



ACOUSTIC
CONSULTANTS LTD

Noise Impact Assessment

**Proposed Extension to Existing Warehouse
Groundhog UK, Aberdulais**

Reference: 11732/FD/BL

Client & Architect



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

Groundhog UK Ltd appointed Acoustic Consultants Ltd (ACL) to undertake a noise impact assessment for the proposed extension to the existing B2 units at Groundhog UK Ltd, Ynysygerwn Avenue, Aberdulais, Neath, South Wales, SA10 8HH.

A noise survey has been undertaken at the site and is fully detailed in this report.

The purpose of this report is to discharge condition 4 of the planning application P2025/0606 which is detailed in this report. The noise impact assessment has been undertaken in accordance British Standard 4142:2014+A1:2019.

The report and assessments have been reviewed and approved by a full Member of the Institute of Acoustics (MIOA) with over seventeen years of experience in the field.

2. The Site

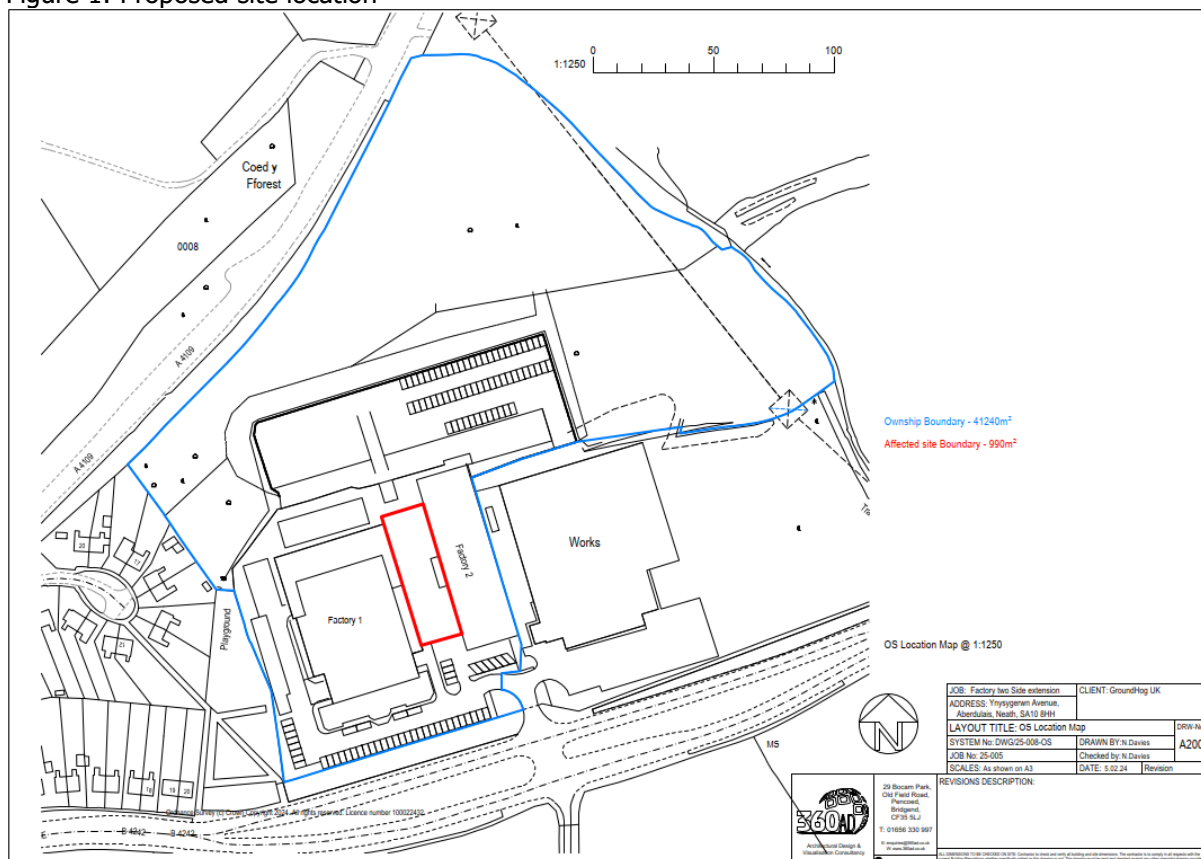
The site is industrial buildings associated with the operations of Groundhogs UK Ltd located at Ynysygerwn Avenue, Aberdulais, Neath, South Wales, SA10 8HH.

The proposals are for an extension of the existing factory to the East of the site. We have been advised that the operational hours of the site will not change from the existing hours of 08:00 – 18:00 Monday to Friday and 08:00 – 13:00 on Saturdays.

The nearest noise sensitive receivers (NSRs) are the dwellings to the West along Ynysygerwn Crescent and Ynysygerwn Avenue.

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

Figure 1: Proposed site location



3. Planning Condition

As stated, the purpose of this report is to address condition 4 of planning application P2025/0606 which states:

"Prior to commencement of development on site, a Noise Impact Assessment of the internal operations, compiled by appropriately experienced and competent persons, shall be submitted to and agreed in writing with the Local Planning Authority. The Noise Impact Assessment shall detail the noise levels associated with the use of the internal operations and include an analysis of whether any noise mitigation measures/attenuation/sound insulation are required to control the noise (and if so full details of these mitigation measures), and a timescale for the implementation of these noise mitigation measures. Upon the LPA's approval of the Noise Impact Assessment, any required mitigation measures shall be implemented in accordance with the approved Noise Impact Assessment and retained thereafter.

Reason:

To ensure that the amenities of occupiers of other buildings and houses in the vicinity are protected, and to ensure compliance with Policies SP16, EN8 and BE1 of the Neath Port Talbot Local Development Plan."

4. Assessment Criteria

The planning condition does not provide a criteria with limits for noise generated from the site. British Standard 4142:2014+2019 is the most appropriate documentation for industrial noise.

The methods described in the British Standard 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 initial estimate 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). Clause 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."*

5. Noise Monitoring

A partially attended noise survey was undertaken at the site from Thursday the 23rd of October 2025 until Monday 27th of October 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-11041-E0	14/07/2025	1512782-1
Pre-Amp, NTI, MA220	1822	14/07/2025	1512782-1
Microphone, NTI, MC230	9583	14/07/2025	1512782-1
Calibrator, Larson Davis, CAL200	18273	27/02/2025	1511387-2
SLM, NTI, XL2	A2A-09705-E0	10/09/2025	UK-25-118
Pre-Amp, NTI, MA220	5332	10/09/2025	UK-25-118
Microphone, NTI, MC230A	A14374	10/09/2025	UK-25-118
Calibrator, NOR-1251	35230	24/10/2024	1510319-1

5.2. Weather Conditions

During the survey setup there was rainfall and wind that has the potential to affect the measured levels. These periods have been excluded from the assessment.

All other data obtained was during periods of clear weather, with wind speeds no greater than 5 m/s.

5.3. Monitoring Procedure

Noise monitoring was undertaken to determine the existing operational noise levels at the site as well as to establish existing background and equivalent sound levels in a location representative on the NSRs.

A number of internal spot measurements were completed at set distances from the loudest machines and tools housed and used within the factory.

Two long term monitors were also setup. Monitoring location 'A' (MLA) was setup externally on the western site boundary of the site backing onto the NSRs while Monitoring location 'B' (MLB) was housed internally within the factory in close proximity to the opening of the factory.

The monitoring locations are shown on the figure below.

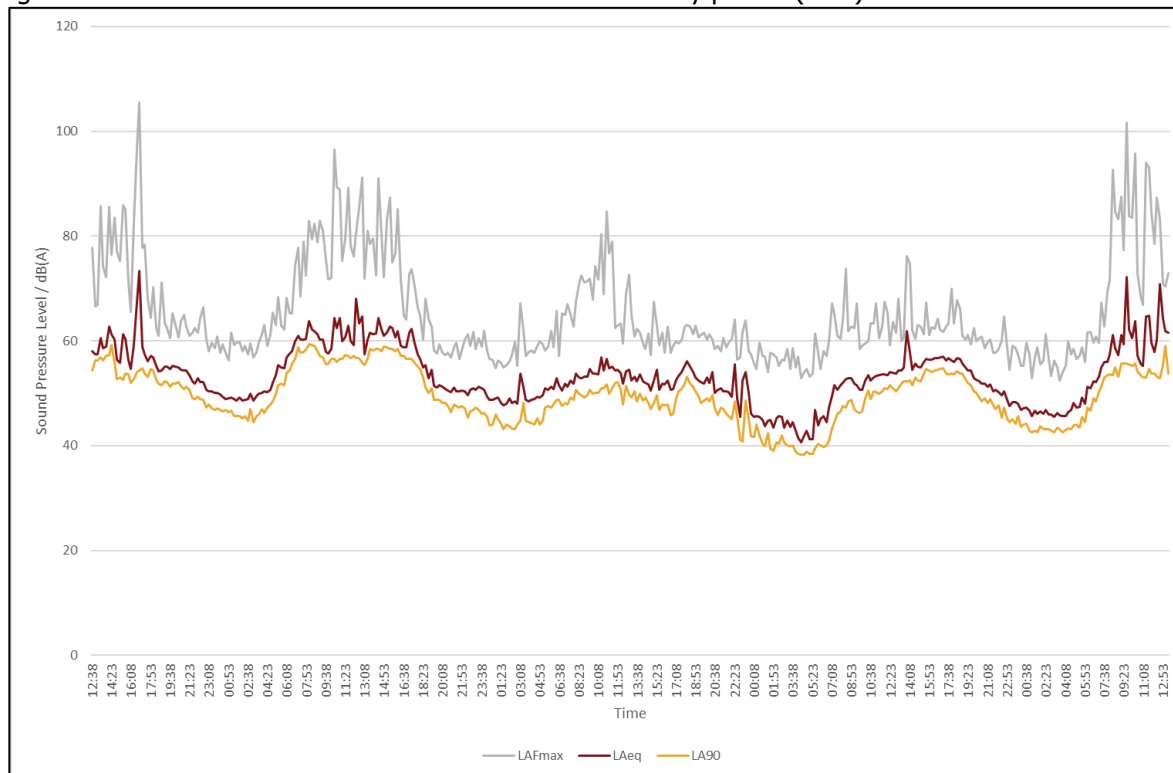
Figure 3: Noise monitoring location



5.4. Measured Baseline Noise Levels (MLA)

The following chart provides the variation in noise level over time for the whole survey period. The chart below provides the equivalent, L_{Aeq} , background, L_{90} , and maximum L_{max} levels obtained.

Figure 4: Collected noise data for the duration of the survey period (MLA)



The table below provides a summary of the range and modal background, and equivalent noise data obtained from survey, excluding periods of unsuitable weather.

Also note that the below table presents the evening levels from the survey to ensure that noise from the existing operations of Groundhog UK as well as the construction site to the North have not adversely affected the data used in the assessment.

Table 2: Summarised baseline noise levels

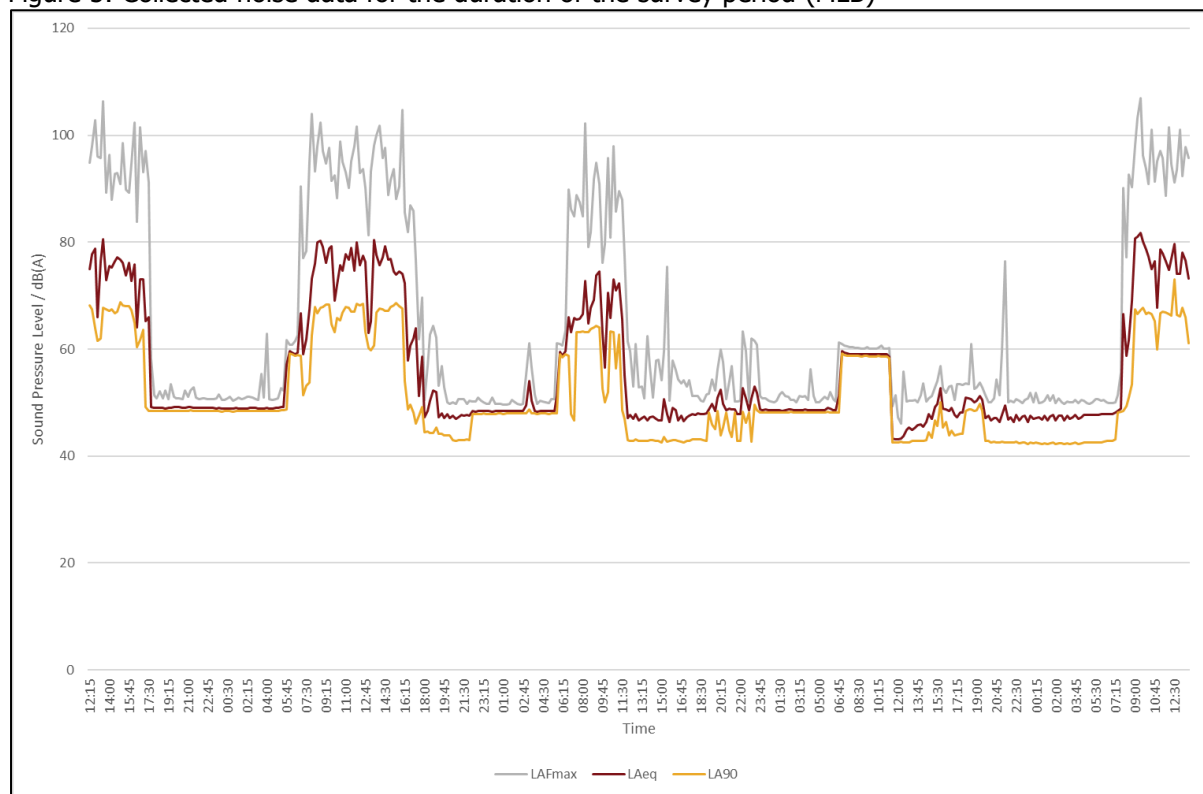
Period	$L_{Aeq,T}$ [dB]		$L_{A90,T}$ [dB]	
	Range	Mean	Range	Mode
Evening (19:00 – 23:00)	50 - 55	51	45 - 51	48
Night time (23:00-07:00)	41 - 58	49	38 - 56	44

Based on the above, the design baseline noise criterion is 48 dB $L_{A90,1hour}$.

5.5. Measured Long Term Workshop Levels (MLB)

The following chart provides the variation in noise level over time for the whole survey period. The chart below provides the equivalent, L_{Aeq} , background, L_{90} , and maximum L_{max} levels obtained.

Figure 5: Collected noise data for the duration of the survey period (MLB)



From the above we have determined the worst-case operational hour of noise from the factory.

Table 3: Worst-case operational hour of noise

	Octave band level (dB) / Frequency (Hz)								dB(A)
	63	125	250	500	1k	2k	4k	8K	
Leq(1hr)	74	72	72	71	73	75	75	72	81

5.6. Measured Individual Workshop Plant Levels

Appendix 2 details the levels of the internal spot measurements undertaken within the workshop.

6. Noise Modelling

6.1. Building Façade Construction

The sections below detail the presumed façade / roof elements, and the sound reduction indices (SRIs) they provide. The following is based on drawings provided to us. This information should be checked by the client and if any changes are needed it may require remodelling to assess noise impact.

6.1.1. External Walls

Based on observations made on site, the construction of the external walls is a Kingspan metal cladding system. From the Kingspan Acoustic Performance Guide we have selected the worst-performing wall detail which is the 'AWP/60 + no lining'.

The above construction is expected to achieve the following sound reduction indices:

Table 4: Assumed sound insulation performance of external walls

Element	SRI (dB) per Octave Band (Hz)								R _w
	63	125	250	500	1k	2k	4k	8k	
External Walls	15	16	19	23	26	22	39	-	23

6.1.2. Roof

Based on observations made on site, the construction of the roof is a Kingspan metal cladding system, from the Kingspan Acoustic Performance Guide we have selected the worst-performing roof detail which is the 'KS1000 ZIP/90 + no lining'.

The above construction is expected to achieve the following sound reduction indices:

Table 5: Assumed sound insulation performance of external walls

Element	SRI (dB) per Octave Band (Hz)								R _w
	63	125	250	500	1k	2k	4k	8k	
External Roof	19	18	19	20	17	35	38	44	23

6.1.3. Windows & Rooflights

All external glazing is presumed to be a standard double glazing comprising a 4mm pane of glass, a 12mm gap and another 4mm pane of glass.

Based on our own data library, we consider glazing of this type to achieve the below sound reduction indices:

Table 6: Assumed sound insulation performance of external glazing

Element	SRI (dB) per Octave Band (Hz)								R _w
	63	125	250	500	1k	2k	4k	8k	
4/12/4 Double Glazing	20	24	20	25	35	38	35	36	31

6.1.4. Doors to Factory

For the purpose of the noise modelling, all doors to the factory extension have been presumed to be open and provide no sound reduction. They have been modelled as opening in the building based on the dimensions provided in the drawings.

6.2. Modelling Parameters

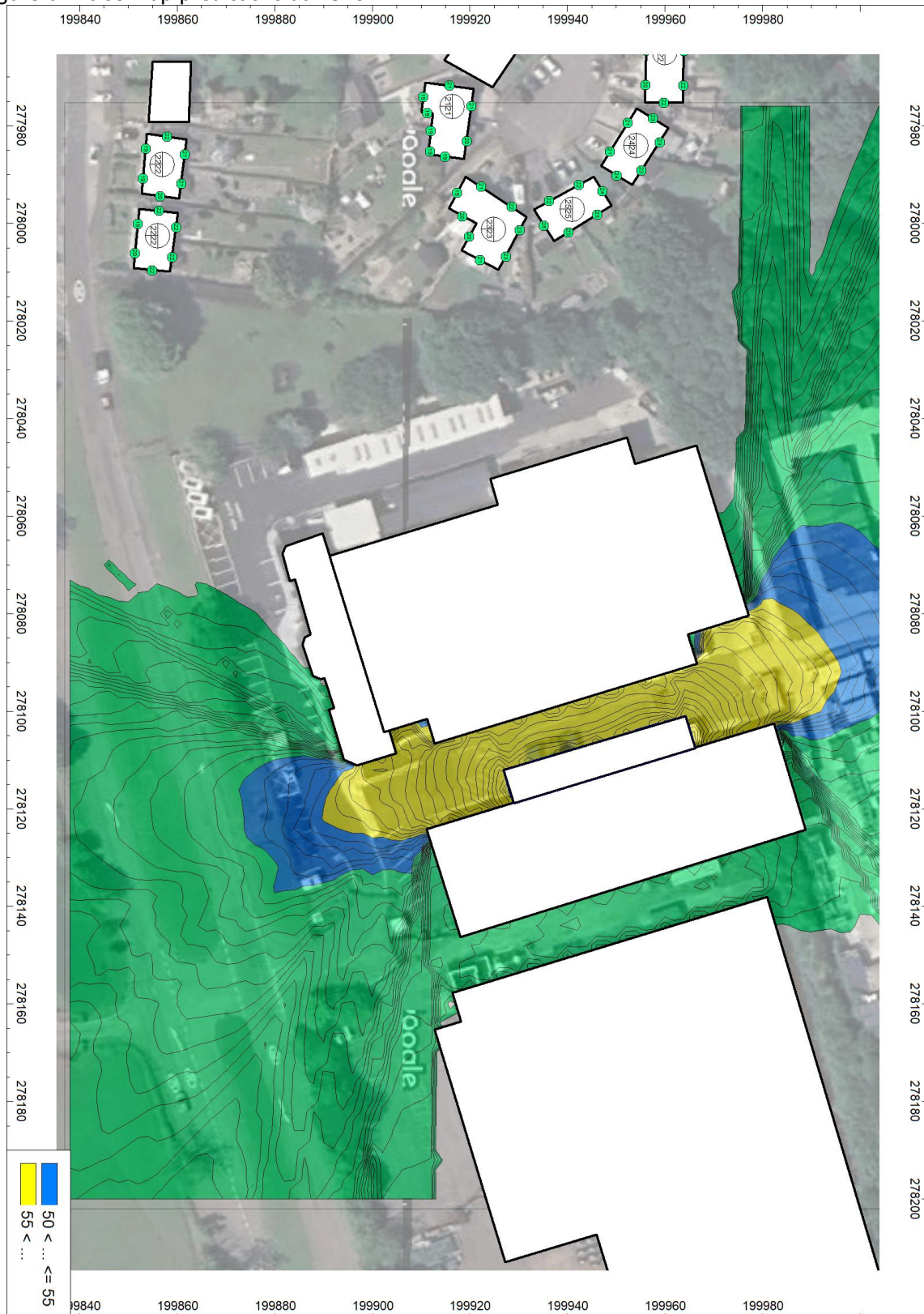
Noise level predictions have been carried out using the noise modelling software CadnaA by DataKustik. The software bases its predictions on the International Standard ISO 9613 entitled 'Acoustics – Attenuation of sound during propagation outdoors', published in 1996. The following parameters have been considered in the noise model.

- The height of the buildings and existing residential dwellings are based on observations made on site, Google Earth imagery and the drawings provided.
- The order of reflections is 3, and all buildings and ground are reflective.
- The ground across the site and surrounding area is considered hard and reflective.
- The topography of the site is assumed to be flat for the purpose of the modelling
- The noise map is modelled at 4.5m in height.
- The building evaluation heights are predicted at the worst-case window height of the NSRs.
- The proposed extension to the factory is modelled as radiating building sources, with the source levels measured and presented in Section 5.5 of this report.
- The structures of the factory units have been input with the sound reduction indices set out in Section 6.

6.3. Noise Modelling Results

The following noise map displays the predicted noise levels at the façade of the NSRs.

Figure 6: Noise map predictions at NSRs



7. Noise Assessment

7.1. Initial Assessment

A British Standard 4142:2014 assessment of the impact of industrial noise from the proposals as noted above has been undertaken at a location representative of the NSRs.

If any of the above information, or site layout is to change, the assessment will require reassessing.

7.1.1. Background Sound Level

From the measured data we have determined the typical daytime background noise level to be 48 dB $L_{A90,1\text{hour}}$.

7.1.2. Specific Sound Level

The predicted specific sound level, L_s , of noise due to operations at the sites is 25 dB $L_{Aeq,1\text{hour}}$.

7.1.3. 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 our site visit and knowledge of such air handling units, corrections to be applied are as follows:

- **Tonality** – Based upon the measurements made on site the noise produced from the factory is not considered tonal.
- **Impulsivity** – The noise produced from the factory can be impulsive in nature; however, this impulsivity would not be perceptible at the NSR over the baseline noise climate.
- **Intermittency** – The noise produced from the factory will have periods of starting and stopping, however this will not be perceptible at the NSR.
- **Other Sound Characteristics** – No character corrections are required for other sound characteristics; the extension of the factory will not introduce a new noise source to the area.

7.2. Initial Estimate of Impact

Considering the data and information provided above, the British Standard 4142:2014 initial estimate at the sensitive receiver location is as follows.

Table 7: British Standard 4142:2014 initial estimate

Parameter	Façade Level at NSR
Background Sound Level, $L_{A90,T}$	48 dB
Specific Sound Level $L_{Aeq,T}$	25 dB
Acoustic Character Correction	0 dB
Rating Level $L_{Ar,T}$	25 dB
Difference between rating and background level	-23 dB

The initial assessment above indicates that operational noise can fall below existing background sound levels by 23 dB. This is an indication of low impact; However, context should also be considered.

7.3. Context

With regard to context British Standard 4142 states: “*where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration*”

7.3.1. Absolute Levels

“Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following. 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.”

With regard to ‘absolute levels’, the most relevant guidance is British Standard 8233:2014. Section 7.7.2 Table 4 of the British Standard provides internal ambient noise levels for dwellings from noise sources ‘without a specific character’ and are based on existing guidelines issued by the World Health Organisation in 1999. We would advise the rating level is considered to allow for the character of the source.

The guideline states that noise levels should not exceed 35 dB $L_{Aeq(16hr)}$ within living rooms during the daytime. The internal level is approximately 15 dB quieter than the external free-field level (as stated by the BS8233:2014 and WHO 1999) allowing for the attenuation of a partially open window. Therefore, based on the predicted rating levels noted above, the internal absolute levels are as follows.

Table 8: Comparison with British Standard 8233:2014 at Worst Case Receiver

Predicted External Level $L_{Ar(T)}$ dB	Open Window Correction dB(A)	Predicted Internal Level $L_{Ar(T)}$ dB	Within Criteria
25	-15	10	YES

As can be seen from the table above, the internal rating sound levels are comfortably below the British Standard 8233:2014 criteria for daytime rooms.

7.3.2. Residual Noise

We should also consider the residual noise climate. British Standard 4142:2014 also states:

"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."

We have compared the lowest measured residual noise climate, i.e. the ambient sound at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound. This is summarised below:

Table 9: Comparison with Residual Noise Climate

$L_{Aeq}(1hr)$	$L_{Ar}(1hr)$
49 dB	25 dB

As can be seen, the rating sound level (with character) is 24 dB lower than the lowest residual sound. We would consider the noise would not be audible and will not result in an incongruous sound by comparison to the baseline residual climate.

7.4. Summary of Assessment

The initial estimate and contextual assessment determine that noise from proposed operations is expected be easily acceptable and of a low impact at the nearest sensitive receiver when assessed to British Standard 4142:2014+A1:2019.

8. Plant Noise Limits

If any fixed plant is installed externally to the development, the following noise limits are to be applied and should be determined at the façade of the nearby noise-sensitive residential properties. These limits are based on the measured survey results, and British Standard 4142:2014+A1:2019.

These are the maximum cumulative 'free-field' rating sound levels as measured at the façade of the noted NSRs.

Although the factory will only be operating during daytime hours, any plant serving the factory may have the need to run into nighttime hours, as such, limits have been provided for both day and night periods.

Table 10: Plant Noise Limits Determined at NSRs (free-field level)

Period	Rating Sound Level Limit
Daytime (07:00 – 23:00 hrs)	48 dB $L_{Ar,1 \text{ hour}}$
Night (23:00 – 07:00 hrs)	44 dB $L_{Ar,15 \text{ minutes}}$

The rating sound level of the plant unit(s) should account for any reasonable character corrections, i.e., tonality, intermittency, impulsivity, and other sound characteristics.

9. Summary and Conclusions

Groundhog UK Ltd appointed Acoustic Consultants Ltd (ACL) to undertake a noise impact assessment for the proposed extension to the existing B2 units at Groundhog UK Ltd, Ynysygerwn Avenue, Aberdulais, Neath, South Wales, SA10 8HH.

A noise survey has been undertaken at the site and is fully detailed in this report.

The purpose of this report is to discharge Condition 4 of the planning application P2025/0606 which is detailed in this report. The noise impact assessment has been undertaken in accordance British Standard 4142:2014+A1:2019.

When assessing the measured levels of the factory against the measured background noise climate at the NSR, it is clear that the proposals will be of low impact when assessed to British Standard 4142. The contextual assessment does not change this impact.

As such, the intent of the condition is met, and the condition can be discharged.

10. 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).

11. Appendix 2 – Individual Operational Measurements

Source	Distance Measured	LAeq, dB	Frequency (Hz)															
			50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600
Circular saw, solid wood	4 metres	90.7	70.3	73.9	73.1	72.7	71.8	71.2	71.5	66.7	68.3	65.7	68.2	66.7	69.2	65.9	68.5	71.6
Circular saw, laminate wood	4 metres	89.1	71.2	75.3	73.3	70.9	71.1	71.8	72.7	66.6	68	64.1	69.3	66.8	69.2	67.8	66	67.8
Circular saw, chip board	4 metres	87.9	69.9	74.4	73.4	72.3	71.4	71.2	72.3	68.1	67.6	64.8	69.8	68.5	77	69.2	67.5	72.7
Circular saw, all of the above at once	4 metres	85.6	70.6	74.9	73.1	72.6	71.8	71.8	72.9	68	69.1	64.9	67.5	67.6	70.5	66.8	65.4	66.8
Circular saw, thin plywood	4 metres	88.5	69.9	73.9	73.6	72.2	72	71.6	71.8	68.6	70	65.9	69.5	68.9	69.2	67.1	70.1	74.6
Circular saw, thick plywood	4 metres	88.4	69.4	73.6	74.1	73	71.8	71.2	71.8	68	68.5	67	70.5	69	73.4	69.6	70.2	74.1
Electric hand saw, polystyrene	1 metre	95	72.9	78	80	78.7	70.2	69.4	70.9	70.1	71.8	74.6	76.5	75.2	75.2	76.4	79.2	85.3
Electric hand saw, plywood	1 metre	92.3	72.3	78.2	78.4	75.2	70.2	69.4	70.9	70.1	71.8	74.6	76.5	75.2	75.2	76.4	79.2	85.3
Electric hand saw, chip board	1 metre	91.4	71.4	78.2	78.4	75.2	70.2	69.4	70.9	70.1	71.8	74.6	76.5	75.2	75.2	76.4	79.2	85.3
Electric hand saw, laminate wood	1 metre	89.1	71.4	78.2	78.4	75.2	70.2	69.4	70.9	70.1	71.8	74.6	76.5	75.2	75.2	76.4	79.2	85.3
Electric hand saw, all of the above at once	1 metre	83	65.2	65.4	66	67.2	65.5	68	69.2	68.8	68.1	70.5	69.6	69.3	68.1	65.7	63.9	71.8
Small hand circular saw	2 metres	85.5	61	62.4	60.4	65.5	62.4	66.3	67.8	65.3	64.4	63	67.6	69.3	69.4	71.1	71.5	72
Impact drill	1 metre	87.4	67.6	69.9	67.7	66.7	67.8	67.9	73.8	66.2	64.1	63.9	67.3	67.8	66.1	72.3	71.1	73.5
Hand saw	2 metres	75.5	68.8	69.1	68.2	69.2	68.2	70.1	70.9	69.8	68.2	65.5	67.3	66	64.6	65.6	66.5	64.3
Hand drill	2 metres	75.5	68.8	69.1	68.2	69.2	68.2	70.1	70.9	69.8	68.2	65.5	67.3	66	64.6	65.6	66.5	64.3



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