

# **Squirrel Hall Farm Bronte Close Dewsbury**

Acoustic Planning Report  
1086/APR1

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For:

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# Acoustic Planning Report

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## **1.0 Introduction**

A new commercial development comprising storage units and light industrial starter units is proposed at Squirrel Hall Farm, Bronte Close, Dewsbury.

Lighthouse Acoustics has been appointed by Tanveer Ramzan to undertake an environmental sound survey at the existing site and to propose operational sound and atmospheric plant sound emission limits in order to minimise the impact at the nearest noise sensitive receptors.

The survey methodology, results and assessment are presented in this report.

## **2.0 Objectives**

To establish the Local Authority's acoustic requirements for the proposed commercial development.

To visit site to undertake a detailed environmental sound survey during critical periods in order to establish existing environmental noise levels at the nearest noise sensitive receptors.

Based on the results of the environmental sound survey to propose operational sound and atmospheric plant sound emission limits in order to minimise the impact at the nearest noise sensitive receptors.

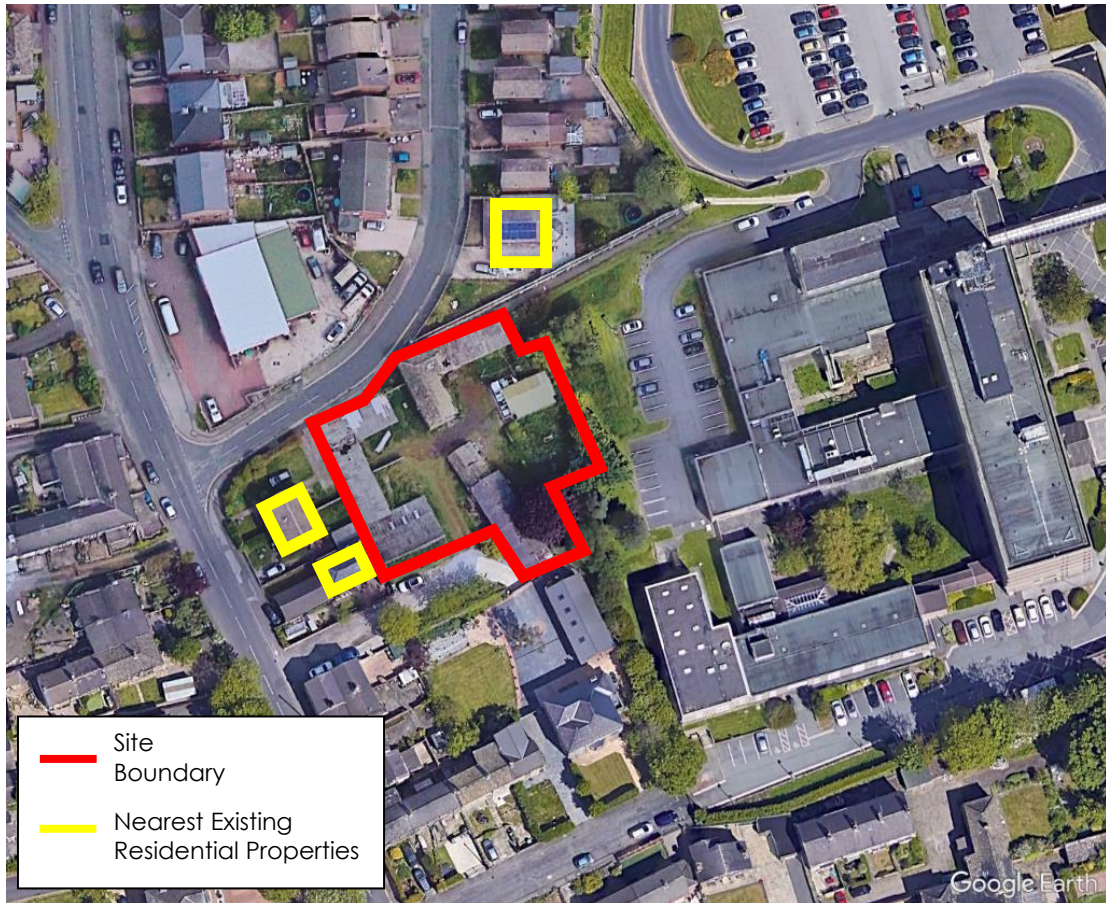
To undertake a preliminary assessment to determine limiting operational sound levels within the light industrial starter units based on basic and uprated building constructions.

## **3.0 Site Description**

Squirrel Hall Farm is located on Bronte Close, Dewsbury. The site comprises numerous 1 and 2 storey farm buildings which are in state of disrepair. The site is bound by Bronte Close to the north, Dewsbury & District Hospital to the east, access road to the south and existing residential properties to the west.

An MOT test station is situated to the north of the site opposite Bronte Close. Existing residential properties are situated to the north of the site along Bronte Close and to the south of the site opposite the access road. Staincliffe Road is situated approximately 25m to the west of the site.

The site plan below indicates the site boundary and the surrounding environment.



Site plan indicating the site boundary and the surrounding environment

## 4.0 Local Authority Requirements

It is understood that Kirklees Council require that commercial sound is assessed in accordance with BS 4142:2014 "Methods for rating and assessing industrial and commercial sound" and that the rating level at the nearest noise sensitive receptor should achieve 5dB below the existing  $L_{A90}$  background sound level during the period which the proposed commercial sound is proposed to operate.

## 5.0 Environmental Sound Survey

### 5.1 Measurements

Due to the lack of secure locations to install unmanned monitoring equipment on the site, manned sound measurements were undertaken in order to obtain measurements of environmental sound levels representative of those at the nearest noise sensitive receptors.

Manned environmental sound measurements were undertaken between 09:00 and 18:00 hours on Tuesday 25 April 2023. During this period the  $L_{Amax}$ ,  $L_{Aeq}$  and  $L_{A90}$  sound levels were measured over 15 minute periods at each measurement position in each hourly period.

## 5.2 Weather Conditions

At the start of the survey period there was a light north easterly breeze (<3m/s) and the sky was clear. There was no rainfall and road surfaces were dry. The temperature was approximately 6°C.

At the end of the survey period there was a light north easterly breeze (<3m/s) and the sky was clear. There was no rainfall and road surfaces were dry. The temperature was approximately 13°C.

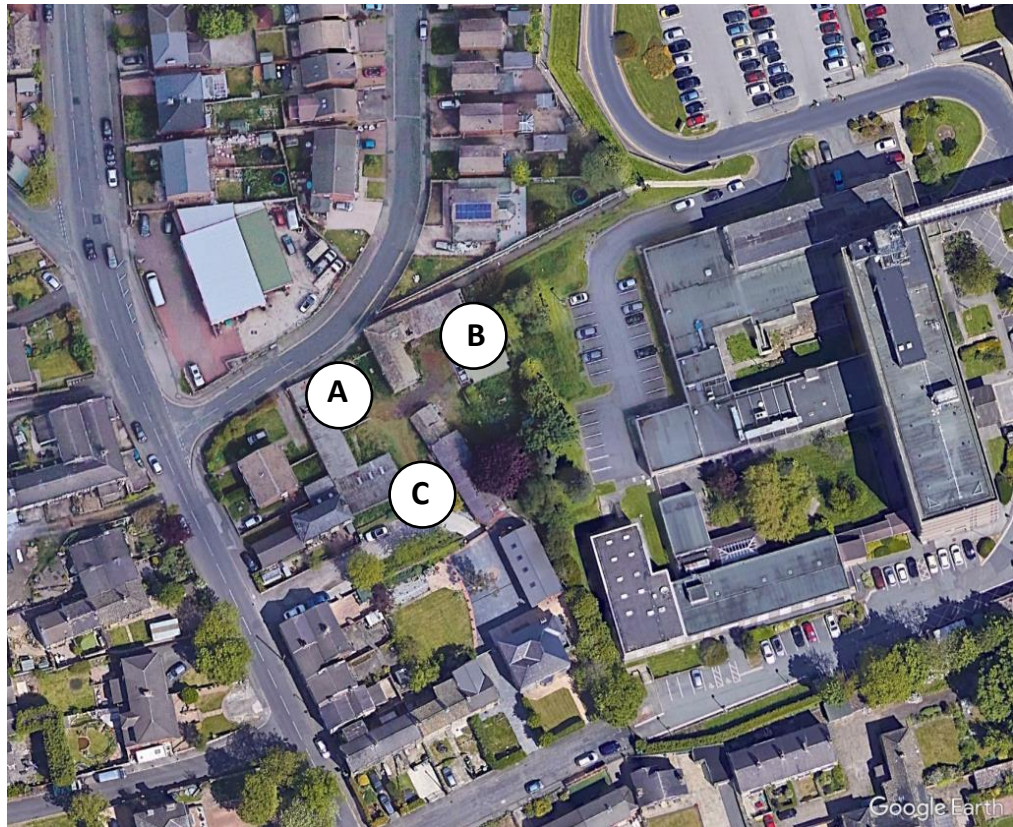
The weather conditions during the survey period are therefore considered to be suitable for undertaking measurements of sound levels.

## 5.3 Measurement Positions

Environmental sound levels were measured at three positions as described in the table below.

| Position | Description                                                                                                                                                                             |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A        | Microphone situated to the north west corner of the site looking toward the existing residential properties along Staincliffe Road at 1.2m above ground level in free field conditions. |
| B        | Microphone situated to the north east corner of the site looking toward the existing residential properties along Bronte Close at 1.2m above ground level in free field conditions.     |
| C        | Microphone situated to the south of the site looking toward the existing residential properties along the access road at 1.2m above ground level in free field conditions.              |

The measurement positions are shown on the site plan below.



**Site plan showing measurement positions**

Measurement Position A was selected in order to assess typical environmental sound levels representative of those at the residential properties to the west of the site along Staincliffe Road.

Measurement Position B was selected in order to assess typical environmental sound levels representative of those at the residential properties to the north of the site along Bronte Close.

Measurement Position C was selected in order to assess typical environmental sound levels representative of those at the residential properties to the south of the site along the access road.

## 5.4 Equipment

The following equipment was used to undertake the environmental sound survey.

| Equipment                 | Manufacturer  | Model   | Serial No. | Calibration Date |
|---------------------------|---------------|---------|------------|------------------|
| Class 1 Sound Level Meter | Bruel & Kjaer | 2250    | 2626230    | 28/10/2022       |
| Preamplifier              | Bruel & Kjaer | ZC-0032 | 21309      | 28/10/2022       |
| Microphone                | Bruel & Kjaer | 4189    | 2621208    | 27/10/2022       |
| Windscreen                | Bruel & Kjaer | UA-1650 | -          | -                |
| Class 1 Sound Calibrator  | Casella       | 120/1   | 3864878    | 27/10/2022       |

Field calibration checks were performed on the sound level meter prior to and on completion of the survey and were found to be within acceptable tolerance limits.

## 5.5 Results

The results of the daytime environmental sound survey periods are presented in the table below.

| Position | Hourly Period | Measured Sound Pressure Levels (dB) |                        |                        |
|----------|---------------|-------------------------------------|------------------------|------------------------|
|          |               | L <sub>Amax</sub>                   | L <sub>Aeq,15min</sub> | L <sub>A90,15min</sub> |
| A        | 09:00-10:00   | 58                                  | 47                     | 38                     |
|          | 10:00-11:00   | 59                                  | 46                     | 37                     |
|          | 11:00-12:00   | 57                                  | 45                     | 36                     |
|          | 12:00-13:00   | 61                                  | 46                     | 37                     |
|          | 13:00-14:00   | 58                                  | 46                     | 40                     |
|          | 14:00-15:00   | 72                                  | 51                     | 39                     |
|          | 15:00-16:00   | 55                                  | 46                     | 38                     |
|          | 16:00-17:00   | 63                                  | 48                     | 38                     |
| B        | 17:00-18:00   | 66                                  | 48                     | 40                     |
|          | 09:00-10:00   | 59                                  | 43                     | 36                     |
|          | 10:00-11:00   | 61                                  | 46                     | 37                     |
|          | 11:00-12:00   | 77                                  | 45                     | 35                     |
|          | 12:00-13:00   | 75                                  | 53                     | 37                     |
|          | 13:00-14:00   | 49                                  | 40                     | 36                     |
|          | 14:00-15:00   | 51                                  | 41                     | 36                     |
|          | 15:00-16:00   | 57                                  | 42                     | 38                     |
| C        | 16:00-17:00   | 54                                  | 40                     | 35                     |
|          | 17:00-18:00   | 52                                  | 41                     | 37                     |
|          | 09:00-10:00   | 55                                  | 45                     | 37                     |
|          | 10:00-11:00   | 55                                  | 45                     | 37                     |
|          | 11:00-12:00   | 58                                  | 44                     | 39                     |
|          | 12:00-13:00   | 54                                  | 44                     | 38                     |
|          | 13:00-14:00   | 66                                  | 49                     | 41                     |
|          | 14:00-15:00   | 56                                  | 46                     | 39                     |
|          | 15:00-16:00   | 64                                  | 47                     | 39                     |
|          | 16:00-17:00   | 60                                  | 46                     | 41                     |
|          | 17:00-18:00   | 57                                  | 47                     | 42                     |

## 5.6 Discussion of Sound Climate

The dominant sound source was frequent road traffic along Staincliffe Road. Sporadic operational sound (banging, impact wrench, jet wash) from the MOT test station situated to the north of the site opposite Bronte Close also contributed towards the measured sound climate along with low level building services noise from the hospital situated to the east of the site and occasional aircraft flyovers.

## 6.0 Operational Sound Emission Limits

### 6.1 Site Layout

The assessment has been based on the proposed site layout drawing detailed below.

| Author | Drawing No. | Revision | Date     |
|--------|-------------|----------|----------|
| Acumen | -           | -        | 05/11/23 |

This indicates that the proposed site layout comprises storage units along the western site boundary, light industrial starter units along the northern, eastern and southern site boundaries and parking spaces in the centre of the site with site access via Bronte Close.

### 6.2 Storage Units

Due to the likely occasional use and low level operational sound associated with operation of storage units they have been scoped out of the preliminary assessment.

### 6.3 Operational Hours

It is understood that the proposed light industrial starter units will have the potential to be used between 08:00 to 18:00 hours.

### 6.4 Proposed Tenants

Tenants for the proposed light industrial starter units have not been confirmed at this stage of the development. As such, a preliminary assessment has been undertaken to determine limiting operational sound levels within the light industrial starter units based on basic and uprated building constructions.

### 6.5 Nearest Noise Sensitive Receptors

The approximate distances between the proposed light industrial starter units and the nearest noise sensitive receptors are presented in the table below.

| Nearest Noise Sensitive Receptor | Approximate Distance (m) |
|----------------------------------|--------------------------|
| West (Staincliffe Road)          | 25                       |
| North (Bronte Close)             | 15                       |
| South (Access Road)              | 20                       |

## 6.6 Building Constructions

The following building elements have been assessed for the basic and uprated building constructions.

| Element | Basic Building Construction                                                                                                                                                                                       |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Walls   | Insulated cladding panel.                                                                                                                                                                                         |
| Windows | Single (min. 6mm) or double (min. 4mm/12mm/6mm) glazed units. Windows to be closed at all times during operational hours and may only be opened outside of operating hours in order to provide purge ventilation. |
| Doors   | External entrance doors to comprise a set of doors with seals to perimeter.                                                                                                                                       |
| Roof    | Insulated roof panel.                                                                                                                                                                                             |

| Element | Uprated Building Construction                                                                                                                                                                                                                                       |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Walls   | Insulated cladding internally lined with 2No. layers of 15mm plasterboard (min. 12.5kg/m <sup>2</sup> each) with 50mm thick mineral wool (min. 16kg/m <sup>3</sup> ) in the cavity.                                                                                 |
| Windows | Single (min. 10mm) or double (min. 10mm/12mm/6mm) glazed units. Windows to be closed at all times during operational hours and may only be opened outside of operating hours in order to provide purge ventilation.                                                 |
| Doors   | External entrance doors to comprise a set of doors achieving a sound reduction rating of R <sub>w</sub> 35dB.                                                                                                                                                       |
| Roof    | Insulated roof panel with acoustic ceiling comprising 2No. layers of 15mm plasterboard (min. 12.5kg/m <sup>2</sup> each) supported from roof with acoustic hangers to create a cavity (min. 200mm) containing 100mm thick mineral wool (min. 16kg/m <sup>3</sup> ). |

The following Sound Reduction Indices have been allowed for the building fabric elements detailed above.

| Building Construction | Element | Sound Reduction Indices (dB)<br>at Octave Band Centre Frequency (Hz) |     |     |     |    |    |    |    |
|-----------------------|---------|----------------------------------------------------------------------|-----|-----|-----|----|----|----|----|
|                       |         | 63                                                                   | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| Basic                 | Walls   | 15                                                                   | 15  | 17  | 23  | 18 | 25 | 40 | 46 |
|                       | Windows | 16                                                                   | 20  | 24  | 31  | 35 | 29 | 36 | 38 |
|                       | Doors   | 13                                                                   | 17  | 21  | 16  | 29 | 31 | 34 | 32 |
|                       | Roof    | 17                                                                   | 17  | 20  | 22  | 19 | 23 | 38 | 44 |
| Uprated               | Walls   | 18                                                                   | 24  | 37  | 48  | 53 | 55 | 63 | 63 |
|                       | Windows | 22                                                                   | 26  | 27  | 34  | 35 | 36 | 44 | 46 |
|                       | Doors   | 23                                                                   | 22  | 33  | 36  | 38 | 35 | 39 | 45 |
|                       | Roof    | 27                                                                   | 32  | 47  | 61  | 69 | 69 | 75 | 75 |

## 6.7 Assessment

Based on the requirements of Kirklees Council detailed in Section 4.0 and the lowest representative  $L_{A90,15min}$  background sound levels measured during the environmental sound survey detailed in Section 5.5, operational sound emissions should not exceed the following preliminary limits within the light industrial starter units.

| Building Construction | Preliminary $L_{Aeq}$ Operational Sound Emission Limits (dB)<br>at Octave Band Centre Frequency (Hz) |     |     |     |    |    |    |    | dBA |
|-----------------------|------------------------------------------------------------------------------------------------------|-----|-----|-----|----|----|----|----|-----|
|                       | 63                                                                                                   | 125 | 250 | 500 | 1k | 2k | 4k | 8k |     |
| Basic                 | 55                                                                                                   | 55  | 55  | 60  | 60 | 60 | 60 | 60 | 65  |
| Up-rated              | 75                                                                                                   | 75  | 75  | 80  | 80 | 80 | 80 | 80 | 85  |

The above preliminary operational sound emission limits are on the basis that all building elements detailed in Section 6.6 are constructed to a high standard of workmanship.

The above preliminary operational sound emission limits are subject to final approval by Kirklees Council.

Once tenants for the proposed light industrial starter units have been confirmed, proposed operational sound levels should be assessed in accordance with BS 4142: 2014 to the nearest noise sensitive receptors. This will determine the level of acoustic treatment likely to be required in order to achieve the proposed requirements at the nearest noise sensitive receptors.

## 7.0 Atmospheric Plant Sound Emission Limits

Based on the requirements of Kirklees Council detailed in Section 4.0 and the lowest representative  $L_{A90,15min}$  background sound levels measured during the environmental sound survey detailed in Section 5.5, cumulative atmospheric plant sound emissions should not exceed the following limits at the nearest noise sensitive receptors.

| Nearest Noise Sensitive Receptor | $L_{Aeq}$ Cumulative Atmospheric Plant Sound Emission Limits (dB)<br>at Nearest Noise Sensitive Receptor |  |
|----------------------------------|----------------------------------------------------------------------------------------------------------|--|
|                                  | Daytime (09:00 – 18:00 hours)                                                                            |  |
| West (Staincliffe Road)          | 31                                                                                                       |  |
| North (Bronte Close)             | 30                                                                                                       |  |
| South (Access Road)              | 32                                                                                                       |  |

The above atmospheric plant sound emission limits are subject to final approval by Kirklees Council.

Building services proposals should be designed to achieve the cumulative atmospheric plant sound emission limits at the nearest noise sensitive receptors and should be assessed in accordance with BS 4142: 2014 once plant noise data and plant layout drawings are available.

## **8.0 Conclusions**

The Local Authority's acoustic requirements for the proposed commercial development have been established.

A detailed environmental sound survey during critical periods has been undertaken in order to establish existing environmental sound levels at the nearest noise sensitive receptors.

Operational sound and atmospheric plant sound emission limits have been proposed in order to minimise the impact at the nearest noise sensitive receptors.

A preliminary assessment has been undertaken to determine limiting operational sound levels within the light industrial starter units based on basic and uprated building constructions

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