KR07135

Chorley Express

Noise Impact Assessment…

Standard: British Standard 4142: 2014

Site: Chorley Express

Address: Station Road
332 Eaves Lane
Chorley
Manchester

Postcode: PR6 0DX

Customer: Tesco Stores Ltd

Address: Shire Park
Kestral Way
Welwyn Garden City
Hertfordshire

Postcode: AL7 1GA

Issue: Version 1.0

Date: 14th August 2022

Status: Current Document

KR Associates (UK) Ltd

Quietly confident…

Revisions…

KR07135		Project	Chorley Express		
		Title	Noise Impact Assessment - Proposed Plant for new Tesco Express		
		Standard	British Standard 4142: 2014 + A1: 2019		
Issue	Date	Details of Revision			
v1_0	14/08/2022	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 by Tesco Stores Ltd to undertake an environmental noise survey at the former social club and bowling green located at 332 Eaves Lane in Chorley, Manchester to determine if the installation of the proposed plant 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 residential dwelling at 14 Smithills Close is located between 8 m and 11 m from the dedicated plant at the rear of the store with a direct line of site from the front of the property at 1st floor level.

1.2.2 Background Noise Measurements

Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Night Time (23:00 – 07:00)		
$L_{Amax,1h}$	$L_{Aeq,1h}$	$L_{A90,1h}$	$L_{Amax,1h}$	$L_{Aeq,1h}$	$L_{A90,1h}$	$L_{Amax,15m}$	$L_{Aeq,15m}$	$L_{A90,15m}$
66 - 100 dB	52 - 78 dB	43 - 74 dB	65 - 94 dB	52 - 66 dB	46 - 52 dB	56 - 83 dB	47 - 63 dB	36 - 56 dB
Minimum Background		46 dB	Minimum Background		45 dB	Minimum Background		36 dB

1.2.3 Criterion at Assessment Position

To comply with the revised version of the National Planning Policy Framework (“NPPF”) and the guidance within the Local Plan, the resultant noise levels at the nearest residential dwellings are at least 10 dB below the underlying background noise levels when assessed in accordance with British Standard 4142: 2014 + A1: 2019.

1.2.4 Mitigation Measures

No specific mitigation measures will be required as the plant has been selected to ensure compliance with the Local Authority criterion.

1.2.5 Assessment of Noise Levels

Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Night Time (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
36 dB	46 dB	-10 dB	35 dB	45 dB	-10 dB	26 dB	36 dB	-10 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.

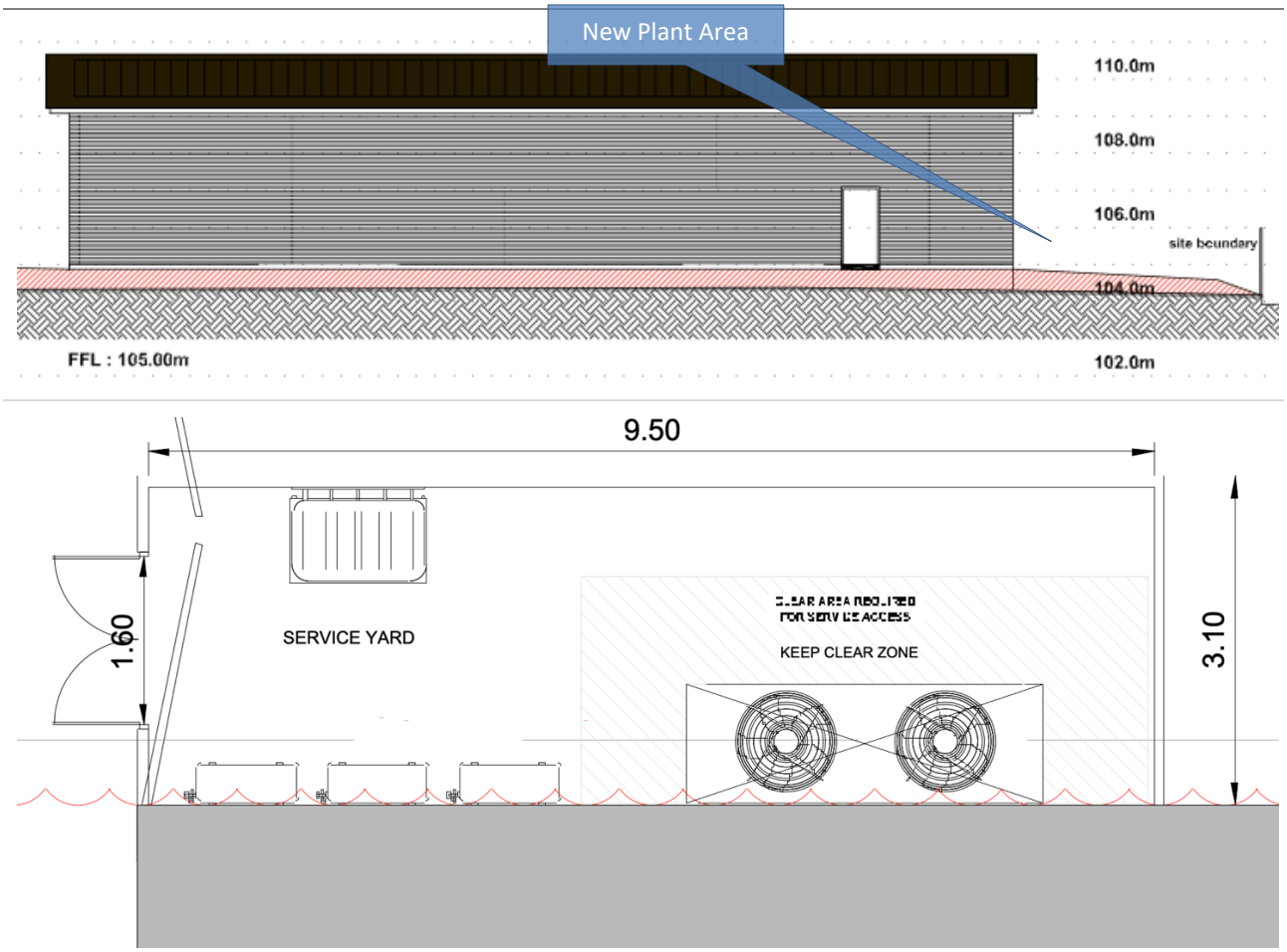
2. Site Location…

2.1. General Location of Site

Site Plan (Imagery © Google 2022)

It is proposed to demolish the existing social club and build a new Tesco Express on the former bowling green with a car park at the front of the site. The proposed CO2 gas cooler and low noise Daikin heat pumps will be located at the rear of the site within a dedicated plant area.

2.2. Key Positions (Source, Assessment & Background)



Position	Description	Latitude	Longitude	Elevation
Sources	Dedicated plant at the rear of the store	53.660898^0	-2.617329^0	1 m
Assessment	Residential dwelling at 14 Smithills Close	53.660962^0	-2.617208^0	2 m
Background	At the side of the site	54.777670^0	-1.646853^0	1 m

2.3. Locations and Distances of Individual Source Positions

Position	Relative Distance	Latitude	Longitude	Elevation
Source 1	11 m to assessment position	53.660898^0	-2.617329^0	1 m
Source 2	9 m to assessment position	53.660931^0	-2.617329^0	1 m
Source 3	8 m to assessment position	53.660942^0	-2.617327^0	1 m
Source 4	8 m to assessment position	53.660954^0	-2.617326^0	1 m

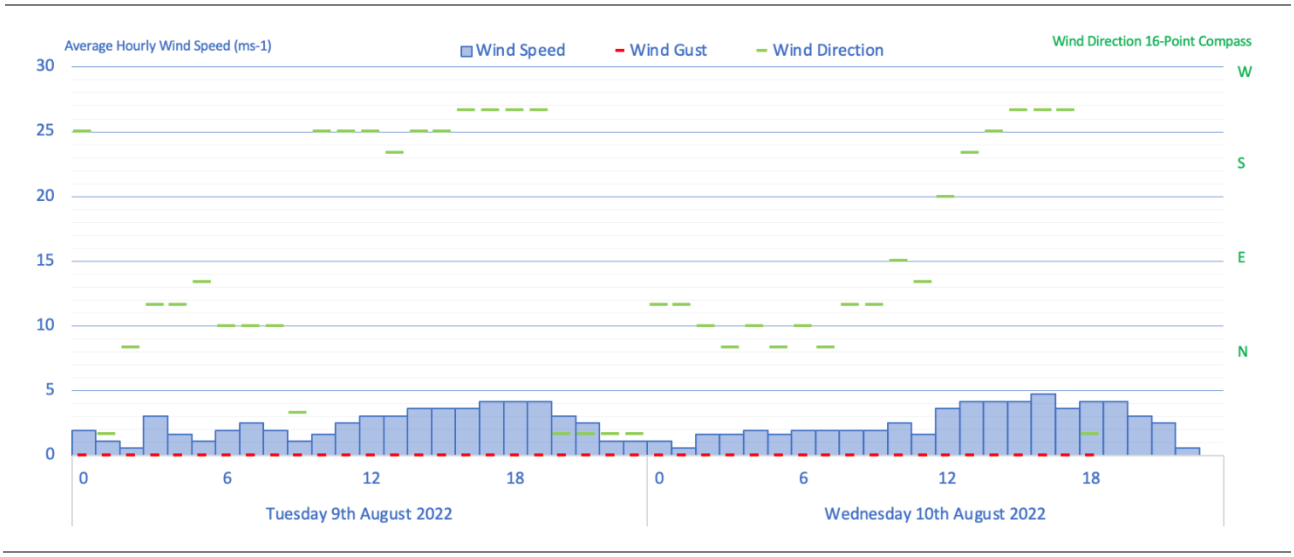
2.4. Free Field Source Sound Pressure Levels at 10m

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	Ultra Low Noise Gas Cooler	$L_{p(10)}$ 30 dB	$L_{p(10)}$ 28 dB	$L_{p(10)}$ 24 dB
Source 2	Daikin AZAS AC Heat Pump	$L_{p(10)}$ 25 dB	$L_{p(10)}$ 25 dB	Not Operating
Source 3	Daikin AZAS AC Heat Pump	$L_{p(10)}$ 25 dB	$L_{p(10)}$ 25 dB	
Source 4	Daikin AZAS AC Heat Pump	$L_{p(10)}$ 25 dB	$L_{p(10)}$ 25 dB	

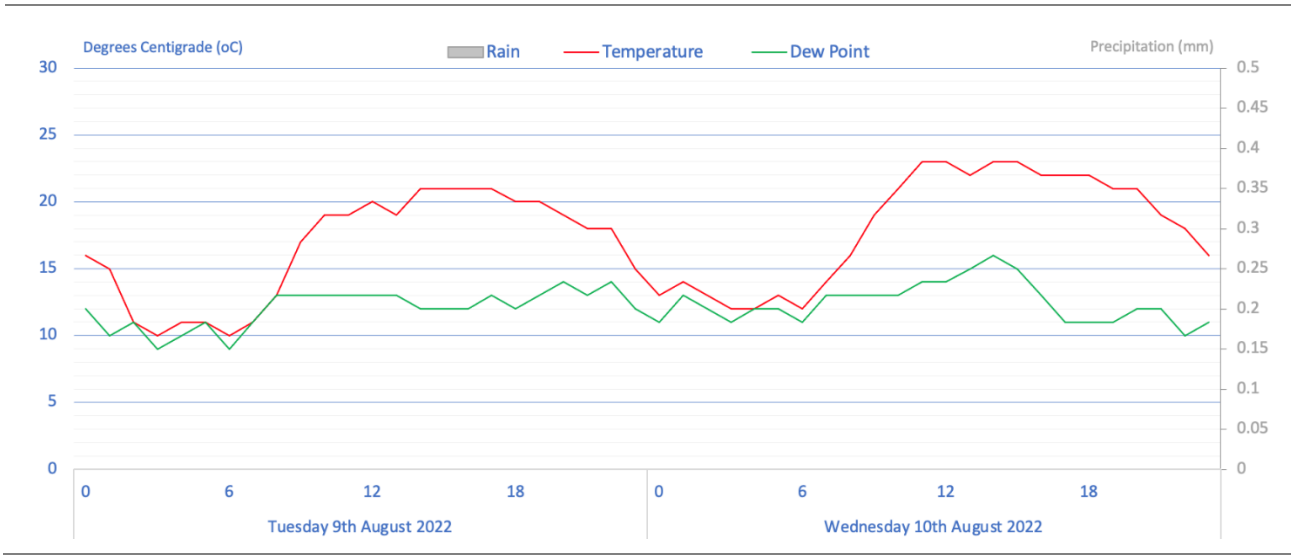
3. Background Noise Levels…

3.1. Weather During Survey

3.1.1 Wind Speed, Gust and Direction



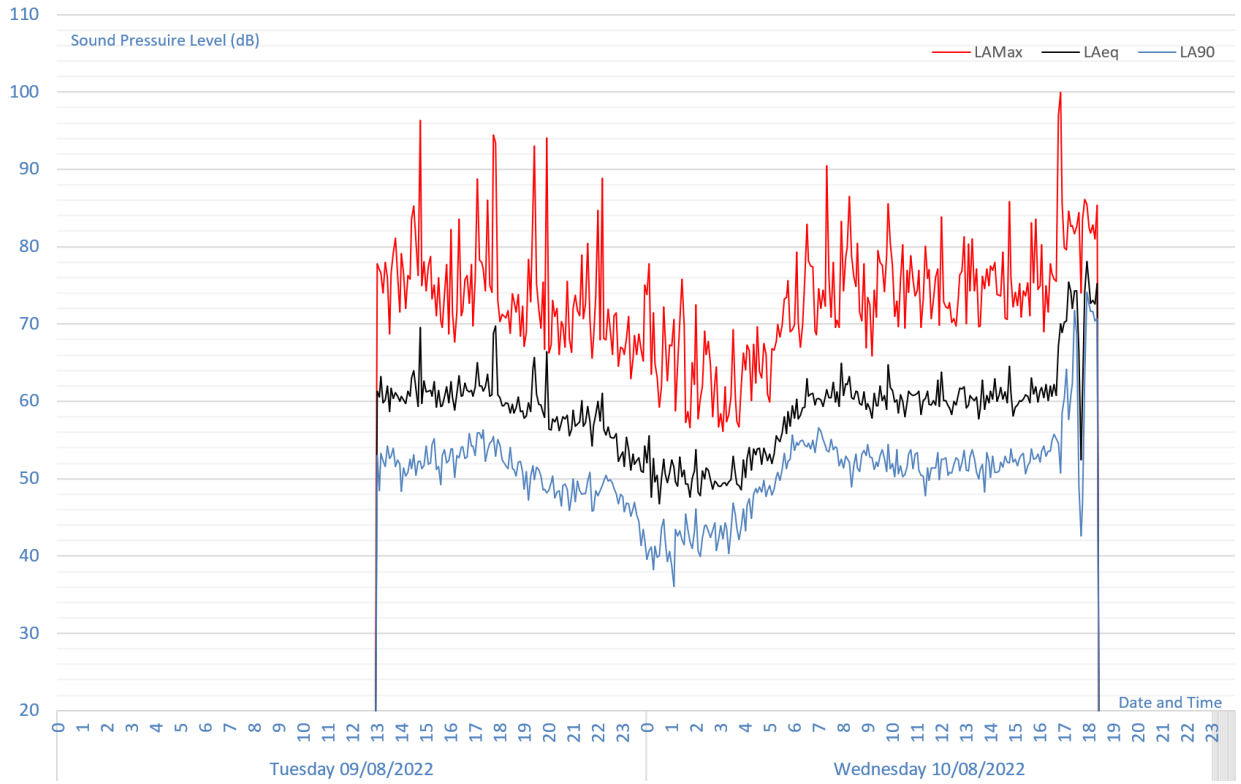
3.1.2 Rainfall, Temperature and Dew Point



3.1.3 Impact of Weather

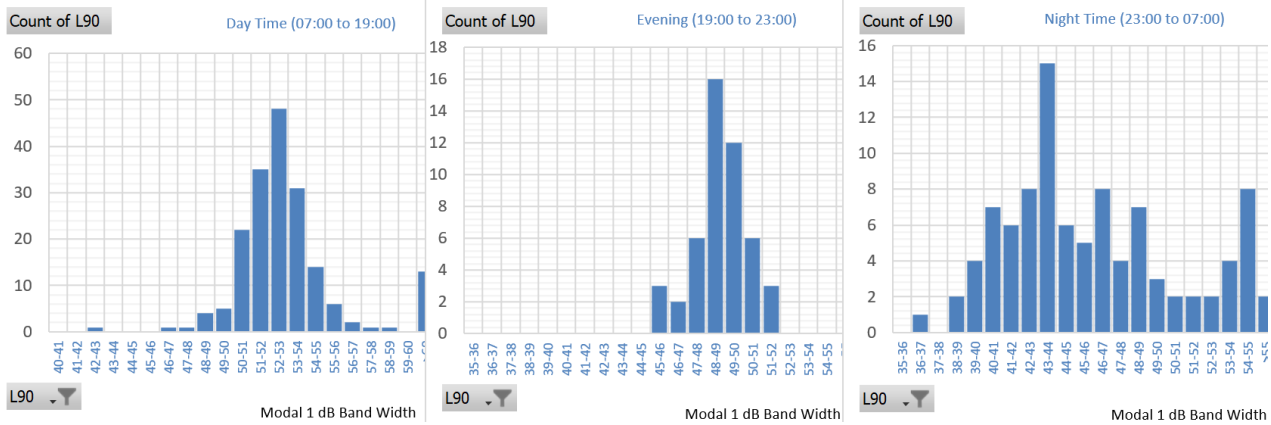
An analysis of the background data recorded on site indicates that the prevailing weather did not adversely impact the results. The wind speed was on average below 5.0ms^{-1} and there was no precipitation during the survey period.

3.2. 24-hour Background Measurements



Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Night Time (23:00 – 07:00)		
$L_{Amax,1h}$	$L_{Aeq,1h}$	$L_{A90,1h}$	$L_{Amax,1h}$	$L_{Aeq,1h}$	$L_{A90,1h}$	$L_{Amax,15m}$	$L_{Aeq,15m}$	$L_{A90,15m}$
66 - 100 dB	52 - 78 dB	43 - 74 dB	65 - 94 dB	52 - 66 dB	46 - 52 dB	56 - 83 dB	47 - 63 dB	36 - 56 dB

3.3. Modal Analysis of Background Data



Day Time (07:00 to 19:00)		Evening (19:00 to 23:00)		Night Time (23:00 to 07:00)	
Standard Deviation (σ)	4.32	Standard Deviation (σ)	1.42	Standard Deviation (σ)	4.78
Geometric Average	53 dB	Geometric Average	49 dB	Geometric Average	46 dB
Modal Value	46 dB	Modal Value	45 dB	Modal Value	36 dB

4. Criterion…

4.1. National Planning Policy Framework 2021

4.1.1 Scope of Standard

The revised National Planning Policy Framework published in 2021 provides an assumption in favour of sustainable development that meets the three overarching objectives: economic, social, and environmental. Paragraph 11 provides guidance for decision makers:

> *"For decision-taking this means:…*
> *c) approving development proposals that accord with an up-to-date development plan without delay; or*
> *d) …granting permission unless…*
> *i) the application of policies in this Framework… provides a clear reason for refusing development proposed; or*
> *ii) any adverse impacts of doing so would significantly and demonstrably outweigh the benefits….''*

4.1.2 Conserving and Enhancing the Natural Environment

Paragraph 174 of the NPPF provides the following guidance on noise:

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of …noise pollution…"*

4.1.3 Appropriate Development

Paragraph 185 of the NPPF requires the development to be appropriate for its location:

> *"Planning… decisions should also ensure that new development is appropriate for its location…*
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development - and avoid noise giving rise to significant adverse impacts on health and the quality of life; [65]*
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value…*
>
> *65 See Explanatory Note to the Noise Policy Statement for England: 2010"*

4.2. Noise Policy Statement for England: 2010

4.2.1 Scope of Standard

The Noise Policy Statement for England published in 2010 defines three aims:

> *"**Avoid** significant adverse impact on health and the quality of life.*
> ***Mitigate** and minimise adverse impacts on health and quality of life; and*
> ***Contribute** to the improvement of health and the quality of life."*

4.2.2 Criterion

The NPSE defines significant adverse and adverse impact in terms of noise:

> *"**LOAEL** – Lowest Observed Adverse Effect Level*
>
> *This is the level above which adverse effects on health and quality of life can be detected.*
>
> ***SOAEL** – Significant Observed Adverse Effect Level*
>
> *This is the level above which significant adverse effects on health and quality of life occur."*

4.3. Night Noise Guidelines ("NNG")

The European Union and the World Health Organisation published the document *"Night Noise Guidelines for Europe"* in 2009.

4.3.1 Recommendation for Health Protection

> *"Below the level of 30 dB $L_{night,\ outside}$ no effects on sleep are observed except for a slight increase in the frequency of body movements during sleep due to night noise.*
>
> *…. 40 dB $L_{night,\ outside}$ is equivalent to the lowest observed adverse effect level (LOAEL) for night noise.*
>
> *Above 55 dB the cardiovascular effects become the major public health concern."*

For reference the $L_{night,\ outside}$ is the average outside noise level calculated over an 8-hour period (EU: 2002/49/EC).

4.3.2 Description of Effect of Change in Noise Level

Noise Level Change (dB)	Subjective Response	Significance
0.1 – 2.9	Barely perceptible	Minor Impact
3.0 – 5.9	Noticeable	Moderate Impact
6.0 – 9.9	Up to a doubling of loudness	Substantial Impact
10.0 or more	More than a doubling of loudness	Major Impact

4.4. British Standard 4142: 2014 + A1: 2019

4.4.1 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."*

4.4.2 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."*

4.4.3 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

4.5. Local Authority Requirements

4.5.1 Local Plan

The Chorley Council Local Plan was fully adopted in July 2015 including Policy BNE1 entitled *"Design Criteria for New Development."*

> *"Planning permission will be granted for new development, including extensions, conversions and free standing structures, provided that, where relevant to the development:….*
>
> *g) The proposal would not cause an unacceptable degree of noise disturbance to surrounding land uses;''*

Reference made to Policy EP3 entitled *''Development Criteria for Business and Industrial Development.''*

> *''Proposals for new business, industrial and storage and distribution uses, including extensions to existing premises, will be permitted if they satisfy the following criteria:……*
>
> *d) the proposal will not cause unacceptable harm e.g. noise, smells to surrounding uses;*

4.5.2 Existing Planning Permission

A planning application was submitted to Chorley Council on 27th June 2022 under reference 22/00719/FUL for *''Erection of single storey building to accommodate a retail unit/convenience store (Use Class E(a)), associated car parking and creation of new access on to Eaves Lane (following demolition of the existing social club building)''* and the decision is pending.

4.5.3 Proposed Criterion

It would be recommended that the proposed plant noise emissions are 10 dB below the underlying 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"* which 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
$A_{div} = 20 . Log_{10} (d/d_0) +11$	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
$A_{bar} = 10 . Log_{10} [3 + (40 . \delta / \lambda) - A_g]$ *Note 1 where $\delta = a + b - r$ and $\lambda = c / f$	A_{bar} = Effective barrier attenuation (dB) A_{gr} = Total Ground Absorption (dB) *Note 1: Only apply the A_{gr} correction if $A_{gr} > 0$ 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 19:00)

Day Time (07:00 to 19:00)		Source	ISO 9613 – Part 2: 1996 Corrections					Assessment
Ref	Description	L_w	D_c	A_{div}	A_{gr}	A_{atm}	A_{bar}	Lp
1	Ultra Low Noise Gas Cooler	58 dB	+3 dB	-32 dB	+3 dB	-0 dB	0 dB	32 dB
2	Daikin AZAS AC Heat Pump	53 dB	+3 dB	-30 dB	+3 dB	-0 dB	0 dB	29 dB
3	Daikin AZAS AC Heat Pump	53 dB	+3 dB	-29 dB	+3 dB	-0 dB	0 dB	30 dB
4	Daikin AZAS AC Heat Pump	53 dB	+3 dB	-29 dB	+3 dB	-0 dB	-9 dB	21 dB

5.2.2 Evening (19:00 to 23:00)

Evening (19:00 to 23:00)		Source	ISO 9613 – Part 2: 1996 Corrections					Assessment
Ref	Description	L_w	D_c	A_{div}	A_{gr}	A_{atm}	A_{bar}	Lp
1	Ultra Low Noise Gas Cooler	56 dB	+3 dB	-32 dB	+3 dB	-0 dB	0 dB	30 dB
2	Daikin AZAS AC Heat Pump	53 dB	+3 dB	-30 dB	+3 dB	-0 dB	0 dB	29 dB
3	Daikin AZAS AC Heat Pump	53 dB	+3 dB	-29 dB	+3 dB	-0 dB	0 dB	30 dB
4	Daikin AZAS AC Heat Pump	53 dB	+3 dB	-29 dB	+3 dB	-0 dB	-9 dB	21 dB

5.2.3 Night Time (23:00 to 07:00)

Night Time (23:00 to 07:00)		Source	ISO 9613 – Part 2: 1996 Corrections					Assessment
Ref	Description	L_w	D_c	A_{div}	A_{gr}	A_{atm}	A_{bar}	Lp
1	Ultra Low Noise Gas Cooler	52 dB	+3 dB	-32 dB	+3 dB	-0 dB	0 dB	26 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	Night Time – 23:00 to 07:00
Residual Noise Levels	$L_{Aeq,1\ hours}$ 62 dB	$L_{Aeq,1\ hours}$ 58 dB	$L_{Aeq,15\ minutes}$ 53 dB
Specific Noise Levels	$L_{Aeq,1\ hours}$ 36 dB	$L_{Aeq,1\ hours}$ 35 dB	$L_{Aeq,\ 15\ minutes}$ 26 dB
Impulsivity Feature	+0 dB	+0 dB	+0 dB
Tonality Feature	+0 dB	+0 dB	+0 dB
Rating Noise Levels	$L_{Aeq,1\ hours}$ 36 dB	$L_{Aeq,1\ hours}$ 35 dB	$L_{Aeq,\ 15\ minutes}$ 26 dB
Background Noise Levels	$L_{A90,1\ hours}$ 46 dB	$L_{A90,1\ hours}$ 45 dB	$L_{A90,\ 15\ minutes}$ 36 dB
BS 4142 Assessment	-10 dB (Low Impact)	-10 dB (Low Impact)	-10 dB (Low Impact)
NPPF – Paragraph 125	-0 dB (Low Impact)	-0 dB (Low Impact)	-0 dB (Low Impact)
Uncertainty (95% Confidence, k=2)	+- 2.03 dB	+- 1.74 dB	+- 2.08 dB

6. Conclusions…

6.1. Assessment Position

The residential dwelling at 14 Smithills Close is located between 8 m and 11 m from the dedicated plant at the rear of the store with a direct line of site from the front of the property at 1st floor level.

6.2. Background Noise Measurements

Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Night Time (23:00 – 07:00)		
$L_{Amax,1h}$	$L_{Aeq,1h}$	$L_{A90,1h}$	$L_{Amax,1h}$	$L_{Aeq,1h}$	$L_{A90,1h}$	$L_{Amax,15m}$	$L_{Aeq,15m}$	$L_{A90,15m}$
66 - 100 dB	52 - 78 dB	43 - 74 dB	65 - 94 dB	52 - 66 dB	46 - 52 dB	56 - 83 dB	47 - 63 dB	36 - 56 dB
Minimum Background		46 dB	Minimum Background		45 dB	Minimum Background		36 dB

6.3. Criterion at Assessment Position

To comply with the revised version of the National Planning Policy Framework ("NPPF") and the guidance within the Local Plan, the resultant noise levels at the nearest residential dwellings are at least 10 dB below the underlying background noise levels when assessed in accordance with British Standard 4142: 2014 + A1: 2019.

6.4. Mitigation Measures

No specific mitigation measures will be required as the plant has been selected to ensure compliance with the Local Authority criterion.

6.5. Assessment of Noise Levels

Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Night Time (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
36 dB	46 dB	-10 dB	35 dB	45 dB	-10 dB	26 dB	36 dB	-10 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)	Night Time (23:00 – 07:00)
+-2.03 dB (k=2, 95% Confidence)	+-1.74 dB (k=2, 95% Confidence)	+-2.08 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	Ultra Low Noise Gas Cooler		
	Source 2	Daikin AZAS AC Heat Pump		
	Source 3	Daikin AZAS AC Heat Pump		
	Source 4	Daikin AZAS AC Heat Pump		
2)	Description of Source	Source Location	Hours of Operation	Mode of Operation
	Source 1	Dedicated plant at the rear of the store.	24-hour	Continuously on Demand
	Source 2		07:00 - 23:00	
	Source 3		07:00 - 23:00	
	Source 4		07:00 - 23:00	
3)	Description of Operation	Period	Conditions	Load
4)	All Sources	Day Time (07:00 to 19:00)	Ambient Temp 32°C	Maximum Load (100%)
		Evening (19:00 to 23:00)	Ambient Temp 28°C	Part Load (60%)
5)		Night Time (23:00 to 07:00)	Ambient Temp 24°C	Part Load (40%)
	Description of Premises	It is proposed to demolish the existing social club and build a new Tesco Express on the former bowling green with a car park at the front of the site. The proposed CO2 gas cooler and low noise Daikin heat pumps will be located at the rear of the site within a dedicated plant area.		

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
		Night Time (23:00 to 07:00)	High	Noise can disturb sleeping

7.5. e) Relative Positions

1)	Assessment Position	Residential dwelling at 14 Smithills Close.		
		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	At the side of the site.		
	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	1st 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 7.9 m to 10.8 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 - CEL 633.C1	KRE/05/01 - CEL 251	KRE/05 - CEL 120/1
2)	Manufacturer	Casella	Casella	Casella
3)	Serial Number	2145360	00709	5231047
4)	Certificate Number	Certificate: U36894	Certificate: U36894	Certificate: U40107
	Calibration Date=	27th January 2021	27th January 2021	4th February 2022

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	09/08/2022

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
		Night Time (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
		Night Time (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