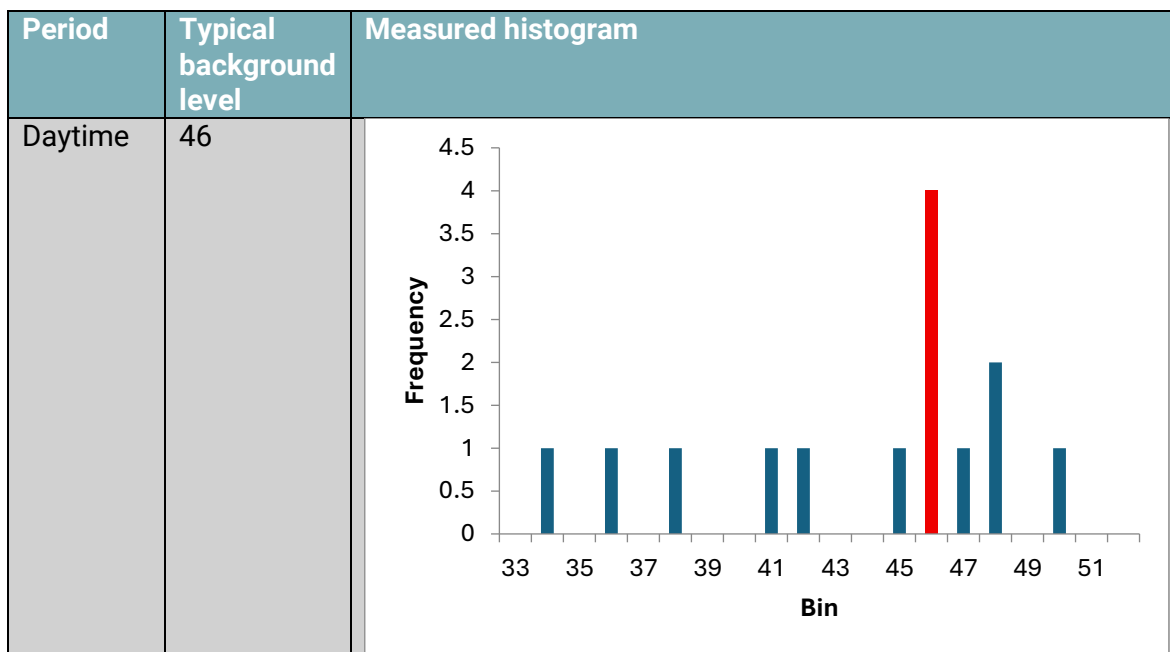


Table 16 Summary of background noise levels

### 9.3.2 Penalties for acoustic characteristics of activity noise

As discussed in Section 2, it is a requirement of BS 4142 that the subjective prominence of the specific sound is considered when assessing the likely impact at nearby sound sensitive receivers, based on the likelihood of any acoustically distinguishing characteristics of the specific sound which may attract attention (whilst considering the existing residual sound climate).

Noise Harvest have experience of assessing industrial sound, and the staff are (minimum) degree-qualified engineering consultants in acoustics or a related discipline. All staff are members of the Institute of Acoustics and are therefore considered suitably qualified to make the following assessments.

### 9.3.3 Tonality

Annex C of BS 41412 provides the following guidance with respect to assessing a noise source for the presence of prominent, spectral components:

For a prominent, discrete tone to be identified as present, the time-averaged sound pressure level in the octave band of interest is required to exceed the time-averaged sound pressure levels of both adjacent one-third-octave bands by some constant level difference.

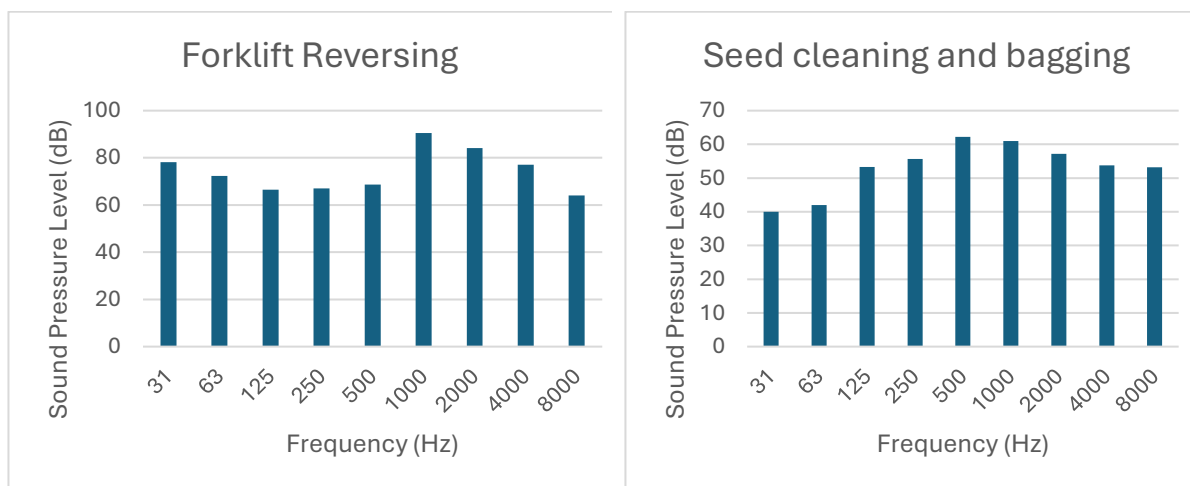
The level differences between adjacent octave bands that identify a tone are:

- 15 dB in the low-frequency one-third-octave bands (25 Hz to 125 Hz);
- 8 dB in the middle-frequency one-third-octave bands (160 Hz to 400 Hz);

And

- 5 dB in the high-frequency one-third-octave bands (500 Hz to 10 000 Hz).

The figure below presents the linear octave band values from the data. It should be noted that the assessment was made against 1/3 octave bands:



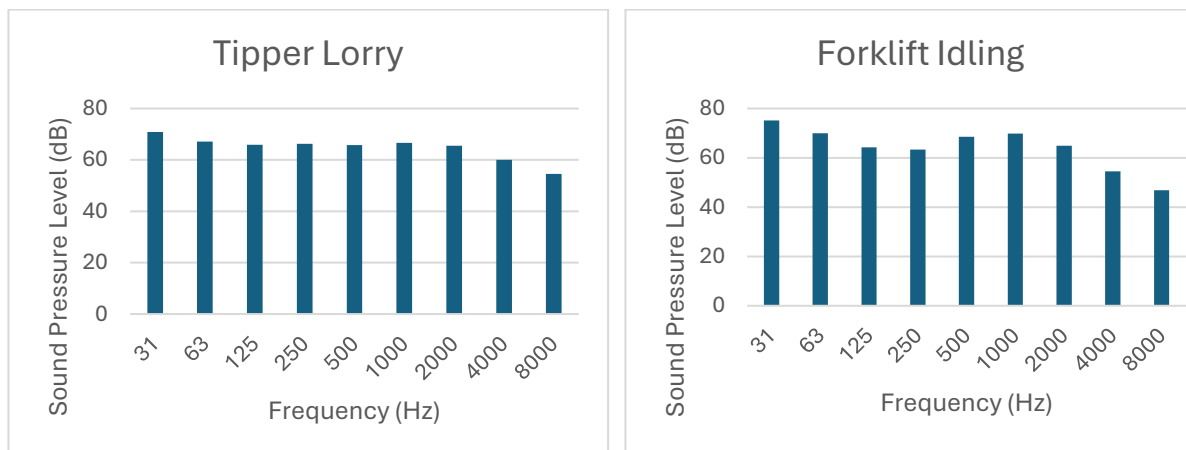


Figure 9 Octave band data for plant

As can be seen from the Figure above, none of the activities can be considered tonal and therefore there will be no penalty for tonality.

#### 9.3.4 Impulsivity and Intermittency

It is understood the activities will not run continuously throughout the day and therefore will be both intermittent and impulsive as this will be just perceptible over the background noise level a +3dB penalty will be applied for each if the predicted noise levels exceed the background noise level.

#### 9.3.5 BS4142 Assessment

A 3D computer noise modelling software (iNoise Pro version 2026) which complies with BS EN ISO 9613:2024 was used to assess the noise levels at the nearest noise sensitive receptor.

The scenarios used in the model are shown in the table below:

| Scenario | Activities                                                                                               |
|----------|----------------------------------------------------------------------------------------------------------|
| 1        | <ul style="list-style-type: none"> <li>2. No tipper lorries</li> <li>1. No forklift reversing</li> </ul> |
| 2        | <ul style="list-style-type: none"> <li>Seed cleaning and bagging</li> </ul>                              |

Table 17 Descriptions of scenarios

The table below shows the scenario, the predicted single point receptor, the typical background noise level and difference between the corrected rating level and background.

| Scenario | Receptor                | Receptor height | Predicted noise at receptor (dB) | BS 4142 correction | Rating level | Background (dB) | Difference (dB) |
|----------|-------------------------|-----------------|----------------------------------|--------------------|--------------|-----------------|-----------------|
| 1        | New housing development | 1.5m            | 45                               | 0                  | 45           | 46              | -11             |
|          |                         | 4.5m            | 45                               | 0                  | 45           | 46              | -11             |
| 2        |                         | 1.5m            | 46                               | 0                  | 46           | 46              | 0               |

| Scenario | Receptor                | Receptor height | Predicted noise at receptor (dB) | BS 4142 correction | Rating level | Background (dB) | Difference (dB) |
|----------|-------------------------|-----------------|----------------------------------|--------------------|--------------|-----------------|-----------------|
|          | New housing development | 4.5m            | 46                               | 0                  | 46           | 46              | 0               |

Table 18 Summary of BS4142 assessment

As can be seen from the Table above the rating level is equal the daytime background noise levels for Scenario 2 of the BS 4142 assessment. This would indicate that the commercial site would not likely cause an adverse impact.

#### 9.4 Keswick Trays

Keswick trays was approached to arrange specific noise measurements and it was confirmed that the business has since vacated the location. The prior location of the site can be seen in the figure below.



Figure 10 Location of prior site

#### 9.5 Caterpillar

Caterpillar is a large construction based company that operates all over the UK. The site in Desford specialises in building construction products.

The survey at Caterpillar was unable to be completed despite many attempts to arrange one. Contact was attempted multiple times at different sites, including Peterborough and two different sites in the USA, as well as the Desford site. the council was also liaised with to establish a contact within Caterpillar. Once contact was establish calls were made several times just to achieve traffic flows in and out of the site, as well as trying to attend the site to monitor the noise from the demonstration area, which has not been achieved

The location of the industrial site is shown in the image below.



Figure 11 Location of Caterpillar

At the time of writing a survey has not been carried out at the site, From telephone conversation with Caterpillar it is understood that that there two areas that would generate noise that potentially could affect the site. These are as vehicles arriving and leaving the site and the demonstration area, shown in the image above.

As mentioned surveys of the demonstration area have not been possible. Noise Harvest have attempted several time to arrange a survey.

It is understood that can Caterpillar have the following vehicle movements

| Type | Amount of vehicles (and times)                     | Entrance  |
|------|----------------------------------------------------|-----------|
| HGV  | 2 per hour                                         | 2         |
| Cars | 5-7am 900 all entrances<br>100 – 200 at entrance 2 | 1,2 and 3 |
| Cars | 3-5pm 900 all entrances<br>100 – 200 at entrance 2 | 1,2 and 3 |

Table 19 Summary of vehicle movements

Based on this, cars will be assessed on 67 per hour.

#### 9.5.1 Specific noise

The following Table shows the sound power values for a car and a HGV in the assessment, based on values from CNOSOS calculations provided in iNoise 2026.1 pro.

| Vehicle | Frequency (Hz) |    |     |     |     |      |      |      |      |
|---------|----------------|----|-----|-----|-----|------|------|------|------|
|         | 32             | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| Car     | 63             | 69 | 72  | 78  | 85  | 93   | 91   | 84   | 73   |
| HGV     | 72             | 78 | 84  | 92  | 98  | 100  | 97   | 91   | 84   |

Table 20 Sound Power of vehicles

All Vehicles were calculated at a speed of 15 mph as per Caterpillar road signs, shown below:



Figure 12 Caterpillar Speed Limit

#### 9.5.2 Tonality

Annex C of BS 41412 provides the following guidance with respect to assessing a noise source for the presence of prominent, spectral components:

For a prominent, discrete tone to be identified as present, the time-averaged sound pressure level in the octave band of interest is required to exceed the time-averaged sound pressure levels of both adjacent one-third-octave bands by some constant level difference.

The level differences between adjacent octave bands that identify a tone are:

- 15 dB in the low-frequency one-third-octave bands (25 Hz to 125 Hz);
- 8 dB in the middle-frequency one-third-octave bands (160 Hz to 400 Hz);

And

- 5 dB in the high-frequency one-third-octave bands (500 Hz to 10 000 Hz).

The figure below presents the linear octave band values from the data. It should be noted that the assessment was made against 1/3 octave bands:

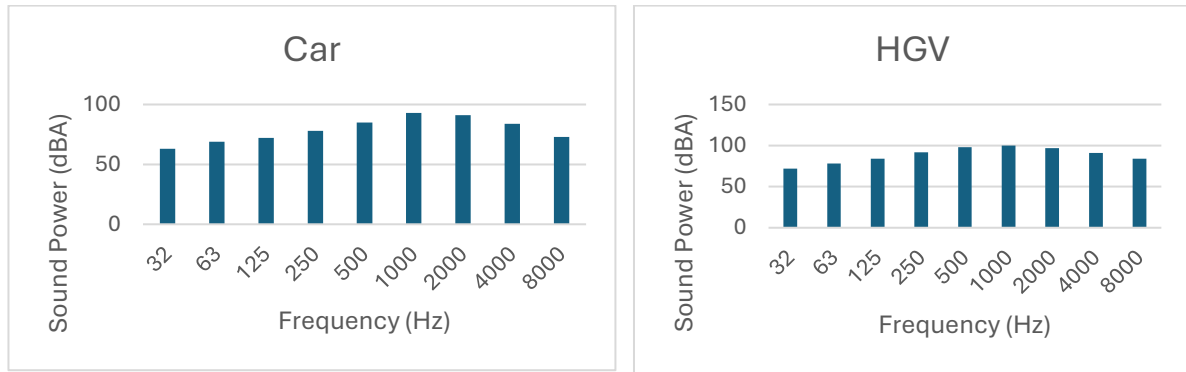


Figure 13 Octave band data for vehicles

As can be seen from the Figure above, none of the activities can be considered tonal and therefore there will be no penalty for tonality.

### 9.3.6 Impulsivity and Intermittency

It is understood the activities will not run continuously throughout the day and therefore will be both intermittent and impulsive as this will be just perceptible over the background noise level a +3dB penalty will be applied for each if the predicted noise levels exceed the background noise level.

### 9.3.7 BS4142 Assessment

A 3D computer noise modelling software (iNoise Pro version 2026) which complies with BS EN ISO 9613:2024 was used to assess the noise levels at the nearest noise sensitive receptor.

The scenarios used in the model are shown in the table below:

| Scenario     | Activities                                                          |
|--------------|---------------------------------------------------------------------|
| 1 Day time   | <ul style="list-style-type: none"> <li>Cars</li> <li>HGV</li> </ul> |
| 2 Night time | <ul style="list-style-type: none"> <li>Cars</li> <li>HGV</li> </ul> |

Table 21 Summary of scenarios

The table below shows the scenario, the predicted single point receptor, the typical background noise level and difference between the corrected rating level and background.

| Scenario     | Receptor                | Receptor height | Predicted noise at receptor (dB) | BS 4142 correction | Rating level | Background (dB) | Difference (dB) |
|--------------|-------------------------|-----------------|----------------------------------|--------------------|--------------|-----------------|-----------------|
| 1 Day time   | New housing development | 1.5m            | 34                               | 0                  | 34           | 46              | -12             |
|              |                         | 4.5m            | 34                               | 0                  | 34           | 46              | -12             |
| 2 Night time | New housing development | 1.5m            | 34                               | 0                  | 34           | 34              | 0               |
|              |                         | 4.5m            | 34                               | 0                  | 34           | 34              | 0               |

As can be seen from the Table above the rating level is equal to the night time background noise levels for Scenario 2 of the BS 4142 assessment. This would indicate that vehicle movements would no have an adverse impact on the site.

## 9.6 Preston Contractors

Attempts to contact Preston Contractors to arrange the specific noise measurements of the business were unsuccessful. As specific noise levels could not be carried out, guidance from Example 7 of BS 4142 will be used based on the 24 hour environmental noise survey.

Unattended measurements were carried out between 26<sup>th</sup> August 2025 and 27<sup>th</sup> of August 2025 to establish the ambient sound level ( $L_{Aeq,T}$ ), the residual sound level ( $L_{Aeq,T}$ ) and the background noise level ( $L_{A90,T}$ ).

The image below shows the contractors site (in blue) and their proximity to the site (in red).



Figure 14 Location of contractors

The contractors is understood to have the following opening times:

- Daily: 08:30-17:30

### 9.6.1 Residual noise

The Table below shows the residual noise level for the period when the contractors was open.

| Period                 | Measured residual noise $L_{Aeq,1hour}$ |
|------------------------|-----------------------------------------|
| 26/01/2025- 27/01/2025 | 64.5 dB                                 |

Table 23 Residual noise

#### 9.6.2 Time on

The measured data was examined to establish how long the contractors could be heard for. From interrogating the data no noise could be heard from the contractors. Due to this an arbitrary figure of one minute (60 seconds) will be used to establish the on time correction. The table below shows the calculated on time correction for the site.

| Type        | On time (seconds) | Measurement period (seconds) | Calculated on time period |
|-------------|-------------------|------------------------------|---------------------------|
| Contractors | 60                | 3600                         | -17.8                     |

Table 24 On time noise

#### 9.6.3 Specific sound level

From the measured ambient noise level of the survey, the residual sound level and the on time correction, the specific noise level can be calculated using the following equation.

$$L_{Aeq,1hour} = (10\log_{10}(10^{7.04} - 10^{-7.01}) - 17.8)$$

The table below shows the calculated specific noise level of the contractors.

| Type                  | Ambient noise level ( $L_{Aeq,T}$ ) | Residual noise level ( $L_{Aeq,T}$ ) | On time correction (dB) | Specific noise level ( $L_{Aeq,T}$ ) |
|-----------------------|-------------------------------------|--------------------------------------|-------------------------|--------------------------------------|
| Contractors operating | 59.7                                | 64.5                                 | -17.8                   | 45                                   |

Table 25 Specific noise

#### 9.6.4 Penalties

As discussed in Section 2, it is a requirement of BS 4142 that the subjective prominence of the specific sound is considered when assessing the likely impact at nearby sound sensitive receivers, based on the likelihood of any acoustically distinguishing characteristics of the specific sound which may attract attention (whilst considering the existing residual sound climate).

Noise Harvest has experience in assessing industrial sound, and the staff carrying out the assessment are (minimum) degree-qualified engineering consultants in acoustics or a related discipline. The member of staff carrying out the assessment are corporate members of the Institute of Acoustics and are therefore considered suitably qualified to make the following assessments.

Measurements results of the survey were investigated to establish if the contractors was tonal or impulsive in nature.

From the measured data it was established the noise from the site could not be heard and therefore the noise from the contractors will not be tonal, or impulsive in nature.

#### 9.6.5 Assessment

The following table shows the BS 4142 assessment when example 7 is followed

| Results                              |                      |
|--------------------------------------|----------------------|
| Measured ambient noise level         | 59.7 $L_{Aeq,1hour}$ |
| Residual sound level                 | 64.5 $L_{Aeq,1hour}$ |
| Background level                     | 49 $L_{A90,1hour}$   |
| On time correction                   | -17.8 dB             |
| Specific sound level                 | 45 $L_{Aeq,1hour}$   |
| Acoustic Characteristics             | 0 dB                 |
| Rating level                         | 45 $L_{Atr}$         |
| Background level                     | 49 $L_{A90,1hour}$   |
| Excess of rating over the background | -4 dB                |

As can be seen from the Table above the predicted rating levels are lower than the measured background level during the daytime. This indicates that it is unlikely there will be an adverse impact from Preston Contractors.

## 9.7 Sport in Desford

To the west side of the site there is a Sports Centre called Sport in Desford. The site is understood to be a venue for the following sports and activities:

- Football
- Tennis
- Bowls
- Squash
- Running
- Table Tennis
- Dance
- Karate
- Tai Chi
- Yoga and Pilates

It is understood the site can also be hired out for functions and events.

The opening hours of the gym within the club are:

- Monday: 9.00am – 12.00pm & 4.00pm – 8.30pm
- Tuesday: 4.00pm – 8.30pm
- Wednesday: 9.00am – 12.00pm & 4.00pm – 8.30pm
- Thursday: 9.00am – 12.00pm & 4.00pm – 8.30pm
- Friday: 9.00am – 1.00pm & 4.00pm – 7.00pm
- Saturday: 9.00am – 12.00pm
- Sunday: Closed

It is understood the club is also open outside these times for sports teams use.

The location of the club is shown in the figure below:

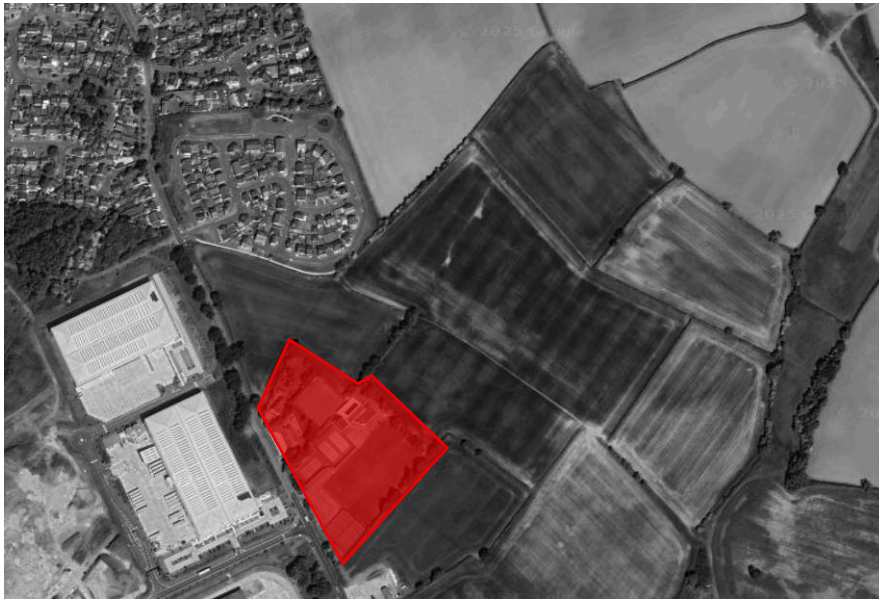


Figure 15 Location of Sport in Desford

An attended noise survey was conducted at one of the football pitches on the 13<sup>th</sup> of December 2025. There was a football game between two men's premiership football teams taking place with a start time of 14:00.

Due to the location of the pitch, one measurement position was chosen to obtain the noise levels of the match. The location of this measurement position is shown in the figure below.



Figure 16 Measurement location

The figure below shows the equipment used.



Figure 17 Equipment used

The attended survey took place at the following times.

| Date       | Start time | End time |
|------------|------------|----------|
| 13/12/2025 | 14:10      | 14:47    |

Table 27 Survey data and times

The measured noise level is shown in the table below.

| Item           | Frequency (Hz)            |    |     |     |     |      |      |      |      |
|----------------|---------------------------|----|-----|-----|-----|------|------|------|------|
|                | 31                        | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
|                | Sound Pressure Level (dB) |    |     |     |     |      |      |      |      |
| Football match | 63                        | 59 | 56  | 53  | 58  | 62   | 57   | 50   | 39   |

Table 28 Survey data

This data has been inputted into 3D computer modelling to predict the noise impact from the football pitches on the proposed houses. It is understood there are two football pitches within the area.

The figure below shows the football pitches that will be assessed in red.



Figure 18 Location of football pitches

### 9.7.1 3D Computer Noise Modelling

The calculations were based on a 3D computer noise model using a proprietary environmental noise prediction programme, iNoise version 2026.

Noise predictions were carried out based on the procedures described in ISO 9613-2:2024 Attenuation of sound during propagation outdoors – Part 2: General method of calculation.

The following inputs were used for the site model:

- **Measured noise levels of football match**
- **Buildings and obstacles:** the model has also taken into consideration existing buildings and obstacles such as fences and walls.

### 9.7.2 Noise Modelling Calibration

The model has been calibrated to the measured noise level, measured at 3m from the football pitch.

The noise model was used to predict noise levels from the 2 football pitches at the nearest noise sensitive receptors. To ensure a worst case scenario was modelled.

### 9.7.3 Noise Modelling Results

The table below shows the noise modelling results at the nearest noise sensitive receptors presented on the above figure.

| Receptor                           | Height (m) | Predicted Noise Level<br>L <sub>Aeq</sub> (dB) |
|------------------------------------|------------|------------------------------------------------|
| Closest to football pitch at north | 1.5        | 51                                             |
| Closest to football pitch to west  | 1.5        | 47                                             |

Table 29 Noise Modelling Results at the nearest noise sensitive receptors

A noise map of the predicted levels can be found in the Appendix.

### 9.7.4 Assessment

The Table below shows the location of the most exposed façade of the predicted noise level when compared to the typical evening background and the Sports England Target of 50 dB L<sub>Aeq,1hour</sub> and the difference between them.

| Receptor                           | Height (m) | Predicted noise level<br>L <sub>Aeq</sub> (dB) | Target noise level | Difference |
|------------------------------------|------------|------------------------------------------------|--------------------|------------|
| Sports England                     |            |                                                |                    |            |
| Closest to football pitch at north | 1.5        | 51                                             | 50                 | +1         |
| Closest to football pitch to west  | 1.5        | 47                                             | 50                 | -3         |

Table 30 Football Pitch Noise Assessment

### 9.7.5 Discussion

As can be seen from the table above. When the predicted noise levels are assessed against the Sports England Target, the predicted noise levels are below the target of 50 dB at the west side of the site, however it is 1 dB above the target at the north end of the site.

It should be noted that 1 dB is not considered to be perceptible. As the predicted noise level only exceeds the target noise level by 1 dB this difference will not be noticeable.

## 10.0 Traffic Assessment of Proposed Link Road

It is understood the proposal includes a link roads for traffic to still get to the industrial and commercial sites to the west of the development. Whilst HGV traffic will be dissuaded from using the link road, the road will be designed to accommodate them is required.

The current proposed alignment of the road is shown in grey in the figure below:

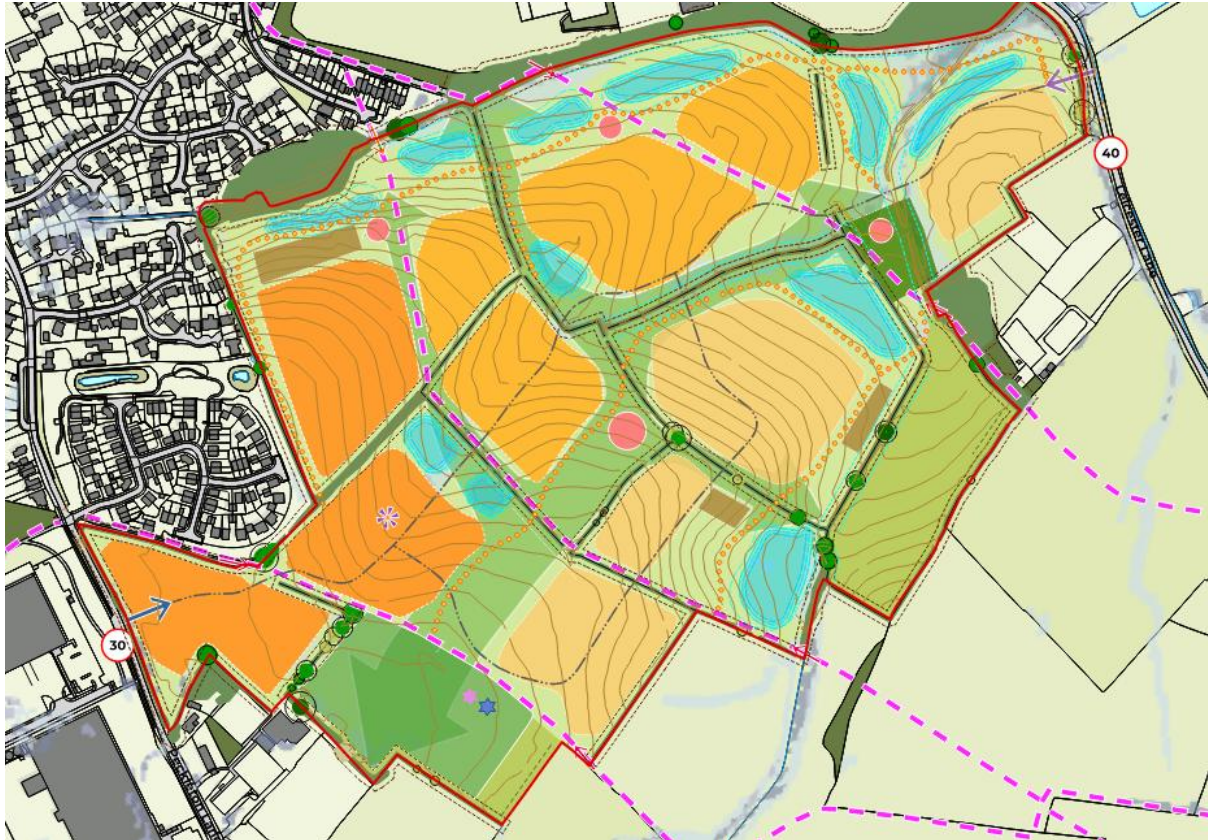


Figure 19 Location of link road

An assessment of the noise impact of this road will be conducted once the design has been finalised and the predicted traffic flow is known.

## 11.0 Assessment of GP Practice and Sports Facility

### 11.1 Sports Facility

It is understood that the proposed site will have four sports pitches for football. The area allocated for this is shown in red on the figure below.

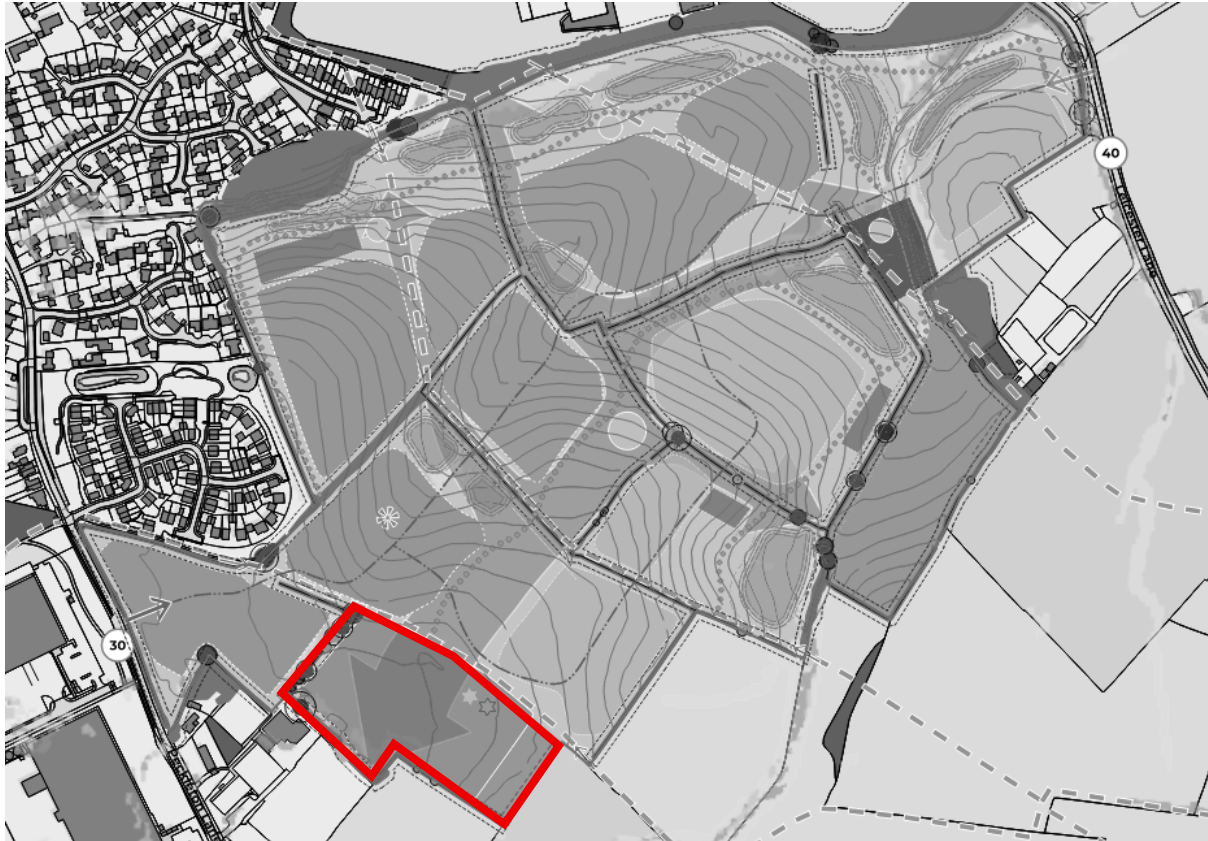


Figure 20 Location of sports facility

The football pitches will need to be assessed against the Sport England targets of achieving the target of 50 dB  $L_{Aeq,1hour}$ .

Care should be taken with the orientation of both the pitches and the nearby dwelling.

Noise from the pitches will be controlled through the orientation of the dwellings, and boundary treatments to achieve the noise level. The precise mitigation will be assessed once the exact location of the pitches and dwellings have been finalised.

### 11.1 GP Practice

It is understood there are plans for a GP practice to be included into the proposed site for the new residents.

The proposed location for the GP practice is shown in red below.



Figure 21 Location of GP

As previously mentioned in section 2, there are requirements from HTM 08 01 for internal ambient noise levels within the practice. These are outlined in the table below.

| Room Type         | Example                                                                   | Criteria for noise intrusion to be met inside the spaces from external sources (dB) |
|-------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Small office type | Private offices, small treatment rooms, interview rooms, consulting rooms | 40 $L_{Aeq,1hr}$                                                                    |
| Circulation       | Corridors, hospital street, atria                                         | 55 $L_{Aeq,1hr}$                                                                    |
| Personal, hygiene | Toilets, showers                                                          | 55 $L_{Aeq,1hr}$                                                                    |

Table 31 HTM 08 01 targets for IANL

As shown in the table above the most stringent target is 40  $L_{Aeq,1hr}$  and therefore the glazing will be assessed to achieve this.

3D computer modelling was used to assess the impact of the road noise on the proposed GP, the predicted noise impact is shown in the table below.

| Receptor  | Height (m) | Predicted Noise Level<br>$L_{Aeq}$ (dB) |
|-----------|------------|-----------------------------------------|
| East side | 1.5        | 42                                      |
|           | 4.5        | 42                                      |

| Receptor   | Height (m) | Predicted Noise Level<br>$L_{Aeq}$ (dB) |
|------------|------------|-----------------------------------------|
| South side | 1.5        | 45                                      |
|            | 4.5        | 45                                      |
| West side  | 1.5        | 43                                      |
|            | 4.5        | 43                                      |

Table 32 Predicted noise impact on GP

Based on the table above, standard thermal glazing and natural ventilation will be able to achieve the targets of HTM 08 01.

## 12.0 Noise emission limits – building services plant

At the time of writing it is not known if air source heat pumps will be installed. However If air source heat pumps are to be used, these should be assessed against the Institute of Acoustics guidance on heat pumps, 'Heat Pumps Professional Advice Note' using the noise emission targets have been set below. Whilst these targets are set by the Institute of Acoustics, they should also be checked with the Local Authority to establish if more stringent targets need to be set.

| Location          | Period                          | Typical back-ground noise level<br>dB $L_{A90}$ | Maximum sound pressure level for<br>items of plant |
|-------------------|---------------------------------|-------------------------------------------------|----------------------------------------------------|
| North end of site | Daytime 07:00 – 23:00 hours     | 41 $L_{A90,1 \text{ hour}}$                     | 41 $L_{Ar,Tr}$                                     |
|                   | Night time 23:00 to 07:00 hours | 28 $L_{A90,15 \text{ mins}}$                    | 28 $L_{Ar,Tr}$                                     |
| East end of site  | Daytime 07:00 – 23:00 hours     | 49 $L_{A90,1 \text{ hour}}$                     | 49 $L_{Ar,Tr}$                                     |
|                   | Night time 23:00 to 07:00 hours | 26 $L_{A90,15 \text{ mins}}$                    | 26 $L_{Ar,Tr}$                                     |
| South end of site | Daytime 07:00 – 23:00 hours     | 46 $L_{A90,1 \text{ hour}}$                     | 46 $L_{Ar,Tr}$                                     |
|                   | Night time 23:00 to 07:00 hours | 34 $L_{A90,1 \text{ hour}}$                     | 34 $L_{Ar,Tr}$                                     |
| West end of site  | Daytime 07:00 – 23:00 hours     | 34 $L_{A90,1 \text{ hour}}$                     | 34 $L_{Ar,Tr}$                                     |
|                   | Night time 23:00 to 07:00 hours | 22 $L_{A90,1 \text{ hour}}$                     | 22 $L_{Ar,Tr}$                                     |

Table 33 Summary of limiting noise levels

The above limit applies to all new items of services plant, running simultaneously at the appropriate design duty.

## 10 Uncertainty

The following subsections focus on the potential uncertainty of the measurements and calculation.

### 10.3 Measurements

The measurement positions potentially may be marginally different to the factors such as traffic being different on the day.

Four measurement positions was selected due to the security of the site.

Specific noise levels could not be measured due to not having a response from the industry or commercial business.

### 10.4 Calculations

Unknown errors in the software may adversely influence the predicted noise levels.

Meteorological conditions such as wind diffraction or temperature inversions have not been taken into account.

## **11 Conclusion**

Noise Harvest has been commissioned by Claremont Planning Ltd to carry out an assessment of noise levels affecting the proposed dwellings in Desford.

The purpose of this assessment is to evaluate the calculated prevailing noise levels affecting the site, based on survey data, and identify to achieve a comfortable internal acoustic environment, in line with relevant British Standards and World Health Organisation.

### **11.3 Proposed dwellings**

An assessment has shown that appropriate internal noise levels within habitable rooms could be achieved by specifying appropriate glazing.

By providing appropriate glazing constructions to the proposed habitable façades, calculations indicate that internal ambient noise levels within proposed habitable rooms would be less than 35 dBA during the daytime and 30 dBA at night-time.

The proposed glazing will also achieve the requirements to meet the WHO guidelines for sleep disturbance.

Mitigation measures have been suggested for outdoor amenity spaces to meet both guidelines and local authority targets.

### **11.4 BS 4142 Assessment and existing sports pitches**

An assessment has shown no adverse impacts of adjacent industrial noise sources on the planned residential dwellings. The existing sports pitches at the leisure centre should also meet the requirements set out in Sports England.

### **11.5 GP practice**

An assessment of the proposed GP practice has been undertaken and is predicted that internal noise level targets can be met with natural ventilation and standard glazing.

### **11.6 Proposed sports pitches**

It is anticipated that the noise from the proposed sports pitches will be controlled with careful orientation of the dwelling and treatments at the boundary and will be assessed once the layout has been finalised.

### **11.7 Link road**

Further assessments for the link road will be undertaken once layout plans have been finalised.

## 12 Appendix

### 12.3 Environmental noise survey data.

| Date and Time                | L <sub>Aeq</sub> | L <sub>AfMax</sub> | L <sub>A90</sub> |
|------------------------------|------------------|--------------------|------------------|
| <b>26/08/25 – 27/08/2025</b> |                  |                    |                  |
| <b>Position 1</b>            |                  |                    |                  |
| 26/08/2025 14:02             | 70.9             | 104.1              | 49.3             |
| 26/08/2025 14:15             | 63.6             | 75.1               | 49.5             |
| 26/08/2025 14:30             | 64.4             | 73.1               | 52.8             |
| 26/08/2025 14:45             | 64.2             | 73.1               | 51.3             |
| 26/08/2025 15:00             | 64.1             | 75.8               | 50.2             |
| 26/08/2025 15:15             | 65.9             | 74.8               | 57.1             |
| 26/08/2025 15:30             | 65.2             | 76.0               | 53.5             |
| 26/08/2025 15:45             | 65.1             | 77.0               | 52.4             |
| 26/08/2025 16:00             | 65.0             | 74.2               | 52.2             |
| 26/08/2025 16:15             | 64.8             | 79.8               | 50.0             |
| 26/08/2025 16:30             | 67.4             | 90.7               | 55.0             |
| 26/08/2025 16:45             | 65.4             | 73.6               | 53.5             |
| 26/08/2025 17:00             | 65.9             | 75.9               | 55.8             |
| 26/08/2025 17:15             | 65.6             | 75.4               | 56.2             |
| 26/08/2025 17:30             | 65.3             | 77.9               | 52.0             |
| 26/08/2025 17:45             | 65.2             | 73.9               | 53.6             |
| 26/08/2025 18:00             | 65.0             | 79.6               | 49.5             |
| 26/08/2025 18:15             | 64.7             | 75.0               | 49.2             |
| 26/08/2025 18:30             | 64.8             | 84.1               | 51.3             |
| 26/08/2025 18:45             | 63.1             | 83.1               | 45.6             |
| 26/08/2025 19:00             | 64.0             | 79.4               | 49.0             |
| 26/08/2025 19:15             | 63.3             | 80.8               | 47.7             |
| 26/08/2025 19:30             | 61.7             | 73.7               | 42.7             |
| 26/08/2025 19:45             | 62.6             | 74.4               | 45.8             |
| 26/08/2025 20:00             | 61.7             | 76.2               | 42.7             |
| 26/08/2025 20:15             | 65.4             | 91.8               | 40.4             |
| 26/08/2025 20:30             | 60.2             | 71.2               | 42.5             |
| 26/08/2025 20:45             | 61.0             | 77.8               | 41.6             |
| 26/08/2025 21:00             | 62.2             | 77.7               | 44.4             |
| 26/08/2025 21:15             | 58.8             | 72.2               | 33.8             |
| 26/08/2025 21:30             | 59.6             | 72.5               | 35.5             |
| 26/08/2025 21:45             | 57.7             | 72.0               | 30.2             |
| 26/08/2025 22:00             | 57.4             | 71.7               | 28.8             |
| 26/08/2025 22:15             | 58.5             | 73.5               | 29.6             |
| 26/08/2025 22:30             | 57.9             | 73.6               | 33.4             |
| 26/08/2025 22:45             | 56.4             | 73.6               | 28.7             |
| 26/08/2025 23:00             | 57.0             | 71.7               | 29.2             |
| 26/08/2025 23:15             | 55.6             | 72.8               | 26.0             |
| 26/08/2025 23:30             | 54.5             | 73.5               | 26.9             |
| 26/08/2025 23:45             | 52.4             | 70.2               | 26.1             |
| 27/08/2025 00:00             | 51.1             | 70.8               | 25.0             |
| 27/08/2025 00:15             | 52.5             | 71.3               | 25.8             |
| 27/08/2025 00:30             | 50.7             | 71.0               | 26.0             |

| Date and Time     | L <sub>Aeq</sub> | L <sub>AfMax</sub> | L <sub>A90</sub> |
|-------------------|------------------|--------------------|------------------|
| 27/08/2025 00:45  | 45.6             | 69.4               | 26.3             |
| 27/08/2025 01:00  | 50.8             | 70.3               | 25.9             |
| 27/08/2025 01:15  | 44.3             | 66.7               | 26.0             |
| 27/08/2025 01:30  | 43.6             | 69.0               | 25.6             |
| 27/08/2025 01:45  | 50.6             | 70.1               | 25.7             |
| 27/08/2025 02:00  | 48.8             | 70.4               | 26.0             |
| 27/08/2025 02:15  | 49.3             | 71.8               | 26.7             |
| 27/08/2025 02:30  | 50.1             | 71.7               | 28.4             |
| 27/08/2025 02:45  | 51.6             | 71.7               | 24.3             |
| 27/08/2025 03:00  | 51.4             | 73.9               | 25.1             |
| 27/08/2025 03:15  | 46.4             | 68.6               | 24.1             |
| 27/08/2025 03:30  | 50.8             | 71.7               | 23.7             |
| 27/08/2025 03:45  | 48.1             | 68.1               | 23.7             |
| 27/08/2025 04:00  | 52.6             | 72.0               | 25.8             |
| 27/08/2025 04:15  | 48.3             | 70.4               | 24.9             |
| 27/08/2025 04:30  | 53.6             | 73.2               | 26.7             |
| 27/08/2025 04:45  | 55.9             | 72.0               | 27.5             |
| 27/08/2025 05:00  | 56.7             | 72.4               | 30.5             |
| 27/08/2025 05:15  | 58.0             | 71.9               | 32.9             |
| 27/08/2025 05:30  | 60.0             | 77.3               | 37.7             |
| 27/08/2025 05:45  | 59.4             | 75.7               | 41.8             |
| 27/08/2025 06:00  | 60.4             | 75.8               | 40.0             |
| 27/08/2025 06:15  | 63.2             | 80.0               | 45.3             |
| 27/08/2025 06:30  | 63.6             | 73.7               | 45.7             |
| 27/08/2025 06:45  | 65.2             | 77.0               | 48.2             |
| 27/08/2025 07:00  | 66.1             | 79.6               | 52.1             |
| 27/08/2025 07:15  | 67.4             | 84.2               | 55.9             |
| 27/08/2025 07:30  | 66.8             | 74.3               | 54.9             |
| 27/08/2025 07:45  | 66.7             | 75.6               | 53.3             |
| 27/08/2025 08:00  | 65.9             | 74.8               | 51.2             |
| 27/08/2025 08:15  | 66.3             | 78.5               | 53.6             |
| 27/08/2025 08:30  | 66.3             | 76.1               | 51.0             |
| 27/08/2025 08:45  | 64.2             | 73.1               | 47.2             |
| 27/08/2025 09:00  | 64.3             | 73.3               | 49.7             |
| 27/08/2025 09:15  | 64.6             | 76.7               | 48.4             |
| 27/08/2025 09:30  | 63.3             | 75.4               | 48.1             |
| 27/08/2025 09:45  | 63.9             | 75.8               | 48.9             |
| 27/08/2025 10:00  | 64.1             | 78.3               | 49.0             |
| 27/08/2025 10:15  | 63.9             | 78.6               | 51.2             |
| 27/08/2025 10:30  | 63.8             | 78.5               | 48.8             |
| 27/08/2025 10:45  | 63.7             | 78.0               | 48.0             |
| 27/08/2025 11:00  | 62.6             | 76.2               | 48.6             |
| 27/08/2025 11:15  | 63.0             | 75.1               | 49.3             |
| 27/08/2025 11:30  | 63.8             | 74.3               | 50.8             |
| 27/08/2025 11:45  | 63.3             | 77.9               | 49.6             |
| 27/08/2025 12:00  | 64.0             | 76.8               | 50.1             |
| 27/08/2025 12:15  | 64.1             | 76.8               | 48.0             |
| <b>Position 2</b> |                  |                    |                  |

| Date and Time    | L <sub>Aeq</sub> | L <sub>AfMax</sub> | L <sub>A90</sub> |
|------------------|------------------|--------------------|------------------|
| 26/08/2025 13:15 | 61.7             | 88.0               | 46.1             |
| 26/08/2025 13:30 | 59.1             | 80.1               | 43.5             |
| 26/08/2025 13:45 | 59.7             | 80.8               | 42.0             |
| 26/08/2025 14:00 | 61.8             | 82.8               | 45.1             |
| 26/08/2025 14:15 | 59.0             | 73.0               | 44.7             |
| 26/08/2025 14:30 | 60.9             | 77.4               | 46.1             |
| 26/08/2025 14:45 | 59.5             | 72.8               | 44.0             |
| 26/08/2025 15:00 | 60.5             | 72.5               | 46.9             |
| 26/08/2025 15:15 | 60.6             | 76.1               | 45.8             |
| 26/08/2025 15:30 | 62.0             | 79.4               | 46.6             |
| 26/08/2025 15:45 | 60.1             | 72.6               | 45.4             |
| 26/08/2025 16:00 | 62.9             | 85.8               | 49.0             |
| 26/08/2025 16:15 | 61.8             | 76.3               | 46.6             |
| 26/08/2025 16:30 | 60.5             | 72.5               | 47.8             |
| 26/08/2025 16:45 | 61.6             | 78.2               | 49.0             |
| 26/08/2025 17:00 | 61.2             | 76.0               | 48.6             |
| 26/08/2025 17:15 | 61.1             | 72.2               | 49.2             |
| 26/08/2025 17:30 | 60.4             | 71.4               | 48.3             |
| 26/08/2025 17:45 | 60.5             | 77.1               | 45.1             |
| 26/08/2025 18:00 | 59.1             | 74.1               | 45.2             |
| 26/08/2025 18:15 | 59.2             | 76.7               | 42.8             |
| 26/08/2025 18:30 | 58.0             | 71.2               | 41.3             |
| 26/08/2025 18:45 | 57.0             | 78.8               | 41.0             |
| 26/08/2025 19:00 | 55.7             | 72.0               | 39.8             |
| 26/08/2025 19:15 | 59.6             | 81.2               | 41.1             |
| 26/08/2025 19:30 | 57.3             | 75.0               | 41.2             |
| 26/08/2025 19:45 | 56.2             | 71.4               | 41.9             |
| 26/08/2025 20:00 | 56.8             | 71.3               | 40.0             |
| 26/08/2025 20:15 | 56.5             | 77.1               | 38.8             |
| 26/08/2025 20:30 | 57.1             | 80.0               | 37.7             |
| 26/08/2025 20:45 | 54.9             | 71.5               | 36.7             |
| 26/08/2025 21:00 | 55.5             | 72.9               | 37.4             |
| 26/08/2025 21:15 | 54.6             | 71.8               | 35.8             |
| 26/08/2025 21:30 | 55.0             | 74.6               | 36.4             |
| 26/08/2025 21:45 | 53.8             | 74.9               | 34.3             |
| 26/08/2025 22:00 | 52.1             | 72.8               | 34.2             |
| 26/08/2025 22:15 | 50.3             | 71.2               | 34.1             |
| 26/08/2025 22:30 | 55.4             | 77.6               | 34.4             |
| 26/08/2025 22:45 | 52.9             | 70.5               | 34.8             |
| 26/08/2025 23:00 | 51.3             | 73.5               | 33.9             |
| 26/08/2025 23:15 | 47.6             | 70.1               | 33.9             |
| 26/08/2025 23:30 | 49.6             | 70.5               | 34.1             |
| 26/08/2025 23:45 | 42.9             | 64.7               | 34.1             |
| 27/08/2025 00:00 | 41.6             | 67.1               | 34.2             |
| 27/08/2025 00:15 | 49.9             | 73.0               | 34.1             |
| 27/08/2025 00:30 | 44.9             | 69.4               | 34.1             |
| 27/08/2025 00:45 | 35.7             | 47.7               | 34.3             |
| 27/08/2025 01:00 | 44.7             | 70.9               | 34.5             |

| Date and Time    | L <sub>Aeq</sub> | L <sub>AfMax</sub> | L <sub>A90</sub> |
|------------------|------------------|--------------------|------------------|
| 27/08/2025 01:15 | 40.3             | 64.2               | 34.2             |
| 27/08/2025 01:30 | 37.1             | 50.3               | 34.7             |
| 27/08/2025 01:45 | 38.2             | 56.2               | 34.6             |
| 27/08/2025 02:00 | 36.1             | 45.8               | 34.8             |
| 27/08/2025 02:15 | 43.0             | 67.7               | 34.4             |
| 27/08/2025 02:30 | 56.0             | 77.0               | 34.7             |
| 27/08/2025 02:45 | 45.9             | 68.7               | 34.2             |
| 27/08/2025 03:00 | 47.0             | 67.8               | 34.3             |
| 27/08/2025 03:15 | 42.6             | 66.9               | 34.2             |
| 27/08/2025 03:30 | 42.0             | 63.8               | 34.3             |
| 27/08/2025 03:45 | 42.7             | 67.7               | 34.5             |
| 27/08/2025 04:00 | 45.0             | 69.1               | 34.8             |
| 27/08/2025 04:15 | 44.7             | 71.2               | 34.9             |
| 27/08/2025 04:30 | 51.7             | 71.1               | 35.6             |
| 27/08/2025 04:45 | 52.5             | 73.9               | 35.2             |
| 27/08/2025 05:00 | 49.4             | 70.4               | 35.4             |
| 27/08/2025 05:15 | 56.7             | 73.3               | 37.2             |
| 27/08/2025 05:30 | 59.3             | 72.3               | 43.6             |
| 27/08/2025 05:45 | 61.6             | 78.0               | 46.9             |
| 27/08/2025 06:00 | 58.7             | 74.4               | 43.4             |
| 27/08/2025 06:15 | 61.1             | 76.7               | 46.8             |
| 27/08/2025 06:30 | 60.1             | 73.5               | 46.6             |
| 27/08/2025 06:45 | 60.3             | 76.1               | 45.8             |
| 27/08/2025 07:00 | 59.0             | 75.3               | 43.0             |
| 27/08/2025 07:15 | 62.2             | 75.8               | 47.9             |
| 27/08/2025 07:30 | 61.9             | 75.1               | 47.0             |
| 27/08/2025 07:45 | 62.9             | 74.7               | 51.2             |
| 27/08/2025 08:00 | 63.2             | 74.3               | 52.2             |
| 27/08/2025 08:15 | 63.0             | 81.1               | 50.2             |
| 27/08/2025 08:30 | 61.7             | 76.0               | 49.9             |
| 27/08/2025 08:45 | 61.8             | 79.7               | 48.0             |
| 27/08/2025 09:00 | 60.0             | 73.1               | 47.5             |
| 27/08/2025 09:15 | 59.2             | 73.1               | 45.7             |
| 27/08/2025 09:30 | 60.1             | 76.1               | 45.5             |
| 27/08/2025 09:45 | 61.3             | 84.4               | 46.3             |
| 27/08/2025 10:00 | 59.7             | 75.9               | 46.5             |
| 27/08/2025 10:15 | 60.2             | 78.3               | 45.3             |
| 27/08/2025 10:30 | 59.5             | 72.9               | 46.4             |
| 27/08/2025 10:45 | 59.0             | 74.4               | 47.2             |
| 27/08/2025 11:00 | 59.8             | 79.9               | 46.3             |
| 27/08/2025 11:15 | 58.4             | 72.3               | 45.2             |
| 27/08/2025 11:30 | 60.6             | 78.7               | 47.5             |
| 27/08/2025 11:45 | 59.3             | 77.8               | 45.2             |
| 27/08/2025 12:00 | 59.2             | 77.3               | 46.4             |
| 27/08/2025 12:15 | 63.6             | 90.8               | 41.2             |
| 27/08/2025 12:30 | 60.3             | 79.7               | 42.4             |
| 26/08/2025 13:15 | 61.7             | 88.0               | 46.1             |
| 26/08/2025 13:30 | 59.1             | 80.1               | 43.5             |

| Date and Time                  | L <sub>Aeq</sub> | L <sub>AfMax</sub> | L <sub>A90</sub> |
|--------------------------------|------------------|--------------------|------------------|
| <b>27/08/2025 – 28/08/2025</b> |                  |                    |                  |
| <b>Position 3</b>              |                  |                    |                  |
| 27/08/2025 13:45               | 45.9             | 76.7               | 37.2             |
| 27/08/2025 14:00               | 44.3             | 59.8               | 39.8             |
| 27/08/2025 14:15               | 44.1             | 59.6               | 38.2             |
| 27/08/2025 14:30               | 42.7             | 54.2               | 37.1             |
| 27/08/2025 14:45               | 42.6             | 56.7               | 36.9             |
| 27/08/2025 15:00               | 46.4             | 61.0               | 41.2             |
| 27/08/2025 15:15               | 43.5             | 56.0               | 37.9             |
| 27/08/2025 15:30               | 43.0             | 64.5               | 36.9             |
| 27/08/2025 15:45               | 48.9             | 56.5               | 33.5             |
| 27/08/2025 16:00               | 39.7             | 57.2               | 31.7             |
| 27/08/2025 16:15               | 42.6             | 62.8               | 31.2             |
| 27/08/2025 16:30               | 37.9             | 56.8               | 31.1             |
| 27/08/2025 16:45               | 37.2             | 51.9               | 32.7             |
| 27/08/2025 17:00               | 43.5             | 64.0               | 33.2             |
| 27/08/2025 17:15               | 40.9             | 60.7               | 34.1             |
| 27/08/2025 17:30               | 38.6             | 58.8               | 30.6             |
| 27/08/2025 17:45               | 41.6             | 60.7               | 32.5             |
| 27/08/2025 18:00               | 38.6             | 49.4               | 33.9             |
| 27/08/2025 18:15               | 39.3             | 54.8               | 34.5             |
| 27/08/2025 18:30               | 40.6             | 56.7               | 33.1             |
| 27/08/2025 18:45               | 42.2             | 57.1               | 35.6             |
| 27/08/2025 19:00               | 40.8             | 59.5               | 32.6             |
| 27/08/2025 19:15               | 41.1             | 56.1               | 33.0             |
| 27/08/2025 19:30               | 37.7             | 53.9               | 32.1             |
| 27/08/2025 19:45               | 39.2             | 53.3               | 30.7             |
| 27/08/2025 20:00               | 41.2             | 69.9               | 28.4             |
| 27/08/2025 20:15               | 38.9             | 58.1               | 28.3             |
| 27/08/2025 20:30               | 32.9             | 59.1               | 27.8             |
| 27/08/2025 20:45               | 28.8             | 44.1               | 26.1             |
| 27/08/2025 21:00               | 29.6             | 46.5               | 25.4             |
| 27/08/2025 21:15               | 30.5             | 49.4               | 26.1             |
| 27/08/2025 21:30               | 28.1             | 47.4               | 25.5             |
| 27/08/2025 21:45               | 31.6             | 48.9               | 25.0             |
| 27/08/2025 22:00               | 27.9             | 40.5               | 24.0             |
| 27/08/2025 22:15               | 28.9             | 49.5               | 24.0             |
| 27/08/2025 22:30               | 36.0             | 52.0               | 24.2             |
| 27/08/2025 22:45               | 29.3             | 42.6               | 23.2             |
| 27/08/2025 23:00               | 30.1             | 44.4               | 23.3             |
| 27/08/2025 23:15               | 37.7             | 52.8               | 22.6             |
| 27/08/2025 23:30               | 26.3             | 40.8               | 23.1             |
| 27/08/2025 23:45               | 26.8             | 37.4               | 22.4             |
| 28/08/2025 00:00               | 25.1             | 36.2               | 22.5             |
| 28/08/2025 00:15               | 24.0             | 34.7               | 21.7             |
| 28/08/2025 00:30               | 22.7             | 38.8               | 21.7             |
| 28/08/2025 00:45               | 24.6             | 36.4               | 22.5             |
| 28/08/2025 01:00               | 25.9             | 42.3               | 22.9             |

| Date and Time     | L <sub>Aeq</sub> | L <sub>AfMax</sub> | L <sub>A90</sub> |
|-------------------|------------------|--------------------|------------------|
| 28/08/2025 01:15  | 24.2             | 34.7               | 22.4             |
| 28/08/2025 01:30  | 33.0             | 49.0               | 22.3             |
| 28/08/2025 01:45  | 29.9             | 42.9               | 23.0             |
| 28/08/2025 02:00  | 24.9             | 35.5               | 23.6             |
| 28/08/2025 02:15  | 23.5             | 31.3               | 21.1             |
| 28/08/2025 02:30  | 28.8             | 40.4               | 22.5             |
| 28/08/2025 02:45  | 25.1             | 48.4               | 21.9             |
| 28/08/2025 03:00  | 23.1             | 42.4               | 21.3             |
| 28/08/2025 03:15  | 22.9             | 34.1               | 21.4             |
| 28/08/2025 03:30  | 24.1             | 33.8               | 22.0             |
| 28/08/2025 03:45  | 26.0             | 38.4               | 22.0             |
| 28/08/2025 04:00  | 26.7             | 39.8               | 22.1             |
| 28/08/2025 04:15  | 27.2             | 44.9               | 22.0             |
| 28/08/2025 04:30  | 25.7             | 33.6               | 23.4             |
| 28/08/2025 04:45  | 26.4             | 38.8               | 23.7             |
| 28/08/2025 05:00  | 28.6             | 42.6               | 25.6             |
| 28/08/2025 05:15  | 35.6             | 58.7               | 27.5             |
| 28/08/2025 05:30  | 44.5             | 70.9               | 30.7             |
| 28/08/2025 05:45  | 43.6             | 69.4               | 32.3             |
| 28/08/2025 06:00  | 42.5             | 69.8               | 32.9             |
| 28/08/2025 06:15  | 40.5             | 60.9               | 33.7             |
| 28/08/2025 06:30  | 42.6             | 72.2               | 32.7             |
| 28/08/2025 06:45  | 39.7             | 61.1               | 34.3             |
| 28/08/2025 07:00  | 42.2             | 67.7               | 33.5             |
| 28/08/2025 07:15  | 41.0             | 60.3               | 33.1             |
| 28/08/2025 07:30  | 38.5             | 53.5               | 33.1             |
| 28/08/2025 07:45  | 46.2             | 64.7               | 34.3             |
| 28/08/2025 08:00  | 48.1             | 75.2               | 33.5             |
| 28/08/2025 08:15  | 45.3             | 63.2               | 32.8             |
| 28/08/2025 08:30  | 49.0             | 68.7               | 34.4             |
| 28/08/2025 08:45  | 49.0             | 72.1               | 35.4             |
| 28/08/2025 09:00  | 51.3             | 73.9               | 33.2             |
| 28/08/2025 09:15  | 43.6             | 62.2               | 34.4             |
| 28/08/2025 09:30  | 55.2             | 74.1               | 34.2             |
| 28/08/2025 09:45  | 51.4             | 70.9               | 33.8             |
| 28/08/2025 10:00  | 50.1             | 72.0               | 33.2             |
| 28/08/2025 10:15  | 47.2             | 72.8               | 32.5             |
| 28/08/2025 10:30  | 42.9             | 64.5               | 34.7             |
| 28/08/2025 10:45  | 43.4             | 60.0               | 34.9             |
| 28/08/2025 11:00  | 45.8             | 67.9               | 34.2             |
| 28/08/2025 11:15  | 49.9             | 71.6               | 35.7             |
| <b>Position 4</b> |                  |                    |                  |
| 27/08/2025 13:58  | 74.3             | 93.3               | 44.7             |
| 27/08/2025 14:00  | 58.0             | 91.7               | 47.7             |
| 27/08/2025 14:15  | 51.9             | 62.5               | 44.6             |
| 27/08/2025 14:30  | 53.0             | 61.8               | 46.9             |
| 27/08/2025 14:45  | 55.7             | 66.9               | 47.4             |
| 27/08/2025 15:00  | 53.9             | 64.1               | 48.2             |

| Date and Time    | L <sub>Aeq</sub> | L <sub>AfMax</sub> | L <sub>A90</sub> |
|------------------|------------------|--------------------|------------------|
| 27/08/2025 15:15 | 51.1             | 61.7               | 46.2             |
| 27/08/2025 15:30 | 50.7             | 69.3               | 43.5             |
| 27/08/2025 15:45 | 48.6             | 70.1               | 38.0             |
| 27/08/2025 16:00 | 43.6             | 60.8               | 36.3             |
| 27/08/2025 16:15 | 42.4             | 58.2               | 36.7             |
| 27/08/2025 16:30 | 45.3             | 57.5               | 35.7             |
| 27/08/2025 16:45 | 42.4             | 54.3               | 37.7             |
| 27/08/2025 17:00 | 43.7             | 57.6               | 38.8             |
| 27/08/2025 17:15 | 43.6             | 56.8               | 38.4             |
| 27/08/2025 17:30 | 42.3             | 62.5               | 37.1             |
| 27/08/2025 17:45 | 46.6             | 61.4               | 38.1             |
| 27/08/2025 18:00 | 43.0             | 64.3               | 37.9             |
| 27/08/2025 18:15 | 42.8             | 60.9               | 37.9             |
| 27/08/2025 18:30 | 42.3             | 55.4               | 37.1             |
| 27/08/2025 18:45 | 46.7             | 68.7               | 39.1             |
| 27/08/2025 19:00 | 42.5             | 57.6               | 36.8             |
| 27/08/2025 19:15 | 43.4             | 58.9               | 36.9             |
| 27/08/2025 19:30 | 40.1             | 63.7               | 35.6             |
| 27/08/2025 19:45 | 37.3             | 51.4               | 34.1             |
| 27/08/2025 20:00 | 38.7             | 65.2               | 34.5             |
| 27/08/2025 20:15 | 36.9             | 45.5               | 34.7             |
| 27/08/2025 20:30 | 38.4             | 53.9               | 34.4             |
| 27/08/2025 20:45 | 35.3             | 48.5               | 32.6             |
| 27/08/2025 21:00 | 37.5             | 56.3               | 34.0             |
| 27/08/2025 21:15 | 35.9             | 45.2               | 33.2             |
| 27/08/2025 21:30 | 34.6             | 45.2               | 32.1             |
| 27/08/2025 21:45 | 35.7             | 50.9               | 31.3             |
| 27/08/2025 22:00 | 33.2             | 44.6               | 30.2             |
| 27/08/2025 22:15 | 34.5             | 42.8               | 31.4             |
| 27/08/2025 22:30 | 39.0             | 55.1               | 31.1             |
| 27/08/2025 22:45 | 35.1             | 48.1               | 30.6             |
| 27/08/2025 23:00 | 34.0             | 46.2               | 28.5             |
| 27/08/2025 23:15 | 39.4             | 54.2               | 27.8             |
| 27/08/2025 23:30 | 33.5             | 44.6               | 29.1             |
| 27/08/2025 23:45 | 32.3             | 43.9               | 28.5             |
| 28/08/2025 00:00 | 31.7             | 43.0               | 28.0             |
| 28/08/2025 00:15 | 29.2             | 41.5               | 26.4             |
| 28/08/2025 00:30 | 30.2             | 41.4               | 26.8             |
| 28/08/2025 00:45 | 30.3             | 39.1               | 27.7             |
| 28/08/2025 01:00 | 30.1             | 41.8               | 26.7             |
| 28/08/2025 01:15 | 30.7             | 41.2               | 27.0             |
| 28/08/2025 01:30 | 35.3             | 48.4               | 28.0             |
| 28/08/2025 01:45 | 30.8             | 41.8               | 27.9             |
| 28/08/2025 02:00 | 31.5             | 41.0               | 29.3             |
| 28/08/2025 02:15 | 30.8             | 39.7               | 25.8             |
| 28/08/2025 02:30 | 34.4             | 45.1               | 28.0             |
| 28/08/2025 02:45 | 30.9             | 43.0               | 27.3             |
| 28/08/2025 03:00 | 28.2             | 36.2               | 25.6             |

| Date and Time    | L <sub>Aeq</sub> | L <sub>AfMax</sub> | L <sub>A90</sub> |
|------------------|------------------|--------------------|------------------|
| 28/08/2025 03:15 | 29.8             | 42.4               | 25.8             |
| 28/08/2025 03:30 | 30.9             | 39.6               | 27.6             |
| 28/08/2025 03:45 | 31.2             | 45.1               | 27.0             |
| 28/08/2025 04:00 | 32.2             | 43.0               | 27.5             |
| 28/08/2025 04:15 | 32.4             | 44.9               | 26.3             |
| 28/08/2025 04:30 | 32.4             | 41.5               | 29.5             |
| 28/08/2025 04:45 | 33.8             | 46.0               | 30.8             |
| 28/08/2025 05:00 | 35.4             | 43.0               | 33.0             |
| 28/08/2025 05:15 | 37.8             | 48.5               | 34.8             |
| 28/08/2025 05:30 | 41.9             | 60.2               | 37.6             |
| 28/08/2025 05:45 | 46.5             | 71.0               | 37.5             |
| 28/08/2025 06:00 | 42.3             | 61.6               | 37.7             |
| 28/08/2025 06:15 | 47.9             | 68.3               | 40.9             |
| 28/08/2025 06:30 | 45.0             | 64.1               | 41.5             |
| 28/08/2025 06:45 | 43.7             | 60.8               | 41.1             |
| 28/08/2025 07:00 | 43.3             | 57.8               | 41.0             |
| 28/08/2025 07:15 | 49.2             | 70.6               | 41.0             |
| 28/08/2025 07:30 | 42.0             | 57.5               | 39.7             |
| 28/08/2025 07:45 | 42.7             | 56.5               | 40.5             |
| 28/08/2025 08:00 | 42.1             | 49.9               | 39.8             |
| 28/08/2025 08:15 | 43.8             | 53.1               | 40.1             |
| 28/08/2025 08:30 | 46.3             | 60.0               | 40.2             |
| 28/08/2025 08:45 | 44.9             | 57.4               | 40.5             |
| 28/08/2025 09:00 | 50.5             | 64.1               | 43.1             |
| 28/08/2025 09:15 | 48.1             | 57.8               | 42.2             |
| 28/08/2025 09:30 | 54.1             | 73.1               | 41.2             |
| 28/08/2025 09:45 | 49.8             | 70.2               | 38.8             |
| 28/08/2025 10:00 | 46.0             | 60.1               | 38.8             |
| 28/08/2025 10:15 | 49.0             | 59.2               | 39.2             |
| 28/08/2025 10:30 | 51.6             | 61.1               | 44.4             |
| 28/08/2025 10:45 | 49.5             | 58.9               | 41.5             |
| 28/08/2025 11:00 | 50.1             | 63.1               | 41.3             |
| 28/08/2025 11:15 | 52.8             | 68.1               | 47.7             |
| 28/08/2025 11:30 | 60.2             | 87.0               | 51.1             |

#### 12.4 Weather data

| Time                               | Temp  | Weather                              | Wind   |
|------------------------------------|-------|--------------------------------------|--------|
| <b>26<sup>th</sup> August 2025</b> |       |                                      |        |
| 12:50                              | 24 °C | Scattered showers. Scattered clouds. | 20 mph |
| 13:20                              | 21 °C | Scattered clouds.                    | 18 mph |
| 13:50                              | 21 °C | Passing clouds.                      | 16 mph |
| 14:20                              | 23 °C | Passing clouds.                      | 16 mph |
| 14:50                              | 22 °C | Scattered clouds.                    | 17 mph |
| 15:20                              | 23 °C | Scattered clouds.                    | 15 mph |
| 15:50                              | 24 °C | Scattered clouds.                    | 10 mph |
| 16:20                              | 23 °C | Scattered clouds.                    | 14 mph |
| 16:50                              | 23 °C | Scattered clouds.                    | 17 mph |
| 17:20                              | 22 °C | Scattered clouds.                    | 23 mph |
| 17:50                              | 22 °C | Scattered clouds.                    | 18 mph |
| 18:20                              | 21 °C | Passing clouds.                      | 15 mph |
| 18:50                              | 21 °C | Passing clouds.                      | 10 mph |
| 19:20                              | 20 °C | Passing clouds.                      | 8 mph  |
| 19:50                              | 20 °C | Passing clouds.                      | 5 mph  |
| 20:20                              | 19 °C | Passing clouds.                      | 5 mph  |
| 20:50                              | 20 °C | Passing clouds.                      | 6 mph  |
| 21:20                              | 19 °C | Passing clouds.                      | 14 mph |
| 21:50                              | 18 °C | Clear.                               | 8 mph  |
| 22:20                              | 19 °C | Clear.                               | 14 mph |
| 22:50                              | 18 °C | Clear.                               | 12 mph |
| 23:20                              | 17 °C | Clear.                               | 8 mph  |
| 23:50                              | 17 °C | Clear.                               | 7 mph  |
| <b>27<sup>th</sup> August 2025</b> |       |                                      |        |
| 00:20                              | 17 °C | Passing clouds.                      | 5 mph  |
| 00:50                              | 16 °C | Clear.                               | 5 mph  |
| 01:20                              | 16 °C | Clear.                               | 8 mph  |
| 01:50                              | 16 °C | Clear.                               | 8 mph  |
| 02:20                              | 16 °C | Passing clouds.                      | 8 mph  |
| 02:50                              | 16 °C | Clear.                               | 8 mph  |
| 03:20                              | 16 °C | Clear.                               | 8 mph  |
| 03:50                              | 15 °C | Clear.                               | 7 mph  |
| 04:20                              | 15 °C | Passing clouds.                      | 6 mph  |
| 04:50                              | 15 °C | Passing clouds.                      | 6 mph  |

| Time  | Temp  | Weather                              | Wind   |
|-------|-------|--------------------------------------|--------|
| 05:20 | 15 °C | Clear.                               | 7 mph  |
| 05:50 | 14 °C | Clear.                               | 6 mph  |
| 06:20 | 14 °C | Passing clouds.                      | 7 mph  |
| 06:50 | 14 °C | Passing clouds.                      | 9 mph  |
| 07:20 | 15 °C | Sunny.                               | 12 mph |
| 07:50 | 16 °C | Sunny.                               | 12 mph |
| 08:20 | 17 °C | Sunny.                               | 13 mph |
| 08:50 | 17 °C | Sunny.                               | 14 mph |
| 09:20 | 18 °C | Passing clouds.                      | 14 mph |
| 09:50 | 18 °C | Scattered clouds.                    | 18 mph |
| 10:20 | 19 °C | Scattered clouds.                    | 18 mph |
| 10:50 | 19 °C | Scattered clouds.                    | 18 mph |
| 11:20 | 20 °C | Scattered clouds.                    | 16 mph |
| 11:50 | 21 °C | Partly sunny.                        | 18 mph |
| 12:20 | 19 °C | Scattered showers. Partly sunny.     | 21 mph |
| 12:50 | 19 °C | Broken clouds.                       | 14 mph |
| 13:20 | 20 °C | Partly sunny.                        | 14 mph |
| 13:50 | 18 °C | Sprinkles. Scattered clouds.         | 13 mph |
| 14:20 | 20 °C | Sprinkles. Passing clouds.           | 16 mph |
| 14:50 | 20 °C | Passing clouds.                      | 18 mph |
| 15:20 | 20 °C | Scattered clouds.                    | 16 mph |
| 15:50 | 20 °C | Scattered showers. Scattered clouds. | 15 mph |
| 16:20 | 21 °C | Scattered clouds.                    | 14 mph |
| 16:50 | 22 °C | Scattered showers. Scattered clouds. | 14 mph |
| 17:20 | 22 °C | Scattered clouds.                    | 12 mph |
| 17:50 | 22 °C | Scattered clouds.                    | 15 mph |
| 18:20 | 21 °C | Scattered clouds.                    | 20 mph |
| 18:50 | 21 °C | Passing clouds.                      | 13 mph |
| 19:20 | 20 °C | Scattered clouds.                    | 12 mph |
| 19:50 | 19 °C | Scattered clouds.                    | 14 mph |
| 20:20 | 19 °C | Passing clouds.                      | 10 mph |
| 20:50 | 18 °C | Passing clouds.                      | 8 mph  |
| 21:20 | 16 °C | Passing clouds.                      | 5 mph  |
| 21:50 | 16 °C | Clear.                               | 6 mph  |
| 22:20 | 16 °C | Clear.                               | 7 mph  |
| 22:50 | 15 °C | Clear.                               | 9 mph  |

| Time                               | Temp  | Weather           | Wind   |
|------------------------------------|-------|-------------------|--------|
| 23:20                              | 15 °C | Passing clouds.   | 6 mph  |
| 23:50                              | 15 °C | Clear.            | 7 mph  |
| <b>28<sup>th</sup> August 2025</b> |       |                   |        |
| 00:20                              | 15 °C | Clear.            | 7 mph  |
| 00:50                              | 15 °C | Clear.            | 9 mph  |
| 01:20                              | 14 °C | Clear.            | 9 mph  |
| 01:50                              | 14 °C | Clear.            | 6 mph  |
| 02:20                              | 13 °C | Clear.            | 9 mph  |
| 02:50                              | 13 °C | Clear.            | 8 mph  |
| 03:20                              | 13 °C | Clear.            | 7 mph  |
| 03:50                              | 13 °C | Clear.            | 9 mph  |
| 04:20                              | 13 °C | Passing clouds.   | 6 mph  |
| 04:50                              | 12 °C | Clear.            | 7 mph  |
| 05:20                              | 12 °C | Clear.            | 7 mph  |
| 05:50                              | 12 °C | Passing clouds.   | 6 mph  |
| 06:20                              | 12 °C | Passing clouds.   | 7 mph  |
| 06:50                              | 12 °C | Passing clouds.   | 7 mph  |
| 07:20                              | 13 °C | Sunny.            | 6 mph  |
| 07:50                              | 14 °C | Sunny.            | 7 mph  |
| 08:20                              | 15 °C | Sunny.            | 9 mph  |
| 08:50                              | 16 °C | Passing clouds.   | 12 mph |
| 09:20                              | 16 °C | Passing clouds.   | 12 mph |
| 09:50                              | 17 °C | Passing clouds.   | 13 mph |
| 10:20                              | 18 °C | Passing clouds.   | 13 mph |
| 10:50                              | 18 °C | Scattered clouds. | 12 mph |
| 11:20                              | 19 °C | Scattered clouds. | 14 mph |
| 11:50                              | 19 °C | Scattered clouds. | 14 mph |