



KR07461

Tesco Express at Bognor Regis

Noise Impact Assessment...

Standard: British Standard 4142: 2014

Site: Tesco Express

Address: 194 - 196 Pagham Road

Bognor Regis

West Sussex

Postcode: PO21 3QB

Customer: Tesco Stores Ltd

Address: Shire Park

Kestrel Way

Welwyn Garden City

Hertfordshire

Postcode: AL7 1GA

Issue: Version 1.3

Date: 9th December 2025

Status: Current Document

KR Associates (UK) Ltd

Quietly confident...

Revisions...

KR07461		Project	Bognor Regis		
		Title	Noise Impact Assessment - Proposed Replacement Plant		
		Standard	British Standard 4142: 2014 + A1: 2019		
Issue	Date	Details of Revision			
v1_3	09/12/25	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...

This report is strictly confidential and is designed to meet the requirements of the customer. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party. No Liability is accepted outside the scope of this report in strict accordance with the standard terms and conditions.

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 Tesco Express located at 194 - 196 Pagham Road in Bognor Regis. The report will determine if the installation of the replacement refrigeration unit will have a significant adverse impact in terms of noise on the local noise sensitive properties.

Arun District Council previously refused planning permission for a similar scheme under application reference P/48/24/PL on 3rd September 2024. The Local Authority had concerns over the original design and in particular the compressor pack and gas cooler associated with the refrigeration system.

The store has operated for a number of years and the re-fit is required to ensure it can operate after 2030 and comply with the F-Gas regulations. The scheme is replacing the existing refrigeration with a system running on a natural refrigerant R744 i.e. CO₂. This has a global warming potential of less than 1 and will ensure the store complies with the long term sustainability goals at the heart of the current National Planning Policy Framework 2024.

The revised scheme now includes an ultra-low noise gas cooler producing the equivalent of 22 dB(A) at 10m with an associated refrigeration pack installed within a full acoustic enclosure producing an equivalent of 20 dB(A) at 10m. These are the lowest noise levels that are achievable in this location using any commercially available refrigeration equipment and or acoustic mitigation measures.

Arun District Council have provided feedback on report KR07461 v1.2 dated July 2025. This version of the report has been updated with some minor typographical changes and additional clarifications. The original questions and the associated responses are included in Appendix B for reference.

1.2. Engineering Selection of AC Heat Pump

Since writing the original report in July 2025, Tesco Engineering reselected the three AC heat pumps changing the manufacturers from Daikin to Fujitsu. These units provide identical heating and cooling requirements and produce identical noise emissions. The following table shows the change in model numbers.

Source	Original Selection – KR07461 v1.2		Amend Selection – KR07461 v1.3	
	Manufacturer	Model	Manufacturer	Model
3	Daikin	FCAG140A (Night Mode)	Fujitsu	AEG54KBTB (Night Mode)
4		FCAG140A (Night Mode)		AEG54KBTB (Night Mode)
5		FCAG140A (Night Mode)		AOEH 12KMCG (Night Mode)

The above change has been updated throughout the report.

1.3. Executive Summary (Repeated at Section 6)

1.3.1 Assessment Position

The residential dwelling at the rear of 198a Pagham Road is located 19 m from the dedicated plant area on the rear wall of the store.

1.3.2 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}
65 - 87 dB	56 - 67 dB	44 - 56 dB	61 - 78 dB	46 - 59 dB	35 - 49 dB	42 - 81 dB	34 - 61 dB	31 - 48 dB
Minimum Background		44 dB	Minimum Background		35 dB	Minimum Background		31 dB

1.3.3 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 below the minimum background noise levels when assessed in accordance with British Standard 4142: 2014 + A1: 2019.

1.3.4 Mitigation Measures

The scheme has been designed with an ultra-low noise gas cooler and a refrigeration pack installed within an acoustic enclosure.

1.3.5 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
34 dB	44 dB	-10 dB	34 dB	35 dB	-5 dB	19 dB	31 dB	-12 dB

1.3.6 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

Date Produced: 30-May-2024

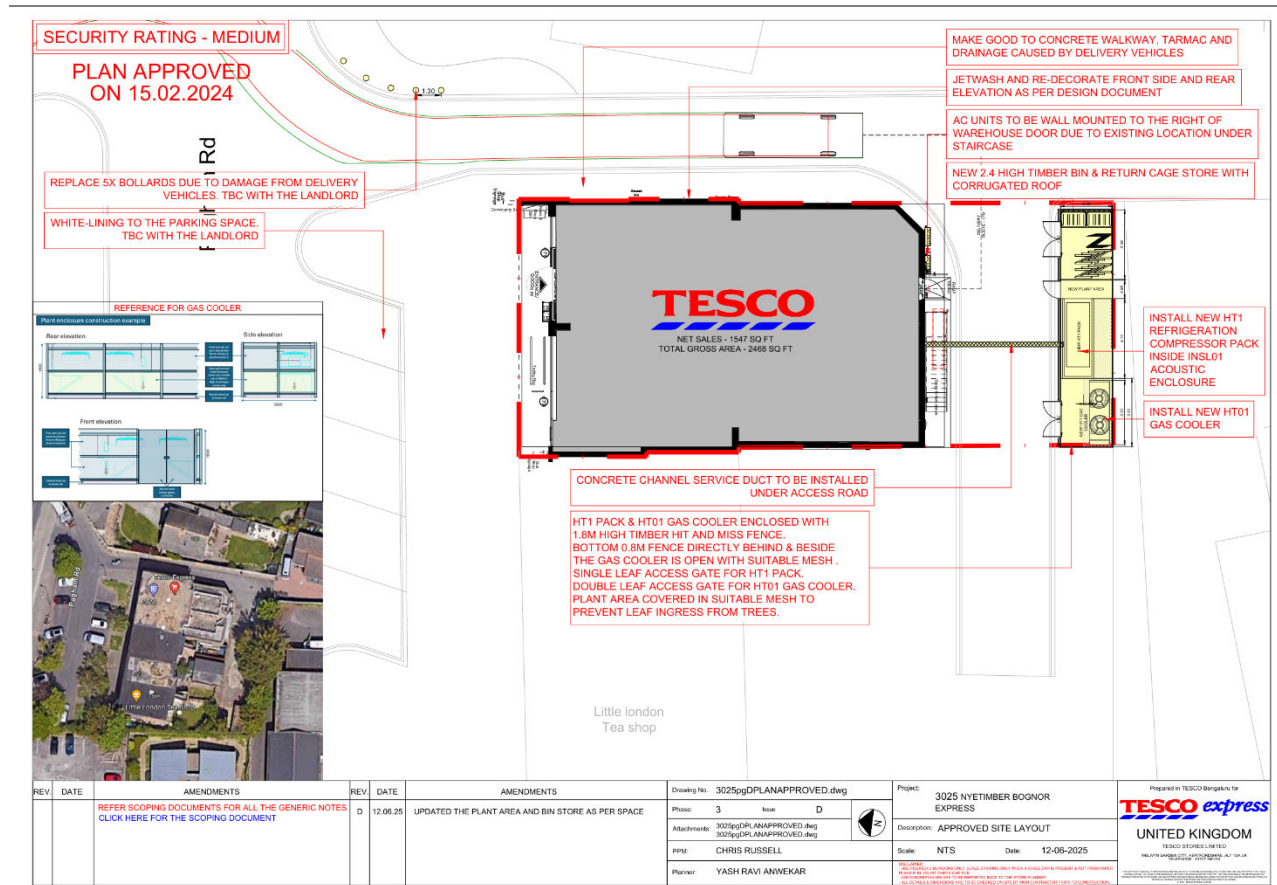
Scale: 1:1250 @A4



The Tesco Express is located within a small parade of shops set back from Pagham Road. There are residential dwellings over the front of the store with a large flat roof at the rear of the store.

2.2. Key Drawings

The following is a copy of drawing No 3025pgDPLANAPPROVED version D dated 12th June 2025 which has been submitted with the planning application. This shows the proposed layout of the site.

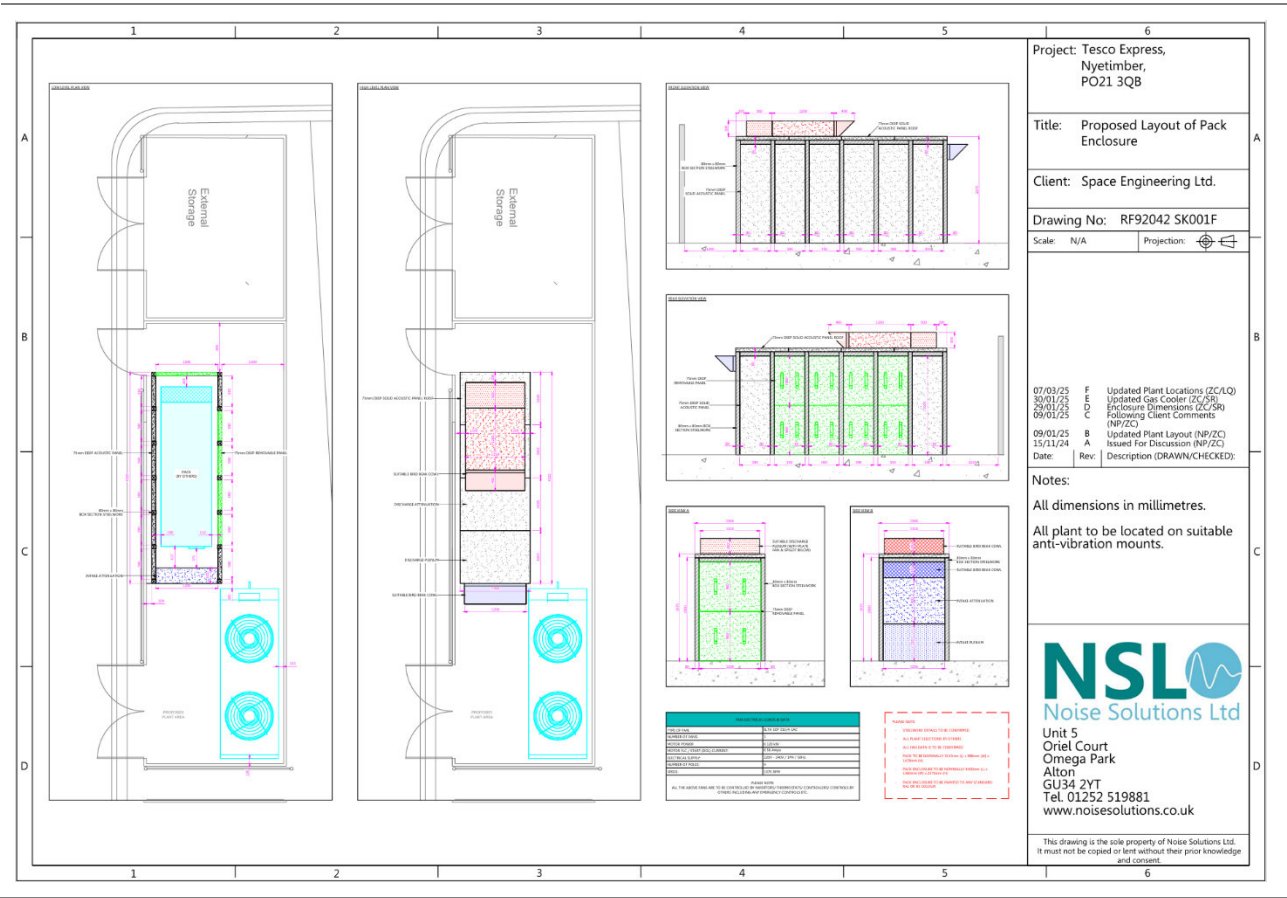


2.3. Sound Power Levels of the Source.

Source	Description of Source	Sound Power Levels		
		07:00 – 19:00	19:00 – 23:00	23:00 – 07:00
Source 1	Kelvion GF-MB102G3H-091R 2-Fan Gas Cooler Day 280 rpm 22 dB(A) at 10m Night 255 rpm 20 dB(A) at 10m	$L_{w(A)}$ 50 dB		$L_{w(A)}$ 48 dB
Source 2	Compressor Pack installed within NSL Acoustic Enclosure 20 dB(A) at 10m	$L_{w(A)}$ 48 dB		
Source 3	Fujitsu AEG54KBTB (Night Mode)	$L_{w(A)}$ 63 dB	Not Turned On	
Source 4	Fujitsu AEG54KBTB (Night Mode)	$L_{w(A)}$ 63 dB		
Source 5	Fujitsu AOEH 12KMCG (Night Mode)	$L_{w(A)}$ 65 dB		

2.4. Acoustic Enclosure around the Compressor Pack

The following is the drawing supplied by the acoustic contractor which shows the proposed full acoustic enclosure that will be installed around the compressor pack.



2.5. Locations and Distances of Individual Source Positions

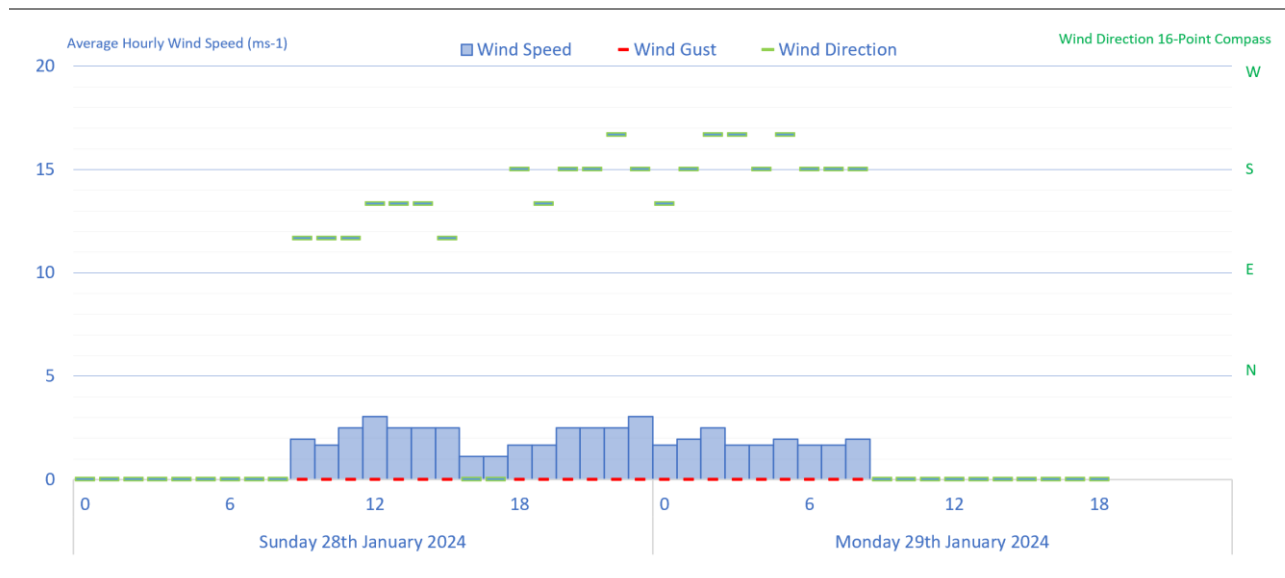


Position	Relative Distance	Latitude	Longitude	Elevation
Source 1	18.5 m to assessment position	50.780155°	-0.735424°	1.5 m
Source 2	15. 3 m to assessment position	50.780192°	-0.735429°	2.1 m
Source 3	17.6 m to assessment position	50.780236°	-0.735527°	0.5 m
Source 4	16.9 m to assessment position	50.780247°	-0.735525°	0.5 m
Source 5	17.7m to assessment position (above source 3)	50.780236°	-0.735527°	2.5 m
Assessment	Front Façade of 198A Pagham Road	50.780304°	-0.735302°	1.5 m

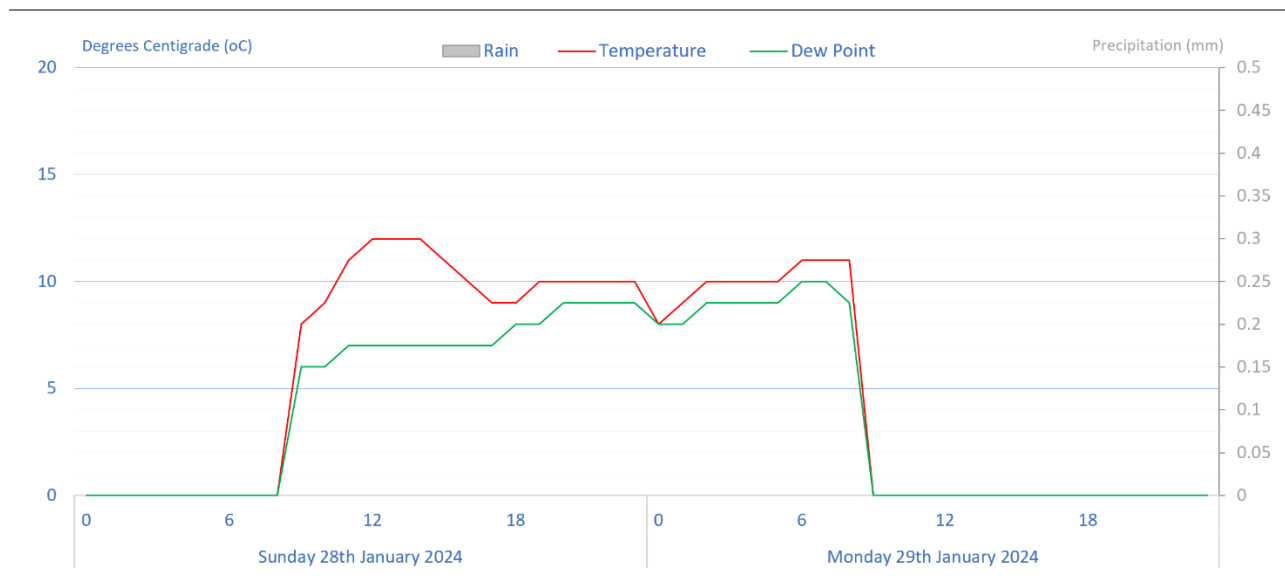
3. Background Noise Levels...

3.1. Weather During Survey

3.1.1 Wind Speed, Gust and Direction



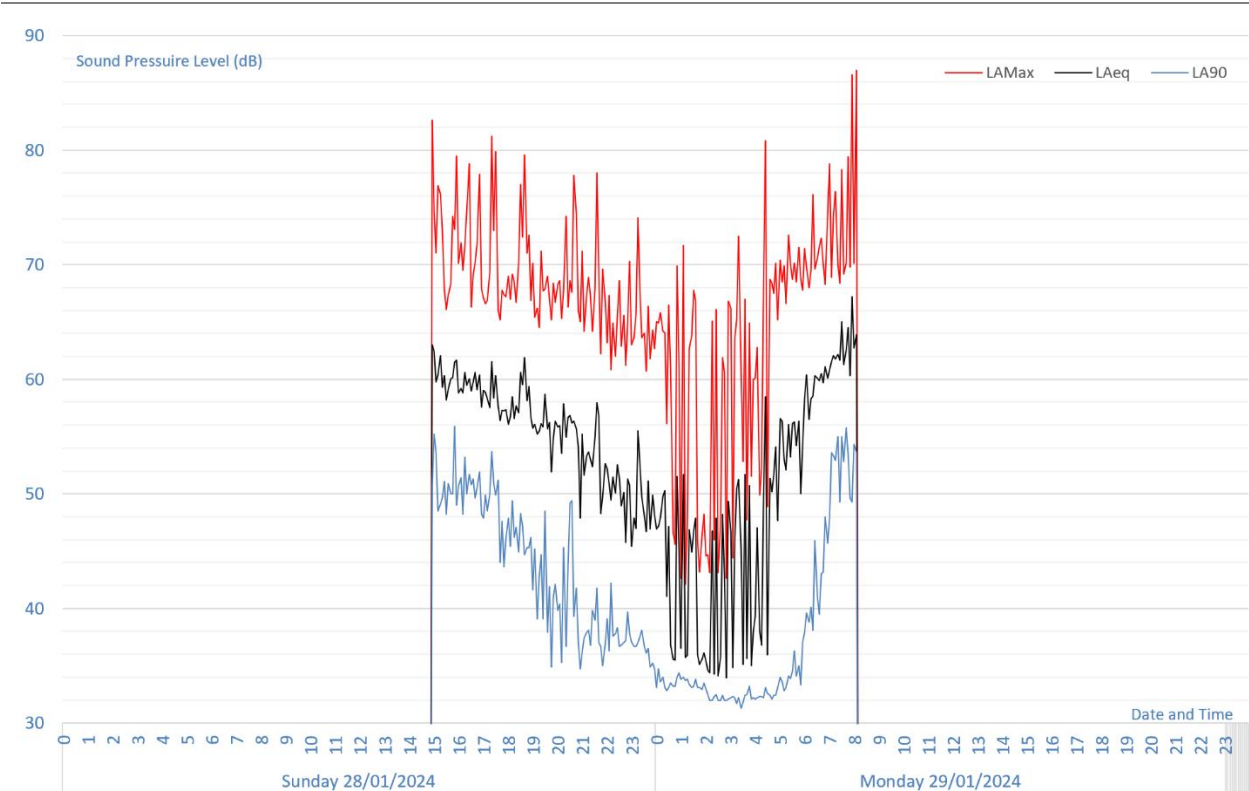
3.1.2 Rainfall, Temperature and Dew Point



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}
65 - 87 dB	56 - 67 dB	44 - 56 dB	61 - 78 dB	46 - 59 dB	35 - 49 dB	42 - 81 dB	34 - 61 dB	31 - 48 dB

3.3. 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)	3.03	Standard Deviation (σ)	3.62	Standard Deviation (σ)	3.29
Geometric Average	50 dB	Geometric Average	40 dB	Geometric Average	35 dB
Minimum Value	44 dB	Minimum Value	35 dB	Minimum Value	31 dB

4. Criterion...

4.1. National Planning Policy Framework 2023

4.1.1 Scope of Standard

The revised National Planning Policy Framework published in December 2023 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 180 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 191 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;⁶⁹

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value...

69 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 Arun District Council Local Plan was fully adopted in July 2018 including Policy QE DM1 entitled “Noise Pollution.”

“....To safeguard the continued use of existing industrial and commercial uses and to protect amenity, noise sensitive development should not normally be permitted where:

- c. High levels of noise will continue throughout the night, especially during the hours when people are normally sleeping.*
- d. There is a likelihood of complaints about noise from industrial development.*

2. New noise generating development

Developers proposing new noise generating development must seek advice from an early stage to determine the level of noise assessment required. Proposals will need to be supported by:

- a. Evidence to demonstrate that there are no suitable alternative locations for the development.*
- b. A noise report which provides accurate information about the existing noise environment, and the likely impact of the proposed development upon the noise environment. The report must also demonstrate that the development meets appropriate national and local standards for noise, as set out in Annex 1 of the Planning Noise Advice Document: Sussex, and any mitigation measures required to ensure noise is managed to an acceptable level.*
- c. Evidence to demonstrate that the development will not impact upon areas identified and valued for their tranquillity, including Gaps Between Settlements which are important to the enjoyment of Arun's countryside, its habitats and biodiversity.”*

4.5.2 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_{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 Operation (07:00 to 23:00)

07:00 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}	L_p
Source 1	Kelvion GF-MB102G3H-091R 2-Fan Gas Cooler Day 280 rpm	50 dB	+0 dB	-36 dB	+3 dB	-0 dB	-5 dB	12 dB
Source 2	Compressor Pack installed within Acoustic Enclosure	48 dB	+0 dB	-35 dB	+3 dB	-0 dB	0 dB	16 dB
Source 3	Fujitsu AEG54KBTB (Night Mode)	63 dB	+3 dB	-36 dB	+3 dB	-0 dB	-5 dB	28 dB
Source 4	Fujitsu AEG54KBTB (Night Mode)	63 dB	+3 dB	-36 dB	+3 dB	-0 dB	-5 dB	28 dB
Source 5	Fujitsu AOEH 12KMCG (Night Mode)	65 dB	+3 dB	-36 dB	+3 dB	-0 dB	-5 dB	30 dB
Combined Noise Levels :								34 dB(A)

5.2.2 Night Time Operation (23:00 to 07:00)

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}	L_p
Source 1	Kelvion GF-MB102G3H-091R 2-Fan Gas Cooler Night 255 rpm	48 dB	+0 dB	-36 dB	+3 dB	-0 dB	-5 dB	10 dB
Source 2	Compressor Pack installed within Acoustic Enclosure	48 dB	+0 dB	-35 dB	+3 dB	-0 dB	0 dB	16 dB
Combined Noise Levels :								17 dB(A)

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 hour} 60 dB	L _{Aeq,1 hour} 54 dB	L _{Aeq,15 minutes} 47 dB
Specific Noise Levels	L _{Aeq,1 hour} 44 dB	L _{Aeq,1 hour} 44 dB	L _{Aeq, 15 minutes} 17 dB
Impulsivity Feature	+0 dB	+0 dB	+2 dB
Tonality Feature	+0 dB	+0 dB	+3 dB
Rating Noise Levels	L _{Aeq,1 hour} 34 dB	L _{Aeq,1 hour} 34 dB	L _{Aeq, 15 minutes} 19 dB
Background Noise Levels	L _{A90,1 hour} 44 dB	L _{A90,1 hour} 35 dB	L _{A90, 15 minutes} 31 dB
BS 4142 Assessment	-10 dB (Low Impact)	-1 dB (Low Impact)	-12 dB (Low Impact)
Uncertainty (95% Confidence, k=2)	+/- 1.90 dB	+/- 1.96 dB	+/- 1.93 dB

6. Conclusions...

6.1. Assessment Position

The residential dwelling at the rear of 198 Pagham Road is located 19 m from the dedicated plant area on the rear wall of the store. The residential dwelling has a direct line of sight to the plant area.

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}
65 - 87 dB	56 - 67 dB	44 - 56 dB	61 - 78 dB	46 - 59 dB	35 - 49 dB	42 - 81 dB	34 - 61 dB	31 - 48 dB
Minimum Background		44 dB	Minimum Background		35 dB	Minimum Background		31 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 below the minimum background noise levels when assessed in accordance with British Standard 4142: 2014 + A1: 2019.

6.4. Mitigation Measures

The scheme has been designed with an ultra-low noise gas cooler and a refrigeration pack installed within an acoustic enclosure.

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
34 dB	44 dB	-10 dB	34 dB	35 dB	-1 dB	19 dB	31 dB	-12 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)
+1.90 dB (k=2, 95% Confidence)	+1.96 dB (k=2, 95% Confidence)	+1.93 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	Kelvion GF-MB102G3H-091R 2-Fan Gas Cooler Day 280 rpm, Night 255 rpm		
	Source 2	Compressor Pack installed within NSL Acoustic Enclosure		
	Source 3	Fujitsu AEG54KBTB (Night Mode)		
	Source 4	Fujitsu AEG54KBTB (Night Mode)		
	Source 5	Fujitsu AOEH 12KMCG (Night Mode)		
	Description of Source	Source Location	Hours of Operation	Mode of Operation
2) 3) 4) 5)	Source 1 & 2	Dedicated plant area on the rear wall of the store.	24-hour	Continuously on Demand
	Source 3 – 5	On the rear wall of the store.	07:00 to 23:00 only Do not operate at night	
	Description of Operation	Period	Conditions	Load
	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%)
		Night Time (23:00 to 07:00)	Ambient Temp 24°C	Part Load (40%)
	Description of Premises	The Tesco Express is located within a small parade of shops set back from Pagham Road. There are residential dwellings over the front of the store with a large flat roof at the rear of the store. The nearest residential dwellings are located at 198a Pagham Road.		

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 the rear of 198a Pagham Road.		
		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 front of the store away from the existing plant area.		
	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 19 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/06/01	KRE/06/02	KRE/06/04
2)	Manufacturer	Casella CEL 633	Casella CEL 251	Casella CEL 120/1
3)	Serial Number	2425448	00092	5230902
4)	Certificate Number	Certificate: U42920	Certificate: 42919	Certificate: U42918
	Calibration Due Date	10/01/2025	10/01/2025	10/01/2025

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	28/01/2024

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)	$T_r = 1 \text{ hour}$
		Evening (19:00 to 23:00)	$T_r = 1 \text{ hour}$
		Night Time (23:00 to 07:00)	$T_r = 15 \text{ minutes}$

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)

8. Appendix B – Feedback from Local Authority on KR07461 Version 1.2

8.1. Comments Received from Local Authority

The following comments were received from the Local Authority with respect to the previous report KR07461 version 1.2 date July 2025. The comments have been broken down and the response provided below each comment.

8.2. Point 1 – Summary of Assessment

“1.2.5 states that the BS 4142 level will be 5 dB below the background level, but levels shown give only a 1 dB below the background.”

This was a typing error which has now been corrected in the table in section 1.2.5 and 6.4. The correct assessment was included in section 5.3 of the original report.

8.3. Point 2 – Daikin Heat Pumps Night Mode

“Shows that the Daikin Heat pumps are shown in “night mode” with no clarification of what this actually means. Is this a permanent setting or does this change? Are different times of the day / year when this is not in night mode? And if so what impact does this have on the noise output?”

The AC heat pumps will be permanently wired in night-mode. The unit will operate in this mode throughout the year.

8.4. Point 3 – Noise Levels at 198 Pagham Road

“The report has assessed the impact of the bungalow at 198A Pagham Road but there is no discussion about the impact of 198 this is a concern as the property has a 1st floor window that appears to have line of [sight] to the plant area, has this been considered.”

The noise levels were considered at 198 Pagham Road including the 1st floor window. From the 1st floor window of 198a Pagham Road the resident would not be able to see the gas cooler (source 1) or the three AC heat pumps on the back wall of the store (sources 3 – 5) due the rear of the Tesco Express acting like a barrier. The residents would have a partial line of sight to the enclosed compressor housing. It is assumed the comments relates to line of sight and not line of site as originally written.

8.5. Point 4 – Night Time Background Level

“3.3 states the minimum value for daytime and evening levels but for the nighttime level states the modal value not the minimum. I’m sure this is a typo, but can it just be clarified”

The background level was actually the modal and minimum value. However, for the avoidance of any confusion and to align with the details in the rest of the report this has been changed to minimum.

8.6. Point 5 – Source Operating at Night

“The nighttime assessment is only undertaken with the source 1&2 which indicates that the other sources will not be in use after 23:00 hours, however 7.2 clearly states that all source 1-5 can operate 24 hours a day continuously on demand. If source 3-5 are not used at night, then this can be conditioned as such. However if they may run at night, we need to see this added to the assessment.”

Section 2.3 of the report states that the three AC heat pumps are “Not Turned On” and therefore the units do not appear in the calculation of the night time levels. The report stated that the units would run continuously on demand. However, there will not be any demand for the units. However, it can be seen how this look ambiguous. The table at 7.2 has been updated to state the pack and gas cooler operate 24-hours per day and the AC heat pumps operate between 07:00 and 23:00 hours.

8.7. Point 6 – Feature Correction during the Day Time

“The BS4142 assessment shows character feature corrections for impulsivity and tonality, but only at night, but does not explain why these do not occur during the day. I would expect an Intermittency correction factor for the AC units as these are by nature turning on and off to maintain the internal temperature.”

During the day time the existing residual noise levels were 60 dB $L_{Aeq, 1 \text{ hour}}$ between 07:00 and 19:00 falling to 54 dB $L_{Aeq, 1 \text{ hour}}$ between 19:00 and 23:00 when there is less traffic. During these two periods the resultant cumulative noise level impacting the residential façade will be 34 dB $L_{Aeq, 1 \text{ hour}}$. As the specific noise level would be 20 dB(A) below the existing levels then it was not considered appropriate to add any form of feature correction. In particular the AC units will experience a constant demand from the need to heat and cool the store. The AC units are designed not to short cycle and therefore are unlikely to turn on and off intermittently during the day time hours.

During the day time we also considered the internal noise levels when the residents would have their windows open. Allowing a 15 dB(A) reduction through a partially open window the internal level would be 19 dB(A). At this level residents would be able to sleep in their bedrooms and the noise from the units would be inaudible.

During the night time period, the residual noise level drops considerably to 47 dB $L_{Aeq, 15 \text{ minutes}}$. Furthermore, there is a lot less traffic in the area and extended periods of quiet. This explains why the modal background levels are the same as the minimum background levels. Due to the sensitivity of the site, and against a back-drop of a previous refusal it was considered appropriate to add the feature corrections. However, it should be noted that with a façade level of 17 dB $L_{Aeq, 15 \text{ minutes}}$ the internal noise level would be around 12 dB(A) which. This level is almost at the threshold of hearing.

8.8. Point 7 – Summary of Assessment.

Please see point 6 above.

KR Associates (UK) Ltd

Quietly confident...



Southampton: [REDACTED]