

# **Acoustic South East**

## Noise Impact Assessment



|                         |                                          |
|-------------------------|------------------------------------------|
| <b>Client:</b>          | <b>Reenergise Projects Ltd</b>           |
| <b>Site Address:</b>    | <b>St Mary's Primary School Climping</b> |
| <b>Reported By:</b>     | <b>George Orton BEng(Hons) MIOA</b>      |
| <b>Date Written:</b>    | <b>05/06/2026</b>                        |
|                         | <b>Issue 1</b>                           |
| <b>ASE Project Ref:</b> | <b>J4218</b>                             |

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Report by: George Orton BEng(Hons) MIOA

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## 1 Summary and Conclusion

Acoustic South East have been appointed to undertake an acoustic assessment to support a planning application for the introduction of two Air Source Heat Pumps (ASHP's) at St Marys Primary School, Borrow Pits Lane, Climping, BN17 5QU.

The ASHPs will replace oil fired boilers that are also housed on the east side of the school site.

The purpose of this assessment is to predict any effects the development could create when considering the existing nearby noise sensitive receptors (NSRs). Noise levels have been measured close to where the proposed plant will be installed.

Noise levels for the day and the night time period have been assessed in terms of the standards and guidelines listed below. Achieving these criteria will result in a good acoustic environment inside/outside the existing NSRs.

- BS4142<sup>i</sup> (2014+A12019) Method for rating industrial noise affecting mixed residential and industrial areas
- BS8233<sup>ii</sup> Sound insulation and noise reduction for buildings 2014
- WHO<sup>iii</sup> Guidelines for community noise 1999

Where necessary noise mitigation measures have been recommended so the adopted criteria can be achieved (sound barrier and ASHP night noise mode).

It is considered that the planning application should not be refused on noise grounds so long as the mitigation measures are implemented into the detailed design and management plans.

## 2 Context and Noise Criteria

### 2.1 Context

#### 2.1.1 Proposed heating system

As part of a decarbonisation programme, St Mary's Primary school are installing two 16kW Viessmann Vitocal 150A, Air Source Heat Pumps (ASHPs).

Whilst the primary purpose is to provide support for the school daytime period, it is possible that the units may also run during the night time period, albeit in a reduced loading mode. Therefore an assessment of the daytime and night time periods has been completed.

#### 2.1.2 Response from Local Authority

A planning application has been made to Arun District Council and as technical consultees to the local planning authority, the Environmental Protection Team have raised concerns over the fact that there is no formal noise assessment and additionally, concerns over whether a fence-line will be sufficient to protect neighbouring residential receptors (memo dated 29/04/2026). This assessment seeks to address the points detailed above.

#### 2.1.3 Nearby Existing Noise Sensitive Receptors NSRs

The closest NSRs are detailed below along with the survey location and the location of the proposed plant items. The adjacent residential building has ground floor windows facing the school as well as upper floor Velux style rooflights win the roof. There is a single storey outbuilding that looks to have been converted to a garden room studio:

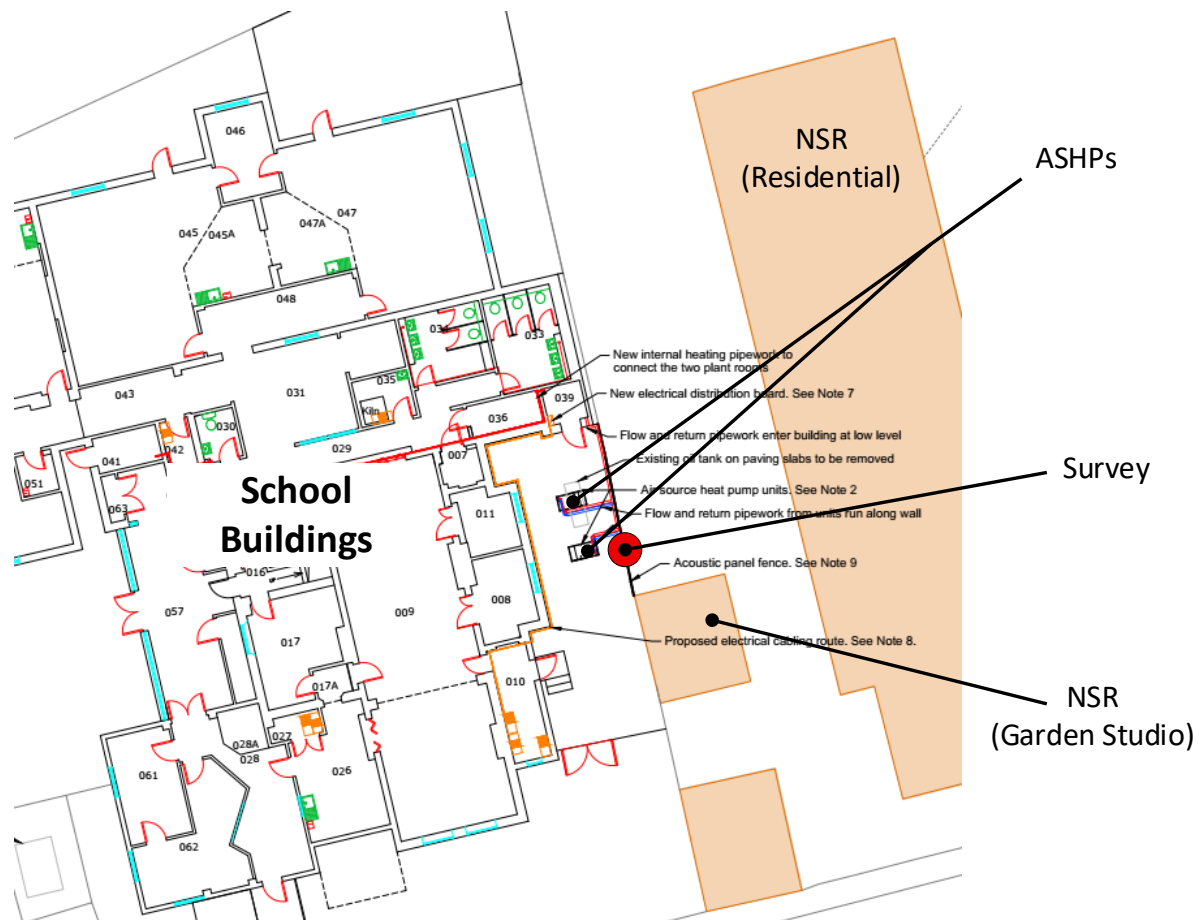


Figure 1: NSR/Survey Drawing

## 2.1 National Planning Policy

### 2.1.1 National Planning Policy Framework

The National Planning Policy Framework<sup>iv</sup> defines the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so.

The document recommends: *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.*

*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

- *Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- *Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;*

*Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.*

The Framework states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of noise pollution. It does not, however, provide any specific formal guidelines.

### 2.1.2 Planning Practice Guidance

With Regard to noise, the Planning Practice Guidance<sup>v</sup> states the following:

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

"Can noise override other planning concerns? It can, where justified, although it is important to look at noise in the context of the wider characteristics of a development proposal, its likely users and its surroundings, as these can have an important effect on whether noise is likely to pose a concern."

“Plan-making and decision making need to take account of the acoustic environment and in doing so consider:

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

“In line with the Explanatory note of the noise policy statement for England this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.”

The planning practice guidance also introduces the concept of observed effect levels:

- “Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur.”
- “Lowest observed adverse effect level: this is the level of noise exposure above which adverse effects on health and quality of life can be detected.”
- “No observed effect level: this is the level of noise exposure below which no effect at all on health or quality of life can be detected.”

The above terms are often abbreviated into the acronyms SOEL, LOEL and NOEL.

## 2.2 Local Planning Guidance

Several Local Planning Authority ('LPA') departments have collaborated to create the Planning Noise Advice Document Sussex<sup>vi</sup>. The document details relevant standards that should be referred to when completing a noise impact assessment.

Based upon the local guidance, noise levels for the day and the night time period have been assessed in terms of and following the guidelines of the documents listed below:

- BS4142 (2014) Method for rating industrial noise affecting mixed residential and industrial areas
- BS8233 (Sound insulation and noise reduction for buildings) 2014
- World Health Organisation (WHO) - Guidelines for Community Noise 1999

## 2.3 BS8233 Noise Criteria

Table 5 of BS8233 provides the following guideline values:

| Activity                   | Location         | Time period of day    |                      |
|----------------------------|------------------|-----------------------|----------------------|
|                            |                  | 07:00-23:00           | 23:00-07:00          |
| Resting                    | Living Rooms     | 35dB $L_{Aeq,16hour}$ | -                    |
| Dining                     | Dining Room/Area | 40dB $L_{Aeq,16hour}$ | -                    |
| Sleeping (daytime resting) | Bedroom          | 35dB $L_{Aeq,16hour}$ | 30dB $L_{Aeq,8hour}$ |

Table 1: BS8233 Criteria

## 2.4 WHO Noise Criteria

The target internal levels laid out by the World Health Organisation (WHO) are similar to the BS8233 criteria above. With regard to outdoor amenity areas WHO states the following:

*To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55dB(A) on balconies, terraces and in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 50dB(A) on balconies, terraces and in outdoor living areas.*

## 2.5 BS4142(2014+A1:2019): Method for rating and assessing industrial and commercial sound

This document provides a means of assessing the impact of industrial or commercial sound upon nearby noise-sensitive receptors, including residential properties.

It does this by comparing the Rating Level of the noise from the industrial or commercial source with the pre-existent  $L_{90}$  background noise level affecting the same noise-sensitive premises. The Standard provides guidance that:

- a) Typically, the greater the difference, the greater the magnitude of the impact.
- b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- d) The lower the rating level is 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 noise level, this is an indication of the specific sound source having a low impact, depending on the context.

## 2.6 Assessment Methodology

Baseline sound levels have been measured close to where the new plant will be installed.

A noise model has been completed for the new plant machinery layout based on the Reenergise Projects Ltd (Project M&E consultant) drawings and specifications

The assessments use the noise criteria found in guidance documents and standards to predict the likely impact in terms of significance of effects. In this case BS4142 assessment criteria have been used.

The rating level thresholds are detailed below along with the associated significance of effects and corresponding NPSE categories :

| Impact Magnitude | Effect Level  | BS4142 Rating to Background                              |
|------------------|---------------|----------------------------------------------------------|
| Major            | SOEL or above | Rating level >6dB above background                       |
| Moderate         | LOEL-SOEL     | Rating level 1-5dB above background                      |
| Minor            | NOEL-LOEL     | Rating level between background and 5dB below background |
| Negligible       | Below NOEL    | Rating Level >5dB below background                       |

**Table 2: Significance of Effects**

### 3 Noise Survey Baseline Conditions & Results

A noise survey was carried out between the 12<sup>th</sup> & 19<sup>th</sup> May 2026 to assess the existing noise levels affecting the nearby noise sensitive receptors.

#### 3.1 Noise Survey Details

- Survey carried out by: George Orton BEng (Hons) MIOA
- Equipment used: Svantek 971 - Type 1 Sound Level Meter (LT1)
- Weather conditions: Mixed with wind speed average mostly under 5m/s.

#### 3.2 Noise Survey Locations

The noise survey locations can be seen on the marked up plan shown in a previous section.

The microphone was on a pole fixed to the top of the boundary wall (3m above the ground and around 1.5m from the top of the wall). The microphone position has assumed to be a "free-field" position

All noise levels in this report will be free-field noise levels unless stated otherwise (including noise model predictions)

#### 3.3 Noise Survey Results

The most commonly occurring (modal) background sound levels ( $L_{A90,15min}$ ) can be seen below:

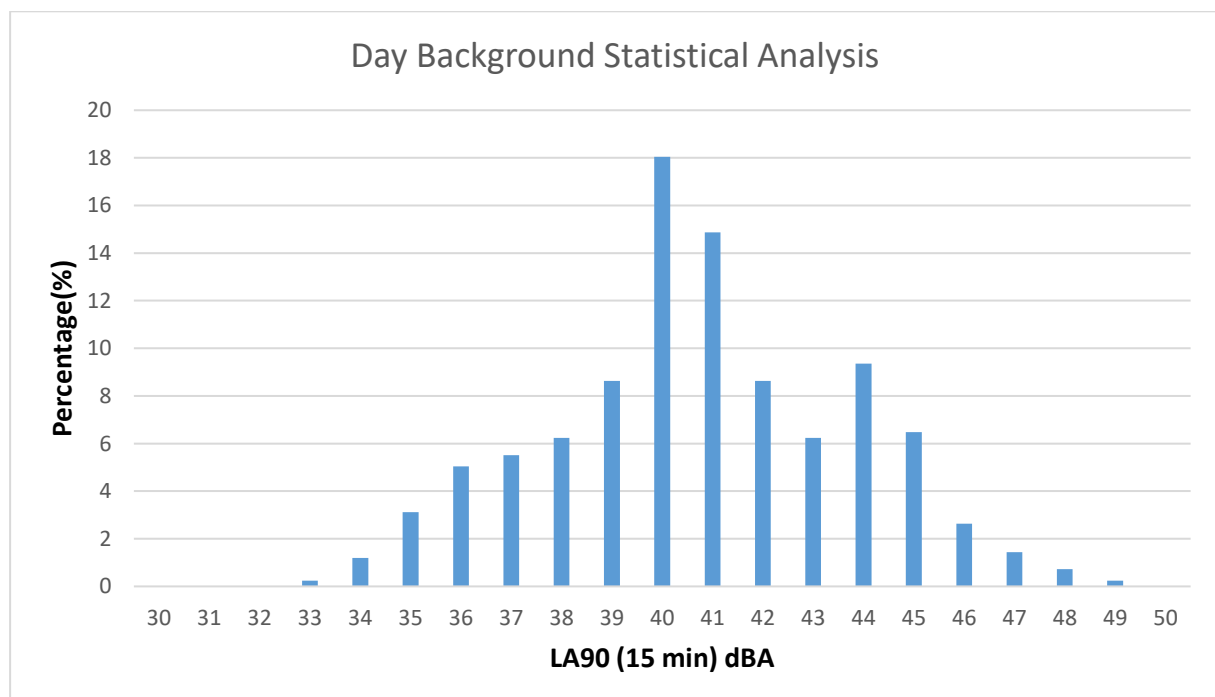


Figure 2: L90 Analysis Daytime

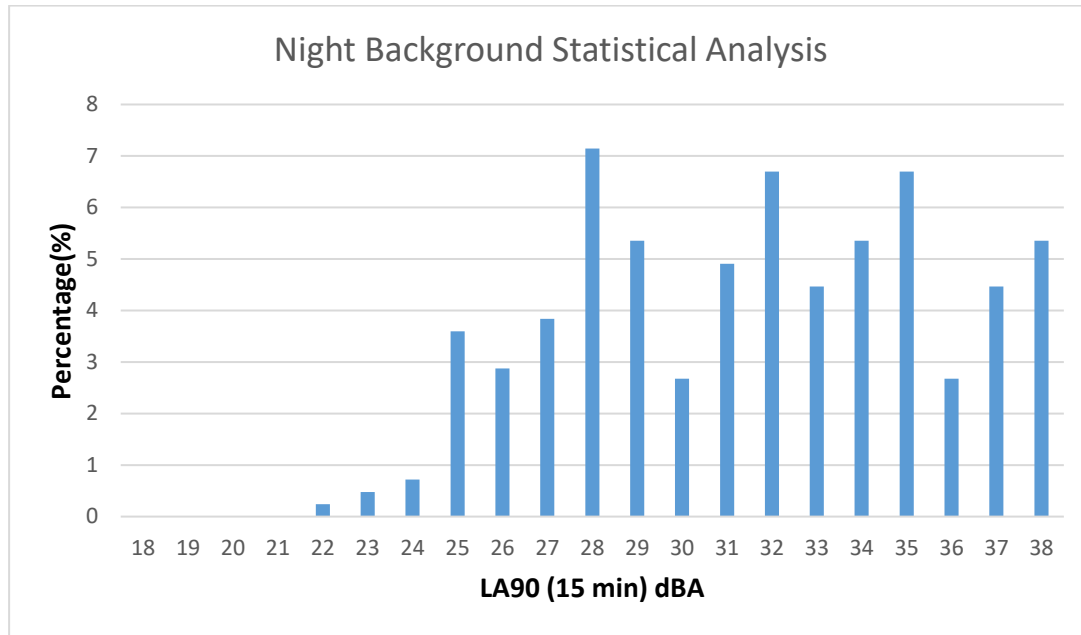


**Figure 3: L90 Analysis Night-time**

Due to the mixed weather conditions the  $L_{A90,15min}$  measured levels have been analysed in more detail. The periods when plant will be operational, at times where background sound levels could be lowest, have also been reviewed. The table below shows the modal values for the different days/periods:

| Date   | Day |              | 07:00-23:00 | 23:00-07:00 | 05:00-07:00 | 17:00-20:00 |
|--------|-----|--------------|-------------|-------------|-------------|-------------|
|        |     | Mode All =   | 40          | 28          | 40          | 40          |
| 12-May | Tue | (part) Day 1 | 41          | 28          |             | 40          |
| 13-May | Wed | Day 2        | 44          | 27          | 42          | 45          |
| 14-May | Thu | Day 3        | 44          | 25          | 40          | 40          |
| 15-May | Fri | Day 4        | 44          | 40*         | 44          | 40          |
| 16-May | Sat | Day 5        | 40          | 33          | 40          | 40          |
| 17-May | Sun | Day 6        | 40          | 29          | 36          | 41          |
| 18-May | Mon | Day 7        | 41          |             | 40          | 40          |

**Table 3: Survey Results**

\* Possibly related to high winds.

From the above the representative background sound levels used in the assessment will be 36dBA for the day and 28dBA for the night. As 33dBA was the lowest single value, measured during the day, it is considered that using 36dBA will result in a cautious conservative assessment of impacts.

## 4 Computer Noise Model

### 4.1 Model Details

For the planning application assessment a computer noise model was created using the computer package IMMI. The drawings of the proposed development and plant specifications were used to complete the noise model. IMMI faithfully implements the propagation method of ISO-9613:1996; Acoustics – Attenuation of sound during propagation outdoors.

The existing buildings were added to the model along with reception points positioned outside NSR windows (RPs). The RPs predict the noise level at a discrete position within the noise model.

### 4.2 Plant Noise Sound Sources

Proposed plant machinery details can be found in the appendix of the report. It is assumed that the ASHPs will operate mostly during the daytime period. For completeness the lower sound level output was added for the night time model. Based on the datasheets each of the 2 ASHP point sources had a sound power of 66/59dBA (Day/Night)

No on time corrections were detailed within the model I.E. all machines running continuously for the hour long reference time period.

The existing wall was added to the model along with the new sound barrier that will be fixed to the top of the wall (see mitigation measures section)

### 4.3 Noise Propagation Model

The noise model plot can be seen below:

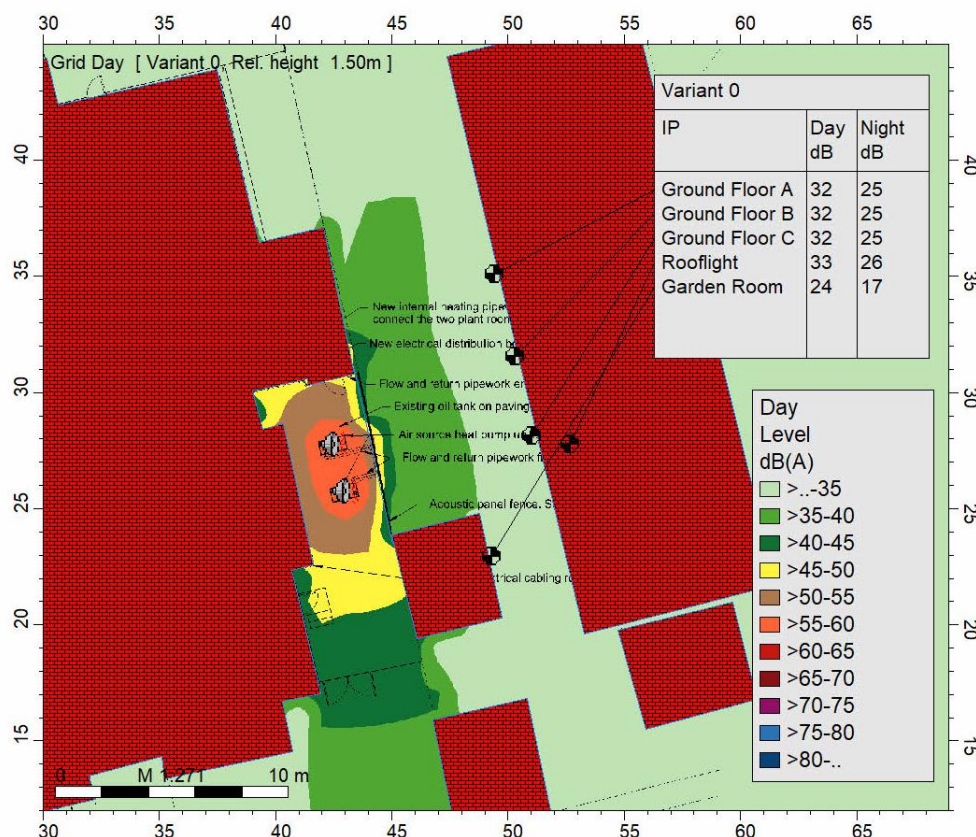


Figure 4: Noise Model

## 5 Noise Assessments

The assessments have been completed with the specific mitigation measures included. Indoor noise levels have been predicted assuming a 13dB reduction for an open window.

### 5.1 BS4142 Assessment

#### 5.1.1 Representative Background Sound Level

As stated in a previous section the representative background sound levels used in the assessment will be 36dBA for the day and 28dBA for the night.

#### 5.1.2 Noise Rating Level

It is important to differentiate between noise rating level and specific noise level. Certain acoustic features can increase the likelihood of complaint. In this instance it is assumed that the ASHPs and heat pumps are not tonal based on 1/3 octave band measurements carried out for previous projects. It is possible the units may cut in and out depending on the required demand for hot water and heating. As such a 3dB penalty could be added for "intermittency", however this would in part be offset by a lower sound level due to the times when the ASHPs were not operating fully. For a simple assessment the noise rating level will be as predicted by the model (I.E correction and on-time cancel each other out).

#### 5.1.3 Assessments

| Scenario               | Rating Level dBA | Background dBA | Rating over Background | Significance (see context note) |
|------------------------|------------------|----------------|------------------------|---------------------------------|
| Daytime Mode (Day)     | 33               | 36             | -3                     | Minor                           |
| Daytime Mode (Night)   | 33               | 28             | +5                     | Moderate                        |
| Night-time Mode(Night) | 26               | 28             | -2                     | Minor                           |

**Table 4: BS4142 Assessment Table**

#### 5.1.4 BS4142 Context/Uncertainty

In terms of context it should be noted that the alterations are not a change of use. As such there would have been noise created by the previous heating plant (Oil fired boilers). In terms of uncertainty the noise levels were calculated with an assumption that the on time reduction would cancel out a 3dB penalty of intermittency. Any uncertainties here may not be significant especially considering the conservative method for calculating the representative background sound level (This was the lowest modal value for the quietest early morning period which was Sunday)

### 5.2 BS8233/WHO Assessment

For the worst case RP the associated internal sound level will at worst be approximately 20/13dBA (Day/Night mode). Even the daytime mode 20dBA sound level is lower than the 30dBA target for bedrooms at night time (significantly lower than the 35dBA target for the daytime).

The 33dBA outdoor sound level is significantly lower than the lower 50dBA limit for an external amenity area,

## 6 Mitigation Measures

### 6.1 ASHP

Based on the measured background sound levels it is recommended that the ASHPs are set to night mode between 22:00hrs and at least 05:00hrs.

### 6.2 Sound barrier

The model assumed the sound barrier (Rockwool Noistop Essential) will be installed as detailed in the planning drawings and documents:

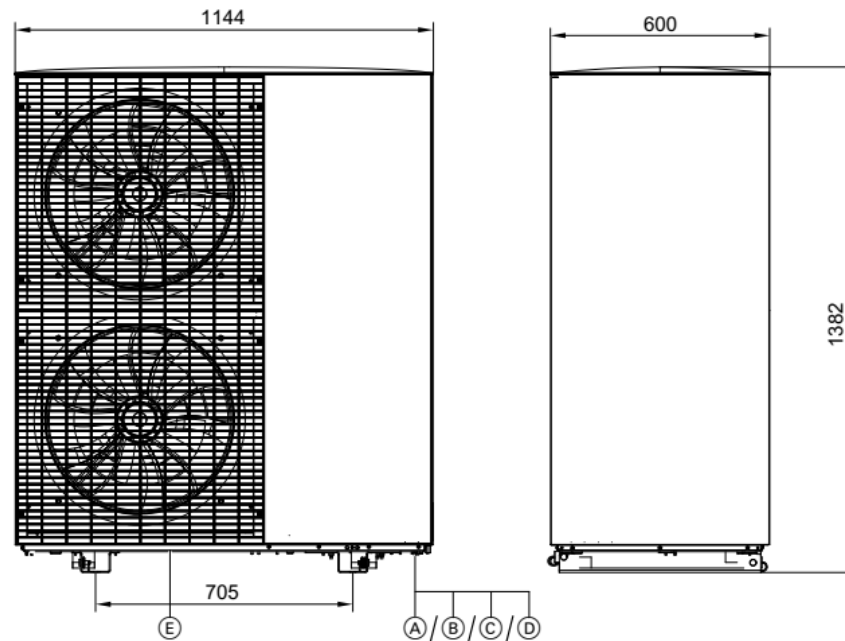
9. The existing mesh fence on the boundary wall is to be removed and replaced with acoustic panel timber fence to a height of 600mm above the wall.

**Noistop<sup>®</sup> Essential**

#### Module features

| Features             | Value                                                                           |
|----------------------|---------------------------------------------------------------------------------|
| Galvanisation        | Hot dip galvanized steel according EN ISO 1461:2011                             |
| Powder coating       | Black RAL 9005, Anthracite RAL 7016                                             |
| Sound insulation     | DL <sub>s</sub> 18 dB acc. DIN EN 1793-2 and RW 22 dB acc. ISO 717-1 (Class B2) |
| Sound absorption     | DL <sub>α</sub> , NRD 9 dB according to DIN EN 1793-1 (Class A3)                |
| Wind load resistance | Tested to maximum load 0,83 kN/m <sup>2</sup> according to EN1794-1             |
| Durability           | Typical service lifetime of +30 years                                           |

## 7 Appendix



Outdoor unit type 151.A10, 230 V~

| Fan speed | Sound power level $L_W$<br>in dB(A) | Directivity<br>Q | Distance from the outdoor unit in m |    |    |    |    |    |    |    |    |
|-----------|-------------------------------------|------------------|-------------------------------------|----|----|----|----|----|----|----|----|
|           |                                     |                  | 1                                   | 2  | 4  | 5  | 6  | 8  | 10 | 12 | 15 |
|           |                                     |                  | Sound pressure level $L_P$ in dB(A) |    |    |    |    |    |    |    |    |
| Night     | 59                                  | 2                | 51                                  | 45 | 39 | 37 | 35 | 33 | 31 | 29 | 27 |
|           |                                     | 4                | 54                                  | 48 | 42 | 40 | 38 | 36 | 34 | 32 | 31 |
|           |                                     | 8                | 57                                  | 51 | 45 | 43 | 41 | 39 | 37 | 35 | 34 |
| Max.      | 66                                  | 2                | 58                                  | 52 | 46 | 44 | 42 | 40 | 38 | 36 | 34 |
|           |                                     | 4                | 61                                  | 55 | 49 | 47 | 45 | 43 | 41 | 39 | 38 |
|           |                                     | 8                | 64                                  | 58 | 52 | 50 | 48 | 46 | 44 | 42 | 41 |

Figure 5: ASHP Details

## 8 References

<sup>i</sup> BS4142 (2014+A1: 2019) "Method for rating industrial noise affecting mixed residential and industrial areas"

<sup>ii</sup> British Standard BS8233 (2014) "Guidance on sound insulation and noise reduction for buildings"

<sup>iii</sup> WHO Guidelines for community noise 1999"

<sup>iv</sup> Department for Levelling Up, Housing and Communities (2024) National Planning Policy Framework.

<sup>v</sup> Department for Levelling Up, Housing and Communities (March 2014) Planning Practice Guidance Noise. Available here: <https://www.gov.uk/guidance/noise--2>

<sup>vi</sup> Sussex Planning Noise Advice Document (March 2023)