

KR05849

Camden High Street

Noise Impact Assessment...

Standard: British Standard 4142: 2014

Site: Camden High Street

Address: 159-165 Camden High Street

London

Postcode: NW1 7JY

Customer: Tesco Stores Ltd

Address: Tesco House

Maes-y-Coed Road

Llanishen

Cardiff

Postcode: CF14 4TT

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KR Associates (UK) Ltd

Quietly confident...



Revisions...

KR05849		Project	Camden High Street		
		Title	Noise Impact Assessment - Proposed Additional Plant		
		Standard	British Standard 4142: 2014		
Issue	Date	Details of Revision			
v1.7	15/02/20187	Description	Report issue for submission to Local Authority – Enclosed AC Units		
		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 Camden High Street Store located at 159-165 Camden High Street 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. Outline of Report

Planning condition 3 of the approved planning permission 2009/3719/P granted on 05/08/2010 states that:

“Noise levels at a point 1 metre external to sensitive façades shall be at least 5dBa less than the existing background measurement (LA90), expressed in dB(A) when all plant/equipment are in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/ or if there are distinct impulses (bangs, clicks, clatters, thumps), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10dB below the LA90, expressed in dB (A).”

1.3. Executive Summary (Repeated at Section 7)

1.3.1 Assessment Position

The residential property above the site is located between 7 m and 10 m from the plant located on the mezzanine deck.

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}
56 - 87 dB	50 - 67 dB	47 - 54 dB	58 - 73 dB	50 - 60 dB	48 - 53 dB	50 - 76 dB	46 - 62 dB	43 - 50 dB

1.3.3 Criterion at Assessment Position

NPPF Policy Aim (p 123)	Action	Night Noise Guidelines	ISO 1996: 2016 / IEMA	BS 4142: 2014
Significant Adverse Impact	Avoid	L _{night} 55 dB or more	L _{Aeq,t} +10 dB or more	+10 dB
Adverse Impact	Mitigate	L _{night} 40 – 55 dB	L _{Aeq,t} +3 to +9 dB	+5 dB
Improved Quality of Life	Ideal if Possible	L _{night} 40 dB or less	L _{Aeq,t} +2 dB or less	+0 dB

1.3.4 Mitigation Measures

The three AC units are to be installed within acoustic enclosures with a manufacturer warranted transmission loss of 18 dB(A). For the purposes of this assessment a transmission loss of 15 dB(A) is assumed which accounts for the possible uncertainty in the manufacturers published figures.

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
36 dB	49 dB	-13 dB	36 dB	49 dB	-13 dB	26 dB	41 dB	-15 dB

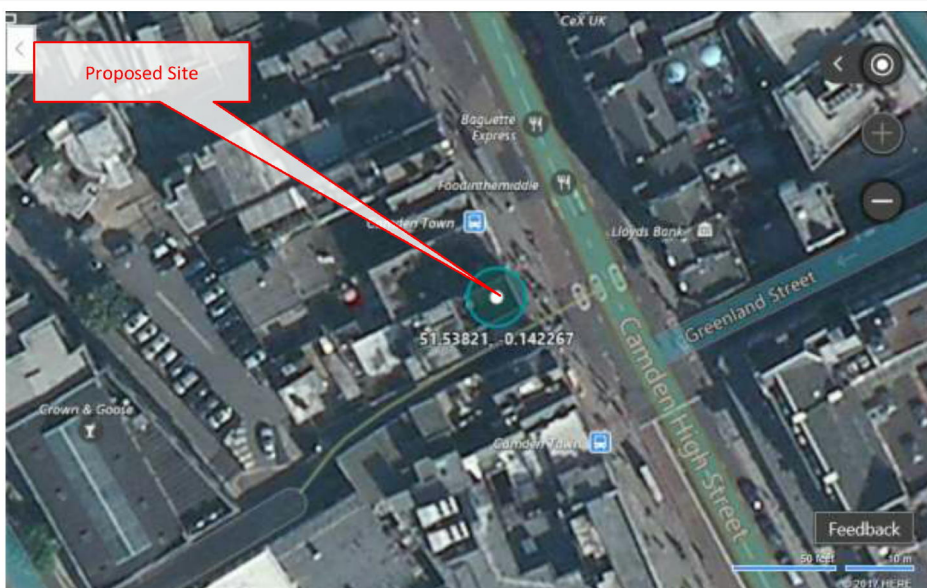
1.4. Conclusions

In accordance with paragraph 14 of the National Planning Policy Framework (2012) planning permission should be granted for the proposal as the benefits outweigh any significant adverse impacts in terms of noise from the installation of the proposed additional mechanical equipment.

The assessment indicates that the noise emissions will comply with the criterion of Camden Council which requires plant to be -10 dB below the underlying background noise level.

2. Site Location...

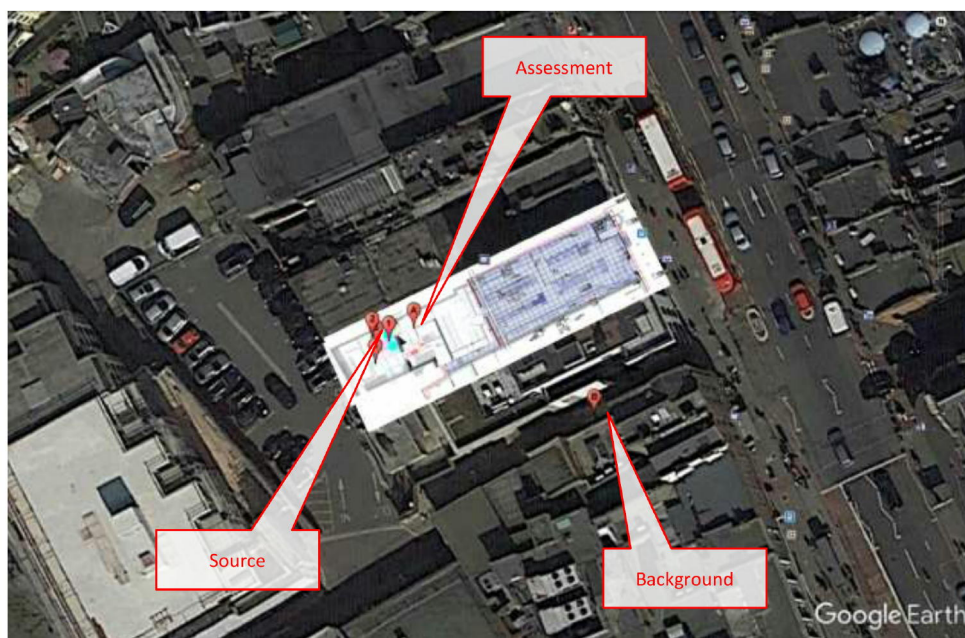
2.1. General Location of Site



Site Plan (Imagery © Google 2016)

The site is located amongst a parade of shops on Camden High Street. The proposed site is to be located on the ground floor underneath residential properties. It is proposed to locate the plant within an external area to the rear of site.

2.2. Key Positions (Source, Assessment & Background)



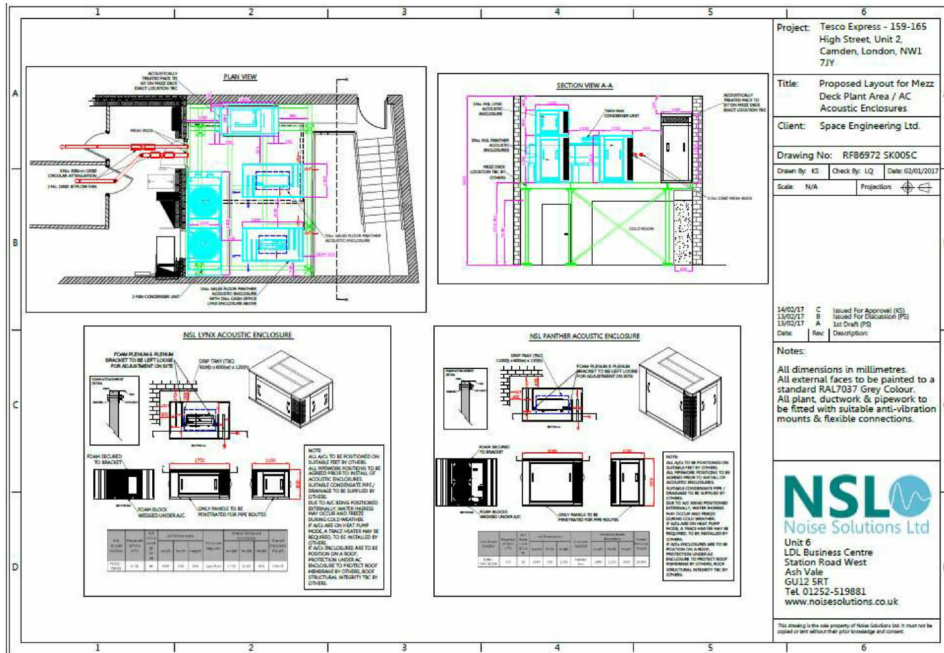
Position	Description	Latitude	Longitude	Elevation
Source	Plant located on the mezzanine deck.	51.538188°	-0.142731°	2 m
Assessment	Residential property above site	51.538220°	-0.142637°	6 m
Background	Lamp post to the east of the site.	51.538118°	-0.142366°	3 m

Site Plan (Imagery © Google 2016)

2.3. Free Field Source Sound Pressure Levels at 10m

Source	Description of Source	Sound Pressure Level at 10m – Annex C 13487: 2003		
		07:00 – 19:00	19:00 – 23:00	23:00 – 07:00
Source 1	C1 - Searle Condenser	$L_{p(10)}$ 35 dB	$L_{p(10)}$ 35 dB	$L_{p(10)}$ 31 dB
Source 2	AC2 - Mitsubishi AC Unit (Enclosed)	$L_{p(10)}$ 28 dB	$L_{p(10)}$ 28 dB	Not Operating
Source 3	AC3 - Mitsubishi AC Unit (Enclosed)	$L_{p(10)}$ 28 dB	$L_{p(10)}$ 28 dB	
Source 4	AC4 - Mitsubishi AC Unit (Enclosed)	$L_{p(10)}$ 21 dB	$L_{p(10)}$ 21 dB	
Combined Sound Pressure Level at 10m (1 Reflective Surface)		$L_{p(10)}$ 36 dB	$L_{p(10)}$ 36 dB	$L_{p(10)}$ 31 dB

2.4. Locations and Distances of Individual Source Positions

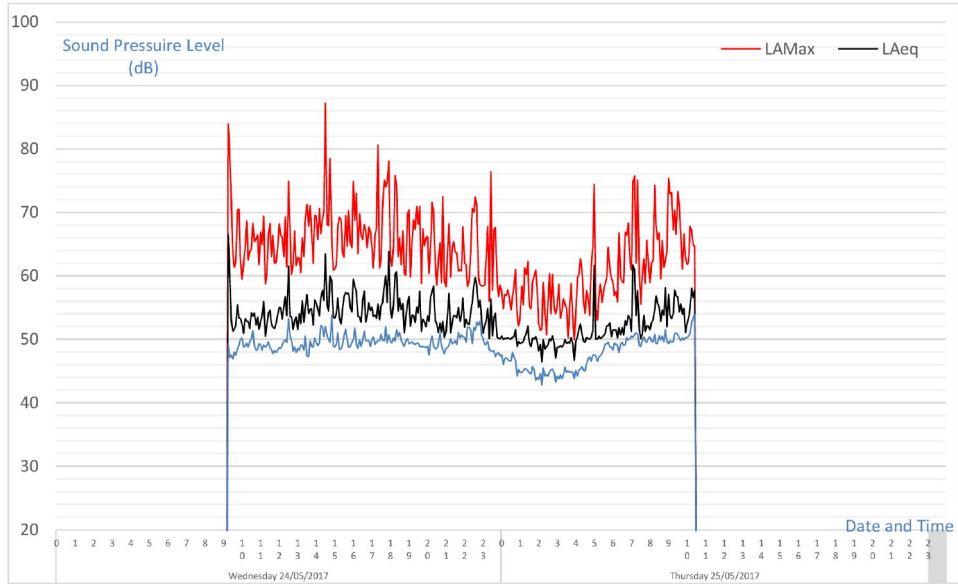


Position	Relative Distance	Latitude	Longitude	Elevation
Source 1	8 m to assessment position	51.538188°	-0.142731°	1 m
Source 2	7 m to assessment position	51.538175°	-0.142703°	1 m
Source 3	9 m to assessment position	51.538169°	-0.142719°	1 m
Source 4	10 m to assessment position	51.538164°	-0.142732°	1 m

Site Plan (Imagery © Google 2016)

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}
56 - 87 dB	50 - 67 dB	47 - 54 dB	58 - 73 dB	50 - 60 dB	48 - 53 dB	50 - 76 dB	46 - 62 dB	43 - 50 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)	1.22	Standard Deviation (σ)	1.26	Standard Deviation (σ)	1.96
Geometric Average	50 dB	Geometric Average	50 dB	Geometric Average	47 dB
Modal Value	49 dB	Modal Value	49 dB	Modal Value	41 dB

4. Criterion...

4.1. National Planning Policy Framework: 2012 (“NPPF”)

The National Planning Policy Framework (“NPPF”) published in March 2012 sets out the Government’s National Planning Policies for England and how these can be applied by local communities when developing their local plans or deciding planning application to best reflect the needs and priorities of the local communities. Current planning law requires Local Authorities to grant planning applications in accordance with the local development plan unless there are material considerations which require them to reach a different decision for sustainable developments.

4.1.1 Paragraph 14 - Requirement of Grant Planning Permission

“At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision taking:

For decision-taking this means:

Approving development proposals that accord with the development plan without delay; and

Where the development plan is absent, silent or relevant policies are out-of-date, granting planning permission unless:

Any adverse impact of doing so would significantly and demonstrably outweigh the benefits, when assessed against policies in this Framework taken as a whole.”

This report therefore will determine if there is a significant adverse impact in terms of noise from the development and then allow the Local Authority to grant planning permission unless they can demonstrate that the significant adverse impact would outweigh the benefits of the development.

4.1.2 Paragraph 123 - Aim of Planning Decisions with respect to Noise

Paragraph 123 of the NPPF provides the overall aims in terms of noise when determining planning applications.

“Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;

mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions...”

4.2. Noise Policy Statement for England: 2010 (“NPSE”)

The “Noise Policy Statement for England” was published in March 2010 by Defra which expands on the requirements of paragraph 123 of the NPPF and clarifies the objectives on the need the manage noise to obtain sustainable developments for the future.

4.2.1 Noise Policy Aims

The NPSE details the three main aims to meet the Governments long term vision:

“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy in sustainable development:

- Avoid significant adverse impact on health and the quality of life;
- Mitigate and minimise adverse impacts on health and quality of life; and
- Where possible, contribute to the improvement of health and the quality of life.”

4.2.2 Lowest and Significant Observed Adverse Effects (LOAEL & SOAEL)

The NPSE provide clarity on the exact aims of the Policy by introducing the following concepts.

“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 $L_{\text{night, outside}}$ 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 $L_{\text{night, outside}}$ 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 $L_{\text{night, outside}}$ is the average outside noise level over 8 hour calculated over a year (EU: 2002/49/EC).

4.4. ISO 1996 – Part 1: 2016

This document details the measurement and assessment of environmental noise and details the basic quantities and assessment procedures adopting the principle of Rating Noise Level which is the resultant noise level after various corrections have been applied.

4.4.1 Designation of Day, Evening and Night Time

The document provides guidance on the designation of day time and evening time in section 3.6.1. and 3.6.2:

"L_{day,12 hours} equivalent continuous sound pressure level when the reference time interval is the day

Note 2 – A day is normally 12 hours between 7h and 19 h....

L_{evening, 4 hours} equivalent continuous sound pressure level when the reference time interval is the day

Note 2 – An evening is normally 4 hours between 19h and 23h

L_{night,8 hours} equivalent continuous sound pressure level when the reference time interval is the night

" Note 2 – A night is normally 8 hours between 23h and 07h

4.4.2 Adjustments to Specific Noise Levels

The following adjustments are detailed within table A.1 of Annex A which enable the calculation of the Rating Level from the Specific Noise level

Type	Specification	Level Adjustment – dB
Source Character	Regular Impulsive	+ 5 dB
	Highly Impulsive	+ 12 dB
	Prominent Tones	+ 3 dB to + 6 dB
Time Period	Evening (19:00 to 23:00)	+5 dB
	Night Time (23:00 to 07:00)	+10 dB
	Weekend Day Time (07:00 to 19:00)	+5 dB

For reference the impulsivity and tones must be clearly audible at the assessment position and to this end the specific noise level must not be more than 3 dB below the existing residual noise level to allow the inclusion of the source character adjustment.

4.5. IEMA Guidelines for Environmental Noise Impact Assessment

The Institute of Environmental Management and Assessment ("IEMA") document entitled "*Guidelines for Environmental Noise Impact Assessment*" version 1.2 dated November 2014 describes the methodology for undertaking a noise impact assessment and an outline procedure for rating the significance of the likely impact based on the change in the overall noise levels.

4.5.1 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

4.6. WHO – Criterion for Community Noise

The World Health Organisation document entitled “*Guidelines for Community Noise*” published in 1999 suggests that a maximum level of L_{Amax} 60 dB at a distance of 1m from a bedroom window is a suitable criterion to avoid sleep disturbance during the night time period. The document clarifies this is for a single event at paragraph 4.3.1. of the document. Usefully the document provides some overall guidance and commentary at paragraph 4.2.7.

“The annoyance response to noise is affected by several factors, including equivalent sound pressure level and the highest sound pressure level of the noise, the number of such events, and the time of day....”

During the daytime, few people are seriously annoyed by activities with L_{Aeq} levels below 55 dB; or moderately annoyed with L_{Aeq} levels below 50 dB....”

It is emphasized that for intermittent noise it is necessary to take into account the maximum sound pressure level as well as the number of events”

4.7. British Standard 4142:2014 (“BS4142”)

4.7.1 Scope of Standard

In the assessment of the proposed plant, consideration has been given to the scope of British Standard 4142:2014, which in section 1, details applicability of this standard to rating assessing sound of an industrial and/or commercial nature.

“The determination of noise amount to a nuisance is beyond the scope of this British Standard.

The standard is not intended to be applied to the derivation of indoor sound levels arising from sound levels outside, or the assessment of indoor sound levels.”

It is considered appropriate that both the background noise levels and the rating noise levels obtained fall within the scope of British Standard 4142:2014 by using outdoor sound levels to assess the effect of sound on local residents.

4.7.2 Assessment of Noise

British Standard 4142:2014 outlines a general consideration and 3 levels of impact based on the calculated assessment level:

“Typically, the greater [the] difference, the greater the magnitude of the impact.

- *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.”*

4.8. Local Authority

It is required that the resultant noise levels do not exceed -5dB beyond the existing background noise levels in accordance with condition 3 of the planning permission.

4.9. Combined Noise Criterion

Taking the above documents into account it would be recommended that consideration is given to the following criteria:

NPPF Policy Aim (p 123)	Action	Night Noise Guidelines	ISO 9613: 2016 / IEMA	BS 4142: 2014
Significant Adverse Impact	Avoid	L _{night} 55 dB or more	L _{Aeq, t} +10 dB or more	+10 dB
Adverse Impact	Mitigate	L _{night} 40 – 55 dB	L _{Aeq, t} +3 to +9 dB	+5 dB
Improved Quality of Life	Ideal if Possible	L _{night} 40 dB or less	L _{Aeq, t} +2 dB or less	+0 dB

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
$A_{bar} = 10 \cdot \text{Log}_{10} [3 + (40 \cdot \delta / \lambda) - A_g]$ <p>*Note 1</p> <p>where $\delta = a + b - r$ and $\lambda = c / f$</p>	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. 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

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 Condenser	63 dB	+0 dB	-29 dB	+3 dB	-0 dB	-9 dB	28 dB
2	AC2 - Mitsubishi AC Unit	71 dB	+0 dB	-28 dB	+3 dB	-0 dB	-9 dB	37 dB
3	AC3 - Mitsubishi AC Unit	71 dB	+0 dB	-30 dB	+3 dB	-0 dB	-9 dB	35 dB
4	AC4 - Mitsubishi AC Unit	64 dB	+0 dB	-31 dB	+3 dB	-0 dB	-9 dB	27 dB
TOT	Total Noise Levels	75 dB			-35 dB			40 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 Condenser	63 dB	+0 dB	-29 dB	+3 dB	-0 dB	-9 dB	28 dB
2	AC2 - Mitsubishi AC Unit	71 dB	+0 dB	-28 dB	+3 dB	-0 dB	-9 dB	37 dB
3	AC3 - Mitsubishi AC Unit	71 dB	+0 dB	-30 dB	+3 dB	-0 dB	-9 dB	35 dB
4	AC4 - Mitsubishi AC Unit	64 dB	+0 dB	-31 dB	+3 dB	-0 dB	-9 dB	27 dB
TOT	Total Noise Levels	75 dB			-35 dB			40 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 Condenser	59 dB	+0 dB	-29 dB	+3 dB	-0 dB	-9 dB	24 dB
TOT	Total Noise Levels	59 dB			-35 dB			24 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} 34 dB	L _{Aeq,1 hours} 34 dB	L _{Aeq,15 minutes} 24 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
NPPF – Paragraph 123	Does Not Comply	Does Not Comply	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} 34 dB	L _{Aeq,1 hours} 34 dB	L _{Aeq,15 minutes} 24 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} 40 dB	L _{Aeq,1 hours} 40 dB	L _{Aeq,15 minutes} 32 dB
Residual Sound Levels	L _{Aeq,1 hour} 55 dB	L _{Aeq,1 hours} 54 dB	L _{Aeq,15 minutes} 51 dB
Rating + Residual	L _{Aeq,1 hour} 55.0 dB	L _{Aeq,1 hours} 54.0 dB	L _{Aeq,15 minutes} 51.1 dB
Increase in Residual Noise	+ 0.0 dB	+ 0.0 dB	+ 0.1 dB
IEMA Significance	+2 dB (No Impact)	2 dB (No Impact)	2 dB (No Impact)
NPPF – Paragraph 123	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} 55 dB	L _{Aeq,1 hours} 54 dB	L _{Aeq,15 minutes} 51 dB
Specific Noise Levels	L _{Aeq,1 hours} 34 dB	L _{Aeq,1 hours} 34 dB	L _{Aeq,15 minutes} 24 dB
Impulsivity Feature	+2 dB	+2 dB	+2 dB
Tonality Feature	+0 dB	+0 dB	+0 dB
Rating Noise Levels	L _{Aeq,1 hours} 36 dB	L _{Aeq,1 hours} 36 dB	L _{Aeq,15 minutes} 26 dB
Background Noise Levels	L _{A90,1 hours} 49 dB	L _{A90,1 hours} 49 dB	L _{A90,15 minutes} 41 dB
BS 4142 Assessment	-13 dB	-13 dB (Low Impact)	-15 dB (Low Impact)
NPPF – Paragraph 123	-0 dB (Low Impact)	-0 dB (Low Impact)	-0 dB (Low Impact)
Uncertainty (95% Confidence, k=2)	+/- 1.72 dB	+/- 1.73 dB	+/- 1.80 dB

7. Conclusions...

7.1. Assessment Position

The nearest assessment position is the residential property above the site which is located between 7 m and 10 m from the plant located on the mezzanine deck.

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}
56 - 87 dB	50 - 67 dB	47 - 54 dB	58 - 73 dB	50 - 60 dB	48 - 53 dB	50 - 76 dB	46 - 62 dB	43 - 50 dB

7.3. Criterion at Assessment Position

NPPF Policy Aim (p 123)	Action	Night Noise Guidelines	ISO 9613: 2016 / IEMA	BS 4142: 2014
Significant Adverse Impact	Avoid	L _{night} 55 dB or more	L _{Aeq,t} +10 dB or more	+10 dB
Adverse Impact	Mitigate	L _{night} 40 – 55 dB	L _{Aeq,t} +3 to +9 dB	+5 dB
Improved Quality of Life	Ideal if Possible	L _{night} 40 dB or less	L _{Aeq,t} +2 dB or less	+0 dB

7.4. Mitigation Measures

The three AC units are installed within NSL acoustic enclosures.

7.5. 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	49 dB	-13 dB	36 dB	49 dB	-13 dB	26 dB	41 dB	-15 dB

7.6. Conclusions

In accordance with paragraph 14 of the National Planning Policy Framework (2012) planning permission should be granted for the proposal as the benefits outweigh any significant adverse impacts from the installation of the proposed additional mechanical equipment.

7.7. Uncertainty

Day Time (07:00 – 19:00)	Evening (19:00 – 23:00)	Night Time (23:00 – 07:00)
+1.72 dB (k=2, 95% Confidence)	+1.73 dB (k=2, 95% Confidence)	+1.80 dB (k=2, 95% Confidence)

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

8.1. a) Competency

	Name	Role	Competency
1)	Ms. E. Samphier	Consultant	Institute of Acoustics Diploma in Acoustics and Noise Control
	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 Condenser		
	Source 2	AC2 - Mitsubishi AC Unit (NSL Enclosure)		
	Source 3	AC3 - Mitsubishi AC Unit (NSL Enclosure)		
	Source 4	AC4 - Mitsubishi AC Unit (NSL Enclosure)		
	Description of Source	Source Location	Hours of Operation	Mode of Operation
2)	Source 1	Plant located on the ground floor at rear of site	24-hour	Continuously on Demand
3)	Source 2		07:00 - 23:00	
4)	Source 3		07:00 - 23:00	
5)	Source 4		07:00 - 23:00	
	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 site is located amongst a parade of shops on Camden High Street. The proposed site is to be located on the ground floor underneath residential properties. It is proposed to locate the plant within an external area to the rear of 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 7.4 m to 9.6m 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=	21-Jun-17	21-Jun-17	21-Jun-17

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	16 – 22
8)	Cloud Cover	Partly Cloudy

8.9. i) Date and Time of Measurements

1)	Source Measurements	Unknown
	Background Measurements	24-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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