

REF: L1662.1 V3

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Mr David Davies
Andrew Scott Ltd
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Margam
NEATH PORT TALBOT
SA13 2SP

2nd July 2024

**RE: SEVEN SISTERS INDUSTRIAL UNITS, NEATH PORT TALBOT
PLANT NOISE ASSESSMENT**

Dear Mr Davies,

Following our recent correspondence, we are writing to you with respect to the above project, to provide a summary of a recent noise survey that was carried out at the above site and our assessment of noise impact from the selected equipment.

The proposal includes the construction of new single storey industrial building comprising 6 independent units, each providing a workshop-type facility, an office and associated ancillary facilities.

The subject of this assessment is the proposed equipment to serve the new building, the specification of which is currently unknown. Noise limits have therefore been proposed to inform the design of the building services systems.

For assessment of noise impact, we have followed the methodology set out in British Standard 4142:2014 *Method for Rating and Assessing Industrial and Commercial Sound*. This is considered to be the most relevant piece of guidance for the situation and our assessment is described in the following sections.

1.0 BS4142 CRITERIA...

BS4142 presents a method for determining the likelihood of complaints arising from noise levels associated with fixed sources. The procedure set out in the standard involves the comparison of two noise levels at a noise sensitive location, these are,

<i>Rating Noise Level:</i>	The level of noise produced by the plant equipment when it has been corrected for tonal and temporal components.
<i>Background Noise Level:</i>	The background noise measured as an L_{A90} (the noise exceeded for 90% of the time) when the plant equipment is not operating.

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If the plant noise has any distinguishing characteristics such as tonal (e.g. whine, hiss, hum etc) or impulsive components (e.g. bangs, clicks, thumps etc), or if the noise is irregular enough to attract attention, then a penalty is applied depending on the severity of the characteristic.

Acoustically Distinguishing Characteristic	Size of Penalty	Assessment Methodologies
Tonality	0 dB to +6 dB	Subjective Method 1/3 Octave Method Reference Method
Impulsivity	Up to +9 dB	Subjective Method Reference Method
Other sound characteristics	3 dB	Subjective Method
Intermittency	3 dB	Subjective Method

TABLE 1: SUMMARY OF BS4142 ACOUSTIC CHARACTERISTIC PENALTIES

To assess the likelihood of complaints, the difference between the *Rating Level* and the *Background Sound Level* is calculated. A simple comparison of these levels provides the outcome of the assessment as shown in Table 2.

Level Difference (Rating – Background) dB(A)	Assessment Conclusion
Around +10 or more	Likely to be an indication of a significant adverse impact, depending on the context
Around +5	Likely to be an indication of an adverse impact, depending on the context
Zero or less	Indication of the specific sound source having a low impact, depending on the context

TABLE 2: SUMMARY OF BS4142:2014 ASSESSMENT METHOD

The assessment conclusions are all subject to taking into consideration the context of the ambient sound at the site, the character of the specific sound and the sensitivity of the receptors.

Where the assessment takes place prior to the specific source of noise being installed, it is permitted to predict the noise level at the noise sensitive location.

2.0 OTHER DESIGN CRITERIA...

Planning Policy Wales (PPW)

The document entitled Planning Policy Wales (PPW) sets out the Welsh Assembly's planning policies for Wales and how these are expected to be applied.

PPW is supplemented by a series of Technical Advice Notes (TANs).

PPW does not contain quantitative acoustic criteria but summarises national planning policy advice and articulates the Assembly's vision of sustainable development. It provides a framework within which councils can provide their own local plans, which reflect the needs and priorities of their communities.

In respect of noise and vibration, PPW states that planning policies and decisions should aim to:

- *“ensure, as far as is practicable, that noise-sensitive developments, such as hospitals, schools and housing, that need to be located close to existing transportation infrastructure to facilitate access, are designed in such a way as to limit noise levels within and around those developments;*
- *ensure, as far as possible, that potentially noisy developments are located in areas where noise will not be such an important consideration or where its impact can be minimised;*
- *adopt policies to prevent potentially noisy developments in areas which have remained relatively undisturbed by noise;*
- *have regard to any relevant Noise Action Plan, including the need to protect urban ‘quiet areas’ against an increase in noise.*

With regards to ‘adverse effects’ and ‘significant adverse effects’, PPW refers to the Technical Advice Note 11 (TAN 11).

Technical Advice Note 11 (TAN 11)

TAN 11 seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The advice note applies to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise.

The statement sets out the long-term vision of the Welsh Assembly’s noise policies and outlines some of the main considerations which local planning authorities should take into account when determining planning applications for development which will either generate noise or be exposed to existing noise sources.

This long-term vision is divided into three key sections:

- *Noise generating development*
- *Noise sensitive development*
- *Measures to mitigate the impact of noise*

The long-term policy vision and aims are designed to enable decisions to be made regarding what is an acceptable noise burden to place on society.

Noise and Soundscape Plan for Wales 2023-2028

This document sets out a vision to create better places to work and live and makes reference to TAN 11, ISO 12913, and the Well-being of Future Generations (Wales) Act 2015. The document assesses noise on a general decision-making framework scale of ‘increasing noise risk’ from ‘No noise or soundscape action required’ to a ‘quality sound environment through noise control’.

Neath Port Talbot County Borough Council Local Development Plan (2011 – 2026) – Policy EN8

This policy seeks to prevent development that would cause or result in unacceptable impact in terms of pollution and land stability due to pollutants such as noise. It does not, however, stipulate design targets in which to achieve with regard to new noise sources, but provides general discussion on proposals surrounding the issue of noise, further expanded in Section 4 – Noise Pollution, with cross reference to TAN 11.

Other Guidance

In addition, we have also considered BS8233:2014 and the World Health Organisation guidance for noise levels which offer good external amenity. A good standard of external amenity is considered to be 55 dB(A) L_{Aeq} and below.

Furthermore, we would expect neighbouring dwellings to maintain reasonable internal noise levels with windows open for ventilation. The BS8233 guidance for reasonable internal noise during the

day within a dwelling is 35 dB(A) L_{Aeq} . We would normally expect 10-15 dB(A) reduction through an open window and hence we would not expect the noise level from new plant equipment to exceed 45 dB(A) L_{Aeq} measured 1 m from the external building façade where there is an opening window. At night a target 5 dB quieter can be derived in the same manner.

The most onerous of the above design criteria is expected to apply.

3.0 EXISTING BACKGROUND SOUND LEVELS...

There are no restrictions on the minimum duration of measurement of the *Background Sound Level* in BS4142, albeit to say they should represent the “*Typical*” background level when the new equipment will be in operation.

A survey of the pre-development noise environment was undertaken in a location chosen to best represent pre-development *Background Sound Levels* at the nearest neighbouring properties in free-field conditions, in light of the available secure positions in which to attach our equipment.

In this instance, we secured our equipment approximately 140 m further South than the proposed building and neighbouring dwellings. This location presented similar characteristics in terms of traffic noise, plant noise and industrial noise to the proposed site. However, due to the siting of the proposed building, to the rear of the dwellings to the West, we are of the opinion that this location would be more sheltered from traffic noise due to the houses, and that the rear elevations of the houses facing the proposed site are also less exposed to traffic noise. We have therefore taken this into account and adjusted our measured data accordingly to accommodate the reduction in noise levels of 5 dB as a result of the dwellings providing line-of-sight screening from traffic noise. This is considered to represent a worst-case scenario and offers a more onerous outcome i.e more protection for the occupiers at receiver No 1.

The background and ambient sound at site are dominated by existing industrial noise, other fixed plant in the area, passing pedestrians and vehicular traffic.

A brief summary of the overall sound levels measured is provided in Table 3.

Location	Period	Parameter dB(A)	
		L_{Aeq}	L_{A90}
1	Day Time $L_{Aeq,1hr}$ (07:00 – 23:00)	57	50
	Night-Time $L_{Aeq,15min}$ (23:00 – 07:00)	54	41

TABLE 3: SUMMARY OF MEASURED NOISE LEVELS (FREE FIELD)

For our assessment at the nearest noise sensitive neighbour, the lowest measured *Background Sound Level* of 50 dB(A) $L_{A90,1hr}$ and 41 dB(A) $L_{A90,15mins}$ has been used to represent the daytime and night-time periods respectively, in free-field conditions. These are the most commonly occurring levels during the survey period.

Taking into consideration the measured levels, tolerances and corrections, the *Background Sound Level* used in our assessment is 48 dB(A) $L_{A90,1hr}$ during the daytime period at façade level at the nearest affected receiver and 39 dB(A) $L_{A90,15mins}$ during the night-time period. This calculation includes a 3 dB correction to convert our measured free-field L_{A90} to a façade level measurement in accordance with BS4142, and the screening correction between the survey site and the proposed site.

4.0 ASSESSMENT OF NOISE IMPACT...

Whilst the equipment has not yet been selected, we have been provided with a floor plan and site plan. It is not known where potential plant is to be sited, and so we have assumed a worst-case scenario of the plant being located externally, at the nearest part of the building to the nearest noise sensitive receiver.

The proposed locations of the equipment are indicated on a marked-up plan included in the appendix to this letter.

We have used 1 No assessment location as follows:

1. Receiver No 1. Most exposed residential property to the West of the proposed development. The address is understood to be No 98 Dulais Road, Seven Sisters, SA10 9ES.

The assessment locations are taken at 1 m from the façade of the dwelling.

To give an idea of the distances involved we have used an on-line mapping tool and drawings to estimate the distance between the assessment location and the proposed plant equipment location.

The distance between the assessment location No 1 and the fixed plant is approximately 55 m.

The calculated maximum Rating Level of any proposed equipment at the assessment location, at 1 m from the façade to achieve the guidance requirements are summarised in Table 4.

We have not included a correction for temporal or tonal components on the basis that the equipment will be new and operating efficiently. Please note that should it transpire that the equipment has an undesirable acoustic characteristic, a penalty would be applied as described in BS4142.

Receiver Location	Period	Background Sound Level dB(A) L _{A90}	Maximum Rating Level dB(A) L _{Ar,Tr}	Distance to Nearest Source (m)	Max Specific Sound Level at 1m dB(A)	Approx. Max Total Sound Power Level
1	Daytime	48	45	55	71	85
	Night-time	39	39		65	79

TABLE 4: SUMMARY OF PREDICTED RATING LEVEL AT RECEIVER

The above daytime limit is dictated by the internal noise levels set out in BS8233.

The total sound power level indicated is an approximate level based on a correction between sound power level and pressure level at 1 m of +14 dB. This is an empirical relationship which is based on the typical dimensions of an air condensing unit and follows the principles of ISO 3744.

For comparison purposes only at this stage, a typical 14 kW outdoor condensing unit has a sound pressure level at 1 m of 50-55 dB(A) when installed over a reflecting plane (i.e. on the floor), and a sound power level of around 65 dB(A) L_{WA}; A typical compressed air machine has a sound power level of around 92 dB(A), and a typical extract fan has a sound power level of around 45 dB(A) L_{WA}.

This suggests that equipment could be installed to serve the units without mitigation, and is expected to result in no adverse impact at the closest residential buildings, although equipment of higher noise output than the limits stated in Table 4 would likely require a commensurate level of mitigation.

We would expect a detailed review of the equipment to be undertaken once selected.

Our assessment is based on achieving a rating noise level that is no greater than the pre-development background sound level and achieves the BS4142 outcome of “a low impact depending on the context”.

5.0 CONCLUSIONS IN CONTEXT...

The context of the site is that of a semi-rural area with some other industrial units nearby and agricultural activities in the wider area. There are also pedestrians and vehicles frequently moving around with an additional presence of existing plant noise from neighbouring doctors' surgery and industrial units.

It is thought that the proposed plant will be similar in context to the neighbouring units and the proposed location is not sensitive to the inclusion of new building services plant.

The proposed units are commercial/industrial in nature and the fixed plant servicing them would operate in a continuous manner, much like the road traffic noise and other existing plant currently affecting the area.

We are of the opinion that the new sources would not be noticeable as out of character with the ambient sounds in this area and no adjustment to the targets in the standard are necessary.

6.0 EFFECTS OF UNCERTAINTY...

Where available we have included uncertainty in our calculations.

We have assessed the uncertainty associated with the measurement of the background sound level based on the measurement tolerance of a Class 1 sound level meter which conforms with IEC61672-1:2002. The largest calculated uncertainty based on the frequency spectrum of the measured background level is ± 1 dB(A).

The survey of the *Background Sound Level* has been undertaken in full accordance with BS7445 and ANC Green Book Guidance using laboratory calibrated measurement equipment. These precautions will minimise sources of uncertainty in the survey data. The current site conditions exhibit a low variability in the ambient and background sound levels and our data is considered to be a good representation of the site.

There are other sources of uncertainty in our assessment, such as, tolerances to be applied to manufacturers data, the variation in *Background Sound Level* on a different day, and the calculation tolerances for the propagation model.

The ISO propagation model used is stated to give results that are “on average correct” although tolerances are given for individual octave bands. We therefore expect uncertainty to have only a small influence on the outcome.

The assessment is based on a worst-case scenario with all equipment operating in the closest location to the receptor.

We do not expect the effects of uncertainty to have a significant effect on the outcome of our assessment.

7.0 ASSESSMENT CONCLUSION...

We have undertaken an assessment of the proposed new fixed building plant against the methodology set out in BS4142:2014 and to assess compliance with the relevant guidance, i.e. local planning policy and national policy.

Prior to the detailed design and equipment selection we have assessed the situation in reverse and set a maximum sound level for the proposed equipment which can be expected to achieve the Local Authority requirements at the nearest neighbours.

It is likely that the proposed mechanical plant will be of a low impact during the day and night period.

I trust you find this assessment provides suitable information for consideration by the local planning authority. Please don't hesitate to contact me if I can be of further assistance.

Yours sincerely,
For Red Twin Limited



Dr Ashley Punter BEng EngD MSc MRTPI MIOA
Acoustic Consultant

APPENDIX A – SURVEY DETAILS...

Address: Seven Sisters Industrial Units, Neath Port Talbot, SA10 9EY

Date: 11th – 12th April 2024

Measurement Location

Location 1 The monitoring equipment was set up 140 m to the South of the proposed site at a location considered representative of the proposed building location and nearest noise sensitive receivers. The microphone was pole mounted at 2 m above local ground level and in free-field conditions as indicated in Figure 1.

Equipment (Blue)

Brüel & Kjær 2250 hand held analyser, serial No 265348, with a Brüel & Kjær Type 4189 Microphone, serial No 2676519. The microphone was fitted with a UA-1650 windshield. The hand-held analyser and microphone were laboratory calibrated on 16th June 2022 (Certificate No. U41288) and the calibrator was laboratory calibrated on 16th June 2022 (Certificate No. U41287). The hand-held analyser sensitivity was checked before and after the measurements using the calibrator and a drift of 0.03 dB was observed, which is not significant and no adjustments to the measurements have been made to the data.

Personnel

The survey was set up and managed by Dr Ashley Punter of Red Twin Limited.

Weather

The weather was suitable for noise measurement with overcast conditions. There was precipitation at the start of the survey period but remained dry for the majority of the survey and the wet conditions are excluded accordingly. Wind speeds were moderately low c. 5 m s⁻¹ and were suitable for noise surveying.

Conditions were acceptable for noise measurement work and in full accordance with BS7445.

Survey Comments

The background and ambient sound at site are dominated by existing industrial noise, other fixed plant in the area, passing pedestrians and vehicular traffic.

Location	Start Time	Duration	Parameter dB(A)		
			LAeq	LA1	LA90
Day 1					
1	14:15:14	00:44:36	56	65	48
	15:00:00	01:00:00	54	62	46
	16:00:00	01:00:00	53	62	47
	17:00:00	01:00:00	52	61	47
	18:00:00	01:00:00	52	61	45
	19:00:00	01:00:00	48	57	43
	20:00:00	01:00:00	46	56	43
	21:00:00	01:00:00	45	53	43
22:00:00	01:00:00	45	53	43	
Day 2					
1	07:00:00	01:00:00	57	65	50
	08:00:00	01:00:00	55	63	50
	09:00:00	01:00:00	53	60	49
	10:00:00	01:00:00	54	63	49

	11:00:00	01:00:00	53	61	50
	12:00:00	00:30:00	52	61	50

TABLE 5: MEASURED NOISE DATA – LOCATION 1 (FREE-FIELD) DAY TIME

The data in red has been excluded from the assessment on the basis that the local weather conditions were unsuitable for survey inclusion.

Location	Start Time	Duration	Parameter dB(A)		
			LAeq	LA1	LA90
1	23:00:00	00:15:00	45	52	43
	23:15:00	00:15:00	47	56	43
	23:30:00	00:15:00	47	57	43
	23:45:00	00:15:00	47	56	43
	00:00:00	00:15:00	45	54	43
	00:15:00	00:15:00	43	48	42
	00:30:00	00:15:00	43	47	42
	00:45:00	00:15:00	44	50	42
	01:00:00	00:15:00	45	54	42
	01:15:00	00:15:00	45	53	42
	01:30:00	00:15:00	45	55	42
	01:45:00	00:15:00	50	62	41
	02:00:00	00:15:00	54	67	41
	02:15:00	00:15:00	50	63	41
	02:30:00	00:15:00	52	67	41
	02:45:00	00:15:00	50	63	41
	03:00:00	00:15:00	47	59	41
	03:15:00	00:15:00	50	63	41
	03:30:00	00:15:00	49	61	41
	03:45:00	00:15:00	46	55	41
	04:00:00	00:15:00	46	56	41
	04:15:00	00:15:00	48	57	42
	04:30:00	00:15:00	53	66	43
	04:45:00	00:15:00	51	58	46
	05:00:00	00:15:00	50	58	44
	05:15:00	00:15:00	47	55	43
	05:30:00	00:15:00	48	56	44
	05:45:00	00:15:00	52	57	48
	06:00:00	00:15:00	53	60	48
	06:15:00	00:15:00	52	61	48
	06:30:00	00:15:00	53	64	48
	06:45:00	00:15:00	53	59	50

TABLE 6: MEASURED NOISE DATA – LOCATION 1 (FREE-FIELD) NIGHT-TIME



FIGURE 1: PHOTOGRAPH OF SURVEY MEASUREMENT LOCATION NO 1

APPENDIX B – SITE LOCATION PLAN...



FIGURE 2: AERIAL VIEW OF THE SITE SHOWING KEY LOCATIONS (NOT TO SCALE)

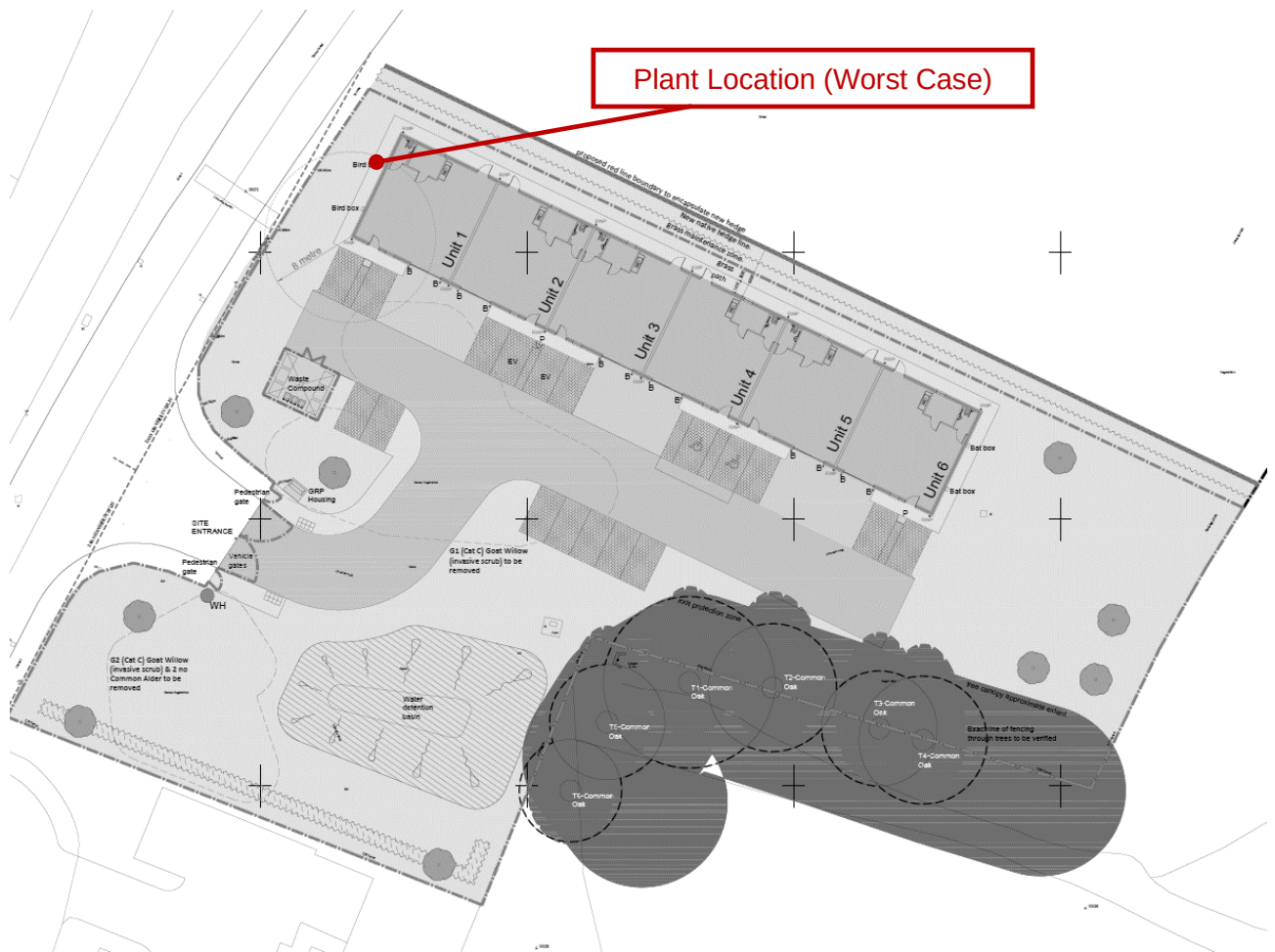


FIGURE 3: BLOCK PLAN (NOT TO SCALE)