

AtkinsRéalis



Noise Impact Assessment

West Sussex County Council

19 June 2026

100124937

HOMEFIELD PRIMARY SCHOOL

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This document has 26 pages including the cover.

Document history

Document title: Noise Impact Assessment

Document reference: 100124937

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	For planning submission	GX	WD	JWT	SM	19/06/2026
2.0	Minor updates	GX	WD	JWT	SM	19/06/2026

Client signoff

Client	West Sussex County Council
Project	Homefield Primary School
Job number	100124937
Client signature/date	



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1. Introduction

1.1 Project Overview

West Sussex County Council proposes a development at Homefield Primary School, located on Chesswood Road in Worthing (BN11 2AA). The scheme comprises a combination of refurbishment works within the existing single-storey school building together with the construction of a new single-storey building to accommodate additional mainstream and Special Educational Needs (SEN) teaching and support spaces.

The aim of the project is to enhance the existing educational provision at the site by delivering purpose-designed teaching, learning and support facilities, including SEN accommodation and associated staff areas.

The proposed development includes both the new-build elements and refurbishment of selected areas within the existing school building. External works include the introduction of plant associated with the building services strategy, including roof-mounted air source heat pump (ASHP) units serving the new development.

1.2 Assessment Scope

AtkinsRéalis has been commissioned by West Sussex County Council to carry out a noise impact assessment of building services associated with the proposed development. This report summarises the findings of this assessment.

The assessment considers noise emissions associated with fixed building services plant, specifically the proposed roof-mounted ASHP units serving the new building. The potential impact of this plant on the surrounding noise sensitive receptors has been assessed with reference to relevant planning policy and guidance, including BS 4142:2014+A1:2019.

The assessment is based on plant information provided by the building services design team, together with an acoustic model developed using SoundPLAN (version 9.1) to predict noise levels at representative receptor locations. The assessment has been undertaken for a worst-case scenario, with all plant operating simultaneously during the stated daytime operating period.

Other sources of noise associated with the development, including internal building activities and school use, are not considered within the scope of this report, as they are not relevant to the planning condition and are typical of an educational environment.

1.3 Competency and Terminology

This assessment has been undertaken by suitably qualified and experienced acoustics consultants within AtkinsRéalis, with relevant expertise in environmental noise assessment and building services noise modelling.

A statement of competency is provided in Appendix A.

A glossary of acoustic terms used in this report is included in Appendix B.



2. Assessment Methodology and Criteria

Details of the relevant planning policy, standards and guidance are included in Appendix C. These documents have been used to determine the appropriate methodology and criteria for assessing the potential noise impact arising from the proposed development, as summarised below.

Noise from building services associated with the development should satisfy the requirements of West Sussex County Council, as set out in the Planning Noise Advice Document: Sussex (November 2023). Noise from fixed plant has been assessed and rated in accordance with BS 4142:2014+A1:2019.

The assessment criterion is that the cumulative rating level ($L_{Ar,1hr}$) from the plant should not exceed the representative background sound level ($L_{A90,1hr}$) of 50 dB at nearby noise sensitive receptors, as measured during the noise survey which is presented in Section 3. In BS 4142 terms, this is indicative of a low impact, subject to context.

The plant serves a mainstream and Special Educational Needs (SEN) school and will operate only during typical school hours, defined as 08:00 to 17:00. The assessment has therefore been undertaken over the relevant daytime reference period, with no operation assumed outside these hours.



3. Noise Survey

3.1 Survey Overview

An attended environmental noise survey was undertaken on 31st October 2025 between 10:00 and 14:00 at the location of the proposed new building. The survey was completed to characterise:

- ambient noise levels relevant to façade design and internal noise assessment;
- background noise levels for the assessment of fixed plant noise in accordance with BS 4142:2014+A1:2019; and

The survey period falls within assumed school operating hours (08:00–17:00) and is therefore representative of the operational assessment period adopted within this report.

3.1.1 Standards and Guidance

The survey and subsequent use of the data within this report are aligned with the following documents:

- BS 4142:2014+A1:2019; Methods for rating and assessing industrial and commercial sound.
- BS 7445-1:2003; Description and measurement of environmental noise.

3.1.2 Survey Methodology

Environmental noise was measured as an attended, continuous free-field survey at the location of the proposed new building. A Class 1 sound level meter was installed with the microphone fitted with a windshield. Measurements were logged continuously and post-processed to obtain the indices required for design and assessment.

The following noise indices are reported:

- $L_{Aeq,30min}$; ambient sound level over 30 minutes.
- $L_{A1,30min}$; level exceeded for 1% of the 30-minute period, providing an indicator of short-duration events such as train pass-bys.
- $L_{A90,1hr}$; background sound level over 1 hour, used for the fixed plant assessment criterion within this report.

3.1.3 Measurement Locations

The environmental noise measurement location is shown in Figure 3-1.





Figure 3-1 - Environmental noise measurement location

3.2 Survey Equipment

Survey instrumentation is summarised in Table 3-1. The noise measurement equipment was Class 1 and held current calibration certification. Acoustic field calibration checks were completed before and after the survey with no significant drift observed.

Table 3-1 - Survey instrumentation

Measurement	Equipment Item	Model	Serial Number	Date of Calibration	Calibration Due Date	Calibration Certificate
Environmental noise	Sound level meter	01dB FUSION	11199	24/03/2025	24/03/2027	UCRT25/1481
	Microphone	GRAS 40CD	233344	24/03/2025	24/03/2027	UCRT25/1481
	Pre-amplifier	01dB Pre No22	1605096	24/03/2025	24/03/2027	UCRT25/1475
	Acoustic calibrator	01dB CAL21	34565046	20/03/2025	20/03/2026	UCRT25/1451

3.3 Weather Conditions

Weather conditions were considered suitable for environmental measurement. Conditions were dry with light winds; no meteorological effects were observed that would compromise the integrity of the measured data.

3.4 Noise Survey Results

The results of the attended environmental noise survey are summarised below. Table 3-2 presents the measured ambient noise levels ($L_{Aeq,30min}$) and short-duration event levels ($L_{A1,30min}$) during the survey period.

Table 3-3 presents the measured background noise levels ($L_{A90,1hr}$). The data has been summarised separately for clarity and to align with the requirements of BS 4142 assessments.

Table 3-2 - Ambient and short duration noise levels

Time	$L_{Aeq,30min}$ (dB)	$L_{A1,30min}$ (dB)
11:00–11:30	59.3	70.9
11:30–12:00	59.4	70.7
12:00–12:30	58.7	68.7
12:30–13:00	58.3	68.8
13:00–13:30	57.7	68.5
13:30–14:00	57.1	69.0

Table 3-3 - Measured background noise levels ($L_{A90,1hr}$)

Period	$L_{A90,1hr}$ (dB)
11:00–12:00	50.1
13:00–14:00	49.9

The background noise levels were consistent throughout the survey period. A representative background noise level of $L_{A90,1hr} = 50$ dBA has therefore been adopted for the fixed plant noise assessment presented elsewhere in this report.



4. Building Services Proposals

4.1 Equipment

The proposed building services equipment with the potential to emit external noise comprises two air source heat pump (ASHP) units located at roof level of the proposed development.

Both units are specified as MAXA i-290 0127 SSL models (please see Appendix D), representing acoustically treated variants of the standard units. Each unit has nominal dimensions of approximately 1602 mm (W) × 700 mm (D) × 1264 mm (H).

Manufacturer acoustic data have been provided by the building services design team, with a screenshot of the relevant datasheet included in Appendix D. The declared overall A-weighted sound power level for each unit is 58 dB L_{wA} under ErP test conditions (A7/W47–55)¹.

Frequency-dependent sound power level data is not provided within the manufacturer's published information. In order to enable robust prediction of sound propagation in accordance with ISO 9613-2, a representative octave-band spectrum has been adopted based on comparable ASHP units of similar capacity, fan configuration and operating characteristics. The selected spectrum has been energy-balanced such that the logarithmic summation of the octave-band levels is consistent with the declared overall sound power level of 58 dB L_{wA} .

Table 4-1 - Assumed octave band sound power levels for ASHP units (per unit)

Octave band centre frequency (Hz)	63	125	250	500	1000	2000	4000	8000	L_{wA}
Sound power level, L_w (dB)	63	59	58	55	51	48	50	48	58

The use of a representative spectrum is standard practice where only overall A-weighted sound power data are available, allowing frequency-dependent propagation effects to be accounted for, including atmospheric absorption, ground interaction and screening. The adopted spectrum includes appropriate low-frequency content, which governs long-range propagation and therefore represents a suitably conservative modelling assumption.

The ASHP units are located externally on the flat roof and operate only during typical school daytime hours, defined as 08:00 to 17:00, with no operation during evening or night-time periods.

It is noted that the assessment is based on the acoustic performance presented in Table 4-1. Alternative plant units may be adopted at a later stage; however, provided that the sound power levels of any such units are equal to or lower than those presented in Table 4-1, the conclusions of this assessment would remain unchanged.

¹ These test conditions represent a standardised operating scenario defined under the Ecodesign (ErP) framework, where the unit is assessed at an outdoor air temperature of 7 °C (A7) and a water flow temperature in the range of 47–55 °C (W47–55). The resulting sound power level therefore corresponds to a controlled, steady-state operating point and is intended to provide a consistent basis for comparison between different units.

4.2 Noise Control Measures

The proposed ASHP units are specified as acoustically treated (“SSL”) versions, incorporating manufacturer-integrated noise reduction measures relative to standard units. No additional external attenuation measures, such as acoustic enclosures or barriers, have been included within the current design. The assessment therefore represents a worst-case scenario based on the manufacturer’s published sound power levels for the units.



5. Noise Impact Assessment

Noise from the proposed external plant has been predicted and assessed against the planning noise criterion set out in Section 2. As described previously, the assessment relates to the two roof-mounted ASHP units serving the proposed development. The representative background sound level for the assessment is $L_{A90,1hr} = 50$ dB, and the adopted criterion is that the cumulative rating level, $L_{Ar,1hr}$, should not exceed this value at nearby noise sensitive receptors during plant operation.

5.1 Noise Sources

The external noise sources considered in this assessment comprise the two roof-mounted air source heat pump units described in Section 4. Their locations are indicated in Figure 5-1. The current SoundPLAN results indicate that the most affected receptor is 53 Chesswood Road.

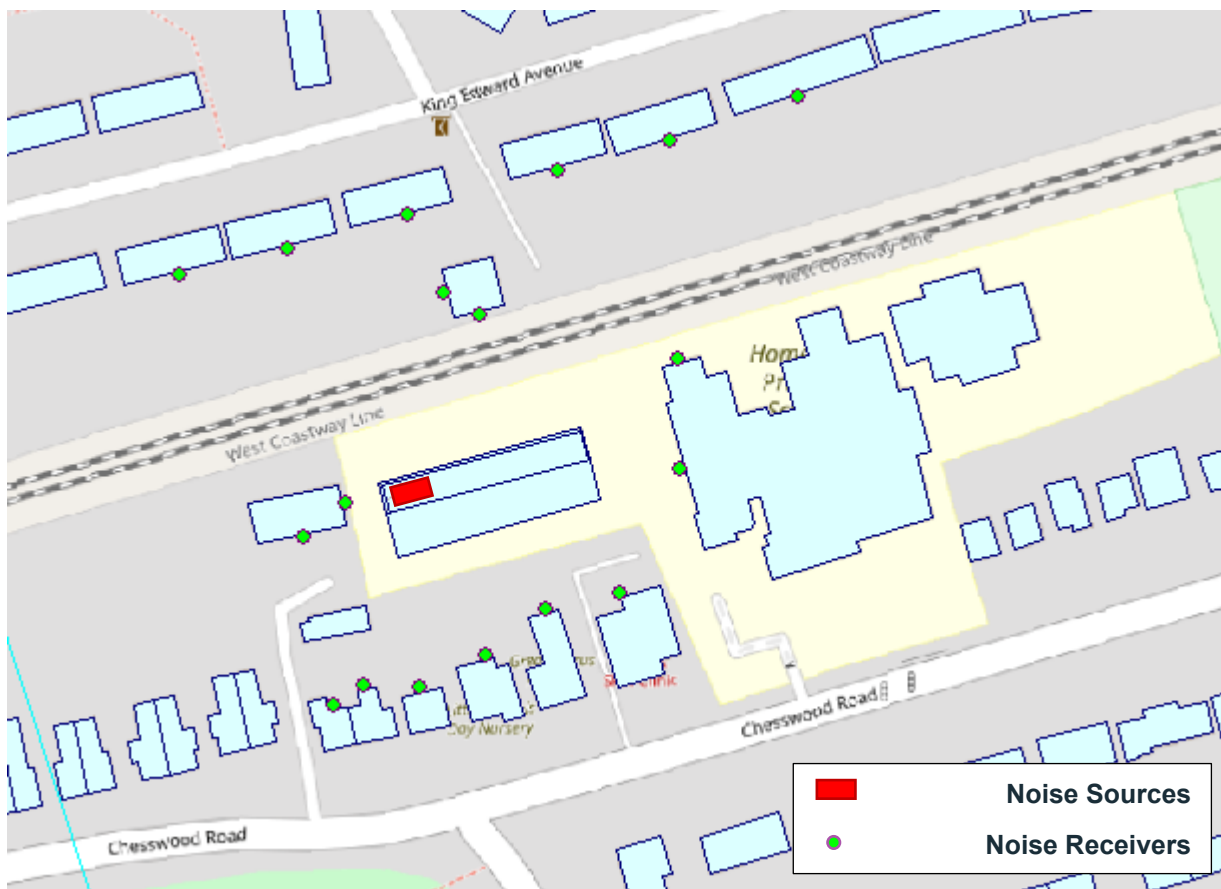


Figure 5-1 - SoundPLAN acoustic model showing source locations and receptor positions

5.2 Acoustic Model

Noise levels at nearby noise sensitive receptors have been predicted using SoundPLAN (version 9.1).

The calculation methodology is consistent with ISO 9613-2, accounting for geometrical divergence, atmospheric absorption, ground effects, screening and reflections from surrounding surfaces. This is consistent with the approach adopted previously for the project.

The model is based on the current site layout and plant arrangement. The two ASHP units were modelled as external sources at roof level using the sound power data described in Section 4 and Appendix D. Receivers were positioned at 1 m away from representative façade locations of nearby residential properties to determine incident sound levels for comparison with the measured free-field background sound level.

The assessment has been undertaken for the worst-case scenario of both units operating simultaneously during the plant operating period. Consistent with the intended use of the development as a mainstream and SEN school, operation is limited to 08:00 to 17:00, with no evening or night-time operation assumed.

5.3 Predicted Noise Levels

The predicted specific sound levels at the nearest and most exposed receptors are summarised in Table 5-1. Based on the current model outputs, the highest predicted level occurs at 53 Chesswood Road, and this remains well below the adopted assessment criterion.

Table 5-1 - Predicted specific sound levels from proposed ASHP units

Noise sensitive receptor	BS 4142 specific sound level, $L_{As,1hr}$ (dB)
53 Chesswood Road 1 st Floor	22.2
53 Chesswood Road Ground Floor	16.9

5.4 BS 4142 Assessment

The BS 4142 assessment has been carried out by comparing the predicted specific sound level and resulting rating level with the representative background sound level of 50 dB $L_{A90,1hr}$.

Based on the model outputs provided, the rating level at the most affected receptor remains below the representative background sound level. In BS 4142 terms, this is an indication of low impact, subject to context.

In accordance with BS 4142, consideration has been given to the potential presence of acoustic characteristics such as tonality, impulsivity and intermittency, which may require the application of character corrections to derive the rating level. Based on the nature of the proposed ASHP units, no such characteristics are expected to be perceptible at the assessment locations and therefore no character corrections have been applied in this assessment.

Notwithstanding this, the predicted sound levels remain substantially below the adopted assessment criterion. As such, even if a conservative character correction were to be applied in accordance with BS 4142, the resulting rating level would still remain comfortably below the representative background sound level by a significant margin, and the overall assessment conclusion would not change.

Based on the model outputs provided, the rating level at the most affected receptor remains below the representative background sound level. In BS 4142 terms, this is an indication of low impact, subject to context.

A summary assessment is set out in Table 5-2.

Table 5-2 - BS 4142 assessment summary

Description	Result
Representative background sound level, $L_{A90,1hr}$	50 dB



Description	Result
Predicted rating level at 53 Chesswood Road, $L_{Ar,1hr}$	22.2 dB
Excess of rating level over background	-27.8 dB
Impact indication	Low impact

5.5 Compliance with Planning Requirements

The Planning Noise Advice Document: Sussex requires that, where practicable, the rating level from plant should be no greater than the representative background sound level when assessed in accordance with BS 4142.

Based on the current SoundPLAN results, the proposed ASHP installation complies with this requirement. The highest predicted level occurs at 53 Chesswood Road and remains below the adopted criterion of 50 dB $L_{Ar,1hr}$. The assessed plant is therefore expected to have a low noise impact and is not anticipated to constrain discharge of the relevant planning condition.



6. Summary and Conclusions

A development is proposed at Homefield Primary School, comprising refurbishment of the existing building and a new-build extension to provide additional mainstream teaching and SEN facilities.

AtkinsRéalis has carried out an assessment of noise impact from the proposed building services plant associated with the development, in accordance with the requirements of West Sussex County Council and the Planning Noise Advice Document: Sussex (November 2023).

To verify compliance with the requirements of West Sussex County Council, an environmental noise survey was undertaken at the site to establish the representative background sound level during the operational period. Noise levels from the proposed ASHP units have been predicted at the nearest noise sensitive receptors using acoustic modelling, and a noise impact assessment has been carried out in accordance with BS 4142.

The two proposed ASHP units are specified as acoustically treated models and no additional external mitigation measures are included within the current design. The assessment therefore represents a robust worst-case scenario based on the manufacturer's published sound power levels.

The assessment demonstrates that predicted noise levels from the proposed plant are well below the adopted assessment criterion, with a substantial margin relative to the representative background sound level.

Noise from the proposed building services is therefore expected to have a low impact and is not considered to represent a constraint to the discharge of the relevant planning condition.



APPENDICES

Appendix A. Statement of Competency

This assessment and report have been completed by George Xanthoulis, a Chartered Engineer (CEng) and Corporate Member of the Institute of Acoustics (MIOA). George has over 10 years' experience in acoustic consultancy, with extensive expertise in the assessment of environmental noise from fixed mechanical plant and in the specification of appropriate noise control measures.

The report has been reviewed in accordance with internal quality assurance procedures by experienced members of the AtkinsRéalis acoustic consultancy team, who are also Corporate Members of the Institute of Acoustics (MIOA). Membership certificates are available upon request.



Appendix B. Glossary of Terms

Table B-1 - Acoustic terms used in the report

Acoustic term	Explanation
A-weighting	The process by which noise levels are corrected to account for the non-linear frequency response of the human ear.
dB	Decibel. The unit of sound level.
dBA or dB(A)	The unit of sound level which has its frequency characteristics modified by a filter (A-weighted) so as to more closely approximate the frequency bias of the human ear.
Façade sound level	Sound level measured or predicted near a building façade, which includes the effect of sound reflections from that façade
Incident sound level	Sound level measured or predicted near a building façade, which excludes the effect of sound reflections from that façade
$L_{Aeq,T}$	The equivalent continuous A-weighted sound pressure level. This is commonly referred to as the average sound level. The suffix "T" represents the time interval over which the sound level is determined, e.g. "15 min" represents a period of 15 minutes.
$L_{A10,T}$	The A-weighted sound level equalled or exceeded for 10% of the measurement period. This level is a descriptor of road traffic. The suffix "T" represents the time interval over which the sound level is determined, e.g. "15 min" represents a period of 15 minutes.
$L_{A90,T}$	The A-weighted sound level equalled or exceeded for 90% of the measurement period. This is commonly referred to as the background sound level. The suffix "T" represents the time interval over which the sound level is determined, e.g. "15 min" represents a period of 15 minutes.
$L_{AFmax,T}$	The A-weighted maximum sound level. The highest level that occurs over a time interval "T", with a specified time weighting. Typically used time weightings are fast "F" (with 125 ms duration used to establish the sound level) and slow "S" (1 s duration), resulting in $L_{AFmax,T}$ and $L_{ASmax,T}$ measurements respectively.
$L_{As,T}$	The specific sound level; the equivalent continuous A-weighted sound pressure level of a specific sound source. The suffix "T" represents the time interval over which the sound level is determined, e.g. "15 min" represents a period of 15 minutes.
$L_{Ar,T}$	The rating level; the equivalent continuous A-weighted sound pressure level of a specific sound source, adjusted to account for characteristic features of the sound such as tonality or impulsivity. The suffix "T" represents the time interval over which the sound level is determined, e.g. "15 min" represents a period of 15 minutes.

Appendix C. Planning Policy, Standards and Guidance

C.1 Planning Policy

C.1.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was published in 2012 and last updated in 2023. The document defines the national policy toward developments which are sensitive to noise and vibration. Specifically, on the subject of noise, paragraphs 174, 185 and 187 state that:

- *'174. Planning policies and decisions should contribute to and enhance the natural and local environment by: (...)*
- *(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;'*
- *'185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
 - *(a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
 - *(b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;**(...).'*
- *'187. 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.'*

NPPF refers to the Noise Policy Statement for England (NPSE), discussed in the subsequent section.

C.1.2 Noise Policy Statement for England

The long-term vision of Government noise policy is set out in the Noise Policy Statement for England (NPSE) published in March 2010. Through effective management and control of environmental noise within the context of Government policy on sustainable development, the NPSE aims to:

- *'Avoid significant adverse impacts on health and quality of life;*
- *Mitigate and minimise other adverse impacts on health and quality of life; and*
- *Contribute to improvements to health and quality of life, where possible.'*



The Explanatory Note to the NPSE refers to three categories of noise exposure level, each associated with a different level of impact from noise:

- No Observed Effect Level (NOEL): the level of noise exposure below which no effect at all on health or quality of life can be detected.
- Lowest Observed Adverse Effect Level (LOAEL): the level of noise exposure above which adverse effects on health and quality of life can be detected.
- Significant Observed Adverse Effect Level (SOAEL): the level of noise exposure above which significant adverse effects on health and quality of life occur.
- The Government policy and guidance do not associate any specific noise levels with the NOEL, LOAEL and SOAEL categories. This association will depend on several factors such as the type of noise source, type of receptor and the time of noise occurrence. The level categorisation should be defined on a strategic or project basis considering the specific features of the area, source or project.

C.1.3 Planning Practice Guide: Noise

Planning Practice Guidance (PPG) for Noise was published in March 2014 and updated in July 2019. It provides advice on how planning can manage potential noise impacts related to new development. It states that:

'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 should be considered early in the planning process to ensure that the most appropriate and cost-effective solutions are identified from the outset.'

It also states that *'...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.'*

The guidance also advises that:

'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'*

The guidance refers to the NPSE and states that the aim is to identify where the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) falls in relation to Significant Observed Adverse Effect Level (SOAEL), the Lowest Observed Adverse Effect Level (LOAEL) and the No Observed Effect Level (NOEL).

The guidance provides the definitions of the observed effect levels in line with the Explanatory Note to the NPSE and orders them in terms of the noise exposure hierarchy in a table. This table is reproduced below.

Table C-1 - Summary of noise exposure hierarchy from PPG

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No effect	No observed effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life	No observed adverse effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life	Observed adverse effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion, where there is no alternative ventilation, having to keep windows closed most of the time because of noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area	Significant observed adverse effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable observed adverse effect	Prevent

C.1.4 West Sussex County Council Planning Noise Requirements

West Sussex County Council, as the local planning authority for the proposed development, sets out planning noise requirements within the Planning Noise Advice Document: Sussex (November 2023).



With respect to assessing noise from new mechanical plant installations, the document states that noise should be assessed in accordance with BS 4142:2014+A1:2019.

Section 3.2.1 of the document includes the following requirement:

"The rating level of the industrial or commercial sound source should, where practicable, achieve a level no greater than the representative background sound, when measured in accordance with BS 4142:2014+A1:2019. There may be instances, for specific sites, where a rating level below background is deemed appropriate. This can be determined through discussion with the Local Planning Authority (LPA)."

The assessment of noise from the proposed building services has therefore been undertaken in accordance with BS 4142, with comparison between the predicted rating level and the representative background sound level at nearby noise sensitive receptors.

Where the rating level does not exceed the background sound level, this is an indication of a low noise impact, subject to consideration of context.

The key aspects of BS 4142 assessments are summarised below.

C.2 Standards

C.2.1 BS 4142:2014+A1:2019

BS 4142 provides a method for rating industrial and commercial sound, and a method for assessing resulting impacts upon people. The method is applicable to fixed plant installations, sound from industrial and manufacturing processes and other associated activities.

The assessment method defined in the standard could be used for the following:

- Investigating complaints.
- Assessing sound from proposed, new, modified or additional sound source(s) of an industrial and/or commercial nature.
- Assessing sound at proposed new dwellings or premises used for residential purposes.

The determination of noise amounting to a nuisance is beyond BS 4142 scope.

BS 4142 provides guidance on determining the rating levels for the relevant sound sources, as well as the ambient, background and residual sound levels at outdoor locations. The procedure contained in BS 4142 determines the significance of sound based on the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs/will occur. The standard states that:

"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."

It also notes that:

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



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

"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."

The initial estimate of impact should be considered in terms of the context. BS 4142 gives examples of factors that may be considered:

"1) The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. [...]"

2) The character and level of the residual sound compared to the character and level of the specific sound. [...]"

3) The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:

i) façade insulation treatment;

ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and

iii) acoustic screening"

The sound level indicator used for the noise source is the $L_{Aeq,T}$ level, where T represents the time period. This is known as the specific sound level $L_{As,T}$ for the purposes of BS 4142 assessments. The sound level indicator used to describe the background sound is the $L_{A90,T}$.

For an assessment during the daytime, the specific sound level should be determined over a one-hour period. During the night-time the specific sound level should be determined over a 15-minute period to give more weight to short duration noise events at night.

BS 4142 defines the typical daytime and night-time time periods as follows:

- Daytime – 07:00 to 23:00 hours; and
- Night-time – 23:00 to 07:00 hours.

BS 4142 explains that certain acoustic features, such as tonality, impulsivity and intermittency, can increase the impact significance over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, a character correction is added to the specific sound level to obtain the rating level. The corrections may be as follows:

- Up to +6 dB for tonal sources.
- Up to +9 dB for impulsive sources.
- +3 dB for intermittent sources.
- +3 dB for other sound characteristics where the specific sound source is neither tonal nor impulsive, through otherwise readily distinctive against the residual acoustic environment.



Appendix D. ASHP Selection



• I-290 0121-0127

The SSL version of this family is **already available**, the reduction is mainly appreciated in the partial load condition at the point defined by the EN 12102-1:2022 standard – Annex A – see CT 2025_29 for construction details

Model / Type	Sound power level according to ErP (A7/W47-55)	Model / Type	Sound power level dB(A) according to ErP (A7/W47-55)	REDUCTION [db(A)]
I-290 0121	64	i-290 0121 SSL	57	-7
I-290 0123	64	i-290 0123 SSL	57	-7
I-290 0125	65	i-290 0125 SSL	58	-7
I-290 0127	65	i-290 0127 SSL	58	-7
I-290 0121	64	i-290 0121 SSL	57	-7

• I-290 0240-0250

starting with PRD2. X (publication date 01/9/25) there will be a change in the acoustic configurations RELATED TO THE ADVANTIX BRAND AND NEUTRAL (FOR "OEM" CUSTOMERS, THE SALES REPRESENTATIVES WILL HAVE TO COMMUNICATE WHAT TO DO TO THE R&D DEPARTMENT). The new acoustic variants will therefore be (MAXA + neutral):

- 1) The standard machine will have basic sound insulation consisting of a jacket on the compressors and a soundproofing headset around them, more details can be appreciated through the images below
- 2) **the SL version will no longer be available**
- 3) The SSL version will be the same as the standard version with the further implementation of silenced fans

For all other brands, the current situation will remain without a soundproofing box until the request of the sales representative.

ADVANTIX SPA

Via San Giuseppe Lavoratore, 24 - 37040 Arcole (VR) - T +39 045 7636585 - P.IVA 01209000239
Registered at the Court of Verona under no. 12621/17484 - Share Capital € 3.100.000 i.v - SDI: M5UXCR1
info@advantixspa.it - www.maxa.it



Figure D-1 - Manufacturer datasheet extract



Appendix E. Noise Survey Photos



Figure E-1 - Outdoor noise measurement equipment

AtkinsRéalis



George Xanthoulis
AtkinsRéalis UK Limited
3 Piccadilly Place
Manchester
M1 3BN

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