



ACOUSTIC
CONSULTANTS LTD

Noise Impact Assessment

**7 Ten Acre Wood
Margam**

Reference: 11207/AE

Client & Architect

Andrew Hall

Document Control

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The report has been prepared in good faith, with all reasonable skill and care, based on information provided or available at the time of its preparation and within the scope of work agreement with the Client. We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above. The report is provided for the sole use of the named Client and is confidential to them and their professional advisors. No responsibility is accepted to other parties.

The report limits itself to addressing solely on the noise, acoustic, and vibration aspects as included in this report. We provide advice only in relation to noise, vibration and acoustics. It is recommended that appropriate expert advice is sought on all the ramifications (e.g. CDM, structural, condensation, fire, legal, etc.) associated with any proposals in this report or as advised and concerning the appointment. It should be noted that noise predictions are based on the current information as we understand it and, on the performances noted in this report. Any modification to these parameters can alter the predicted level. All predictions are in any event subject to a degree of tolerance of normally plus or minus three decibels. If this tolerance is not acceptable, then it would be necessary to consider further measures.

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1. Introduction

Andrew Hall appointed Acoustic Consultants Ltd to undertake a noise impact assessment of the proposed ASHP and external air conditioning units associated with the proposed residential house to be located at 7 Ten Acre Wood, Margam.

The noise impact assessment has been undertaken with Planning Policy Wales, TAN11 and British Standard 4142:2014+A1:2019.

The assessment addresses the noise impact of the proposed plant upon surrounding dwellings only. Design of building services noise within the dwelling itself is not a requirement of planning and outside the scope of this report.

2. The Site & Proposals

The proposed site is a vacant plot of land off Ten Acre Wood, Margam, surrounded by residential properties to the north and south. The M4 motorway, the predominant noise source in the area, is approximately 220 meters to the southwest.

The property previously located on the site, as shown in the satellite image, has been demolished, and a new residential house is proposed for construction.

2 no. ASHP units and 2 no. air conditioning units are proposed to be installed, requiring a noise impact assessment to support the planning application.

The proposed location and site plans are shown in the figures below.

Figure 1: Site Location



Figure 2: Site Plan



3. Planning and Noise

3.1. Planning Policy Wales (PPW)

Planning Policy Wales (PPW) Edition 12 dated February 2024 sets out the land use planning policies of the Welsh Government. Section 1 states:

1.1 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. PPW, the TANs¹, MTANs² and policy clarification letters comprise national planning policy.

The most relevant statements for noise affecting a residential use are provided in Section 6.7 and summarised below:

"6.7.1 Clean air and an appropriate soundscape, contribute to a positive experience of place as well as being necessary for public health, amenity and well-being. They are indicators of local environmental quality and integral qualities of place which should be protected through preventative or proactive action through the planning system. Conversely, air, noise and light pollution can have negative effects on people, biodiversity and the resilience of ecosystems and should be reduced as far as possible."

6.7.4 The planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.

6.7.5 In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments. Air Quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable.

6.7.6 In proposing new development, planning authorities and developers must, therefore:

- address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;*
- not create areas of poor air quality or inappropriate soundscape; and*
- seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.*

6.7.7 To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer."

6.7.8 Good design, for example setting back buildings from roads to avoid canyon effects and using best practice in terms of acoustic design to ensure the appropriate and intended acoustic environment of completed developments should be incorporated at an early consideration in the design and planning process. Other mitigation measures must be capable of being effectively implemented for their intended purpose, and could include those related to:

- traffic management and road safety;*
- ensuring progress towards a shift to low or zero emissions means of road transport, such as electrical charging points;*
- supporting low or zero emissions public transport;*
- providing active travel infrastructure; and*
- incorporating green infrastructure, where it can improve air quality by removing air pollution and aiding its dispersal, reduce real or perceived noise levels by absorbing and scattering noise and introducing natural sounds to soften man-made noise, provide areas of relative tranquillity, and reduce exposure by putting a buffer between sources of pollution and receptors.*

6.7.14 Proposed development should be designed wherever possible to prevent adverse effects to amenity, health and the environment but as a minimum to limit or constrain any effects that do occur. In circumstances where impacts are unacceptable, for example where adequate mitigation is unlikely to be sufficient to safeguard local amenity in terms of air quality and the acoustic environment it will be appropriate to refuse permission.

6.7.19 The health imperative of good air quality and appropriate soundscapes in contributing to the overall character and quality of places and the health and well-being of people and wildlife should be fully recognised. It will not be appropriate to locate sensitive uses, such as hospitals, schools, care homes and housing adjacent to busy roads or other transport routes, where there are no connectivity benefits to be gained and where health and amenity impacts associated with increased exposure of people to pollution will be unacceptable. Whilst some uses may be appropriate with

the aid of good design air quality and soundscape considerations can be overriding factors, especially for sensitive uses, if they cannot be adequately mitigated and impacts minimised.

6.7.20 Where sensitive developments need to be located close to existing transportation infrastructure for sustainable movement and access they should be designed, as far as practicable, to limit harmful substances and noise levels within and around those developments both now and in the future. This may include employing the principles of good acoustic design and the inclusion of active travel or travel management measures as part of development proposals. Such development, however, should preferably be located away from existing sources of significant noise, which may include aircraft noise or roads, particularly new roads or those with programmed route improvements.

6.7.21 Regard should be paid to current air quality and noise levels and the quality of the existing soundscape and account taken of any relevant local air quality action plan, noise action plan and/ or local or regional air quality strategy as part of development strategies and proposals in development plans and before determining planning applications.

6.7.24 The potential impacts of noise pollution arising from existing development, be this commercial, industrial, transport related or cultural venues (such as music venues, theatres or arts centres), must be fully considered to ensure the effects on new development can be adequately controlled to safeguard amenity and any necessary measures and controls should be incorporated as part of the proposed new development. This will help to prevent the risk of restrictions or possible closure of existing premises or adverse impacts on transport infrastructure due to noise and other complaints from occupiers of new developments. It will be important that the most appropriate level of information is provided and assessment undertaken.

PPW does not provide any quantifiable criteria and directs you to the Technical Advice Notes (TAN 11).

3.2. Technical Advice Note (Wales) - Noise

Planning Policy Wales (PPW) Edition 11 dated February 2021 sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes. The relevant planning criteria for proposed residential development is in Technical Advice Note (Wales) 11 entitled "Noise" which was published in October 1997. The introduction states:

"This note provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business.

It outlines some of the main considerations which local planning authorities should take into account in drawing-up development plan policies and when determining

planning applications for development which will either generate noise or be exposed to existing noise sources”.

For noise from industrial and commercial developments, such as plant noise, TAN 11 states:

"B17. The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in BS 4142: 1990. Tonal or impulsive characteristics of the noise are likely to increase the scope for complaints and this is taken into account by the "rating level" defined in BS 4142. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard states that, 'A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance'. Since background noise levels vary throughout a 24-hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable noise levels within buildings can be found in BS 8233: 1987."

4. Assessment Methodology

4.1. British Standard 4142:2014

British Standard 4142:2014 entitled 'Method for rating and assessing industrial and commercial sound' use outdoor sound levels to assess the likely effects of sound upon people who might be inside or outside a dwelling or other premises used for residential purposes. The principle is that of establishing the 'difference' between the 'rating level' and the 'background sound level'.

The 'rating level' is the 'specific sound level' of the source over a period of one hour during the day (07:00 to 23:00 hours) and over a period of 15 minutes during the night (23:00 to 07:00 hours).

Section 9 entitled 'Rating Level' states: *"Certain acoustic features can increase the significance of impact 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, add a character correction to the specific sound level to obtain the rating level."*

An acoustic character correction should be added to the 'specific sound level' if it exhibits any tonality, impulsivity, other specific characteristics and/or intermittency at the assessment location. The value of the character correction varies, dependent on the prominence of the character of the sound source at the assessment location.

In Section 11 of the Standard, entitled 'Assessment of the Impacts', it states: *"Obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level (see Clause 8) from the rating level (see Clause 9) and consider the following."*

- *Typically, the greater this difference, the greater the magnitude of the impact.*
- *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.*
- *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 sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

In all instances the context needs to be considered when determining the overall impact. In terms of context BS 4142:2014 states: *"Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following."*

- 1) *Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night. Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.*
- 2) *The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound, to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/or commercial nature is likely to be perceived and how people react to it.*

NOTE 3 Consideration ought to be given to evidence on human response to sound and, in particular, industrial and/or commercial sound where it is available. A number of studies are listed in the "Effects on humans of industrial and commercial sound" portion of the "Further reading" list in the Bibliography.

- 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."*

In terms of good internal acoustic conditions, the most relevant criteria and methodology is provided in BS8233:2014. This is in accordance with a March 2020 Technical published by the ANC Working Group, which provided comments and guidance to clear any ambiguity in BS414:2014+A1:2019.

The March 2020 Technical Note later states:

"Whilst BS 4142 can be used to assist in the determination of the likelihood of an adverse or significant adverse impact, guidance on internal design criteria and mitigation is provided elsewhere. BS 8233:2014, for example, provides guidance on indoor ambient noise levels."

5. Baseline Noise Monitoring

A partially attended noise monitoring exercise was undertaken at the site between Wednesday the 8th of January 2025 and Friday the 10th of January 2025.

5.1. Monitoring Equipment

Sound Pressure Levels were measured using a Class 1 sound level meter with a half-inch condenser microphone, using the 'fast' setting. The equipment is checked regularly using a Quality System meeting the requirements of British Standard EN ISO/IEC 17025:2017 "General requirements for the competence of testing and calibration laboratories"; in accordance with British Standard EN 10012:2003 "Measurement management systems. Requirements for measurement processes and measuring equipment"; and traceable to the National Standards.

This equipment was checked and calibrated as noted below and the certificates are available for inspection.

Table 1: Equipment and Calibration Status

Equipment Description / Manufacturer / Type	Serial Number	Date of Calibration	Calibration Certification Number
SLM, NTI, XL2	A2A-13561-E0	24/11/2023	1507073-1
Pre-Amp, NTI, MA220	13831	24/11/2023	1507073-1
Microphone, NTI, MC230A	A17955	24/11/2023	1507073-1
Calibrator, Larson Davis, CAL200	15064	20/09/2024	45555-15064-CAL200

5.2. Weather Conditions

During the survey conditions were predominantly clear, dry, and calm. The weather conditions are not expected to have adversely affected the measured data.

Table 2: Weather Conditions During Survey

Date	Wind Speed (m/s)	Prevailing Wind Direction	Average Air Temperature (°C)	Precipitation (time/hrs)
8/1/2025	3	W	2	0
9/1/2025	2-6	S	1	0
10/1/2025	3-4	W	2	0

5.3. Monitoring Procedure

The microphone was positioned at 1.5m height in free field position, in a location representative of the nearby sensitive receivers. The monitoring position is shown in the figure below.

The dominant noise source was road traffic noise from the A38 and M4 to the south and southeast.

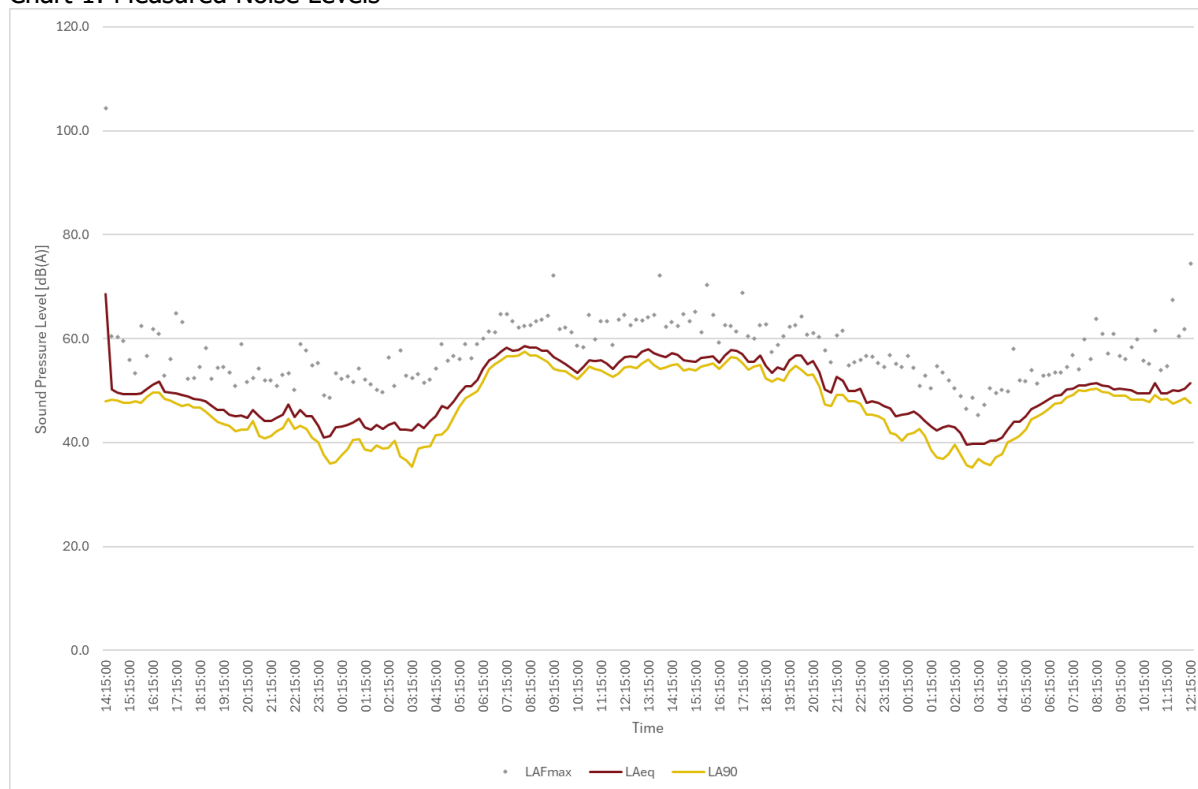
Figure 3: Noise Monitoring Location



5.4. Measured Noise Levels

The A-weighted L_{eq} , L_{max} and L_{90} were measured over 15-minute intervals and are shown in the chart below.

Chart 1: Measured Noise Levels



The following table displays the range and modal values of equivalent and background noise levels monitored during the worst-case day and night periods.

Table 3: Measured Range and Modal Values of the Background in Decibels

Period	LA90,15min		LAeq,15min	
	Range	Mode	Range	Typical
Daytime (07:00-23:00)	45-58	48	48-58	50
Night time (23:00-07:00)	35-48	37	40-49	40

From the measured data we have determined the representative background sound levels during the day (07:00 to 23:00 hours) and night (23:00 to 07:00 hours) to be 48 dB $L_{A90,1hour}$ and 37 dB $L_{A90,15min}$ respectively.

6. Plant Noise Assessment

6.1. Proposed Plant

2 14 kW air source heat pumps (ASHPs) and 2 external air conditioning units are proposed for installation at the northern façade of the property, as shown in the figures below.

Figure 4: Plant Location

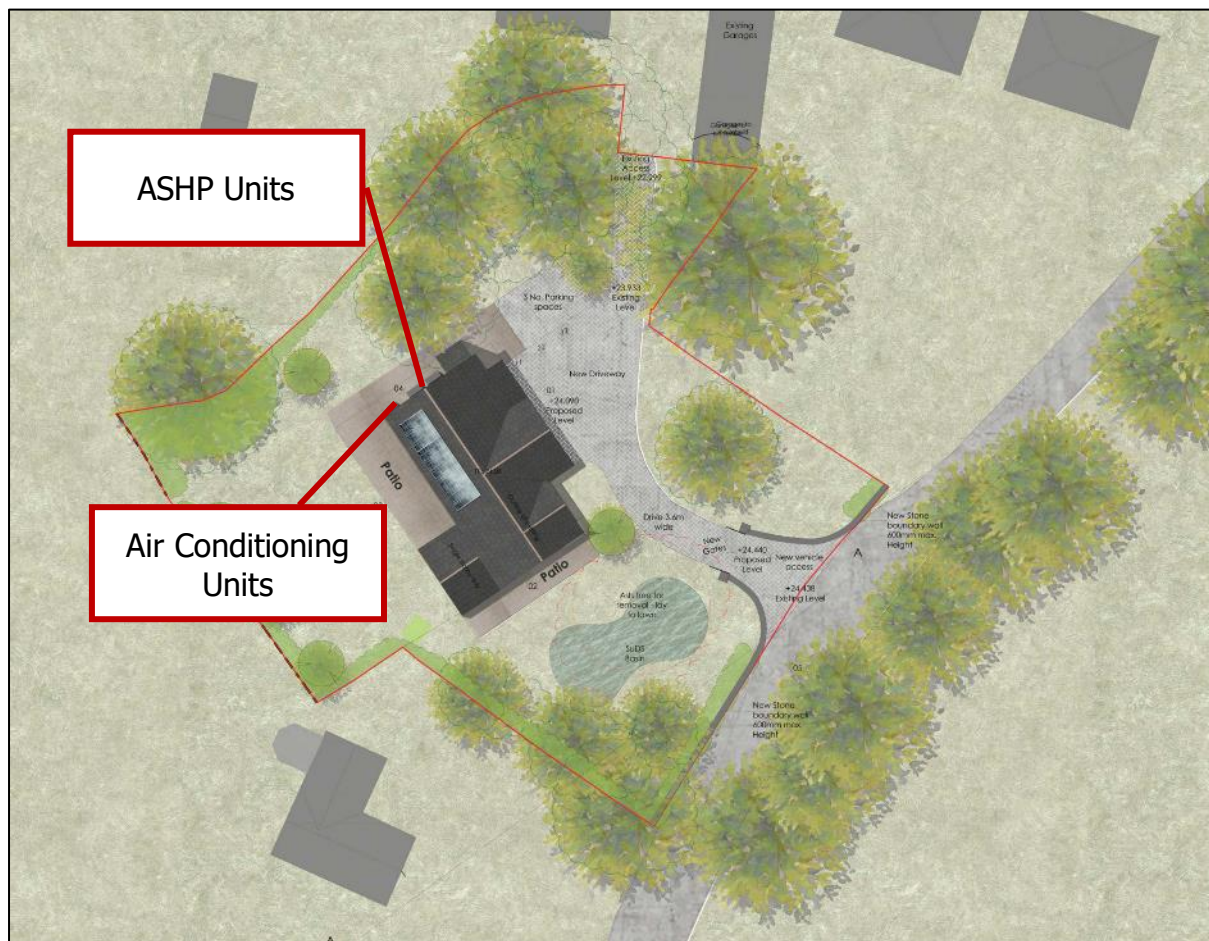


Figure 5: Plant Location – At Elevation



The sound power level outputs and heights of the selected units are outlined below and are based on supplied manufacturer's data.

Table 4: Sound Power Level Output for the Selected Plant Units

Unit	Sound Power Level Output (dBA)	Height (m)
ASHP Ideal HP290 14 kW	69	0.9
Air Conditioning - Bedrooms 1-2 Daikin 2MXM 50	59	0.6
Air Conditioning - Bedrooms 3-5 Daikin 3MXM 68	61	0.7

The installed plant should not exceed the sound power level above. The plant supplier should ensure the information above is correct. Where the source noise levels differ, plant noise would need to be reassessed.

6.3. Noise Modelling

Noise level predictions have been carried out using the noise modelling software CadnaA by DataKustik. The software bases its predictions on the International Standard ISO 9613 entitled 'Acoustics – Attenuation of sound during propagation outdoors'.

- All buildings are considered reflective, and third order reflections have been calculated.
- The height of the site is based on the supplied drawings and reasonable assumptions.
- The height of all other buildings has been determined from Google Maps imagery and on-site observation.
- The topography of the site is based on LiDAR data from DataMapWales.
- The ground surrounding the site has been modelled as hard and reflective.
- The site layout follows the provided plans.
- Noise levels on the building façade are the highest levels determined at façade.
- Plant units are modelled as point sources with the manufacturer's sound power levels as detailed above.
- The proposed noise mitigating barrier from Section 6.2 is shown on the map in purple.

The predicted noise map for the proposed plant with mitigation is shown below:

Figure 7: Noise Map of Plant Noise Affecting the Site dB L_{Aeq,T} (4.5m grid height)



6.4. BS4142:2014+A1:2019 Assessment

A British Standard 4142:2014 assessment has been undertaken at the sensitive receivers on the site.

6.4.1. Background Sound Level

From the measured data we have determined a typical design background sound level of 48 dB $L_{A90,1\text{hour}}$ during the day and 37 dB $L_{A90,15\text{min}}$ during the night.

6.4.2. Predicted Specific Sound Level

The cumulative specific sound level predicted at the façade the existing worst-case receiver is 35 dB $L_{Aeq,T}$ during the daytime and during the night. This is the predicted noise level including a 1.2m barrier as set out in Section 6.2.

6.4.3. Character Corrections

Character corrections should be added to the 'specific sound level' if it exhibits any *tonality, impulsivity, other specific characteristics and/or intermittency* at the assessment location.

Based on manufacturer's data and knowledge of such heating units, corrections to be applied are as follows:

- *Tonality* – Plant such as this is not normally tonal; the plant and enclosure suppliers should confirm and ensure that that no tonality is present or perceptible at the dwellings. No correction has been applied.
- *Impulsivity* – Plant such as this is not normally impulsive. No correction has been applied.
- *Intermittency* – We do not expect that any intermittency of the plant would be clearly distinguishable at the sensitive receiver over the residual noise climate and we have not applied correction for intermittency as the plant noise is equal or lower than the background. We have also assumed all plant is running continuously though the assessment period. No correction has been applied.
- *Other Sound Characteristics* – We do not believe any correction is required due to other characteristics as the plant noise is equal or lower than the background.

6.4.4. Initial Estimate of Impact

Therefore, the British Standard 4142:2014 initial estimate at the most sensitive location is as follows:

Table 5: British Standard 4142:2014 Initial Estimate for NSR

Parameter	Day	Night
Background Level, $L_{A90,T}$	48 dB	37 dB
Specific Sound Level, $L_{Aeq,T}$	35 dB	
Character Correction	0 dB	0 dB
Rating Level, $L_{Ar,T}$	35 dB	
Excess of rating over background level	-13 dB	-2 dB

This means that the predicted rating noise level of plant is -13 dB below the background sound level during the day period and -2 dB below the background sound level during the night.

BS 4142 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. 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."*

This means that the plant rating noise level at the nearest noise sensitive receivers will result in a low impact when assessed to British Standard 4142:2014.

In addition, we do not consider the context of the site would alter this assessment outcome.

6.5. Summary of Assessment

Noise from the proposed plant, including a noise mitigating barrier, is predicted to achieve the requirements of the planning condition and have low impact on nearby dwellings during both day and night when assessed to British Standard 4142:2014+A1:2019.

Commentary on suitable noise mitigation measures is set out in Section 6.2.

7. Summary and Conclusions

Andrew Hall appointed Acoustic Consultants Ltd to undertake a noise impact assessment of the proposed plant associated with the proposed residential house to be located at 7 Ten Acre Wood, Margam.

Noise from the proposed ASHP and external air conditioning plant is predicted to achieve the requirements with Planning Policy Wales, TAN11, British Standard 4142:2014+A1:2019 as modelled above in this report – this includes suitably designed noise mitigation measures such as a 1.2m barrier at the north-façade of the property as set out in Section 6.2.

With this in mind, the BS 4142 criteria can be met at the nearest sensitive receptors, ensuring compliance with planning policy requirements and aligning with the aims of PPW.

8. Appendix 1 – Glossary of Acoustic Terminology

A-weighted sound pressure p_A – value of overall sound pressure, measured in pascals (Pa), after the electrical signal derived from a microphone has been passed through an A-weighting network.

A-weighted sound pressure level, L_{pA} – quantity of A-weighted sound pressure given by the following formula in decibels (dBA)

$$L_{pA} = 10 \log_{10} (p_A/p_0)^2$$

where:

p_A is the A-weighted sound pressure in pascals (Pa);
 p_0 is the reference sound pressure (20 μ Pa)

Background sound level, $L_{A90,T}$ – A-weighted sound pressure level that is exceeded by the residual sound assessment location for 90% of a given time interval, T, measured using weighting F and quoted to the nearest whole number of decibels

Break-in - noise transmission into a structure from outside.

Decibel (dB) – The decibel is the unit used to quantify sound pressure levels. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro-Pascals to 100 Pascals). Therefore, a logarithmic scale is used to describe sound pressure levels and also sound intensity and power levels. The logarithms are taken to base 10. Hence an increase of 10 dB in sound pressure level is equivalent to an increase by a factor of 10 in the sound pressure level (measured in Pascals). Subjectively, this increase would correspond to a doubling of the perceived loudness of sound.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ – value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation:

$$L_{Aeq,T} = 10 \log_{10} \left\{ (1/T) \int_{t_1}^{t_2} [p_A(t)^2 / p_0^2] dt \right\} \quad (1)$$

where:

p_0 is the reference sound pressure (20 μ Pa); and

$p_A(t)$ is the instantaneous A-weighted sound pressure (Pa) at time t

NOTE The equivalent continuous A-weighted sound pressure level is quoted to the nearest whole number of decibels.

Facade level – sound pressure level 1 m in front of the façade. Facade level measurements of L_{pA} are typically 1 dB to 3 dB higher than corresponding free-field measurements because of the reflection from the facade.

Free-field level – sound pressure level away from reflecting surfaces. Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field. To minimize the effect of reflections the measuring position has to be at least 3.5 m to the side of the reflecting surface (i.e. not 3.5 m from the reflecting surface in the direction of the source).

Octave and Third Octave Bands – The human ear is sensitive to sound over a range of frequencies between approximately 20 Hz to 20 kHz and is generally more sensitive to medium and high frequencies than to low frequencies within the range. There are many methods of describing the frequency content of a noise. The most common methods split the frequency range into defined bands, in which the mid-frequency is used as the band descriptor and in the case of octave bands is double that of the band lower. For example, two adjacent octave bands are 250 Hz and 500 Hz. Third octave bands provide a fine resolution by dividing each octave band into three bands. For example, third octave bands would be 160 Hz, 250 Hz, 315 Hz for the same 250 Hz octave band.

Sound pressure level – Sound pressure level is stated on many of the charts. It is the amplitude of the acoustic pressure fluctuations in a sound wave, fundamentally measured in Pascals (Pa), typically from 20 micro-Pascals to 100 Pascals, but commonly simplified onto the decibel scale.

Sound reduction index, R – laboratory measure of the sound insulating properties of a material or building element in a stated frequency band.

Specific sound level, $L_s = L_{Aeq,T_r}$ – equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r .

Structure-borne noise – audible noise caused by the vibration of elements of a structure, the source of which is within a building or structure with common elements.

Rating level, L_{A,r,T_r} – Specific sound level plus any adjustment for the characteristic features of the sound.

Reverberation Time, T – The reverberation time is defined as the time taken for a noise level in an enclosed space to decay by 60 dB from a steady level once the noise source has stopped. It is measured in seconds. Often a 60 dB decay cannot be measured so the reverberation time is measured over a lesser range and corrected back to the time for a 60 dB drop assuming a constant decay rate. Common parameters are T20 (time taken for a 20 dB decay multiplied by three) and T30 (time taken for a 30 dB decay multiplied by two).

Vibration Dose Value, VDV – measure of the total vibration experienced over a specified period of time.

Estimated Vibration Dose Value, $eVDV$ – estimation of the total vibration experienced over a specified period of time. This is usually based on the number of events and shortened measurement data.

Weighted sound reduction index, R_w – Single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies. The weighted sound reduction index is used to characterize the insulation of a material or product that has been measured in a laboratory (see BS EN ISO 717-1).



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