

KR07992

Merthyr Tydfil Convenience Store

Noise Impact Assessment...

Standard: British Standard 4142: 2014

Site: Merthyr Tydfil Convenience Store

Address: Alexandra Avenue

Merthyr Tydfil

Wales

Postcode: CF47 9AF

Customer: MJD Commercial Ltd

Address: 7 Gelliwastad Road

Pontypridd

Wales

Postcode: CF37 2BP

Issue: Version 1.1

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KR Associates (UK) Ltd

Quietly confident...

Revisions...

KR07992		Project	Merthyr Tydfil Convenience Store		
		Title	Assessment of proposed refrigeration equipment for new convenience store		
		Standard	British Standard 4142: 2014 + A1: 2019		
Issue	Date	Details of Revision			
v1_1	18/06/2026	Description	Report issue for submission to Local Authority		
		Signature			
		Name	Mr. R. Scrivener	Miss N Truman	Mr R Scrivener
		Position	Technical Director	Project Manager	Technical Director

Disclaimer...

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KR Associates...

KR Associates (UK) Ltd (Company No. 04813349) registered office at 56 Bassett Green Road, Southampton. SO16 3DX.

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1. Executive Summary....

1.1. Instruction

KR Associates (UK) Ltd have been instructed to undertake an environmental noise survey at the proposed convenience store located at Alexandra Avenue in Merthyr Tydfil, Wales. The report will determine if the proposed plant associated with the new convenience store will have a significant adverse impact in terms of noise on the local noise sensitive properties.

1.2. Executive Summary (Repeated at Section 6)

1.2.1 Assessment Position

The rear of the residential dwelling at 31 Briarmead is located between 31 m and 35 m from the dedicated plant area at the side of the site facing the social club.

1.2.2 Background Noise Measurements

Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Nighttime (23:00 – 07:00)		
L _{Amax,1h}	L _{Aeq,1h}	L _{A90,1h}	L _{Amax,1h}	L _{Aeq,1h}	L _{A90,1h}	L _{Amax,15m}	L _{Aeq,15m}	L _{A90,15m}
64 - 93 dB	58 - 71 dB	53 - 60 dB	62 - 79 dB	52 - 61 dB	41 - 56 dB	42 - 76 dB	37 - 59 dB	36 - 54 dB
Minimum Background		53 dB	Minimum Background		41 dB	Minimum Background		36 dB

1.2.3 Criterion at Assessment Position

To comply with The Welsh Government Planning Policy Wales (PPW) Edition 12 and the guidance within the Local Plan, the resultant noise levels at the nearest residential dwellings are below the minimum background noise levels when assessed in accordance with British Standard 4142: 2014 + A1: 2019.

1.2.4 Mitigation Measures

The packaged refrigeration unit and the two standard AC heat pumps have been selected to meet the Local Authority requirements.

1.2.5 Assessment of Noise Levels

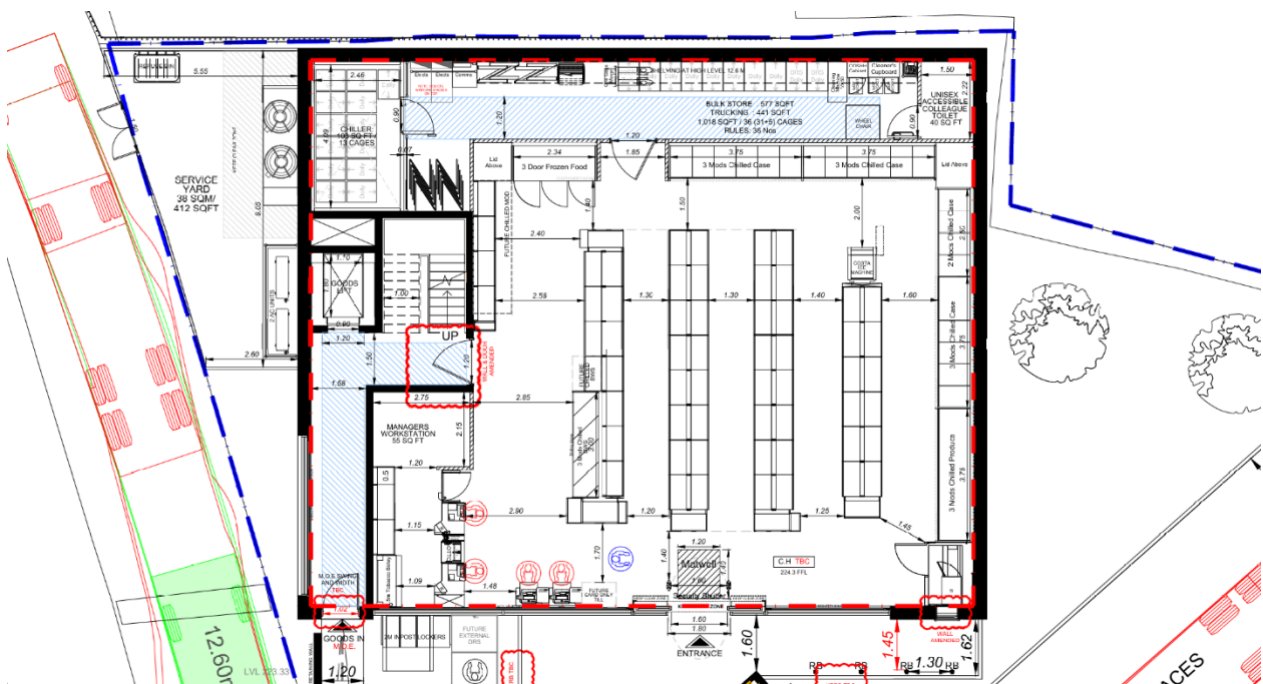
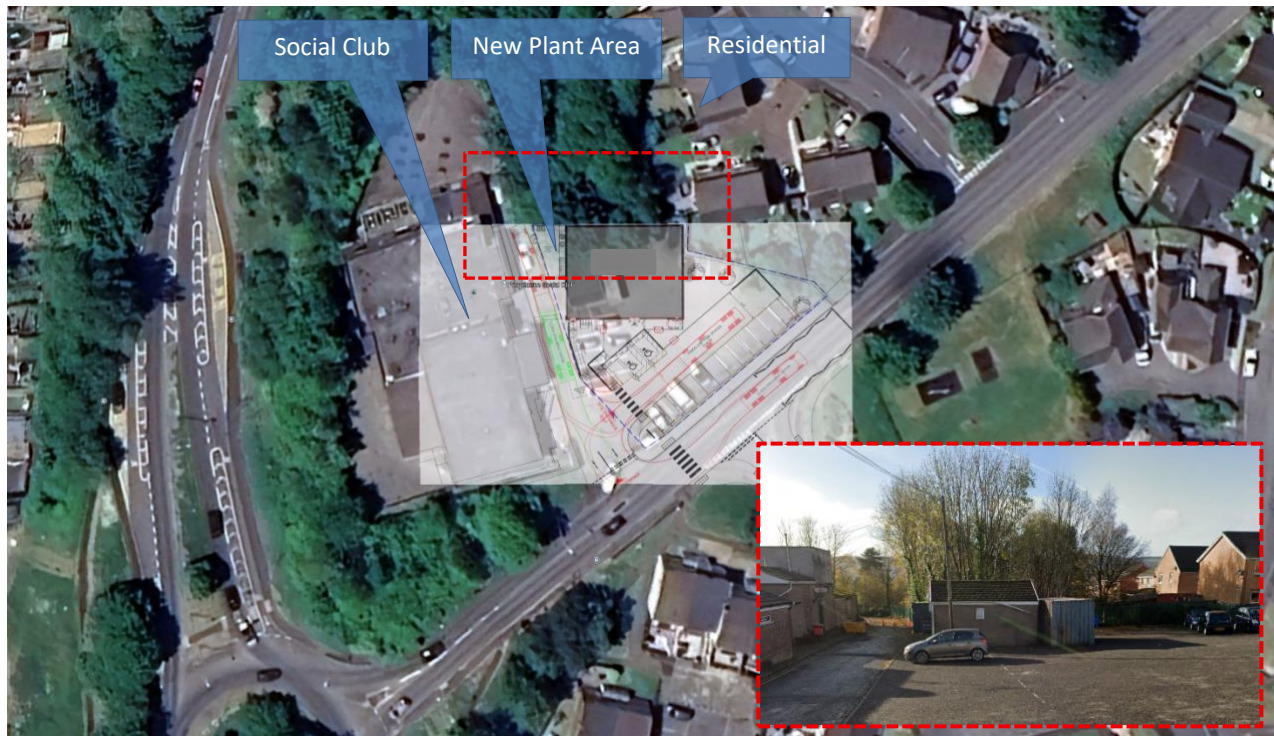
Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Nighttime (23:00 – 07:00)		
L _{Aeq,1h}	L _{A90,1h}	BS4142	L _{Aeq,1h}	L _{A90,1h}	BS4142	L _{Aeq,1h}	L _{A90,1h}	BS4142
35 dB	53 dB	-18 dB	35 dB	41 dB	-6 dB	17 dB	36 dB	-19 dB

1.2.6 Conclusions

The resultant noise levels from the proposed mechanical equipment will result in noise levels that comply in full with the Local Plan and are at levels that are very unlikely to give rise to complaints from residents.

2. Site Location...

2.1. General Location of Site



Site Plan (Imagery © Google 2026)

It is proposed to construct a convenience store within the car park of the existing social club. The dedicated plant area at the side of the store will be located around 31 to 35m from the rear of the residential dwelling at 31 Briarmead.

2.2. Key Positions (Source, Assessment & Background)



Position	Description	Latitude	Longitude	Elevation
Sources	Dedicated plant area at the side of the convenience store facing the social club.	51.753882 ⁰	-3.371844 ⁰	2 m
Assessment	Rear of the residential dwelling at 31 Briarmead.	51.753965 ⁰	-3.372262 ⁰	6 m
Background	Within the corner of the social club car park.	51.753693 ⁰	-3.372029 ⁰	4 m

2.3. Locations and Distances of Individual Source Positions

Position	Relative Distance	Latitude	Longitude	Elevation
Source 1	31 m to assessment position	51.753882 ⁰	-3.371844 ⁰	2 m
Source 2	33 m to assessment position	51.753898 ⁰	-3.371795 ⁰	2 m
Source 3	35 m to assessment position	51.753904 ⁰	-3.371776 ⁰	2 m

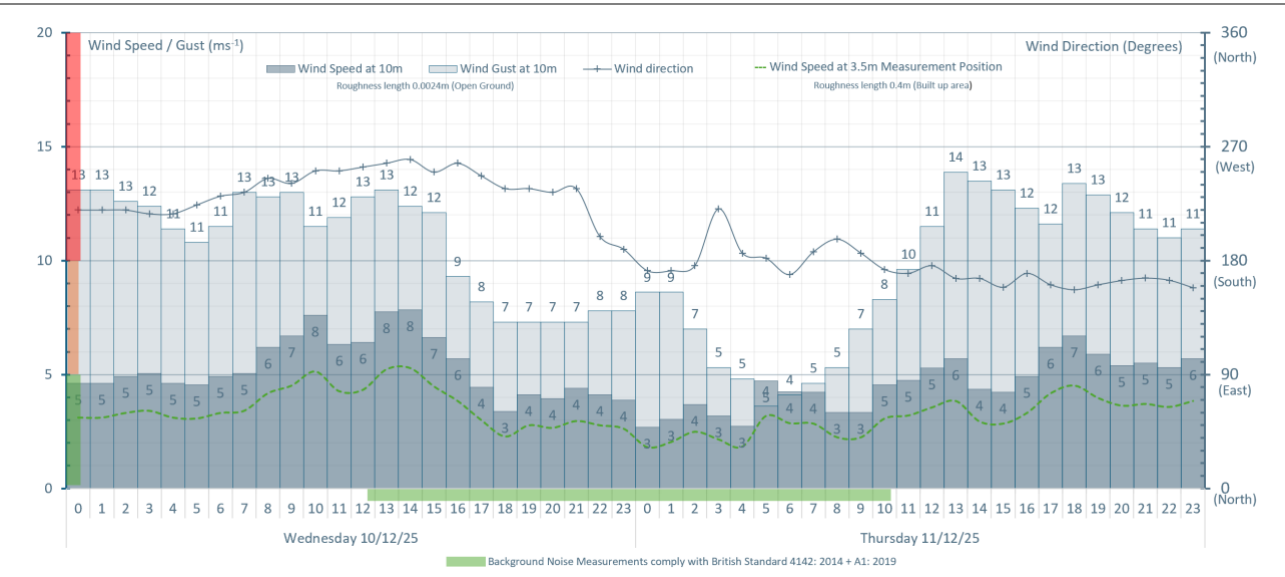
2.4. Free Field Source Sound Pressure Levels at 10m

Source	Description of Source	Sound Pressure at 10m – Annex C 13487: 2003		
		07:00 – 19:00	19:00 – 23:00	23:00 – 07:00
Source 1	Remote Packaged Refrigeration Unit	L _{p(10)} 40 dB	L _{p(10)} 40 dB	L _{p(10)} 30 dB
Source 2	Standard AC Heat Pump	L _{p(10)} 45 dB	L _{p(10)} 45 dB	Not Operating
Source 3	Standard AC Heat Pump	L _{p(10)} 45 dB	L _{p(10)} 45 dB	

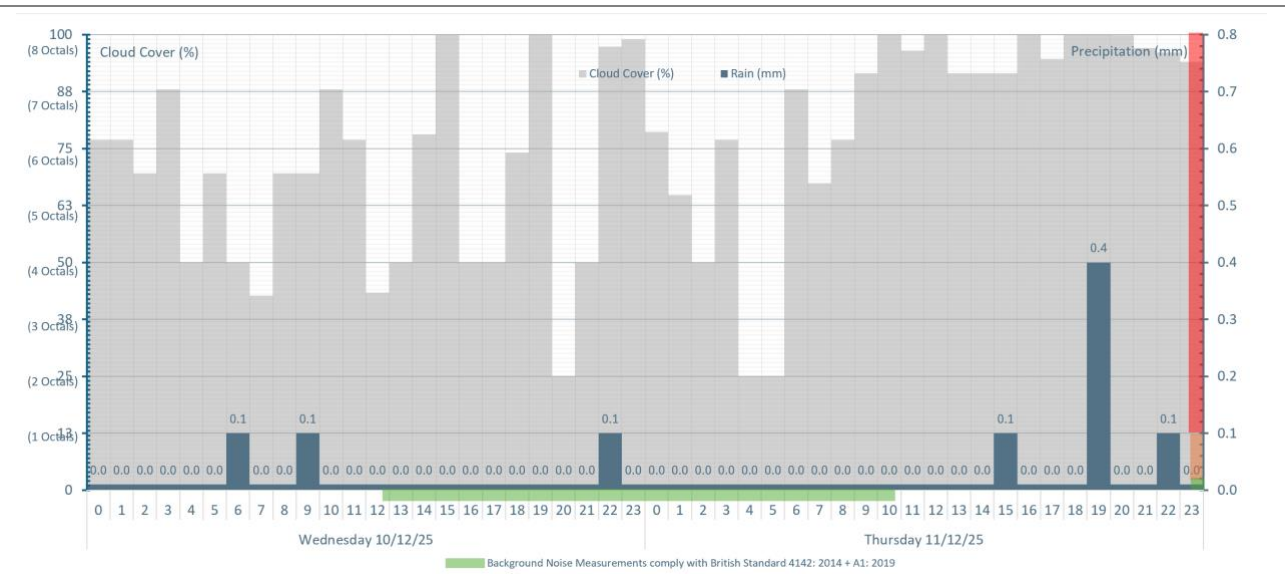
3. Background Noise Levels...

3.1. Weather During Survey

3.1.1 Wind Speed, Gust and Direction



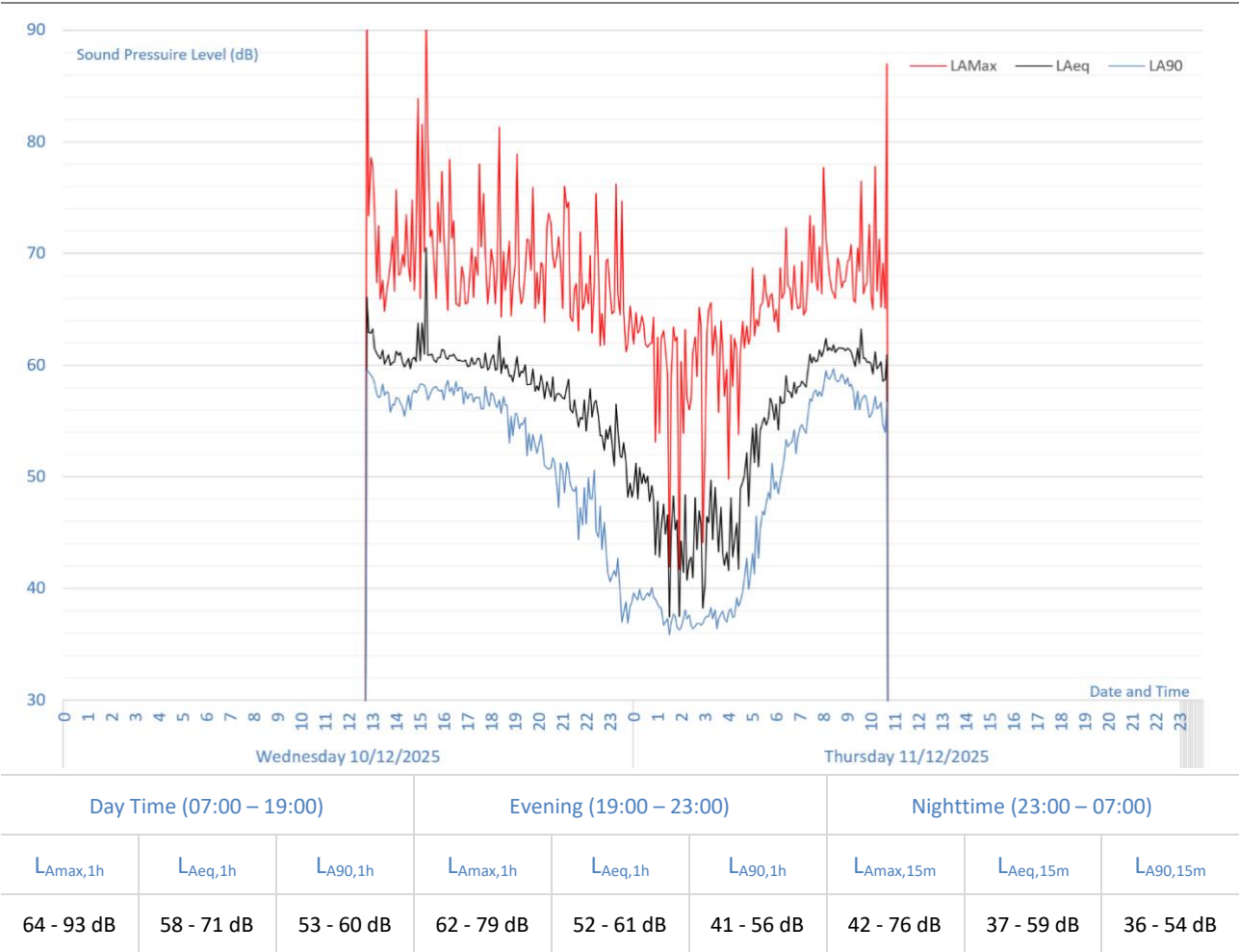
3.1.2 Rainfall, Temperature and Dew Point



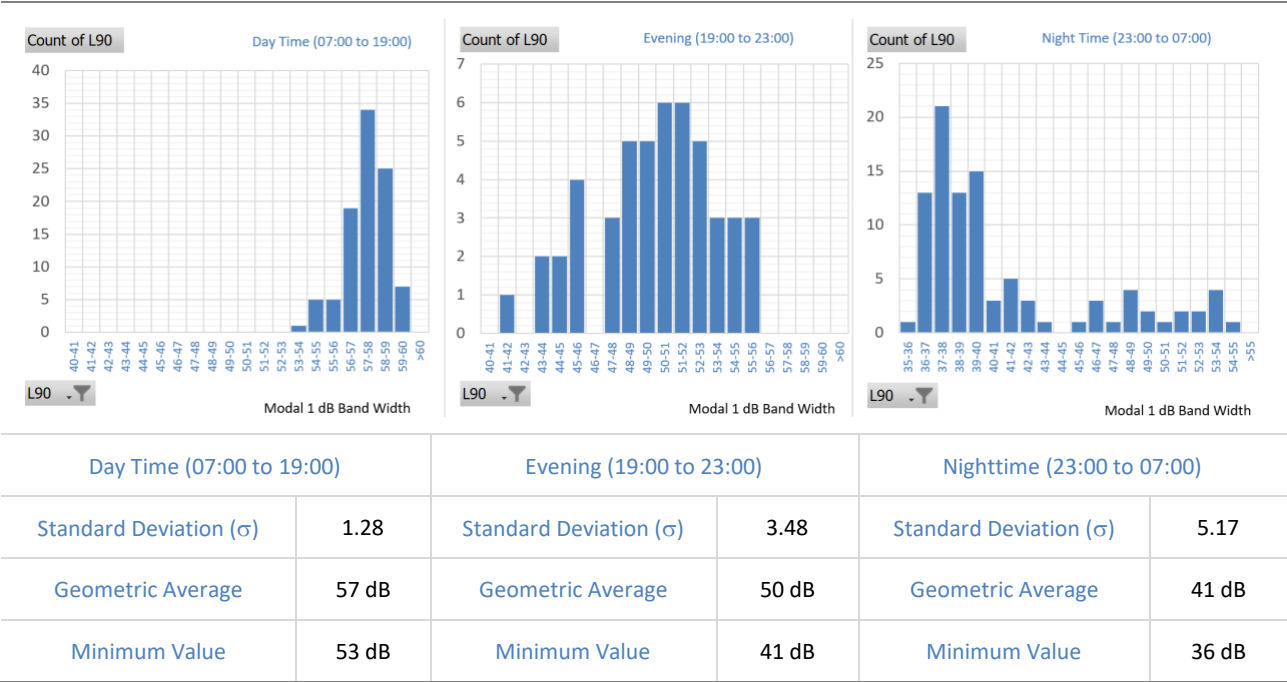
3.1.3 Impact of Weather

An analysis of the background data recorded on site indicates that the prevailing weather did not adversely impact the results.

3.2. 24-hour Background Measurements



3.3. Modal Analysis of Background Data



4. Criterion...

4.1. Planning Policy Wales (PPW) Edition 12

The Welsh Government Planning Policy Wales (PPW) Edition 12 was fully adopted in February 2024 including chapter 6 entitled *‘Distinctive and Natural Places.’* Paragraph 6.7.11 relates to understanding and identifying sources of air and noise pollution.

“Understanding and Identifying the Sources of Airborne (Air and Noise) Pollution

Air and noise pollution are often, but not exclusively, emitted from the same sources, notably road transport, commercial and industrial activities. Consequently, areas of poor air quality often coincide or overlap with areas subject to high noise levels. Even where they do not, poor air quality at one location and high levels of noise at a neighbouring location may be related to one another, depending on the characteristics of the place in question, including the way in which people use and occupy places and the way in which traffic is managed in the wider area. Where air and noise pollution are generated from the same source they should be considered and addressed together and links should be made with active travel and other strategies for reducing vehicular use so as to reduce or minimise, pollution and to ensure an appropriate soundscape.”

Paragraph 6.7.14 relates to the design of new development and the prevention of adverse effects to amenity.

*“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.
”*

Paragraph 6.7.15 discusses the location of commercial and industrial development.

“Location of Commercial, Industrial, and other Potentially Polluting Development

For the purposes of this section, potentially polluting development includes commercial, industrial, energy and agricultural or transport infrastructure. Such development should be located in areas where there is low potential for public exposure, or where its impact can be minimised. Novel or new development types may potentially cause pollution and should be carefully considered, and where appropriate, decisions should be based on the precautionary principle. “

4.2. Technical Advice Note (Wales) 11, Noise

The Welsh Government published a document entitled *“Technical Advice Note (Wales) 11, Noise”* in October 1997.

Paragraph 3 advises that the intention of TAN11 is how the planning system can be used to *‘minimise the adverse impact of noise without placing unreasonable restrictions on development...’*

Reference should be made to paragraph 8 entitled *“Noise generating development.”*

“ 8. Local planning authorities must ensure that noise generating development does not cause an unacceptable degree of disturbance. They should also bear in mind that if subsequent intensification or change of use results in greater intrusion, consideration should be given to the use of appropriate conditions.”

Annex B of TAN 11 specifies that the assessment of potential noise disturbance from industrial and commercial developments should be undertaken in accordance with BS4142:1990 (superseded by 2014+A1:2019).

4.3. British Standard 4142: 2014 + A1: 2019

4.3.1 Testing Standard...

British Standard 4142: 2014 + A1: 2019 provides a method for assessing the likely effects of sound from industrial or commercial nature on *“people who might be inside or outside a dwelling used for residential purposes.”*

4.3.2 Criterion

The standard provides 3-levels of impact based on the calculated Rating Levels:

“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 +5dB 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.”

4.3.3 Feature Correction

It is appropriate to add a character correction where there is a new source that cannot be measured in line with British Standard 4142: 2014 + A1: 2019. The 3 methods for approaching this are the subjective, objective, and reference methods. In this report the subjective method is used.

Section 9.2 Subjective Method	Perceptibility to noise sensitive façades	Correction
Tonality Ranging from not tonal to prominently tonal	Not tonal	+0
	Just perceptible	+2
	Clearly perceptible	+4
	Highly perceptible	+6
Impulsivity Considering both the rapidity and any overall change in sound levels	Not impulsive	+0
	Just impulsive	+3
	Clearly impulsive	+6
	Highly impulsive	+9
Readily Distinctive Characteristic is neither tonal nor impulsive	Is not present	+0
	Is present	+3
Intermittency Identifiable “on/off” conditions	Is not present	+0
	Is present	+3

4.3.4 Feature Correction

It is appropriate to add a character correction where there is a new source that cannot be measured in line with British Standard 4142: 2014 + A1: 2019. The 3 methods for approaching this are the subjective, objective, and reference methods. In this report the subjective method is used.

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Tonality Ranging from not tonal to prominently tonal	Not tonal	+0
	Just perceptible	+2
	Clearly perceptible	+4
	Highly perceptible	+6
Impulsivity Considering both the rapidity and any overall change in sound levels	Not impulsive	+0
	Just impulsive	+3
	Clearly impulsive	+6
	Highly impulsive	+9
Readily Distinctive Characteristic is neither tonal nor impulsive	Is not present	+0
	Is present	+3
Intermittency Identifiable “on/off” conditions	Is not present	+0
	Is present	+3

4.4. Local Authority Requirements

4.4.1 Local Plan

The Merthyr Tydfil County Borough Council Replacement Local Plan was fully adopted in January 2020 including Policy EnW4 entitled *“Environmental Protection.”*

“Development proposals will be required to demonstrate they will not result in an unacceptable impact on people, residential amenity, property and / or the natural environment from either:...

- *Noise, vibration, dust, odour nuisance and light pollution; or*
- *Any other identified risk to public health and safety.*

Where impacts are identified the Council will require applicants to demonstrate that appropriate measures have been incorporated to reduce, or minimise the impact identified to the lowest possible acceptable level.

Planning conditions may be imposed or legal obligation entered into, to secure any necessary mitigation and monitoring processes...”

4.4.2 Proposed Criterion

It would be recommended that the proposed noise emissions are below the minimum 15-minute background noise level at the nearest noise sensitive property.

5. Calculations of Noise Levels...

5.1. ISO 9613 – Part 2:1996

The International Standards Organisation (“ISO”) published ISO 9613 – Part 2: 1996 entitled “*Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculations*” details the corrections that are required to establish the resultant noise levels of the existing and proposed plant at the assessment position.

5.1.1 Source Directivity (D_c)

A correction is made to account for the location of the source and the effect of additional reflective surfaces excluding the ground and is contained within section 6 of ISO 9613 - Part 2: 1996.

Number of Surfaces	Correction in dB (D_c)
1 Reflective Surface	+3 dB
2 Reflective Surfaces	+6 dB
3 Reflective Surfaces	+9 dB

5.1.2 Geometric Divergence (A_{div})

A correction is made for the distance between the source and assessment position using the following formula defined in section 7.1 of ISO 9613-Part 2: 1996.

Formula	Symbols
$A_{div} = 20 \cdot \log_{10} (d/d_0) + 11$	A_{div} = Reduction due to Geometric Divergence (dB) d = Distance from source to receiver (m) d_0 = reference distance (1m)

5.1.3 Ground Absorption (A_{gr})

A correction is made for the effect of the ground between the source and receiver depending on whether it is considered hard or soft ground.

Type of ground	Correction in dB (A_{gr})
Hard Ground	+ 3 dB
Soft Ground	+ 0 dB

5.1.4 Atmospheric Absorption (A_{atm})

As the source was less than 100m from the receiver position (assessment position) no correction was made for atmospheric absorption.

5.1.5 Barrier Effect (A_{bar})

A correction is made for any barrier in the direct line of sight between the source and the assessment position and is detailed in section 7.4 of ISO 9613-Part 2: 1996. For clarity, the K_{met} meteorological correction has been ignored and C_2 equals 40 and C_3 equals 1.

Formula	Symbols
$A_{bar} = 10 \cdot \log_{10} [3 + (40 \cdot \delta / \lambda) - A_g]$ *Note 1 where $\delta = a + b - r$ and $\lambda = c / f$	A_{bar} = Effective barrier attenuation (dB) A_g = Total Ground Absorption (dB) *Note 1: Only apply the A_g correction if $A_g > 0$ δ = Path difference (m) a = Distance from source to barrier head (m) b = Distance from barrier head to assessment position (m) r = Distance from source to assessment position (m) λ = Wavelength of sound (m) c = Speed of sound – Assumed to be 342 ms ⁻¹ f = Octave band centre frequency (Hz)

5.2. Calculation of Plant Noise Levels

5.2.1 Day Time (07:00 to 23:00)

Day Time (07:00 to 19:00)		Source	ISO 9613 – Part 2: 1996 Corrections					Assessment
Ref	Description	L_w	D_c	A_{div}	A_g	A_{atm}	A_{bar}	L_p
1	Remote Packaged Refrigeration Unit	68 dB	+6 dB	-41 dB	+3 dB	-0 dB	-9 dB	27 dB
2	Standard AC Heat Pump	73 dB	+6 dB	-42 dB	+3 dB	-0 dB	-9 dB	32 dB
3	Standard AC Heat Pump	73 dB	+6 dB	-42 dB	+3 dB	-0 dB	-9 dB	31 dB

5.2.2 Nighttime (23:00 to 07:00)

Nighttime (23:00 to 07:00)		Source	ISO 9613 – Part 2: 1996 Corrections					Assessment
Ref	Description	L_w	D_c	A_{div}	A_g	A_{atm}	A_{bar}	L_p
1	Remote Packaged Refrigeration Unit	58 dB	+6 dB	-41 dB	+3 dB	-0 dB	-9 dB	17 dB

5.3. Assessment of Average Noise Levels (BS 4142: 2014 + A1: 2019)

BS 4142: 2014	Day Time - 07:00 to 19:00	Evening – 19:00 to 23:00	Nighttime – 23:00 to 07:00
Specific Noise Levels	$L_{Aeq,1\text{ hour}}$ 35 dB	$L_{Aeq,1\text{ hour}}$ 35 dB	$L_{Aeq, 15\text{ minutes}}$ 17 dB
Impulsivity Feature	+0 dB	+0 dB	+0 dB
Tonality Feature	+0 dB	+0 dB	+0 dB
Rating Noise Levels	$L_{Aeq,1\text{ hour}}$ 35 dB	$L_{Aeq,1\text{ hour}}$ 35 dB	$L_{Aeq, 15\text{ minutes}}$ 17 dB
Background Noise Levels	$L_{A90,1\text{ hour}}$ 53 dB	$L_{A90,1\text{ hour}}$ 41 dB	$L_{A90, 15\text{ minutes}}$ 36 dB
BS 4142 Assessment	-18 dB (Low Impact)	-6 dB (Low Impact)	-19 dB (Low Impact)

6. Conclusions...

6.1. Assessment Position

The rear of the residential dwelling at 31 Briarmead is located between 31 m and 35 m from the dedicated plant area at the side of the convenience store facing the social club.

6.2. Background Noise Measurements

Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Nighttime (23:00 – 07:00)		
L _{Amax,1h}	L _{Aeq,1h}	L _{A90,1h}	L _{Amax,1h}	L _{Aeq,1h}	L _{A90,1h}	L _{Amax,15m}	L _{Aeq,15m}	L _{A90,15m}
64 - 93 dB	58 - 71 dB	53 - 60 dB	62 - 79 dB	52 - 61 dB	41 - 56 dB	42 - 76 dB	37 - 59 dB	36 - 54 dB
Minimum Background		53 dB	Minimum Background		41 dB	Minimum Background		36 dB

6.3. Criterion at Assessment Position

To comply with The Welsh Government Planning Policy Wales (PPW) Edition 12 and the guidance within the Local Plan, the resultant noise levels at the nearest residential dwellings are below the minimum background noise levels when assessed in accordance with British Standard 4142: 2014 + A1: 2019.

6.4. Mitigation Measures

The packaged refrigeration unit and the two standard AC heat pumps have been selected to meet the Local Authority requirements.

6.5. Assessment of Noise Levels

Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Nighttime (23:00 – 07:00)		
L _{Aeq,1h}	L _{A90,1h}	BS4142	L _{Aeq,1h}	L _{A90,1h}	BS4142	L _{Aeq,1h}	L _{A90,1h}	BS4142
35 dB	53 dB	-18 dB	35 dB	41 dB	-6 dB	17 dB	36 dB	-19 dB

6.6. Conclusions

The resultant noise levels from the proposed mechanical equipment will result in noise levels that comply in full with the Local Plan and are at levels that are very unlikely to give rise to complaints from residents.

6.7. Uncertainty

Day Time (07:00 – 19:00)	Evening (19:00 – 23:00)	Nighttime (23:00 – 07:00)
+1.73 dB (k=2, 95% Confidence)	+1.95 dB (k=2, 95% Confidence)	+2.12 dB (k=2, 95% Confidence)

7. Appendix A - BS 4142:2014 + A1: 2019 Information to Be Reported...

7.1. a) Competency

	Name	Role	Competency
1)	Mr. R. Scrivener	Director	Master of Science Degree in Acoustics and Noise Control (MSc) Member of the Institute of Acoustics (MIOA)

7.2. b) Source Under Investigation

	Source Number	Description		
1)	Source 1	Remote Packaged Refrigeration Unit		
	Source 2 and 3	Standard AC Heat Pump		
	Source Number	Source Location	Hours of Operation	Mode of Operation
	Source 1	Dedicated plant area at the side of the convenience store facing the social club	24-hour	Continuously on Demand
	Source 2 and 3		07:00 - 23:00	
2)	Description of Operation	Period	Conditions	Load
3)	All Sources	Day Time (07:00 to 19:00)	Ambient Temp 32°C	Maximum Load (100%)
4)		Evening (19:00 to 23:00)	Ambient Temp 28°C	Part Load (60%)
5)		Nighttime (23:00 to 07:00)	Ambient Temp 24°C	Part Load (40%)
	Description of Premises	It is proposed to construct a convenience store within the car park of the existing social club. The dedicated plant area at the side of the store will be located around 31 to 35m from the rear of the residential dwelling at 31 Briarmead.		

7.3. c) Subjective Impression of Source at Assessment Position

1)	Dominance	Source will not be dominant at residential facade
	Audibility	Source will not be audible at residential facade
2)	Residual Noise Sources	Residual noise due to local road traffic

7.4. d) Existing Contexts

	Type of Receptor	Period	Sensitivity	Description
1)	Residential	Day Time (07:00 to 19:00)	Low	Noise can disturb outside amenity space and internal living space
		Evening (19:00 to 23:00)	Moderate	Noise can interrupt people trying to get to sleep
		Nighttime (23:00 to 07:00)	High	Noise can disturb sleeping

7.5. e) Relative Positions

1)	Assessment Position	Rear of the residential dwelling at 31 Briarmead		
		BS 4142:2014 Criteria	Details	Compliance with Criteria
		Section 6	1.0m from façade (external)	Position is valid
2)	Source Measurement	The source sound power levels were supplied by the client. It is believed the sound power levels were established in accordance with BS EN 13487:2003.		
	Justification	The client supplied the noise levels for the proposed plant.		
3)	Background Position	Within the corner of the social club car park		
	Justification	BS 4142:2014 Criteria	Details	Compliance with Criteria
		Section 6.2	3.5m to any reflecting surface	Complies
		Section 6.2	Height 1.2m to 1.5m	Complies
		Section 6.2	1 st floor 1m to facade	Not applicable
		Section 6.2	Measurement Height	3.5m
			Distance to Reflecting Surface	1.0m
		To record remote background levels, the noise meter had to be left in a secure position. The position represented the assessment position within the constraints of the site.		
4)	Topography, surfaces etc.	Hard and Flat		
5)	Relative Distances	The plant is located approximately 30.7 m to 34.6 m from the assessment position.		
6)	Dimensioned sketch	See maps and images.		

7.6. f) Noise Measurement Equipment Calibration

1)	Type	Sound Level Meter	Microphone	Calibrator
		KRE/05/01	KRE/05/02	KRE/05/04
2)	Manufacturer	Casella CEL 63X	Casella CEL 251	Casella CEL 120/1
3)	Serial Number	4734887	00671	5231047
4)	Certificate Number	Certificate: C00558	Certificate: C00558	Certificate: C00543
	Calibration Due Date	16/03/2027	16/03/2027	05/01/2026

7.7. g) Noise Measurement Equipment Operation Test

1)	Ref. Level of Calibrator	94 dB
2)	Meter Reading Before	94 dB – Meter operation checked. Meter in good working order.
	Meter Reading After	94 dB - Meter operation checked. Meter in good working order.

7.8. h) Weather Conditions

1)	Wind Speed	See weather information
	Wind Direction	
2)	Temperature Inversion	Unlikely to have occurred
3)	Precipitation	None – See section 3.1
4)	Fog	None
5)	Wet Ground	Not within the measurement period – See section 3.1
6)	Frozen Ground or Snow	Not within the measurement period – See section 3.1
7)	Temperature	See section 3.1
8)	Cloud Cover	Partly Cloudy

7.9. i) Date of Measurements

1)	Source Measurements	Unknown
	Background Measurements	10/12/2025

7.10. j) Measurement Time Interval

1)	Source Measurements	$T_m = 15$ minutes	
	Background Measurements	Day Time (07:00 to 19:00)	$T_m = 12$ hours
		Evening (19:00 to 23:00)	$T_m = 4$ hours
		Nighttime (23:00 to 07:00)	$T_m = 8$ hours

7.11. k) Reference Time Interval

1)	Reference Time Interval	Day Time (07:00 to 19:00)	$T_r = 1$ hour
		Evening (19:00 to 23:00)	$T_r = 1$ hour
		Nighttime (23:00 to 07:00)	$T_r = 15$ minutes

7.12. l) Specific Noise / m) Background Noise / n) Rating / o) Assessment / p) Conclusions

These details are all included within the body of the report and are not replicated within this section.

END OF REPORT (1st and last page not numbered)

KR Associates (UK) Ltd

Quietly **confident...**



Southampton: 02380 55 04 55