



KR05850

Northways Parade

Noise Impact Assessment...

Standard: British Standard 4142: 2014

Site: Northways Parade
Address: 21 Northways Parade
London
Postcode: NW3 5EN

Customer: Tesco Stores Lrd
Address: Tesco House
Maes-y-Coed Road
Llanishen
Cardiff
Postcode: CF14 4TT




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KR Associates (UK) Ltd

Quietly confident...



Revisions...

KR05850		Project	Northways Parade		
		Title	Noise Impact Assessment - Proposed Additional Plant		
		Standard	British Standard 4142: 2014		
Issue	Date	Details of Revision			
V1.4	27/03/2019	Description	Report issue for submission to Local Authority		
		Signature			
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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 Northways Parade Tesco Store located at 21 Northways Parade in London 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 7)

1.2.1 Assessment Position

The nearest noise sensitive façade has been established as the residential property above the sites proposed plant area and is located between 5 m from the plant located within a dedicated plant area.

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}
55 - 91 dB	50 - 71 dB	45 - 56 dB	61 - 90 dB	47 - 67 dB	44 - 52 dB	53 - 78 dB	41 - 59 dB	40 - 51 dB

1.2.3 Criterion at Assessment Position

Policy A4 of the Camden Local Plan published in 2017 requires “*that noise and vibration is controlled and managed. Development should have regard to Camden’s Noise and Vibration Thresholds (Appendix 3).*” Appendix 3 details the LOAEL level in table C as -10 dB when assessed in accordance with British Standard 4142: 2014.

1.2.4 Mitigation Measures

No specific mitigation measures will be required.

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
35 dB	49 dB	-14 dB	32 dB	46 dB	-14 dB	3. dB	40 dB	-10 dB

1.3. Conclusions

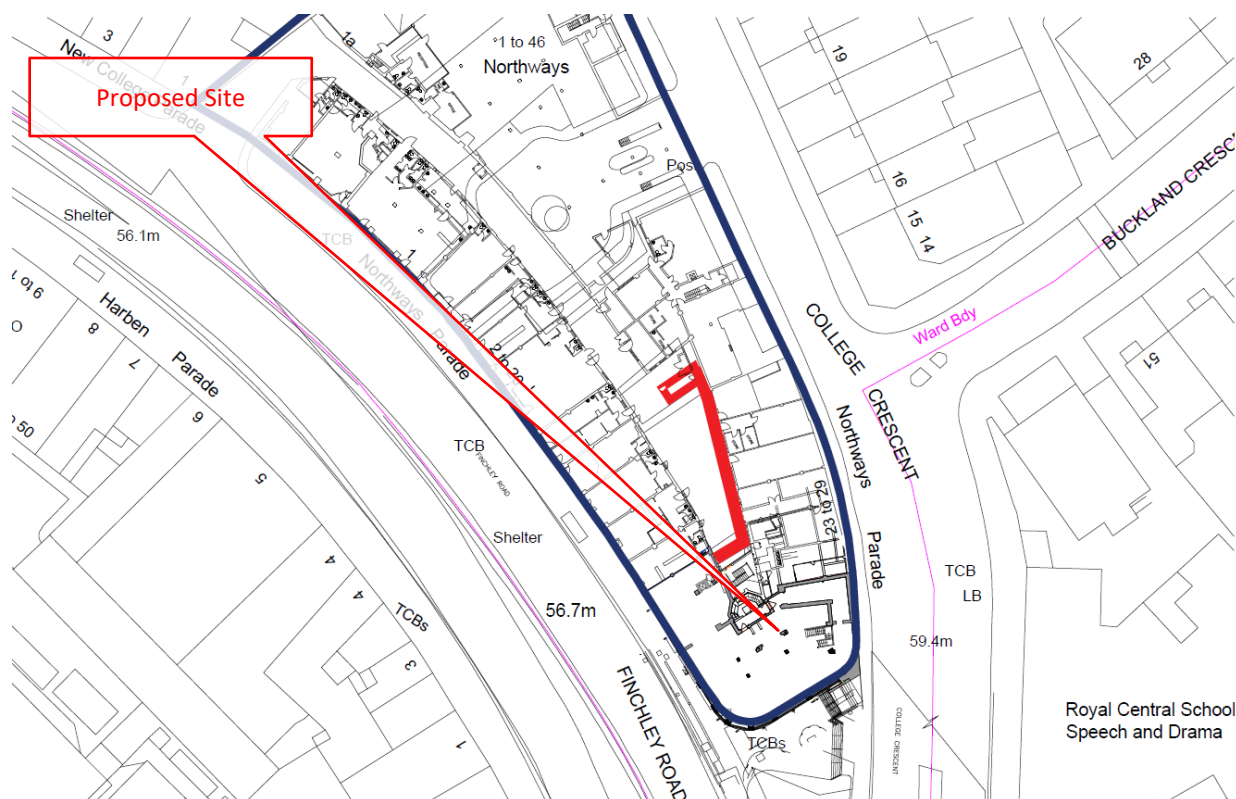
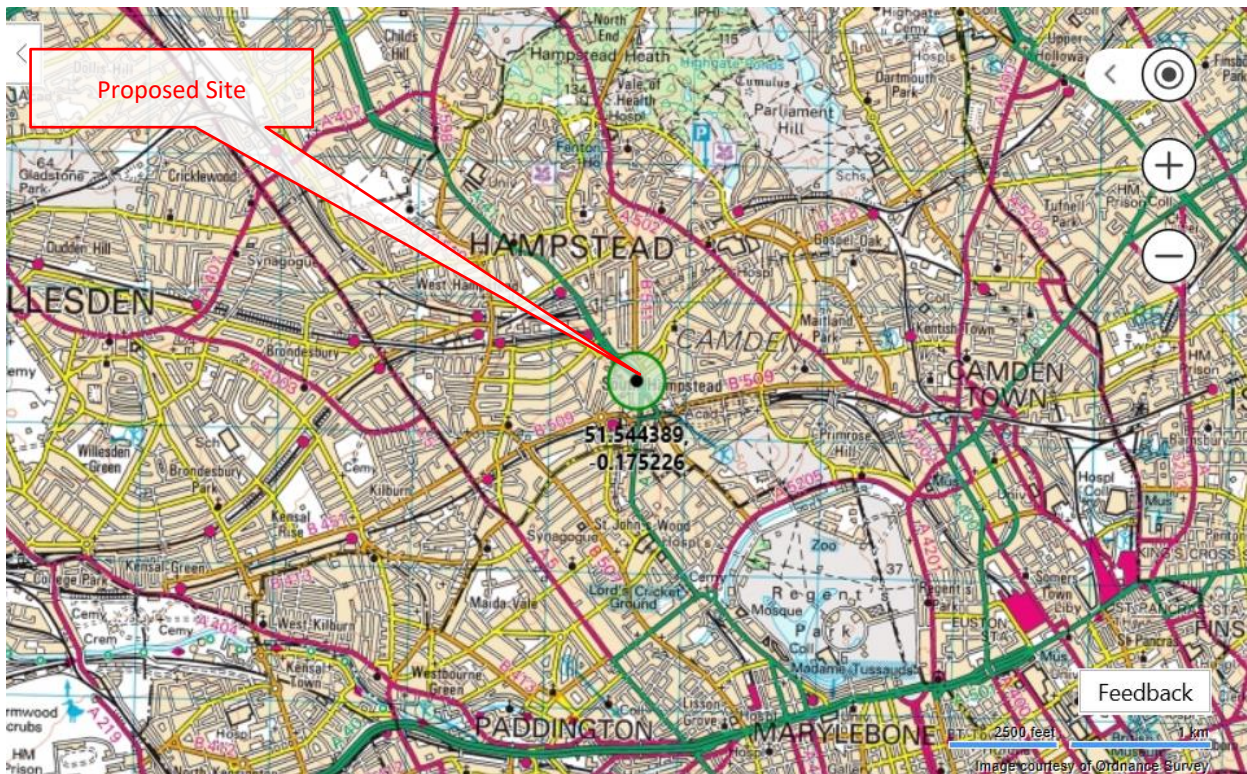
The proposed refrigeration plant associated with the Tesco Express will comply in full with the NPPF and policy A4 of the Camden Local Plan.

The report now includes the noise emissions from the two Daikin AC units and the CO2 refrigeration pack within an acoustic housing located in the internal undercroft area at the rear of the store.

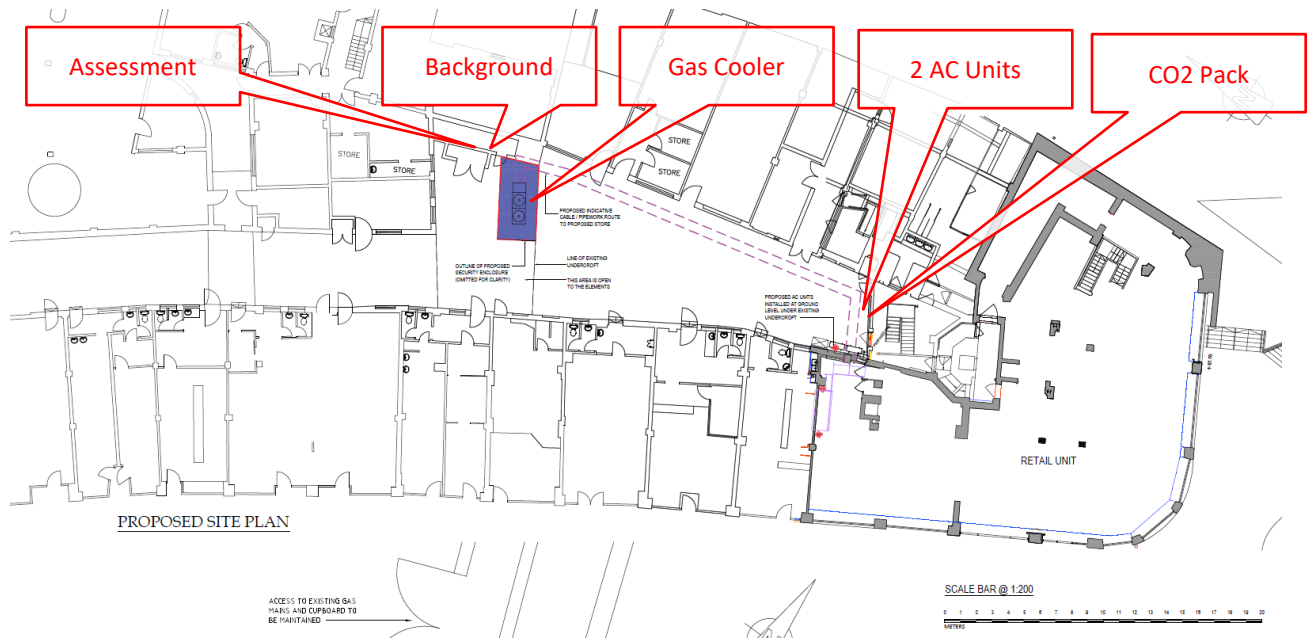
2. Site Location...

2.1. General Location of Site

The proposed site is to be located on the corner of Finchley Road and Fitzjohn Avenue. It is proposed to locate the plant within a dedicated area to the north of the site with residential properties situated above.



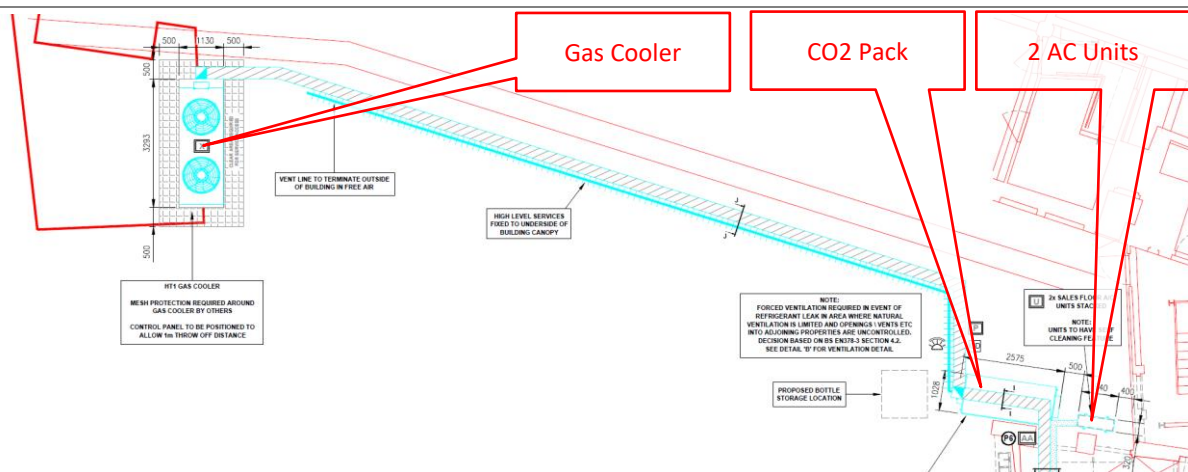
2.2. Key Positions (Source, Assessment & Background)



Position	Description	Latitude	Longitude	Elevation
Source	Plant located within a dedicated plant area	51.544702 ⁰	-0.175363 ⁰	1 m
Assessment	Residential property above site	51.544644 ⁰	-0.175463 ⁰	4 m
Background	Lamp post to the east of the site	51.544648 ⁰	-0.175044 ⁰	3 m

Site Plan (Imagery © Google 2016)

2.3. Free Field Source Sound Pressure Levels at 10m



Source	Description of Source	Sound Pressure Level at 10m – 13487: 2003		
		07:00 – 19:00	19:00 – 23:00	23:00 – 07:00
Source 1	C1- Searle GF MB 102G4 Gas Cooler	L _{p(10)} 35 dB	L _{p(10)} 32 dB	L _{p(10)} 30 dB
Source 2	AC1 and 2 – 2 No. Daikin AC Unit AZQS 100B8V	L _{p(10)} 46 dB	L _{p(10)} 46 dB	--
Source 3	P1 – Gas Cooler Pack in Acoustic Enclosure	L _{p(10)} 40 dB	L _{p(10)} 40 dB	L _{p(10)} 40 dB

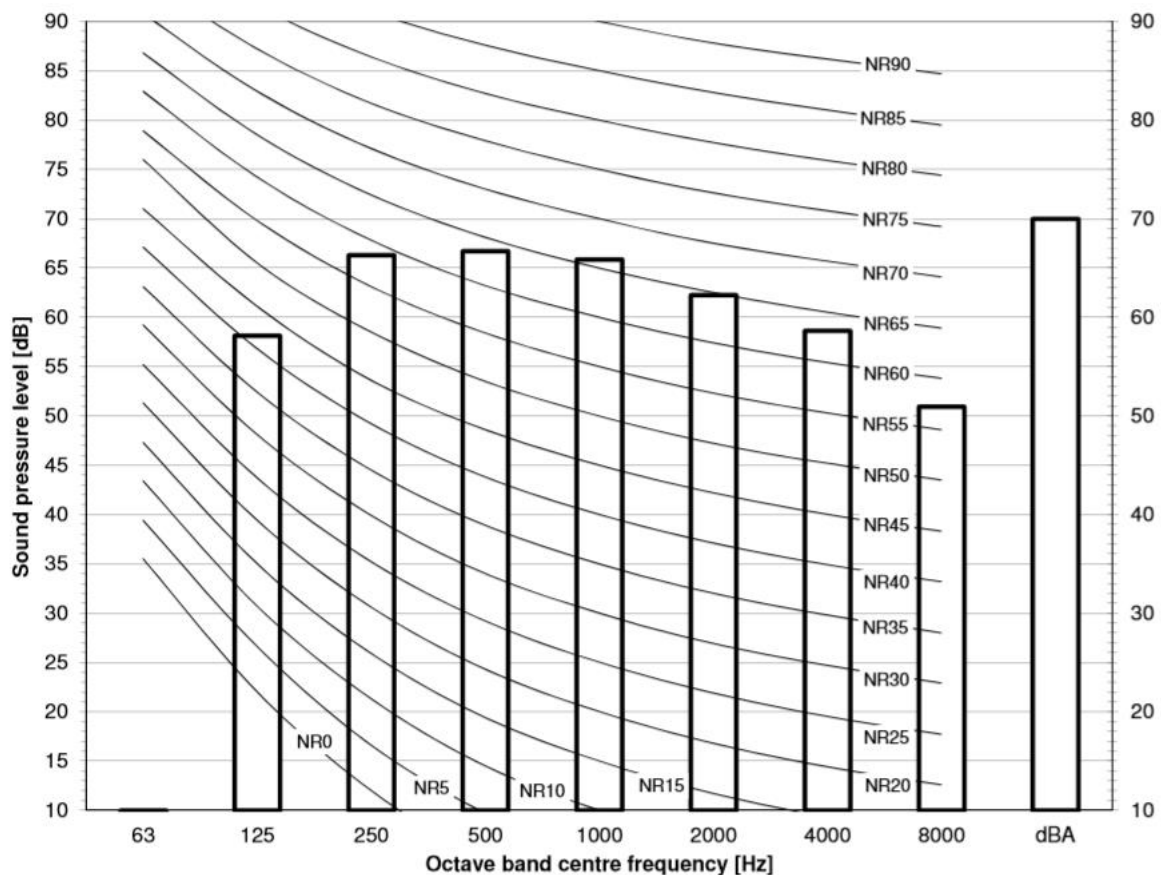
2.4. Locations and Distances of Individual Source Positions

Position	Relative Distance	Latitude	Longitude	Elevation
Source 1	8 m to assessment position	51.544702 ⁰	-0.175363 ⁰	1 m
Source 2	35m to assessment position	51.544444	-0.175204	2m
Source 3	35m to assessment position	51.544444	-0.175204	2m

Site Plan (Imagery © Google 2016)

The following extract confirms the sound power level of the Daikin Units. There is no manufacturers data available for the gas cooler or enclosed CO2 pack and therefore reliance has been placed on the noise levels supplied by the refrigeration contractor.

AZQS100B8V1



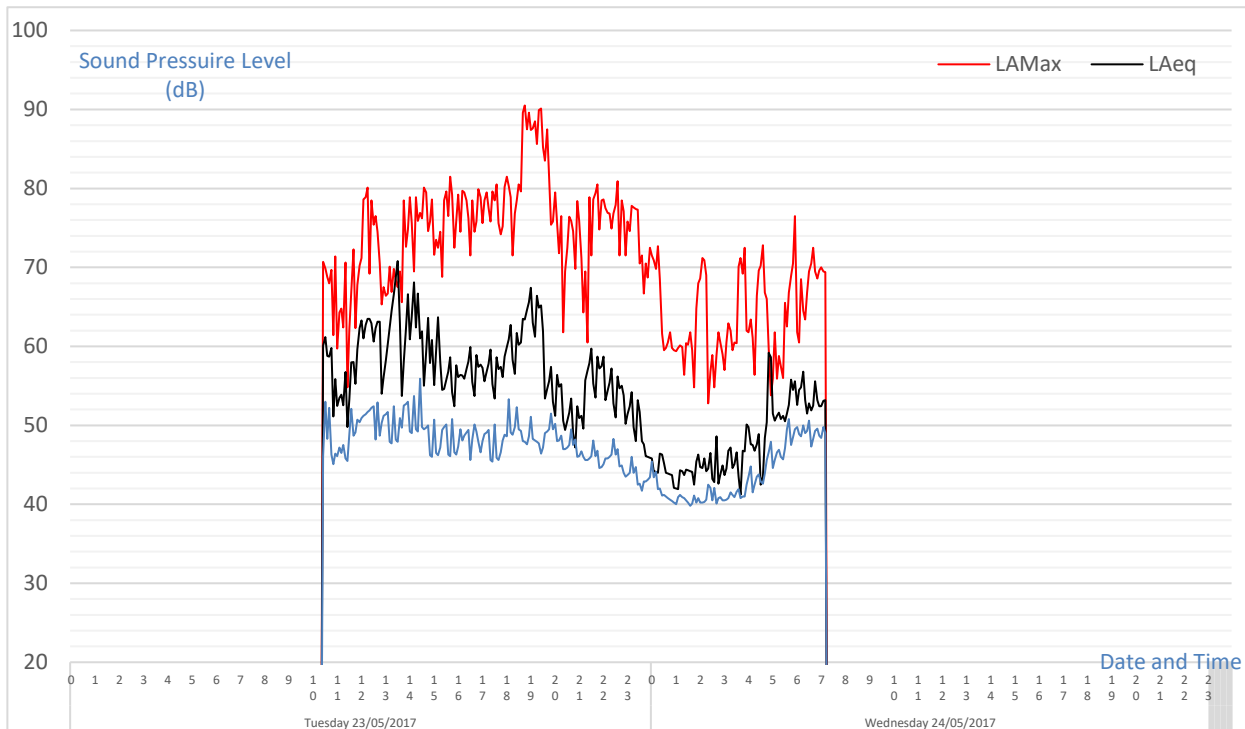
Notes

- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity $0 \text{ dB} = 10^{-6} \text{ W/m}^2$
- Measured according to ISO 3744

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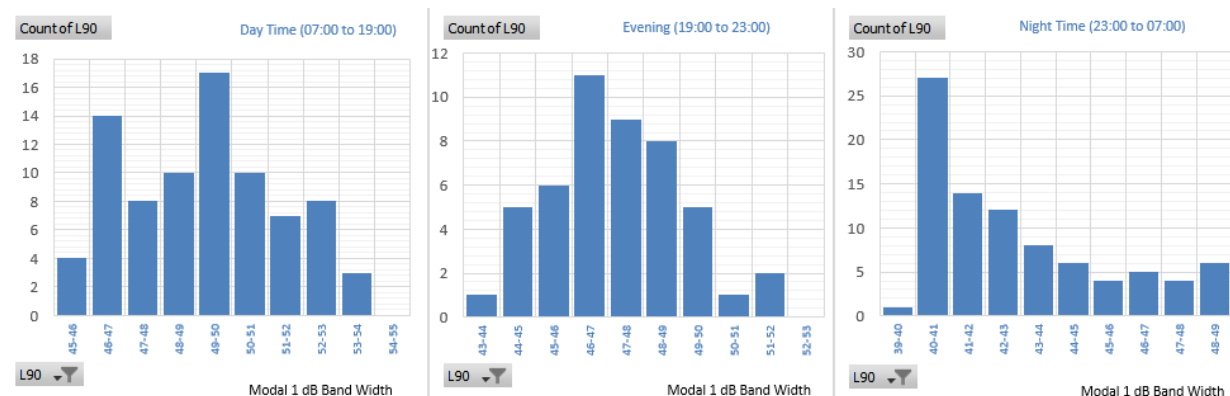
3. Background Noise Measurements...

3.1. 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}
55 - 91 dB	50 - 71 dB	45 - 56 dB	61 - 90 dB	47 - 67 dB	44 - 52 dB	53 - 78 dB	41 - 59 dB	40 - 51 dB

3.2. 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)	2.24	Standard Deviation (σ)	1.76	Standard Deviation (σ)	3.20
Geometric Average	49 dB	Geometric Average	47 dB	Geometric Average	44 dB
Modal Value	50 dB	Modal Value	47 dB	Modal Value	40 dB

4. Criterion...

4.1. National Planning Policy Framework 2018

4.1.1 Scope of Standard

The revised National Planning Policy Framework published in 2018 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 means:...

c) approving development proposals that accord with an up-to-date development without delay; or

d) ...granting planning permission...

i) the application of policies in this Framework... provides a clear reason for refusing development proposal; 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 170 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 180 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 impact resulting from noise from new development and avoid noise giving rise to significant adverse impacts on health and quality of life⁶⁰

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

60 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 was 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 over 8 hour calculated over a year (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...

4.4.1 Testing Standard...

British Standard 4142: 2014 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 British Standard 4142: 2014 Feature Correction

It is appropriate to add a character correction where there is a new source that cannot be measured in line with BS4142:2014. 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

The Camden Local Plan sets out the Council's planning policies and replaces the Core Strategy and Development Policies planning documents (adopted in 2010). It ensures that Camden continues to have robust, effective and up-to-date planning policies that respond to changing circumstances and the borough's unique characteristics and contribute to delivering the Camden Plan and other local priorities. The Local Plan will cover the period from 2016-2031.

"Policy A4 Noise and vibration The Council will seek to ensure that noise and vibration is controlled and managed. Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3). We will not grant planning permission for: a. development likely to generate unacceptable noise and vibration impacts; or b. development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses. We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development."

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
$A_{div} = 20 \cdot \log_{10} (d/d_0) + 11$	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 site 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
$A_{bar} = 10 \cdot \log_{10} [3 + (40 \cdot \delta / \lambda) - A_g]$ <p>*Note 1</p> <p>where $\delta = a + b - r$ and $\lambda = c / f$</p>	<p>A_{bar} = Effective barrier attenuation (dB)</p> <p>A_g = Total Ground Absorption (dB)</p> <p>*Note 1: Only apply the A_g correction if $A_g > 0$</p> <p>δ = Path difference (m)</p> <p>a = Distance from source to barrier head (m)</p> <p>b = Distance from barrier head to assessment position (m)</p> <p>r = Distance from source to assessment position (m)</p> <p>λ = Wavelength of sound (m)</p> <p>c = Speed of sound – Assumed to be 342 ms^{-1}</p> <p>f = Octave band centre frequency (Hz)</p>

5.2. British Standard 4142: 2014 Feature Correction

It is appropriate to add a character correction where there is a new source that cannot be measured in line with BS4142:2014. 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
<p>Tonality</p> <p>Ranging from not tonal to prominently tonal</p>	Not tonal	+0
	Just perceptible	+2
	Clearly perceptible	+4
	Highly perceptible	+6
<p>Impulsivity</p> <p>Considering both the rapidity and any overall change in sound levels</p>	Not impulsive	+0
	Just impulsive	+3
	Clearly impulsive	+6
	Highly impulsive	+9
<p>Readily Distinctive</p> <p>Characteristic is neither tonal nor impulsive</p>	Is not present	+0
	Is present	+3
<p>Intermittency</p> <p>Identifiable “on/off” conditions</p>	Is not present	+0
	Is present	+3

5.3. Calculation of Plant Noise Levels

5.3.1 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}	L _p
1	C1- Searle GF MB 102G4 Gas Cooler	63 dB	+3 dB	-29 dB	+0 dB	-0 dB	-5 dB	32 dB
2	2 No Daikin AC Units	73 dB	+6 dB	-42 dB	+0 dB	-0 dB	-12 dB	25 dB
3	1 No Gas Cooler Pack	68 dB	+6 dB	-42 dB	+0 dB	-0 dB	-12 dB	20 dB
TOT	Total Noise Levels	63dB	-31 dB					32 dB

5.3.2 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}	L _p
1	C1- Searle GF MB 102G4 Gas Cooler	60 dB	+3 dB	-29 dB	+0 dB	-0 dB	-5 dB	29 dB
2	2 No Daikin AC Units	70 dB	+6 dB	-42 dB	+0 dB	-0 dB	-12 dB	23 dB
3	1 No Gas Cooler Pack	68 dB	+6 dB	-42 dB	+0 dB	-0 dB	-12 dB	20 dB
TOT	Total Noise Levels	60 dB	-31 dB					29 dB

5.3.3 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}	L _p
1	C1- Searle GF MB 102G4 Gas Cooler	58 dB	+3 dB	-29 dB	+0 dB	-0 dB	-5 dB	27 dB
3	1 No Gas Cooler Pack	68 dB	+6 dB	-42 dB	+0 dB	-0 dB	-12 dB	20 dB
TOT	Total Noise Levels	58 dB	-31 dB					27 dB

6. Assessment of Noise Levels...

6.1. Night Noise Guidelines

Night Noise Guidelines	Day Time - 07:00 to 19:00	Evening – 19:00 to 23:00	Night Time – 23:00 to 07:00
Specific Sound	L _{Aeq,1 hour} 32 dB	L _{Aeq,1 hours} 29 dB	L _{Aeq,15 minutes} 27 dB
NPPF – Improve Quality of Life	Less than L _{Aeq,1 hour} 40 dB	Less than L _{Aeq,1 hour} 40 dB	Less than L _{Aeq,1 hour} 40 dB
Conclusion	Complies	Complies	Complies

6.2. ISO 1996 Part 1: 2016

ISO 1996 – Part 1: 2016	Day Time - 07:00 to 19:00	Evening – 19:00 to 23:00	Night Time – 23:00 to 07:00
Specific Sound	L _{Aeq,1 hour} 32 dB	L _{Aeq,1 hours} 29 dB	L _{Aeq,15 minutes} 27 dB
Adjustment - Regular Impulsive	+0 dB	+0 dB	+3 dB
Adjustment – Tonal	+0 dB	+ 0 dB	+ 5 dB
Adjustment - Time Period	+0 dB (Day Time)	+5 dB (Evening)	+10 dB (Night Time)
Rating Levels	L _{Aeq,1 hour} 32 dB	L _{Aeq,1 hours} 29 dB	L _{Aeq,15 minutes} 27 dB
Residual Sound Levels	L _{Aeq,1 hour} 59 dB	L _{Aeq,1 hours} 55 dB	L _{Aeq,15 minutes} 48 dB
Rating + Residual	L _{Aeq,1 hour} 59 dB	L _{Aeq,1 hours} 55 dB	L _{Aeq,15 minutes} 48 dB
Increase in Residual Noise	+ 0.1 dB	+ 0.2 dB	+ 0.2 dB
IEMA Significance	+2 dB (No Impact)	2 dB (No Impact)	2 dB (No Impact)
Conclusion	Complies	Complies	Complies

6.3. Assessment of Average Noise Levels (BS 4142: 2014)

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} 59 dB	L _{Aeq,1 hours} 55 dB	L _{Aeq,15 minutes} 48 dB
Specific Noise Levels	L _{Aeq,1 hour} 32 dB	L _{Aeq,1 hours} 29 dB	L _{Aeq,15 minutes} 27 dB
Impulsivity Feature	+0 dB	+0 dB	+0 dB
Tonality Feature	+3 dB	+3 dB	+3 dB
Rating Noise Levels	L _{Aeq,1 hours} 35 dB	L _{Aeq,1 hours} 32 dB	L _{Aeq, 15 minutes} 30 dB
Background Noise Levels	L _{A90,1 hours} 49 dB	L _{A90,1 hours} 46 dB	L _{A90, 15 minutes} 40 dB
BS 4142 Assessment	-14 dB (Low Impact)	-14 dB (Low Impact)	-10 dB (Low Impact)
Conclusions	-0 dB (Low Impact)	-0 dB (Low Impact)	-0 dB (Low Impact)
Uncertainty (95% Confidence, k=2)	+/- 1.82 dB	+/- 1.78 dB	+/- 1.92 dB

7. Conclusions...

7.1. Assessment Position

The nearest assessment position is the residential property above the site which is located between 5 m from the plant located within a dedicated plant area.

7.2. 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}
55 - 91 dB	50 - 71 dB	45 - 56 dB	61 - 90 dB	47 - 67 dB	44 - 52 dB	53 - 78 dB	41 - 59 dB	40 - 51 dB

7.3. Criterion at Assessment Position

Policy A4 of the Camden Local Plan published in 2017 requires “*that noise and vibration is controlled and managed. Development should have regard to Camden’s Noise and Vibration Thresholds (Appendix 3).*” Appendix 3 details the LOAEL level in table C as -10 dB when assessed in accordance with British Standard 4142: 2014.

7.4. 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
35 dB	49 dB	-14 dB	32 dB	46 dB	-14 dB	3. dB	40 dB	-10 dB

7.5. Conclusions

The proposed refrigeration plant associated with the Tesco Express will comply in full with the NPPF and policy A4 of the Camden Local Plan.

7.6. Uncertainty

Day Time (07:00 – 19:00)	Evening (19:00 – 23:00)	Night Time (23:00 – 07:00)
+1.82 dB (k=2, 95% Confidence)	+1.78 dB (k=2, 95% Confidence)	+1.92 dB (k=2, 95% Confidence)

8. Appendix A - BS 4142:2014 Information to Be Reported...

8.1. 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)

8.2. b) Source Under Investigation

	Source Number	Description		
1)	Source 1	C1- Searle GF MB 102G4 Gas Cooler		
	Description of Source	Source Location	Hours of Operation	Mode of Operation
	Source 1	Plant located within a dedicated plant area	24-hour	Continuously on Demand
	Description of Operation	Period	Conditions	Load
2)	All Sources	Day Time (07:00 to 19:00)	Ambient Temp 32°C	Maximum Load (100%)
3)		Evening (19:00 to 23:00)	Ambient Temp 28°C	Part Load (60%)
4)		Night Time (23:00 to 07:00)	Ambient Temp 24°C	Part Load (40%)
5)	Description of Premises	The proposed site is to be located on the corner of Finchley Road and Fitzjohn Avenue..It is proposed to locate the plant within a dedicated area to the north of the site.		

8.3. 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

8.4. 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

8.5. e) Relative Positions

1)	Assessment Position	Residential property above site		
		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	Lamp post to the east 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	1 st floor 1m to facade	Not applicable
		Section 6.2	Measurement Height	3.5
			Distance to Reflecting Surface	1.0
		In order to record remote background levels the noise meter had to be left in a secure position. The position represented the assessment position with the constraints of the site.		
4)	Topography, surfaces etc.	Hard and Flat		
5)	Relative Distances	The plant is located approximately 10.0 m to 12.6 m from the assessment position.		
6)	Dimensioned sketch	See maps and images		

8.6. f) Noise Measurement Equipment Calibration

1)	Type	Sound Level Meter	Microphone	Calibrator
		KRE/066/01 - NL32	KRE/066/03 - UC53A	KRE/066/04 - NC74
2)	Manufacturer	Rion	Rion	Rion
3)	Serial Number	01103394	317919	35084210
4)	Certificate Number	Certificate: 09234	Certificate: 09234	Certificate: 09231
	Calibration Date=	07-Jun-16	07-Jun-16	07-Jun-16

8.7. 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.

8.8. h) Weather Conditions

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

8.9. i) Date and Time of Measurements

1)	Source Measurements	Unknown
	Background Measurements	23-May-17

8.10. 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

8.11. 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

8.12. 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)

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