

KR08165

Parkhills Development

Noise Impact Assessment...

Standard: British Standard 4142: 2014

Site: Former Parkhills Car Centre

Address: 1 Parkhills Road
Manchester Road
Bury

Postcode: BL9 9AZ

Issue: Version 1.3

Date: 18th May 2026

Status: Current Document

KR Associates (UK) Ltd

Quietly confident...

Revisions...

KR08165		Project	Parkhills Development		
		Title	Proposed Convenience Store and Drive-through		
		Standard	British Standard 4142: 2014 + A1: 2019		
Issue	Date	Details of Revision			
V1.3	18/05/2026	Description	Report issue for submission to Local Authority		
		Signature			
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KR Associates...

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1. Executive Summary....

1.1. Instruction

KR Associates (UK) Ltd have been instructed to undertake an environmental noise survey at the former Parkhills Car Centre at 1 Parkhills Road, Manchester Road, Bury. It is proposed to demolish the existing building and construct a detached convenience store and Drive-through with a shared customer car park in the middle of the site.

1.1.1 Scope of Report

The report will determine the following:

- The existing background noise climate at the existing residential dwellings around the site.
- A suitable noise criteria to comply with the Local Development Plan and ensure existing residential occupiers are not disturbed by the future use of the convenience store and drive-through.
- The determination of the following noise emissions from the convenience store and Drive-through.
 - o All external fixed mechanical equipment including refrigeration, air conditioning and extract systems.
 - o Noise from deliveries to both sites.
 - o Noise from customers using the shared customer car park.
 - o Noise from customers using the Drive-through.

1.1.2 End Users

There has been a car sales and servicing centre on the site for at least the last 25 years which is likely to fall within the Sui Generis use class. To ensure the long-term viability and sustainability of this commercial site it has been decided to demolish the existing building and construct a convenience store and drive thru. The end users are currently unknown and therefore the report will assume the following to determine if reasonable mitigation can be introduced into the scheme to ensure compliance with the Local Development Plan and all other material considerations.

Element of Design		Convenience Store	Drive Thru
Opening Times		07:00 to 23:00	05:00 to 00:00
Total Refrigeration Duty for Chilled and Frozen		35 kW THR – 1 Unit	5 kW THR – 1 Unit
Daikin RZAG 140 NV1 AC Heat Pump	Heating Capacity	15 kW – 2 Units	10 kW – 1 Unit
	Cooling Capacity	25 kW – 2 Units	12 kW – 1 Unit
General Ventilation Extract including bakery and toilet extract		2.1 m ³ s ⁻¹	1.5 m ³ s ⁻¹
Daily Deliveries – 07:00 to 19:00 (7-days per week)		2 Deliveries (18T)	1 Delivery (7.5T)
Car Parking Spaces – 15-minute dwelling time x 3 times per hour		34 Spaces	
Cars through the Drive-through		Peak Times (Short Bursts) 40 to 60 cars per hour	

1.2. Executive Summary

1.2.1 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}
69 - 101 dB	62 - 75 dB	57 - 68 dB	69 - 90 dB	62 - 71 dB	52 - 64 dB	63 - 91 dB	48 - 67 dB	32 - 63 dB
Minimum Background		57 dB	Minimum Background		52 dB	Minimum Background		32 dB

1.2.2 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 from the mechanical equipment should be 5 dB below the background levels when assessed in accordance with British Standard 4142: 2014 + A1: 2019. It would be recommended that noise from other sources does not exceed 5 dB above the background noise level.

1.2.3 Assessment of Plant Noise Levels

Source	Nearest Receptor	Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Night Time (23:00 – 07:00)		
		L _{Aeq,1h}	L _{A90,15m}	BS4142	L _{Aeq,1h}	L _{A90,15m}	BS4142	L _{Aeq,15m}	L _{A90,15m}	BS4142
Convenience Store	NSP A 3 Richmond Street	41 dB	57 dB	-16 dB	41 dB	52 dB	-11 dB	27 dB	32 dB	-5 dB
Drive-through	NSP B Flat above Morrisons	31 dB		-26 dB	31 dB		-21 dB	25 dB		-7 dB

1.2.4 Assessment of Average Delivery Noise Levels

Source	Nearest Receptor	Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Night Time (23:00 – 07:00)		
		L _{Aeq,1h}	L _{A90,15m}	BS4142	L _{Aeq,1h}	L _{A90,15m}	BS4142	L _{Aeq,15m}	L _{A90,15m}	BS4142
Convenience Store	NSP A 3 Richmond Street	49 dB	57 dB	-8 dB	--	52 dB	--	--	32 dB	--

It is assumed that the large impact will come from the deliveries to the convenience store. The drive-through will have deliveries from smaller vehicles which are further away from the nearest residents.

1.2.5 Assessment of Car Park

Source	Nearest Receptor	Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Morning (05:00 – 07:00) Evening (23:00 – 00:00)		
		L _{Aeq,1h}	L _{A90,15m}	BS4142	L _{Aeq,1h}	L _{A90,15m}	BS4142	L _{Aeq,15m}	L _{A90,15m}	BS4142
Car Park 05:00-00:00	NSP B Flat above Morrisons	49 dB	57 dB	-8 dB	49 dB	52 dB	-3 dB	49 dB	49 dB	0 dB

1.2.6 Drive through

Source	Nearest Receptor	Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Morning (05:00 – 07:00) Evening (23:00 – 00:00)		
		L _{Aeq,1h}	L _{A90,15m}	BS4142	L _{Aeq,1h}	L _{A90,15m}	BS4142	L _{Aeq,15m}	L _{A90,15m}	BS4142
Car Park 05:00-00:00	NSP B <i>Flat above Morrisons</i>	46 dB	57 dB	-11 dB	46 dB	52 dB	-6 dB	69 dB	49 dB	-3 dB

1.3. Conclusions (repeated in section 6)

The background noise levels at the surrounding residential properties are reasonably high during the daytime and still only fall to 52 L_{A90,15 minute} during the later evening. However, overnight between 23:00 and 07:00 the background noise levels fall to 32 dB L_{A90, 15 minutes} between the hours of around 01:00 and 04:00 hours. The minimum night time noise between 23:00 to 00:00 and 05:00 to 07:00 is 49 dB L_{A90,15 minutes}.

To ensure compliance with the Local Development Plan and in particular policy EN7/2 entitled “*Noise Pollution*” and Policy JP-P1 entitled “*Sustainable Places*” it is proposed that the noise from mechanical equipment is at least 5 dB below the background noise levels and that all other noise is not more than 5 dB above the background noise levels.

The resultant noise levels from the mechanical equipment, deliveries to the site, the use of the car park and drive-through will comply with these criteria. The resultant noise levels from the development are unlikely to produce an adverse impact on the existing residential dwellings surrounding the site. This conclusion is based on the following:

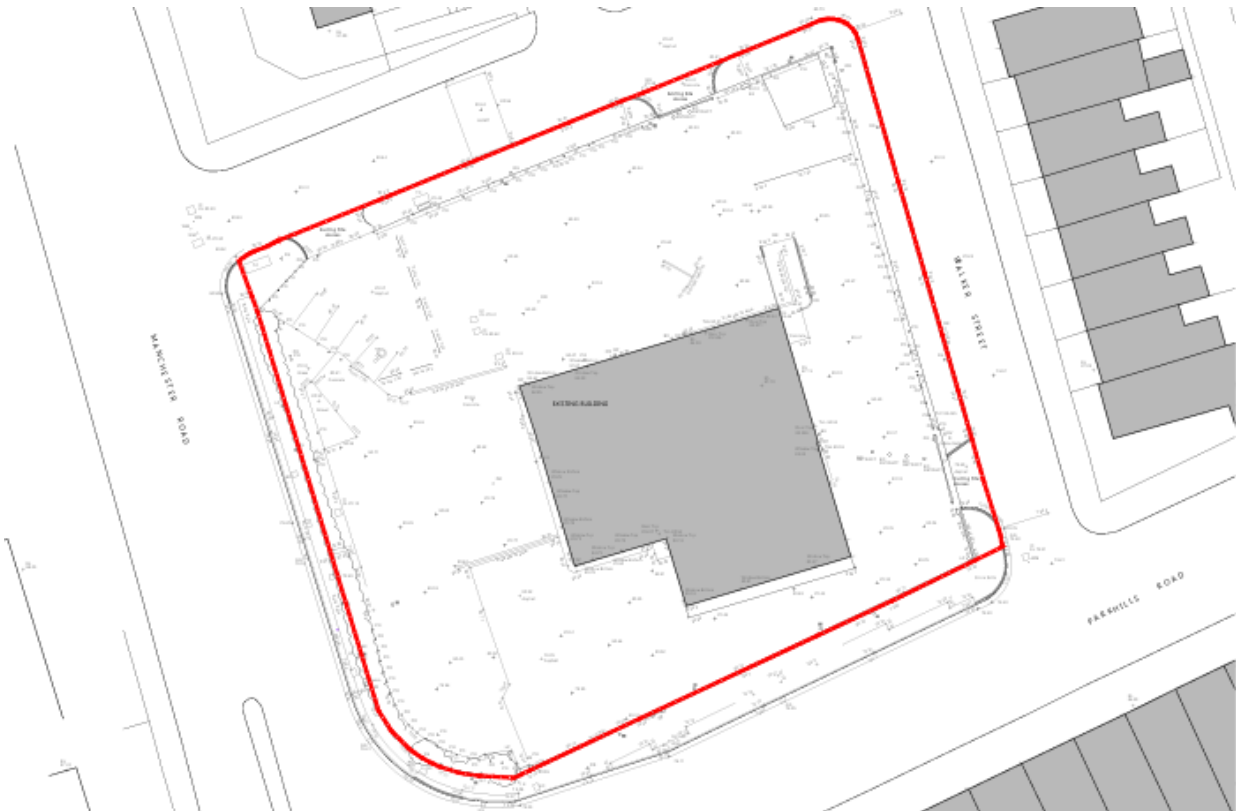
- Convenience store only open between 07:00 and 23:00 hours
- Drive through only open between 05:00 to 00:00 hours.
- Deliveries to the site are only undertaken between 07:00 and 19:00 hours.
- The car park is only open between 05:00 and 00:00 hours.

The site is located within a traffic-influenced environment where background noise levels remain relatively elevated throughout both the early morning and late evening periods. The proposed development would not introduce new or atypical noise sources, with no deliveries during night-time hours and all mechanical equipment designed to operate below background levels.

The drive-through activity would be consistent with the existing acoustic character of the area, comprising short-duration vehicle movements similar to surrounding road traffic. Whilst the site could theoretically operate on a 24-hour basis without giving rise to significant adverse impacts, the proposed hours of 05:00 to 00:00 represent a balanced and proportionate approach that aligns with the prevailing noise climate and is supported by the assessment findings.

2. Site Location...

2.1. Existing Site

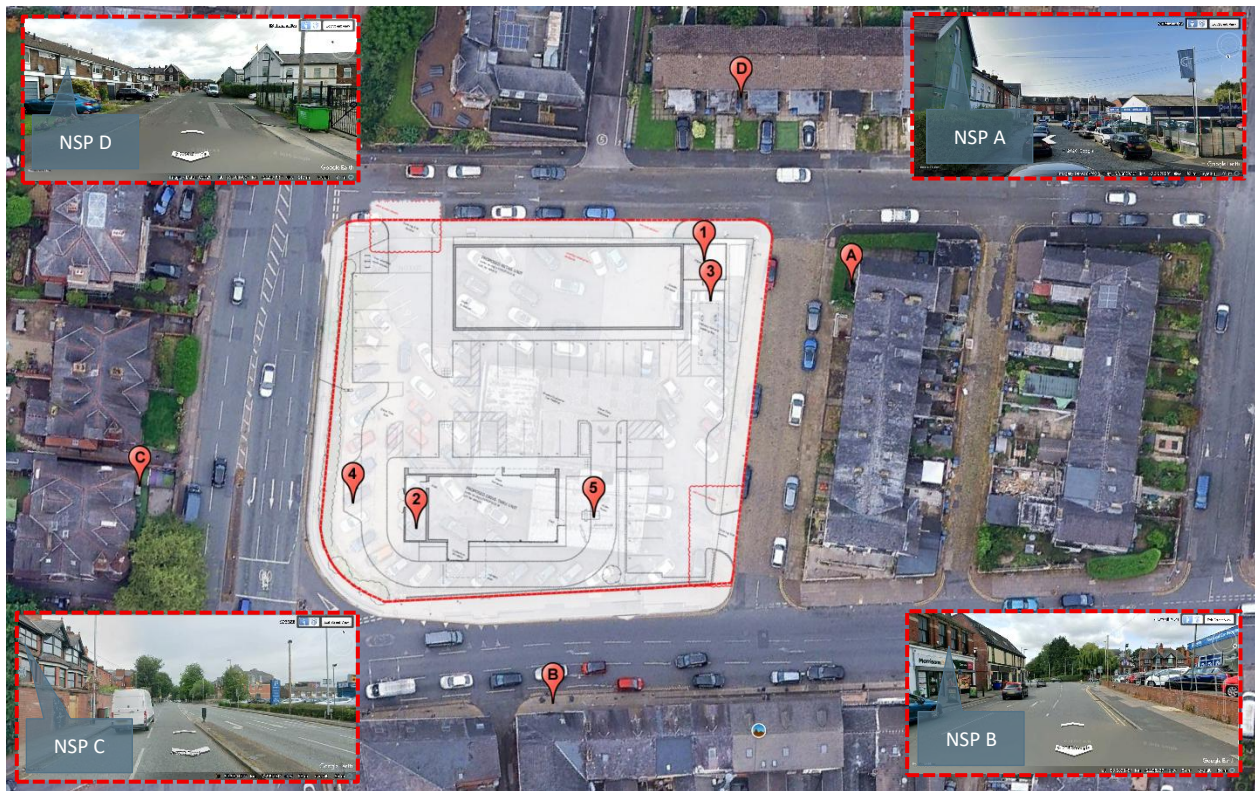


Site Plan (Imagery © Google 2026)

The existing site is bounded by Manchester Road to the west, Richmond Street to the north, Walker Street to the east and Parkhills Road to the South. The site consists of hardstanding for cars and a single storey 'L' shaped building within the centre of the site with a single storey pitched roof over part of the building.

2.2. Proposed Site Layout

The following shows the proposed development with the convenience store on the northern part of the site and the Drive-through on the southern part of the site. The shared customer car park is located between the two buildings. The convenience store plant area is in the north east corner of the site, and the Drive-through plant area is in the south west corner of the site. All vehicles enter the site off Richmond Street in the north west corner of the site and exit onto Walker Street in the south west corner of the site.



Position	Relative Distance	Latitude	Longitude	Elevation
Source 1	External Mechanical Equipment for Convenience Store	53.583865°	-2.298310°	1.5 m
Source 2	External Mechanical Equipment for Drive Thru	53.583416°	-2.298648°	1.5 m
Source 3	Deliveries to Convenience Store (18T)	53.583823°	-2.298265°	2.5 m
Source 4	Deliveries to Drive Thru (7.5T)	53.583414°	-2.298792°	1.6 m
Source 5	Ordering Tannoy and Drive-through	53.583517°	-2.298312°	1.2 m
NSP A	1 st floor bedroom at side of 3 Richmond Street	53.583911°	-2.298007°	4.5 m
NSP B	1 st floor residential flat above Morrisons Daily	53.583281°	-2.298237°	4.5 m
NSP C	1 st floor bedroom at 188 Manchester Street	53.583327°	-2.299224°	5.5 m
NSP D	1 st floor bedroom at 13 Richmond Street	53.584070°	-2.298374°	4.5 m

2.3. Proposed Mechanical Equipment

The end users of the convenience store and Drive-through are not yet confirmed. However, irrespective of the operators these units are likely to have the following mechanical equipment. When the final operators are confirmed, they will need to ensure that their individual selections for external mechanical equipment do not exceed the following noise emissions.

2.3.1 Day Time (07:00 to 23:00 hours)

Source	Description	Octave Band Centre Frequency (Hz)							(A)
		63	125	250	500	1K	2K	4K	
1a	DT01 37 kW THR Packaged Refrigeration Unit <i>Equivalent to 40 dB(A) at 10m</i>	78	79	70	69	56	67	50	72
1b	AC01 Daikin RZAG 140 NV1 AC Heat Pump <i>Equivalent to 55 dB(A) at 1m</i>	76	72	71	70	63	58	49	70
1c	AC02 Daikin RZAG 140 NV1 AC Heat Pump <i>Equivalent to 55 dB(A) at 1m</i>	76	72	71	70	63	58	49	70
1d	Ventilation Extract including bakery & toilet	72	60	58	59	55	49	43	60
2a	DT02 15 kW Condensing Refrigeration Unit <i>Equivalent to 35 dB(A) at 10m</i>	69	71	43	65	58	57	53	65
2b	AC03 Daikin RZAG 140 NV1 AC Heat Pump <i>Equivalent to 55 dB(A) at 1m</i>	76	72	71	70	63	58	49	70
2c	Ventilation Extract including bakery & toilet	72	60	58	59	55	49	43	60

Sound Power Levels, dB – reference 1×10^{-12} watts.

2.3.2 Night Time (23:00 to 07:00 hours)

Source	Description	Octave Band Centre Frequency (Hz)							(A)
		63	125	250	500	1K	2K	4K	
1a	DT01 37 kW THR Packaged Refrigeration Unit <i>Equivalent to 30 dB(A) at 10m</i>	65	64	60	63	54	49	40	62
2a	DT02 15 kW Condensing Refrigeration Unit <i>Equivalent to 35 dB(A) at 10m</i>	69	71	43	65	58	57	53	65

Sound Power Levels, dB – reference 1×10^{-12} watts.

The ventilation extract system may consist of more than one extract fan. The combined sound power levels of all extract fans should meet the above overall sound power level of $L_{w(A)}$ 60 dB. This will be met by the inclusion of internal atmospheric side attenuators.

2.4. Proposed Delivery Noise Sources

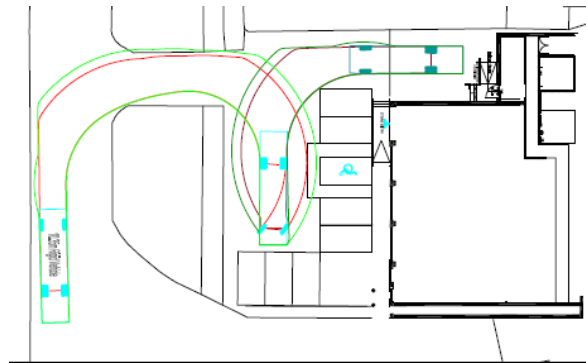
2.4.1 Approach

It is very difficult to measure delivery noise without access to the residential properties and then it is very awkward to install a noise meter 1m externally from a residential window. Furthermore, if an operator knows you are undertaking measurements, they tend to be very careful to not make a noise.

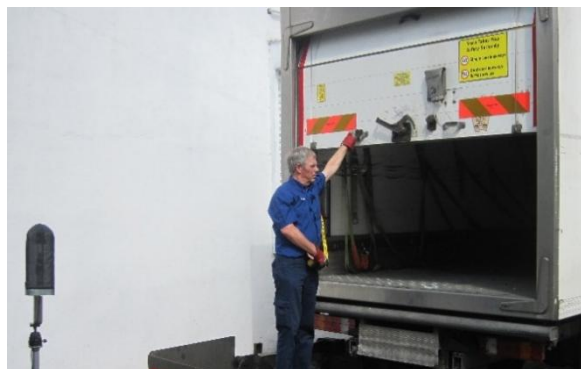
It has therefore been found more robust to measure a worst case in which the delivery is broken down into its key components and the noise from each component measured in a controlled fashion ensuring the source noise levels capture all eventualities that could occur on a site for an extended time period.

The following noise levels were measured and corrected for a position 1m from the edge of a lorry to simulate a residential dwelling located 3m from the bed of a lorry at an alternative site where it was possible to make detailed measurements of a delivery.

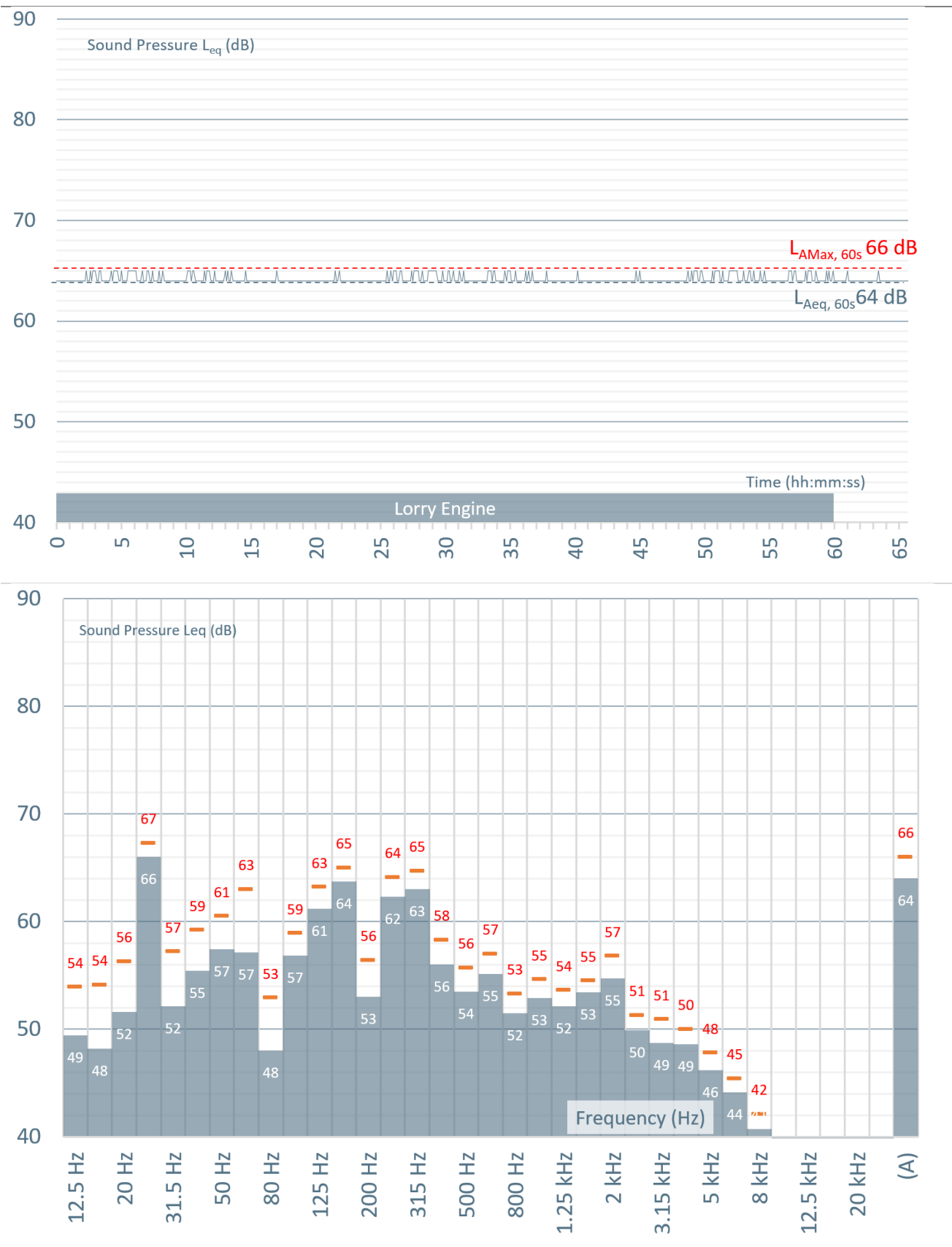
2.4.2 Measurement of Lorry Arriving / Departing



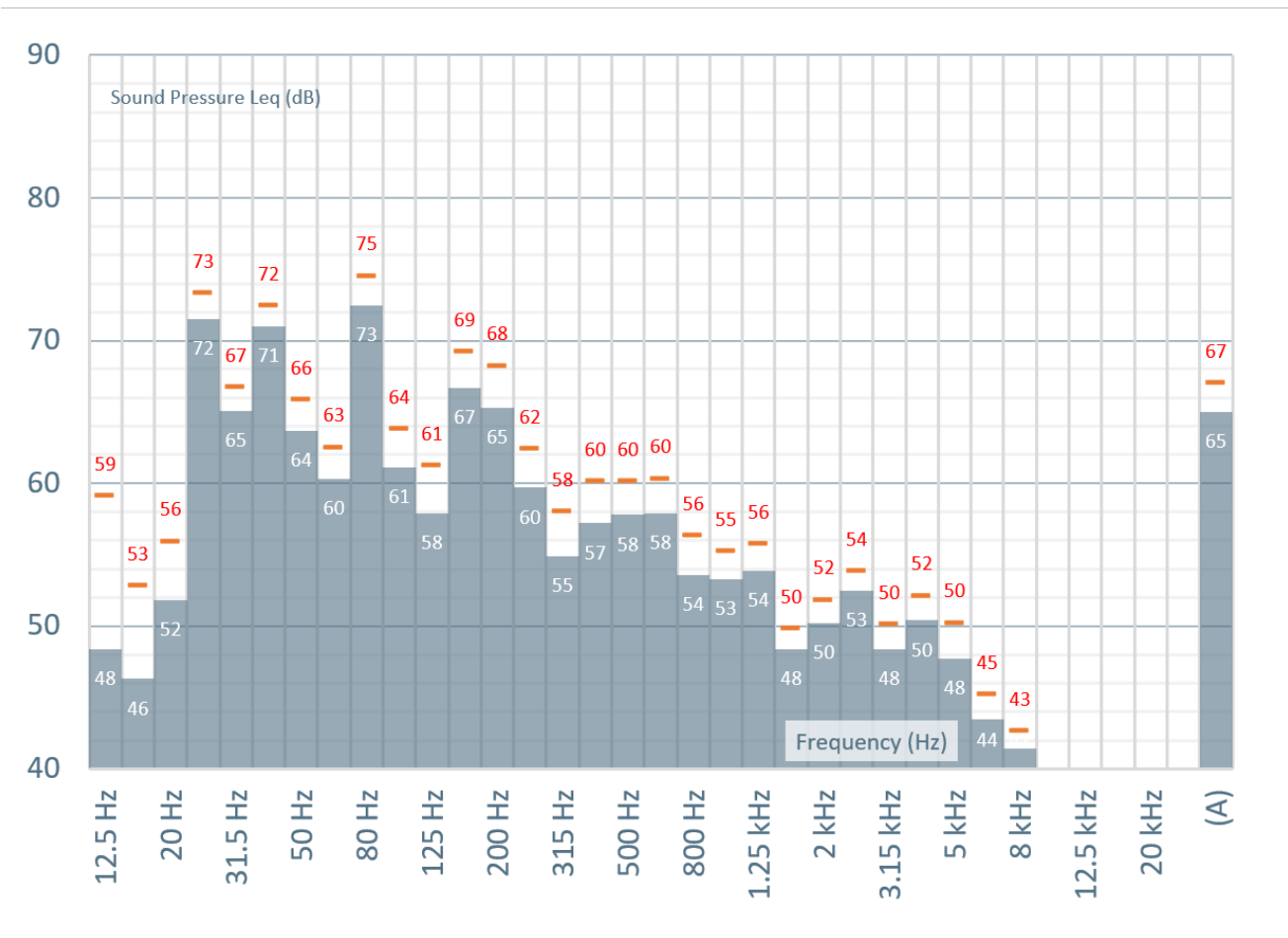
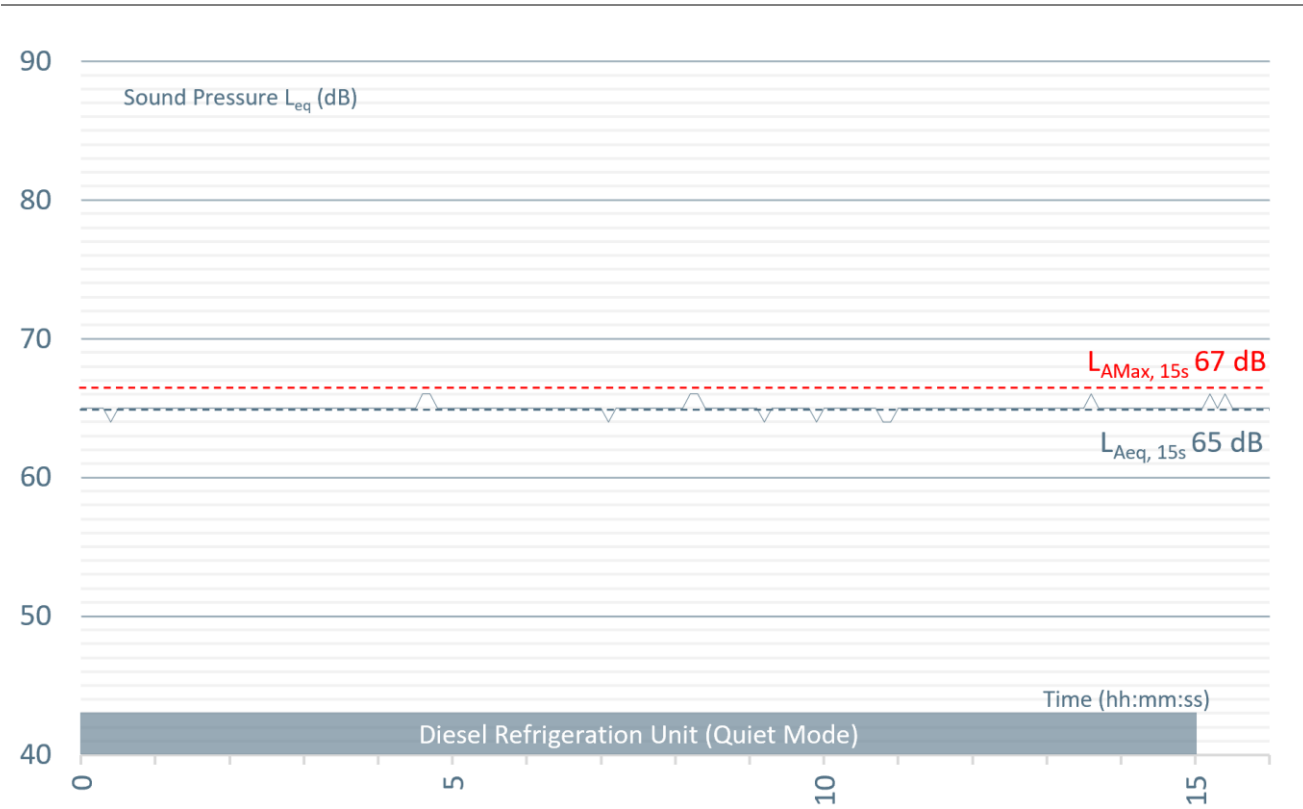
2.4.3 Measurement of Delivery Events



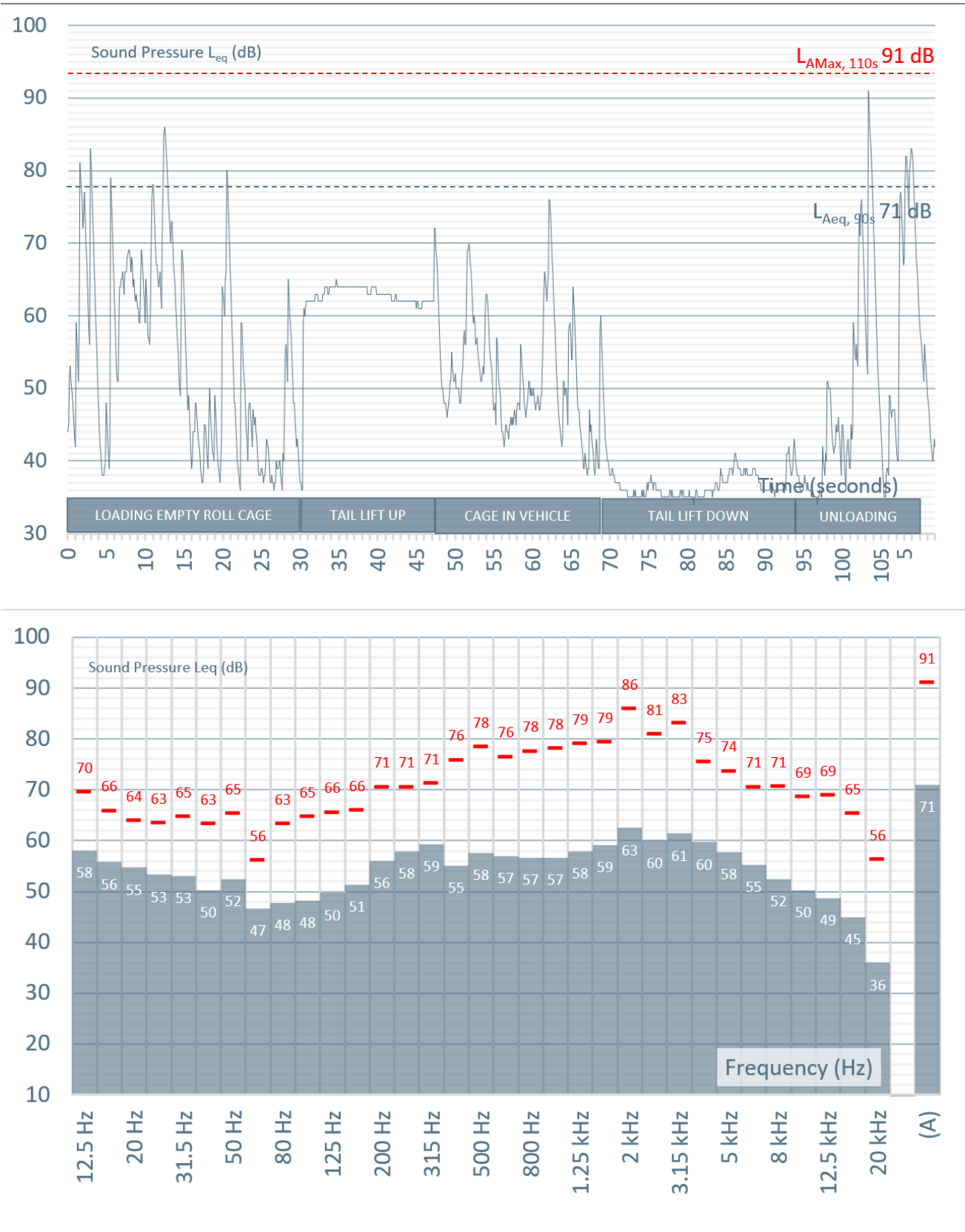
2.4.4 Noise from the Delivery Vehicle Engine



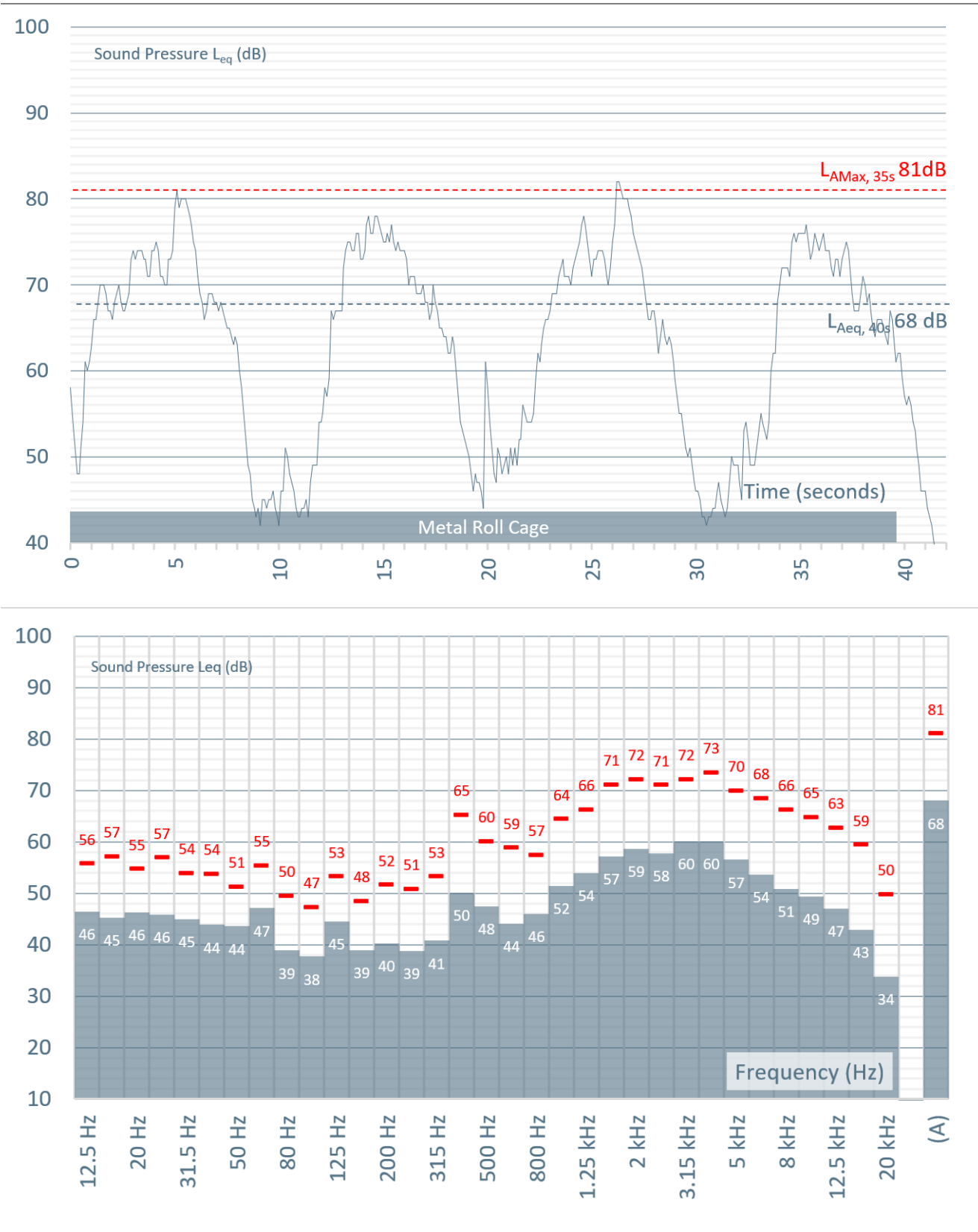
2.4.5 Delivery Vehicle Refrigeration Unit (Running on Diesel in Quiet Mode)



2.4.6 Unloading / Loading of Metal Roll Cages from Delivery Vehicle



2.4.7 Movement of Metal Roll Cages on Concrete



2.4.8 Summary of Maximum Noise Level

Octave Band Frequency (Hz)		(A)	63	125	250	500	1K	2K	4K	8K
Lorry	1700 rpm Lorry Engine	66	65	68	68	62	59	60	55	48
	Diesel Refrigeration	67	75	71	70	65	61	57	56	48
Metal Roll Cage	Unloading / Loading	91	68	70	76	82	83	88	84	75
	Roll Cage Movement	81	58	55	57	67	69	76	77	71

Sound Pressure Level – Nominal 1m from Activity (dB) – Reference $2 \times 10^{-5} \text{ Nm}^{-2}$

2.4.9 Summary of Average Noise Levels

Octave Band Frequency (Hz)		(A)	63	125	250	500	1K	2K	4K	8K
Lorry	1700 rpm Lorry Engine	64	61	66	66	60	57	58	53	46
	Diesel Refrigeration	65	73	68	67	62	58	55	54	46
Metal Roll Cage	Unloading / Loading	71	54	55	63	61	62	66	65	58
	Roll Cage Movement	68	49	46	45	53	56	63	64	56

Sound Pressure Level – Nominal 1m from Activity (dB) – Reference $2 \times 10^{-5} \text{ Nm}^{-2}$

2.4.10 Standard Delivery Schedule

The vehicle will arrive at site, park up and switch off the vehicle engine leaving the diesel refrigeration unit running while the driver signs in. The refrigeration unit will remain on for the duration of the unloading of the full roll cages and the loading of the empty roll cages.

Delivery Element		Start	Stop	Duration
Arriving	Engine Noise	00:00	01:00	1 minute
	Diesel Refrigeration	00:00	01:00	1 minute
Stationary	Engine Off/ Sign In	01:00	03:00	2 minute
	Diesel Refrigeraton	01:00	15:00	14 minutes
Departing	Diesel Refrigeration	15:00	16:00	1 minute
	Engine Noise	15:00	16:00	1 minute

It should be noted that for the purposes of the assessment it is assumed that the delivery is undertaken continuously over a 1-hour period and therefore the specific noise levels are compared against the background noise levels over the same time period i.e. 15-minutes.

2.4.11 Unloading Full Roll Cages

A standard delivery will consist of 8 full roll cages which can be unloaded from the vehicle in pairs using the electric tail lift. The full roll cages will then be moved via the delivery route to the internal storage area of the store.

Delivery Element	Start	Stop	Duration
Move 2-No Roll Cages onto Tail Lift	00:00	00:30	30 seconds
Tail Lift Down	00:30	00:45	15 seconds
Unload 2-No Roll Cages from Tail Lift	00:45	01:15	30 seconds
Move 2-No Roll Cages to Store	01:15	01:45	30 seconds
Tail Lift Raised	01:45	02:00	15 seconds
8 Roll Cages – 4 Events (8 minutes total)	03:00	11:00	8 minutes

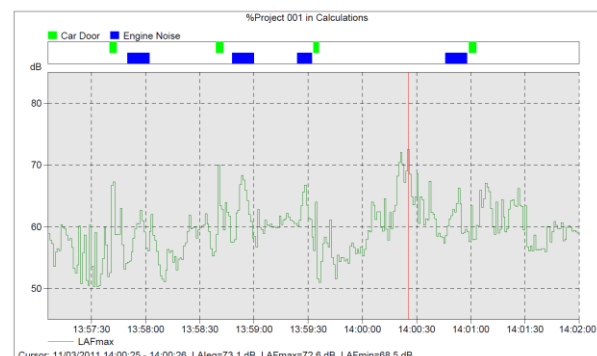
2.4.12 Loading of Empty Roll Cages

8- No roll cages will be returned to the depot with the empty roll cages nested in groups of 4-no cages. The cages are moved internally from the store to the back of the lorry.

Delivery Element	Start	Stop	Duration
Move 4-No Empty Roll Cages to Lorry	00:00	00:30	30 seconds
Load Empty Roll Cages onto Tail Lift	00:30	00:45	15 seconds
Tail Lift Up with Empty Roll Cages	00:45	01:00	15 seconds
Empty Roll Cages into Lorry and Secure	01:00	01:45	45 seconds
Tail Lift Down	01:45	02:00	15 seconds
8 Roll Cages – 2 Events (4 minutes in Total)	11:00	15:00	4 minutes

2.5. Proposed Noise from Car Parks

The noise from a similar car park was measured at a reference point.



The above measurements resulted in the following noise measurement results 3m from the parking position.

Delivery Event	L _{Amax, fast} (Maximum Level)	L _{Aeq 1 hour} (Average Level)
Use of Car Park by Customers Sound Pressure Level at 3m	73 dB	61 dB

2.6. Proposed Noise Levels from a Drive-through

2.6.1 Approach

The noise levels were recorded from similar sized drive-through operating in Bristol. It should be noted that this site had a hotel on the 1st and 2nd floors. The proposed sites at Bury will be a single storey detached building.



2.6.2 Resultant Sound Power Levels

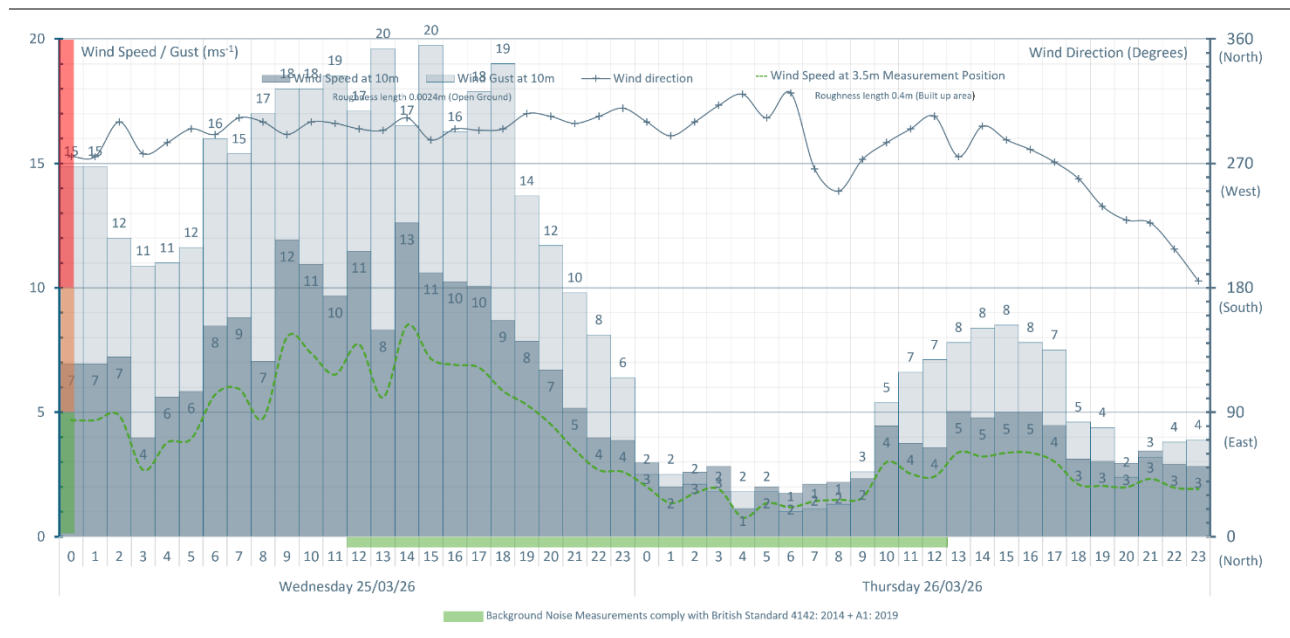
Source	Description	Octave Band Centre Frequency (Hz)							(A)
		63	125	250	500	1K	2K	4K	
1a	Drive-through ordering screen and speaker	56	58	63	67	69	65	61	72
2a	Normal car engine using Drive-through (10 mph)	60	62	60	63	60	59	58	66

Sound Power Levels, dB – reference 1×10^{-12} watts.

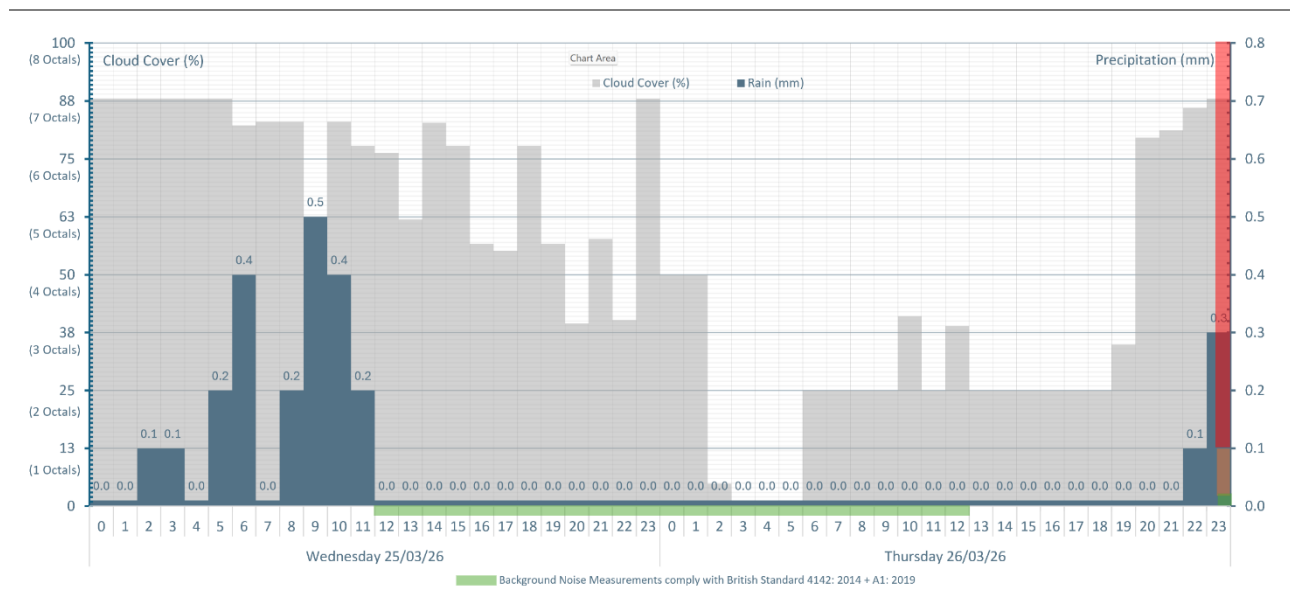
3. Background Noise Levels...

3.1. Weather During Survey

3.1.1 Wind Speed, Gust and Direction



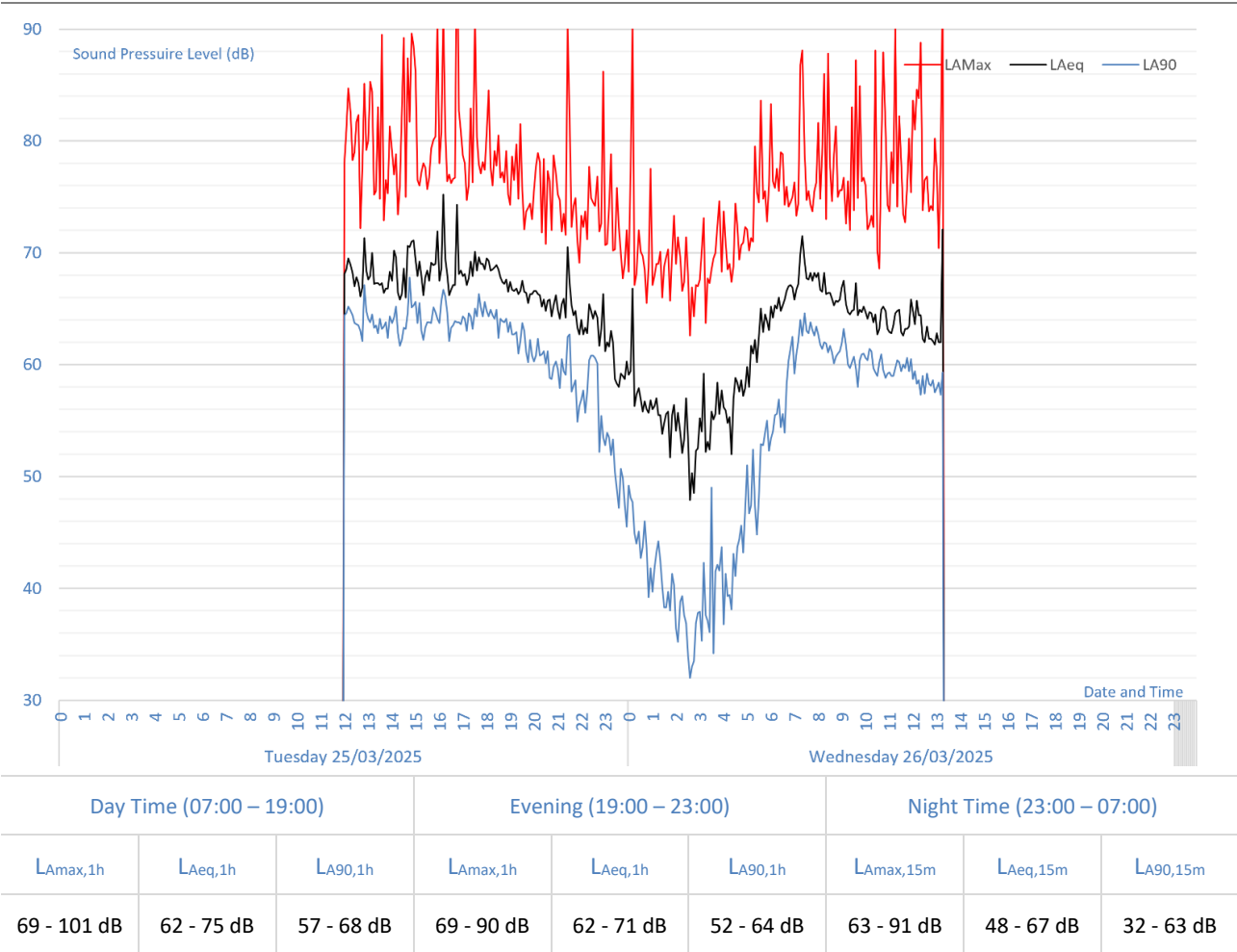
3.1.2 Rainfall, Temperature and Dew Point



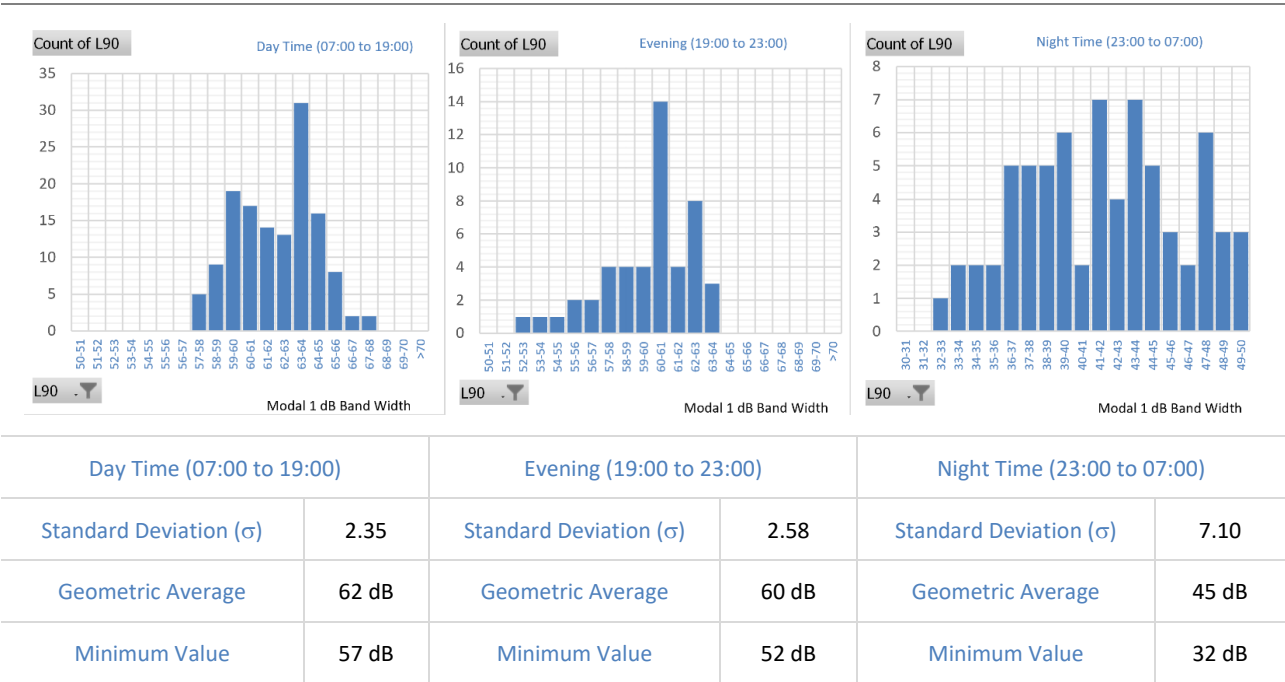
3.1.3 Impact of Weather

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



3.3. Modal Analysis of Background Data



3.4. Existing Noise Climate

3.4.1 Existing Noise Climate

The measured background sound climate demonstrates that the site is already subject to relatively elevated noise levels throughout both the day and night-time periods, with particular influence from traffic along Manchester Road and the surrounding highway network. Notably, the early morning period (circa 04:00–05:00) does not represent a true “low-noise” condition, with baseline levels already influenced by vehicular movements and associated activity as would be expected from customer using the convenience store and drive through.

Similarly, noise levels remain elevated into the late evening and around midnight, reflecting the site’s location within an active urban corridor. In this context, the proposed development would not introduce fundamentally different noise characteristics. There are no deliveries proposed during the night-time period and mechanical plant has been designed to be fully attenuated such that it operates below background levels, ensuring compliance with established criteria.

3.4.2 Convenience Store

The final operator of the convenience store is not yet known. However, from initial discussions operators are unlikely to want to open in this location earlier than 07:00 or later than 23:00. Even though 24-hour operation of a convenience store in this location could be support by the noise data, it is proposed that should planning permission be granted, the opening time of the convenience store is limited to 07:00 to 23:00.

3.4.3 Drive Through

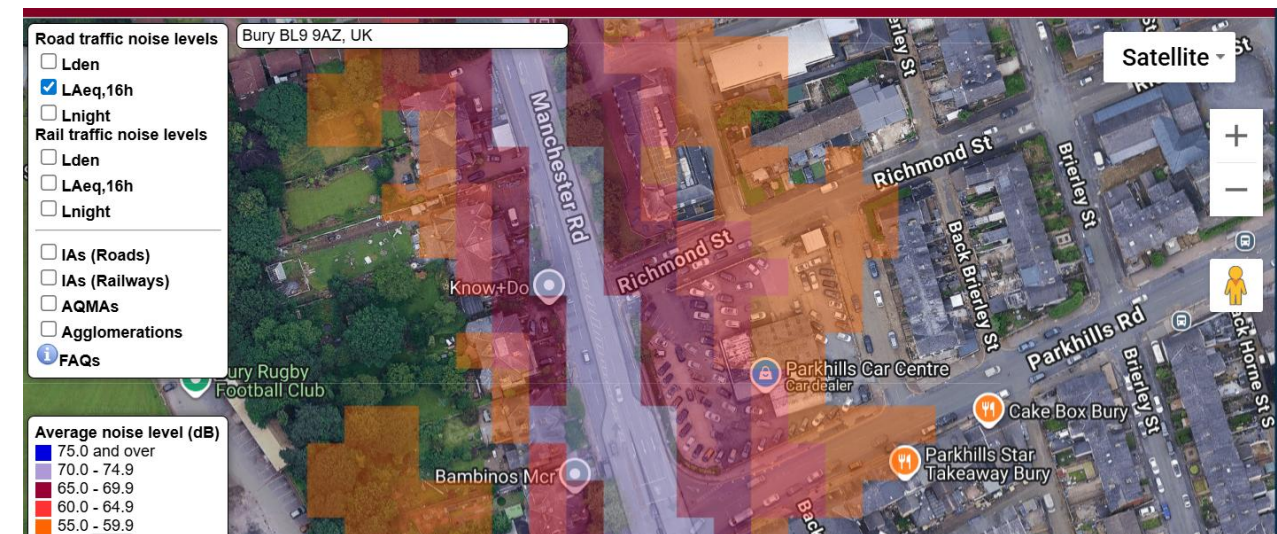
The nature of the drive-through operation is also closely aligned with the existing acoustic environment, comprising transient and intermittent vehicle movements, short dwell times, and low-level communication at ordering and collection points. These activities are inherently similar to the prevailing noise sources associated with traffic on Manchester Road and adjacent side streets. When considered in the round, the site could reasonably accommodate a 24-hour operation without giving rise to significant adverse effects.

However, it is recognised that the likely commercial operation of the unit would be more limited in practice. As such, the proposed drive-through hours of 05:00 to 00:00 represent a pragmatic and proportionate approach, capturing peak demand periods whilst avoiding the quietest part of the night. These hours are therefore considered to be robustly justified by the noise evidence and consistent with the surrounding environmental context.

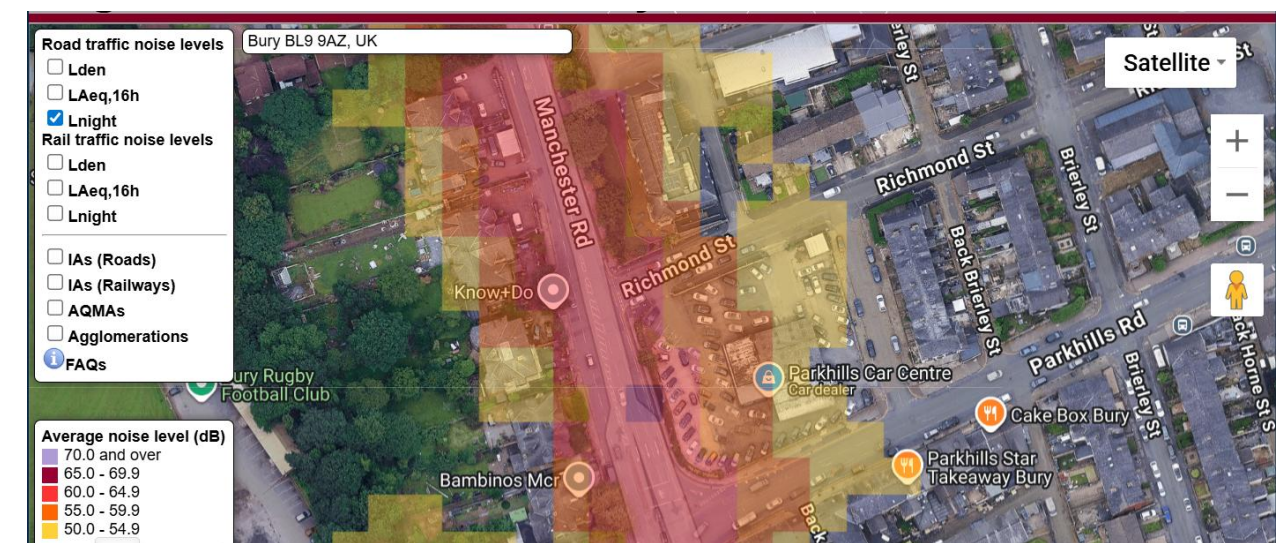
Consideration has also been given that with the convenience store closed between 23:00 and 07:00 the operation of the drive through between 05:00 and 07:00 and 23:00 to 00:00 will be the only noise source on site. During these hours which fall within the night time period only the drive through will be generating noise.

3.4.4 Strategic Noise Maps

The following are an extract from the Strategic Noise Maps. They show the high level of existing traffic noise during both the day and night time periods.



Day Time (07:00 to 23:00) 65 dB LAeq, 16 hours



Night Time (23:00 to 07:00) 60 dB LAeq, 16 hours

4. Criterion...

4.1. National Planning Policy Framework 2024

4.1.1 Scope of Standard

The revised National Planning Policy Framework published in December 2024 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 strong reason for refusing the 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 187 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 198 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 life⁷².

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

⁷²*See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 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 Bury Metropolitan Borough Council adopted the Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan in March 2024 including Policy JP-P1 entitled *“Sustainable Places.”*

“We aim to become one of the most liveable city regions in the world, consisting of a series of beautiful, healthy and varied places, each having the following key attributes that all development, wherever appropriate, should be consistent with:

1. *Distinctive, with a clear identity that:*
 - A. *Conserves and enhances the natural environment, landscape features, historic environment and local history and culture.*
 - B. *Enables a clear understanding of how the place has developed; and*
 - C. *Respects and acknowledges the character and identity of the locality in terms of design, siting, size, scale and materials used*
2. *Visually stimulating, creating interesting and imaginative environments which raise the human spirit through the use of green space, public art and quality design*
3. *Socially inclusive:*
 - A. *Responding to the needs of all parts of society.*
 - B. *Enabling everyone to participate equally and independently.*
 - C. *Providing opportunities for social contact and support; and*
 - D. *Promoting a sense of community*
4. *Resilient, capable of dealing with major environmental events*
5. *Adaptable, able to respond easily to varied and changing needs and technologies*
6. *Durable, being built to last and using robust materials that reflect local character, weather well and are easily maintained*
7. *Resource-efficient with:*
 - A. *A low carbon footprint.*
 - B. *Efficient use of land.*
 - C. *Minimised use of new materials.*
 - D. *High levels of recycling*

10. *Functional and convenient, enabling people and uses to act efficiently with minimal effort, and responding to needs relating to servicing, recycling facilities, refuse collection and storage*
11. *Incorporating inclusive design within all spaces with support for tackling inequality and poverty to form part of creating sustainable places*
12. *Legible, being easy to understand and navigate, with the protection and enhancement of key views and new development well-integrated into the place...*
15. *Comfortable and inviting, with indoor and outdoor environments:*
 - A. *Offering a high level of amenity that minimises exposure to pollution;...*
17. *Well-served by local shops, services and amenities, including education and health facilities."*

Reference should be made to the Bury Unitary Development Plan which was fully adopted in August 1997 with policies saved in 2007 and 2024 including Saved Policy EN7/2 entitled *"Noise Pollution."*

"In seeking to limit noise pollution the Council will not permit:

- *development which could lead to an unacceptable noise nuisance to nearby occupiers and/or amenity users.*
- *development close to a permanent source of noise."*

4.5.2 Proposed Mechanical Equipment Criterion

It would be recommended that the combined noise emissions are 5 dB below the minimum 15-minute background noise level at the nearest noise sensitive properties when assessed in accordance with British Standard 4142: 2014 + A1: 2019.

4.5.3 Proposed Delivery and General Noise Emissions Criteria

British Standard 4142: 2014 + A1: 2019 is not usually used to assess the impact of noise from deliveries, the use of a car park or the noise from a Drive-through. However, in the absence of any other guidance, the principles of BS 4142 can be applied to the assessment of these noise sources. It would be recommended that the noise from these sources does not exceed +5 dB above the background noise level.

5. Calculations of Noise Levels...

5.1. ISO 9613 – Part 2:1996

The International Standards Organisation (“ISO”) published ISO 9613 – Part 2: 2024 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)

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})

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})

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.

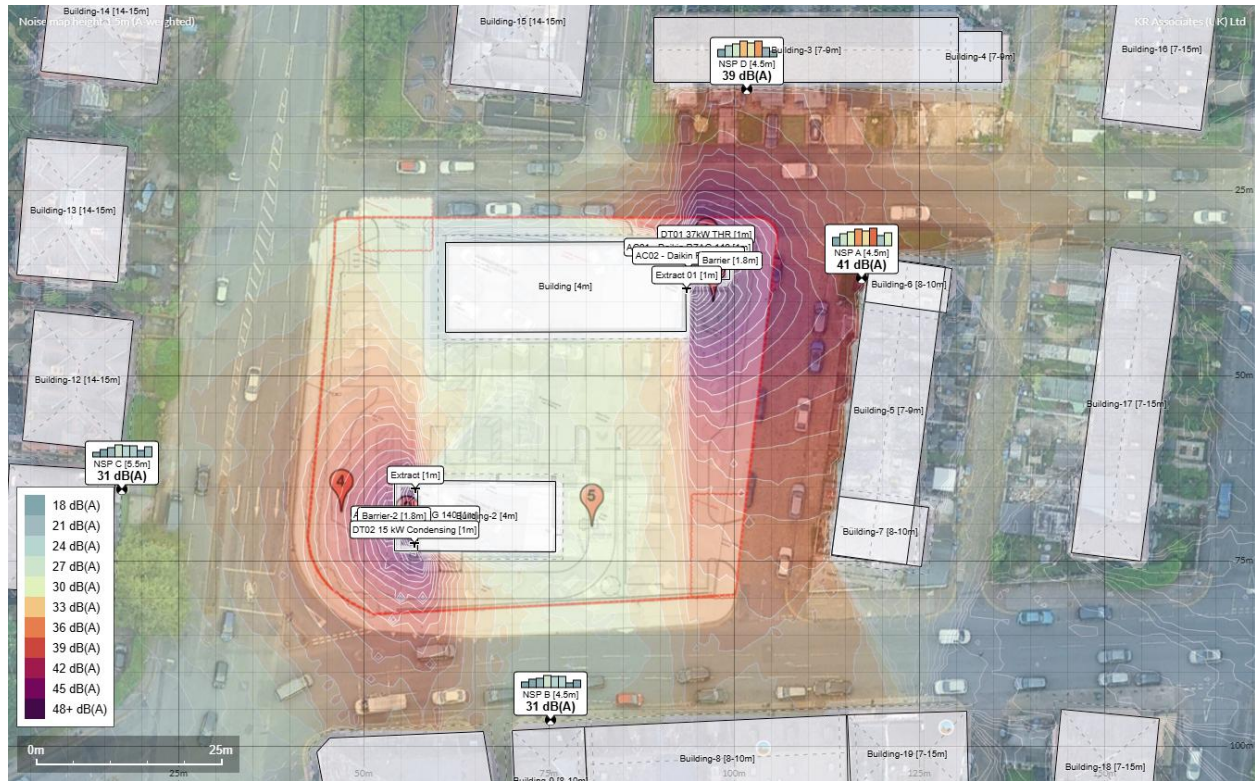
5.1.5 Barrier Effect (A_{bar})

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

5.2. 3D Noise Map of Overall Plant Noise Levels

The following 3D noise map shows the cumulative noise levels at the residential facades surrounding the proposed sites as a result of the proposed mechanical equipment operating under full load.

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



NSP	Description of the Location	Octave Band Centre Frequency (Hz)							(A)
		63	125	250	500	1K	2K	4K	
A	1 st floor bedroom at side of 3 Richmond Street	45	43	39	38	32	36	21	41
B	1 st floor residential flat above Morrisons Daily	37	34	28	30	24	23	9	31
C	1 st floor bedroom at 188 Manchester Street	37	33	29	30	24	22	13	31
D	1 st floor bedroom at 13 Richmond Street	43	40	36	37	31	34	19	39

Sound Pressure Level, dB – reference $2 \times 10^{-5} \text{ Nm}^{-2}$.

5.3. Assessment of Plant Noise Levels from Convenience Store at NSP A

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

Day Time (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
1a	DT01 37 kW THR Packaged Refrigeration Unit <i>Equivalent to 40 dB(A) at 10m</i>	68 dB(A)	3 dB	-37 dB (21m)	3 dB	0 dB	0 dB	37 dB(A)
1b	AC01 Daikin RZAG 140 NV1 AC Heat Pump <i>Equivalent to 55 dB(A) at 1m</i>	72 dB(A)	3 dB	-37 dB (21m)	3 dB	0 dB	-5 dB	36 dB(A)
1c	AC02 Daikin RZAG 140 NV1 AC Heat Pump <i>Equivalent to 55 dB(A) at 1m</i>	72 dB(A)	3 dB	-37 dB (21m)	3 dB	0 dB	-5 dB	36 dB(A)
1d	Ventilation Extract including bakery & toilet	60 dB(A)	3 dB	-37 dB (21m)	3 dB	0 dB	-5 dB	24 dB(A)
Combined Noise Level at Residential Façade:								41 dB (A)

5.3.2 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}	L _p
1a	DT01 37 kW THR Packaged Refrigeration Unit <i>Equivalent to 40 dB(A) at 10m</i>	58 dB(A)	3 dB	-37 dB (21m)	3 dB	0 dB	0 dB	27 dB(A)
Combined Noise at Residential Façade:								27 dB(A)

5.3.3 Assessment of Average Plant Noise Levels

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} 67 dB	L _{Aeq,1 hours} 65 dB	L _{Aeq,15 minutes} 58 dB
Specific Noise Levels	L _{Aeq,1 hour} 41 dB	L _{Aeq,1 hour} 41 dB	L _{Aeq, 15 minutes} 27 dB
Impulsivity Feature	+0 dB	+0 dB	+0 dB
Tonality Feature	+0 dB	+0 dB	+0 dB
Rating Noise Levels	L _{Aeq,1 hour} 41 dB	L _{Aeq,1 hour} 41 dB	L _{Aeq, 15 minutes} 27 dB
Background Noise Levels	L _{A90,1 hours} 57 dB	L _{A90,1 hours} 52 dB	L _{A90, 15 minutes} 32 dB
BS 4142 Assessment	-16 dB (Low Impact)	-11 dB (Low Impact)	-5 dB (Low Impact)
Uncertainty (95% Confidence, k=2)	+/- 1.84 dB	+/- 1.86 dB	+/- 2.31 dB

The proposed mechanical equipment associated with the convenience store, will be at least 5 dB below the background noise level. It is unlikely to give rise to complaints from the 1st floor bedroom at the side of 3 Richmond Street (NSP A). It is likely that with the 1st floor bedroom windows open the noise from the convenience store mechanical plant will not be perceivable or audible to the current residential occupiers.

5.4. Assessment of Plant Noise Levels from Drive Thru at NSP B

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

Day Time (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
2a	DT02 15 kW Condensing Refrigeration Unit <i>Equivalent to 35 dB(A) at 10m</i>	65 dB(A)	3 dB	-41 dB (31m)	3 dB	0 dB	-7 dB	23 dB(A)
2b	AC03 Daikin RZAG 140 NV1 AC Heat Pump <i>Equivalent to 55 dB(A) at 1m</i>	70 dB(A)	3 dB	-41 dB (31m)	3 dB	0 dB	-7 dB	28 dB(A)
2c	Ventilation Extract including bakery & toilet	60 dB(A)	3 dB	-41 d(31m)	3 dB	0 dB	-7 dB	18 dB(A)
Combined Noise Level at Residential Façade:								31 dB (A)

5.4.2 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}	L _p
2a	DT02 15 kW Condensing Refrigeration Unit <i>Equivalent to 35 dB(A) at 10m</i>	65 dB(A)	3 dB	-41 dB (31m)	3 dB	0 dB	-5 dB	25 dB(A)
Combined Noise at Residential Façade:								25 dB(A)

5.4.3 Assessment of Average Plant Noise Levels

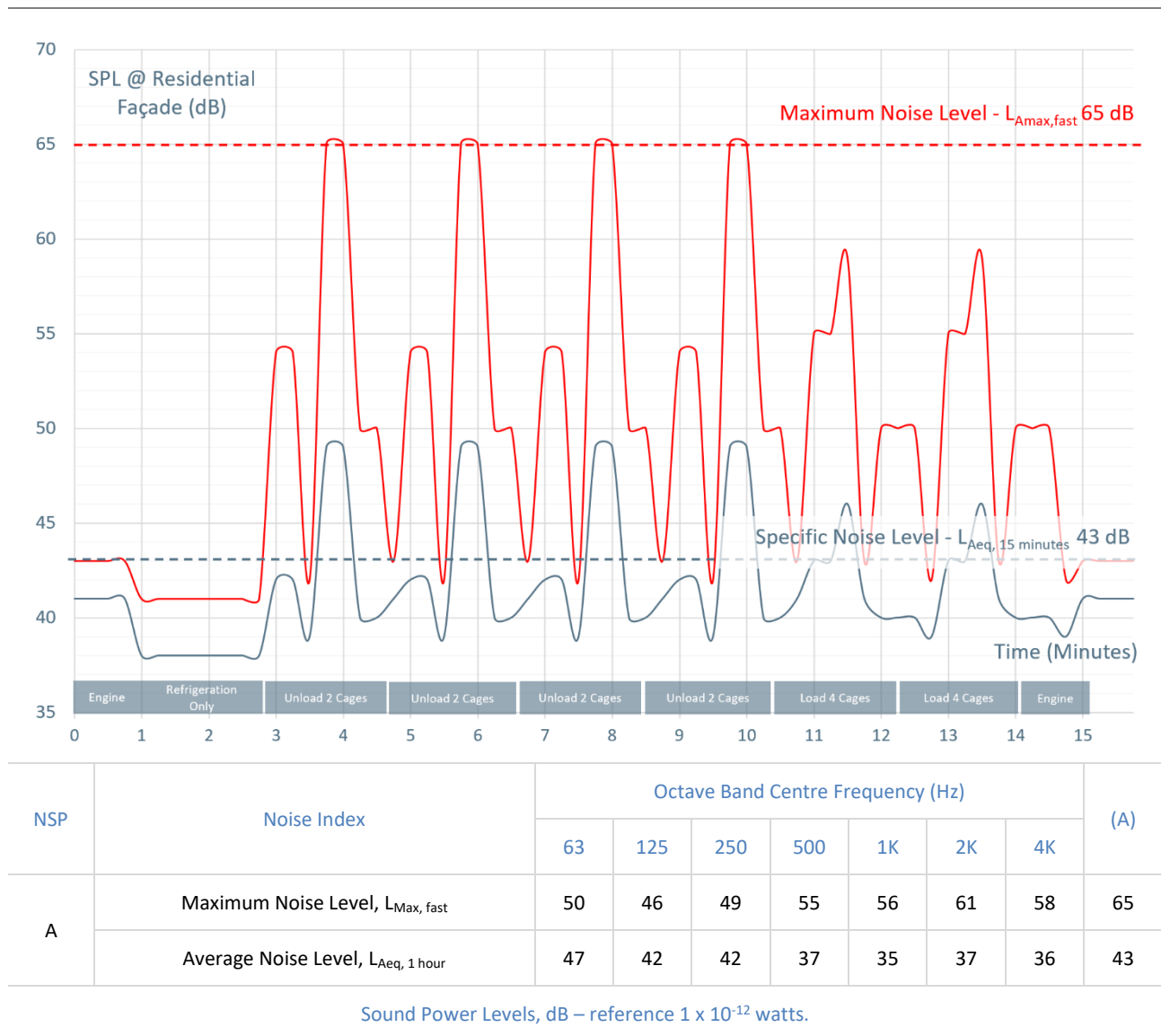
BS 4142: 2014	Day Time - 07:00 to 19:00	Evening – 19:00 to 23:00	Night Time – 23:00 to 07:00
Residual Noise Levels	L _{Aeq,1 hours} 67 dB	L _{Aeq,1 hours} 65 dB	L _{Aeq,15 minutes} 58 dB
Specific Noise Levels	L _{Aeq,1 hour} 31 dB	L _{Aeq,1 hour} 31 dB	L _{Aeq, 15 minutes} 25 dB
Impulsivity Feature	+0 dB	+0 dB	+0 dB
Tonality Feature	+0 dB	+0 dB	+0 dB
Rating Noise Levels	L _{Aeq,1 hour} 31 dB	L _{Aeq,1 hour} 31 dB	L _{Aeq, 15 minutes} 25 dB
Background Noise Levels	L _{A90,1 hours} 57 dB	L _{A90,1 hours} 52 dB	L _{A90, 15 minutes} 32 dB
BS 4142 Assessment	-26 dB (Low Impact)	-21 dB (Low Impact)	-7 dB (Low Impact)
Uncertainty (95% Confidence, k=2)	+/- 1.84 dB	+/- 1.86 dB	+/- 2.31 dB

The proposed mechanical equipment associated with the Drive-through will be at least 5 dB below the background noise levels and is unlikely to give rise to complaints from the 1st floor residential flat above Morrisons Daily (NSP B). It is likely that with the 1st floor bedroom windows open the noise from the drive-through store mechanical plant will not be perceivable or audible to the current residential occupiers.

5.5. Assessment of Delivery Noise Levels from Convenience Store at NSP A

5.5.1 Resultant Noise Levels

The following are the resultant noise levels at the 1st floor bedroom window of 3 Richmond Street (NSP A).



5.5.2 Assessment of Noise Levels

Delivery Times:	07:00 to 19:00 Monday to Sunday
Specific Noise Levels	$L_{Aeq,1\text{ hour}}$ 40 dB (100% of the Time over a 1-hour period)
Impulsivity Feature	+6 dB
Intermittency Feature	+3 dB
Rating Noise Levels	$L_{Aeq,1\text{ hour}}$ 49 dB (Between 07:00 and 19:00 hours only)
Background Noise Levels	$L_{A90,15\text{ minutes}}$ 57 dB (07:00 to 19:00)
BS 4142 Assessment	- 8 dB (Below Adverse impact)

5.5.3 Conclusion

The existing ambient noise levels around the site are reasonably high and therefore impact of delivering to the site between 07:00 and 19:00 will result in average noise levels that are below the background noise levels. The maximum noise levels at the residential façade are also likely to be acceptable as they will for the vast majority of the time be masked by the existing noise emissions.

However, the evening and background noise levels are likely to fall sharply as the traffic and general activity in the local area subsides. Therefore, it would be recommended that deliveries are not undertaken at these quieter times.

5.6. Assessment of Noise Levels from Use of Car Park at NSP B

5.6.1 Resultant Noise Levels

The following are the resultant noise levels at the 1st floor bedroom window of the flat above the Morison Daily store to the south of the site (NSP B).



NSP	Noise Index	Octave Band Centre Frequency (Hz)							(A)
		63	125	250	500	1K	2K	4K	
B	Average Noise Level, L_{Aeq} , 1 hour	33	36	34	37	34	33	31	40

Sound Power Levels, dB – reference 1×10^{-12} watts.

5.6.2 Assessment of Noise Levels

Delivery Times:	05:00 to 00:00 Monday to Sunday
Specific Noise Levels	$L_{Aeq,1\text{ hour}}$ 43 dB (100% of the Time over a 1-hour period)
Impulsivity Feature	+3 dB
Intermittency Feature	+3 dB
Rating Noise Levels	Lowest $L_{Aeq,1\text{ hour}}$ 49 dB (Between 05:00 and 00:00 hours only)
Background Noise Levels	$L_{A90,15\text{ minutes}}$ 49 dB
BS 4142 Assessment	-0 dB (Low Impact)

The assessment of the noise from the car park indicates that as long as the car park is only in use when the convenience store is open between 07:00 and 23:00 the resulting noise levels will not impact the surrounding residential dwellings.

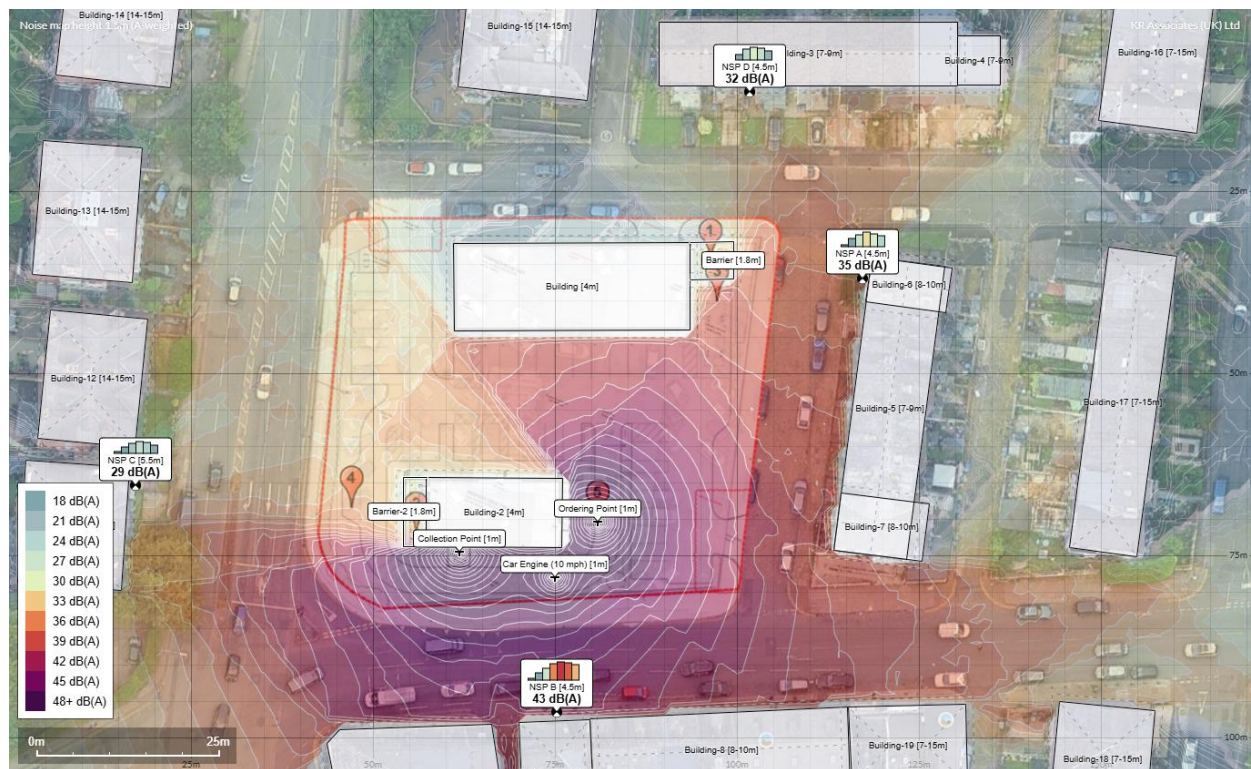
5.6.3 Over-Night Use of Car Park

The background noise levels drop considerably overnight, with the lowest levels occurring between midnight and approximately 05:00.

5.7. Assessment of Noise Levels from Drive-through at NSP B

5.7.1 Resultant Noise Levels

The following are the resultant noise levels at the 1st floor bedroom window of the flat above the Morrisons Daily store to the south of the site (NSP B) as a result of the customers using the proposed drive-through.



NSP	Noise Index	Octave Band Centre Frequency (Hz)							(A)
		63	125	250	500	1K	2K	4K	
B	Average Noise Level, $L_{Aeq,1\text{ hour}}$	31	33	35	39	40	36	33	43

Sound Power Levels, dB – reference 1×10^{-12} watts.

5.7.2 Assessment of Noise Levels

Delivery Times:	05:00 to 00:00 Monday to Sunday
Specific Noise Levels	$L_{Aeq,1\text{ hour}}$ 43 dB (100% of the Time over a 1-hour period)
Impulsivity Feature	+3 dB
Intermittency Feature	+0 dB
Rating Noise Levels	Lowest $L_{Aeq,1\text{ hour}}$ 46 dB (Between 05:00 and 00:00 hours only)
Background Noise Levels	$L_{A90,15\text{ minutes}}$ 49 dB
BS 4142 Assessment	-3 dB (Below Adverse impact)

6. Conclusions...

6.1. Report Conclusions

The background noise levels at the surrounding residential properties are reasonably high during the daytime and still only fall to 52 $L_{A90,15 \text{ minute}}$ during the later evening. However, overnight between 23:00 and 07:00 the background noise levels fall to 32 dB $L_{A90, 15 \text{ minutes}}$.

To ensure compliance with the Local Development Plan and in particular policy EN7/2 entitled “*Noise Pollution*” and Policy JP-P1 entitled “*Sustainable Places*” it is proposed that the noise from mechanical equipment is at least 5 dB below the background noise levels and that all other noise is not more than 5 dB above the background noise levels.

The resultant noise levels from the mechanical equipment, deliveries to the site, the use of the car park and drive-through will comply with these criteria. The resultant noise levels from the development are unlikely to produce an adverse impact on the existing residential dwellings surrounding the site. This conclusion is based on the following:

- Convenience store only open between 07:00 and 23:00 hours
- Drive through only open between 05:00 to 00:00 hours.
- Deliveries to the site are only undertaken between 07:00 and 19:00 hours.
- The car park is only open between 05:00 and 00:00 hours.

The site is located within a traffic-influenced environment where background noise levels remain relatively elevated throughout both the early morning and late evening periods. The proposed development would not introduce new or atypical noise sources, with no deliveries during night-time hours and all mechanical equipment designed to operate below background levels.

The drive-through activity would be consistent with the existing acoustic character of the area, comprising short-duration vehicle movements similar to surrounding road traffic. Whilst the site could theoretically operate on a 24-hour basis without giving rise to significant adverse impacts, the proposed hours of 05:00 to 00:00 represent a balanced and proportionate approach that aligns with the prevailing noise climate and is supported by the assessment findings.

6.2. Uncertainty

Day Time (07:00 – 19:00)	Evening (19:00 – 23:00)	Night Time (23:00 – 07:00)
+1.84 dB (k=2, 95% Confidence)	+1.86 dB (k=2, 95% Confidence)	+2.31 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)	Sources	See Section 2		
	Description of Source	Source Location	Hours of Operation	Mode of Operation
2) 3) 4) 5)	Convenience Store	Convenience store and drive-through with a shared car park between them.	07:00 to 23:00	Continuously on Demand
	Drive through		05:00 to 00:00	
	Deliveries		07:00 to 19:00	
	Car Park		05:00 to 00:00	
	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%)

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

e) Relative Positions

1)	Assessment Position	See section 2		
		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	In the north west corner 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	3.5m
			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	See Section 2		
6)	Dimensioned sketch	See maps and images.		

7.5. f) Noise Measurement Equipment Calibration

1)	Type	Sound Level Meter	Microphone	Calibrator
		118	40AF	1251
2)	Manufacturer	Norsonic	GRAS	Norsonic
3)	Serial Number	31471	114650	31310
4)	Certificate Number	C00618	C00618	U51875
	Calibration Due Date	03/02/2028	03/02/2028	13/08/2026

7.6. 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.

7.7. 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

7.8. i) Date of Measurements

1)	Source Measurements	Unknown
	Background Measurements	25/03/2025

7.9. 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

7.10. 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

7.11. 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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