



KR07367

Proposed Convenience Store

Technical Note...

Condition: Condition 15 of F/22/94159

Site: Proposed Convenience Store

Address: 103 Bournemouth Road
(Junction of Leigh Road)

Chandler's Ford

Southampton

Postcode: SO53 3AJ

Issue: Version 1.3

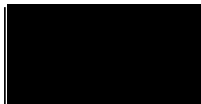
Date: 11th January 2024

Status: Current Document

KR Associates (UK) Ltd

Quietly confident...

Revisions...

KR07367		Project	Proposed Convenience Store		
		Title	Discharge of Part 1 of Condition 15 of Permission F22/94159		
		Standard	British Standard 4142: 2014 + A1: 2019		
Issue	Date	Details of Revision			
V1.3	11/01/24	Description	Report issue for submission to Local Authority Noise Management Plan in Appendix A Shortened version of the Noise Management Plan in Appendix B		
		Signature			
		Name	Mr. R. Scrivener	Miss N Truman	Mr R Scrivener
		Position	Technical Director	Project Manager	Technical Director

Disclaimer...

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

KR Associates...

KR Associates (UK) Ltd (Company No. 04813349) registered office at 56 Bassett Green Road, Southampton. SO16 3DX.

Table of Contents....

1. Executive Summary.....	5
1.1. Instruction.....	5
1.2. Planning Permission.....	5
1.3. Sources of Noise	5
1.4. Background Noise Levels	5
1.5. Assessment Position	6
1.6. Exclusions.....	6
1.7. Executive Summary.....	6
1.7.1 Assessment Position.....	6
1.7.2 Background Noise Measurements	6
1.7.3 Criterion at Assessment Position	6
1.7.4 Combined Assessment of Noise Levels	6
1.7.5 Conclusions.....	6
2. Site Location.....	7
2.1. General Location of Site General Location of Site	7
2.2. Key Positions (Source, Assessment & Background).....	8
2.3. Location of Sources and Distance to Assessment Position	9
3. Background Noise Levels... ..	10
3.1. Weather During Survey.....	10
3.1.1 Wind Speed, Gust and Direction	10
3.1.2 Rainfall, Temperature and Dew Point.....	10
3.1.3 Impact of Weather	10
3.2. 24-hour Background Measurements.....	11
3.3. Modal Analysis of Background Data	11
4. Calculation of Delivery Noise Levels... ..	12
4.1. Approach to Delivery Noise	12
4.2. Source Noise Levels	12
4.2.1 Measurement of Lorry Arriving / Departing	12
4.2.2 Measurement of Delivery Events.....	12
4.3. Resultant Noise Levels at Nominal 1m Distance	13
4.3.1 Lorry Engine.....	13
4.3.2 Lorry Refrigeration Unit (Running on Diesel in Quiet Mode)	14
4.3.3 Unloading / Loading of Metal Roll Cages onto Lorry	15
4.3.4 Movement of Metal Roll Cages on Concrete	16
4.3.5 Summary of Maximum Noise Level	17
4.3.6 Summary of Average Noise Levels	17
4.3.7 Standard Delivery Schedule	17
4.3.8 Unloading Full Roll Cages	18
4.3.9 Loading of Empty Roll Cages	18
4.4. Car Park Noise	18
4.5. Resultant Noise Levels at NSP 1.....	19
4.6. Assessment of Delivery Noise Levels.....	20
5. Calculations of Noise Levels... ..	21
5.1. ISO 9613 – Part 2:1996	21
5.1.1 Source Directivity (D_c)	21
5.1.2 Geometric Divergence (A_{div}).....	21
5.1.3 Ground Absorption (A_{gr}).....	21
5.1.4 Atmospheric Absorption (A_{atm})	21

5.1.5 Barrier Effect (A_{bar})	22
5.2. Sound Power Level of Sources	22
5.3. Calculation of Plant Noise Levels	22
5.3.1 Day Time (07:00 to 23:00)	22
5.3.2 Night Time (23:00 to 07:00)	23
5.4. Assessment of Average Noise Levels (BS 4142: 2014 + A1: 2019)	23
6. Conclusions... ..	24
6.1. Assessment Position	24
6.2. Background Noise Measurements.....	24
6.3. Criterion at Assessment Position.....	24
6.4. Combined Noise Levels from Deliveries and Plant	24
6.5. Assessment Against Condition 15 of F/22/94159	24
6.6. Conclusions	24
7. Appendix A – Noise Management Plan... ..	25
7.1. Mitigation Measures.....	25
7.1.1 Signs on Inside of Fence	25
7.1.2 Signs in Loading Bay	25
7.1.3 Reversing Beepers	25
7.2. Noise Policy... ..	25
7.2.1 Scope of Policy	25
7.2.2 Consideration of Noise	25
7.2.3 Mitigation Measures	25
7.2.4 Staff Members	25
7.2.5 Feedback from Residents	26
7.2.6 Permitted Hours	26
7.2.7 Management Control	26
7.2.8 Proactive Approach to Noise.....	26
7.2.9 Staff Training	26
7.2.10 Site Speed Limit.....	26
7.2.11 Vehicle Radios / Refrigeration Units	26
7.2.12 Site Log	27
7.2.13 Beginning of Each Shift.....	27
7.2.14 Site Inspection	27
7.2.15 Initial Complaint	27
7.2.16 Resolution of Complaint within 48-hours	27
7.2.17 Outstanding Complaint	28
7.2.18 Audit of Site Logs.....	28
8. APPENDIX A – Noise Management Plan (Shortened Version).....	29
8.1. Restriction on Site due to Noise from Deliveries.....	29
8.2. Noise Management Plan.....	29
8.3. Physical Mitigation Measures	29
8.4. Deliveries.....	29
8.5. Staff Requirements	29
8.6. Site Logs	29
8.7. Complaints	29

1. Executive Summary....

1.1. Instruction

KR Associates (UK) Ltd have been instructed to provide a technical note to discharge part 1 of condition 15 of planning permission F/22/94159, relating to the combined noise emissions from the proposed approved convenience store at 103 Bournemouth Road in Eastleigh.

1.2. Planning Permission

Eastleigh Borough Council granted planning permission on 3rd July 2023 under reference F/22/94159 for a “Single storey extension to existing commercial building (Use Class E, excluding E(b), (d), (g)ii, iii and (f)), including new refuse and cycle storage (amended description)”.

“Condition 15 - Prior to any works above foundation/ slab level, details shall be submitted to and approved in writing by the Council of the external sound level (Rating Level) emitted from the premises including plant/ machinery/ equipment, and mitigation measures as appropriate. The measures shall ensure that the external sound level emitted from the premises and plant, machinery/equipment will be lower than the existing background sound level by at least 10dB(A) in order to prevent adverse impact. The assessment shall be made in accordance with BS4142:2014 at the nearest and/or most affected noise sensitive premises, with all premises activity (including delivery vehicles and all plant/ machinery and equipment) operating together at maximum capacity. A post installation noise assessment shall be carried out where required to confirm compliance with the sound criteria and additional steps to mitigation noise shall be taken as necessary. The approved details shall be fully implemented prior to first use of the development and thereafter retained.”

1.3. Sources of Noise

The report will assume the daytime operations between 07:00 and 23:00 include a continuous 1-hour delivery, the operation of the customer car park and the refrigeration, air conditioning and extract ventilation system operating at maximum capacity assuming an external ambient temperature of 35°C. The report will assume the night time operations between 23:00 and 07:00 only include the operation of the refrigeration systems.

1.4. Background Noise Levels

The background noise levels have been previously measured between the 10th and 11th December 2022 and the modal levels found to be as follows.

Day Time (07:00 to 23:00 hours) L_{A90, 15 minutes} 48 dB

Night Time (23:00 to 07:00 hours) L_{A90, 15 minutes} 38 dB

The background noise levels are dominated by the road traffic noise from Bournemouth Road (B3043) running along the western boundary of the site, Leigh Road (A335) running along the northern boundary and the M3 motorway around 820 m to the east of the site.

1.5. Assessment Position

The 1st floor bedroom of 331 Leigh Road is considered to be the closest noise sensitive property as it is 16m from the nearest item of mechanical equipment. The report will detail the resultant noise levels from the operation of the convenience store at this location but will also provide an over-view 3D noise map to show the resultant noise levels at all the surrounding residential dwellings.

1.6. Exclusions

The report will not consider the noise from customers cars and delivery vehicles on the public highway as this is outside the scope of British Standard 4142: 2014 + A1: 2019 and the general purpose of condition 15.

1.7. Executive Summary

1.7.1 Assessment Position

The 1st floor bedrooms at the rear of 331 Leigh Road are located between 16 m and 20 m from the dedicated plant area for the packaged gas cooler and the 3-No AC units located on the rear wall. There is a garden room within the garden of 331 Leigh Road which is adjacent to the boundary but the main windows face in the opposite direction.

1.7.2 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}
68 - 105 dB	57 - 79 dB	42 - 59 dB	72 - 84 dB	60 - 66 dB	43 - 55 dB	46 - 88 dB	40 - 65 dB	36 - 49 dB
Modal Background		48 dB	Modal Background		48 dB	Modal Background		38 dB

1.7.3 Criterion at Assessment Position

Condition 15 of planning permission F/22/94159 requires the combined Rating Noise Level from all sources associated with the convenience store to be at least 10 dB below the background noise levels when assessed in accordance with British Standard 414: 2104 + A1: 2019.

1.7.4 Combined Assessment of Noise Levels

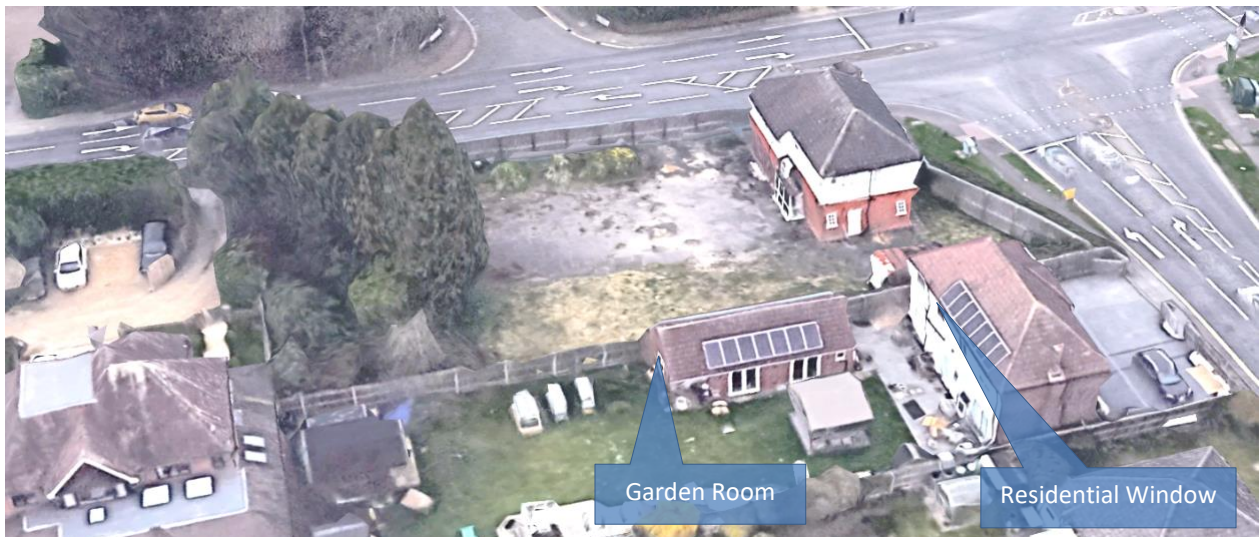
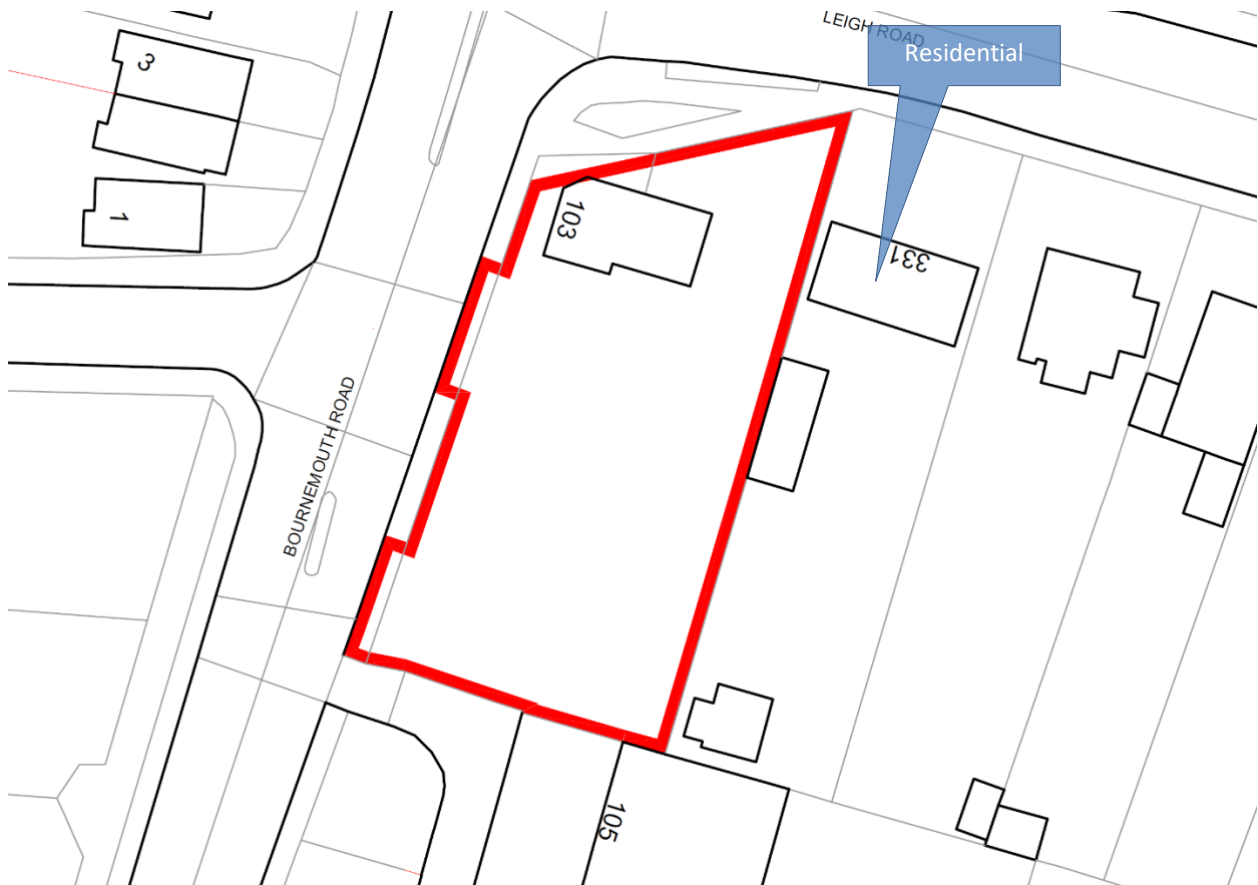
Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Night Time (23:00 – 07:00)		
L _{Aeq,1h}	L _{A90,1h}	BS4142	L _{Aeq,1h}	L _{A90,1h}	BS4142	L _{Aeq,1h}	L _{A90,1h}	BS4142
37 dB	48 dB	-11 dB	37 dB	48 dB	-11 dB	22 dB	38 dB	-14 dB

1.7.5 Conclusions

The resultant Rating Noise Levels from the combined noise emissions from the proposed convenience store will comply in full with condition 15 of planning permission F/22/94159. It should be noted that condition 15 also requires a post installation noise survey once the development is complete before it opens.

2. Site Location...

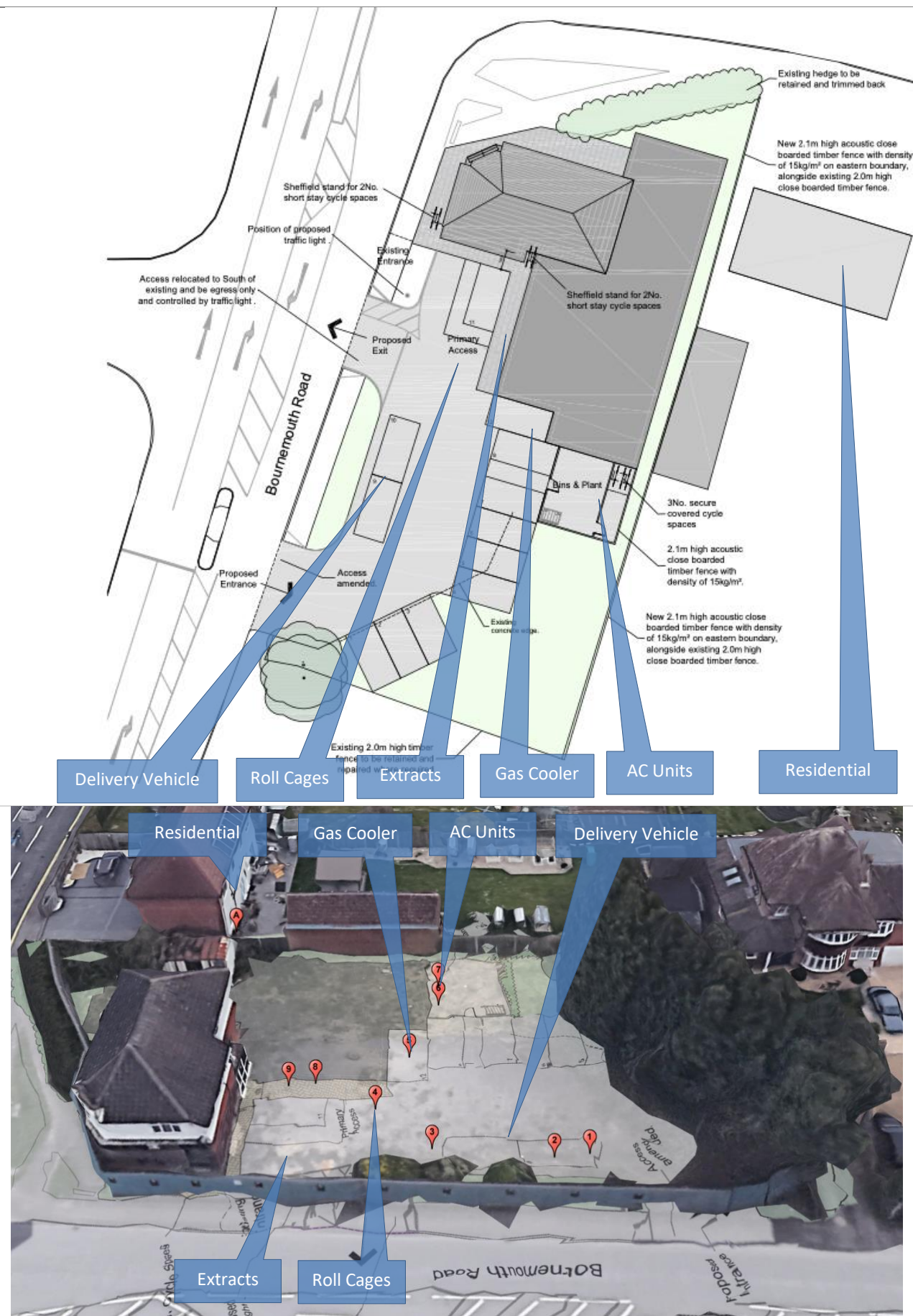
2.1. General Location of Site General Location of Site



Site Plan (Imagery © Google 2022)

It is proposed to construct a convenience store on the site. There are residential dwellings along the eastern boundary of the site, Bournemouth Road runs along the western boundary and Leigh Road runs along the northern boundary.

2.2. Key Positions (Source, Assessment & Background)



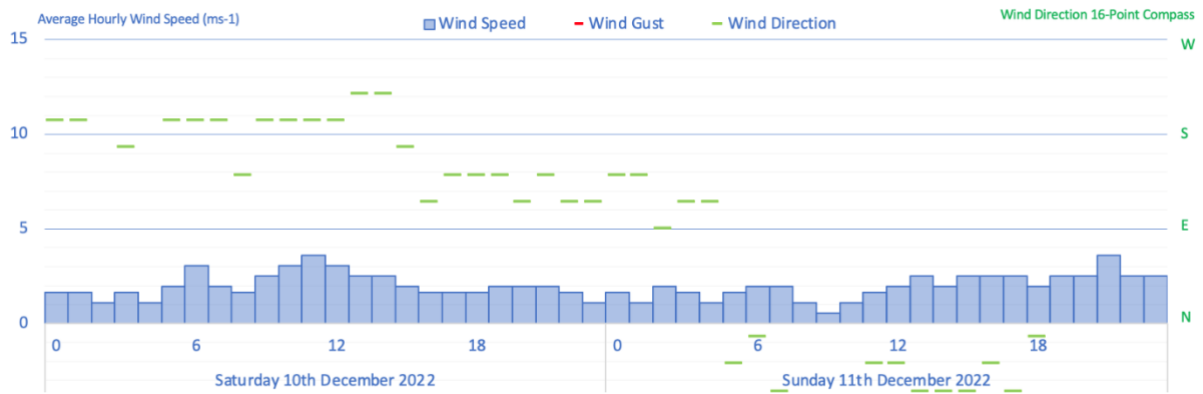
2.3. Location of Sources and Distance to Assessment Position

Position	Relative Distance	Latitude	Longitude	Elevation
Source 1	Lorry Engine Driving on site (1700 rpm) – 34m	50.974633°	-1.388063°	1.5m
Source 2	Refrigeration Motor on Front of Vehicle – 32m	50.974653°	-1.388057°	3.5m
Source 3	Rear Roll Shutter – 25m	50.974717°	-1.388014°	2.5m
Source 4	Movement of Roll Cage into Store – 21m	50.974741°	-1.387954°	0.5m
Source 5	Refrigeration Gas Cooler -20m	50.974711°	-1.387900°	2.1m
Source 6	Daikin AZAS 140 AC Unit 1 – 19m	50.974680°	-1.387836°	0.9m
Source 7	Daikin AZAS 140 AZAS Unit 2 – 18m	50.974675°	-1.387808°	0.9m
Source 8	Bakery Extract – 17m	50.974771°	-1.387905°	2.3m
Source 9	Toilet and General Extract – 16m	50.974787°	-1.387900°	2.3m
Source 10	Customer Car Park Dwelling time 15 minutes 100%	50.974741°	-1.387954°	0.5m
Assessment	Rear of Residential Dwelling at 1 st Floor Level	50.974799°	-1.387649°	4.5m

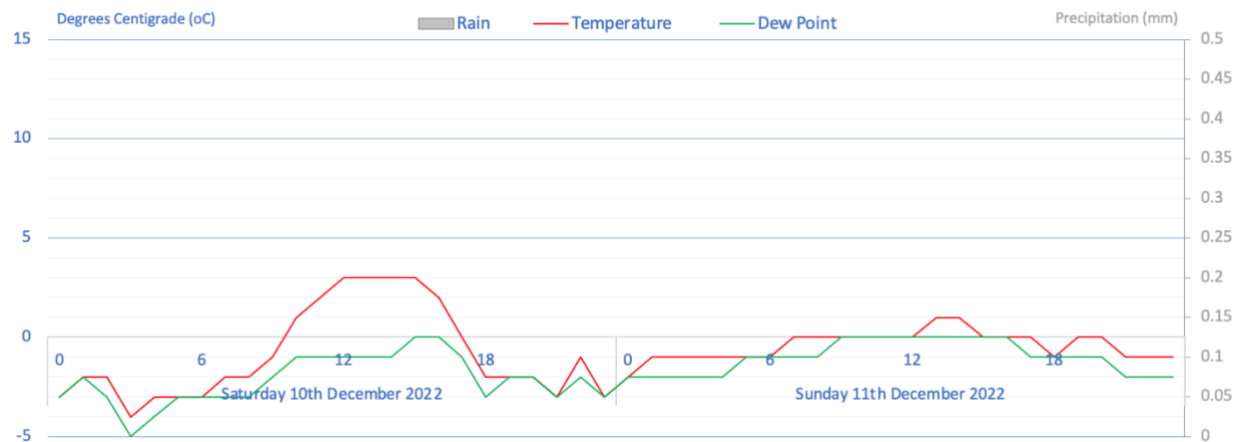
3. Background Noise Levels...

3.1. Weather During Survey

3.1.1 Wind Speed, Gust and Direction



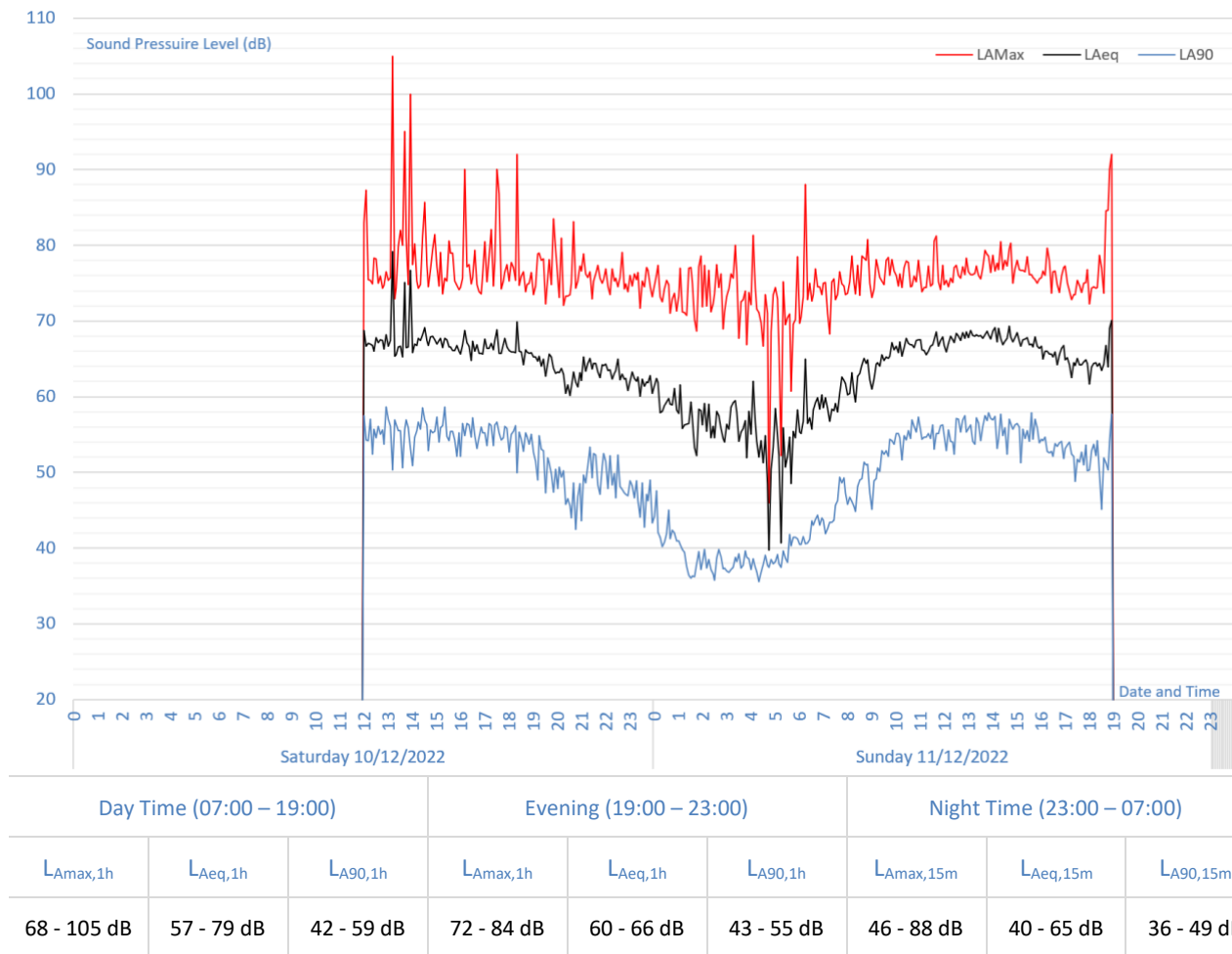
3.1.2 Rainfall, Temperature and Dew Point



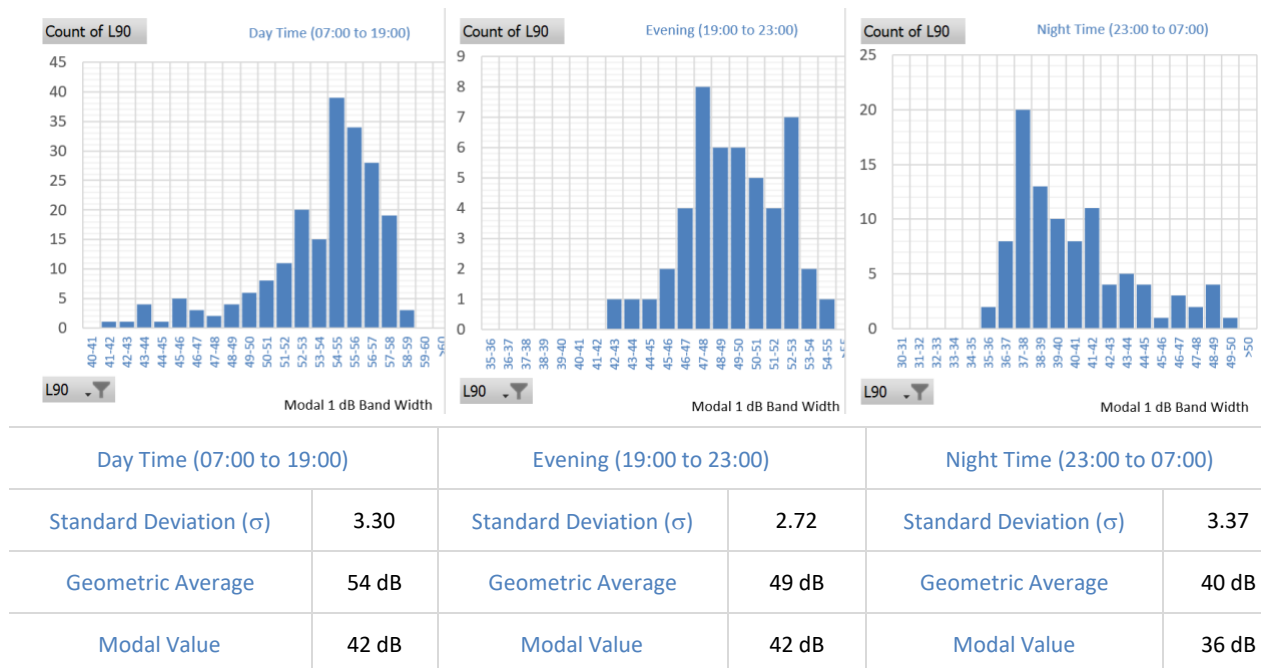
3.1.3 Impact of Weather

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



4. Calculation of Delivery Noise Levels...

4.1. Approach to Delivery Noise

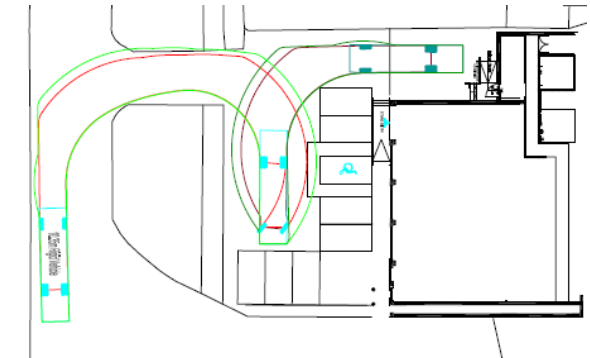
It is very difficult to measure delivery noise without access to the residential properties and then it is very awkward to install a noise meter 1m externally from a residential window. Furthermore, if an operator knows you are undertaking measurements, they tend to be very careful to not make a noise.

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.

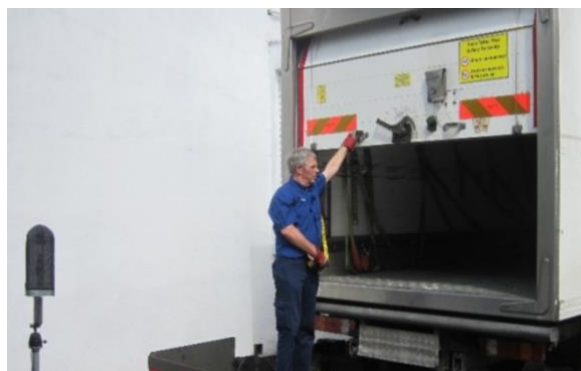
4.2. Source Noise Levels

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

4.2.1 Measurement of Lorry Arriving / Departing

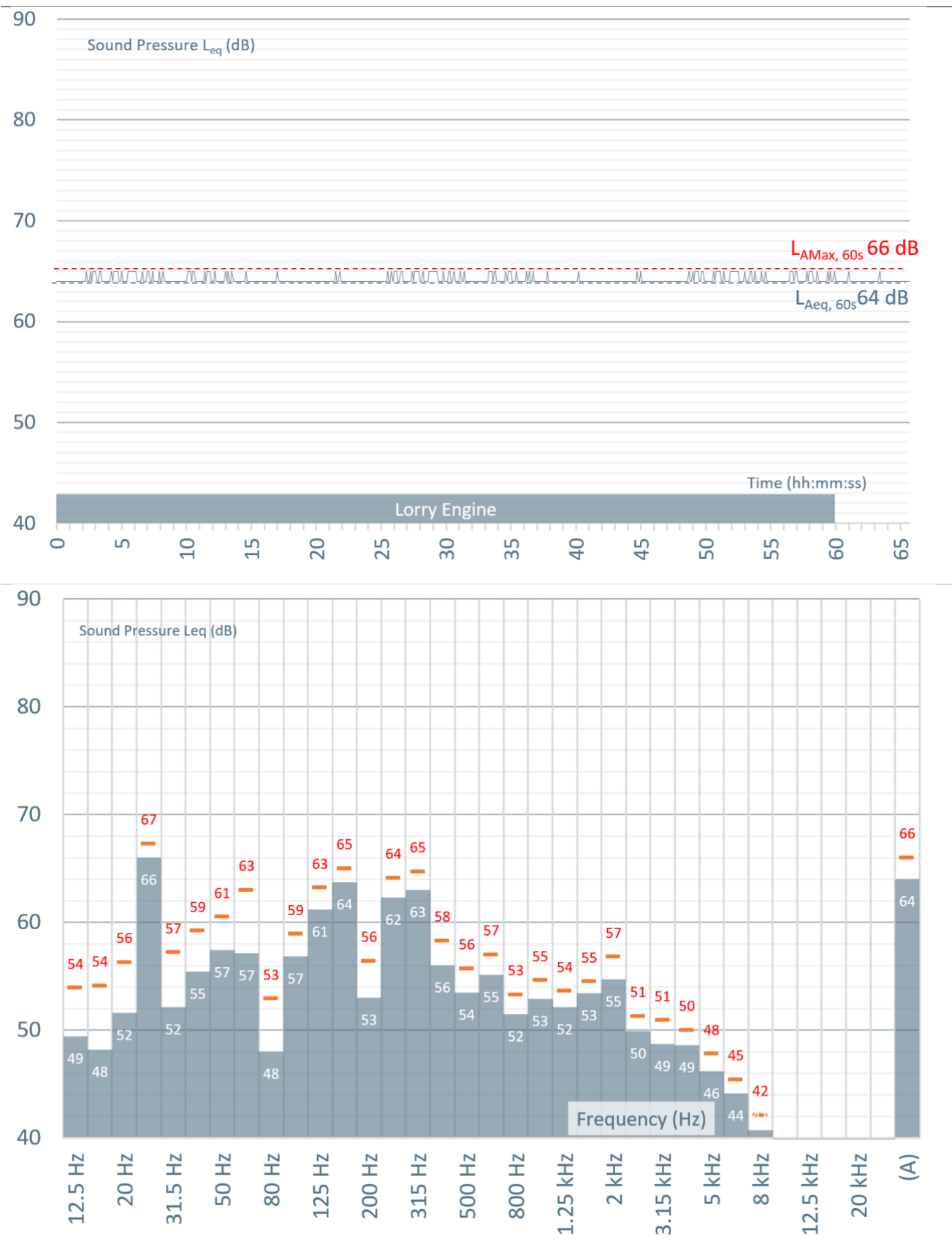


4.2.2 Measurement of Delivery Events

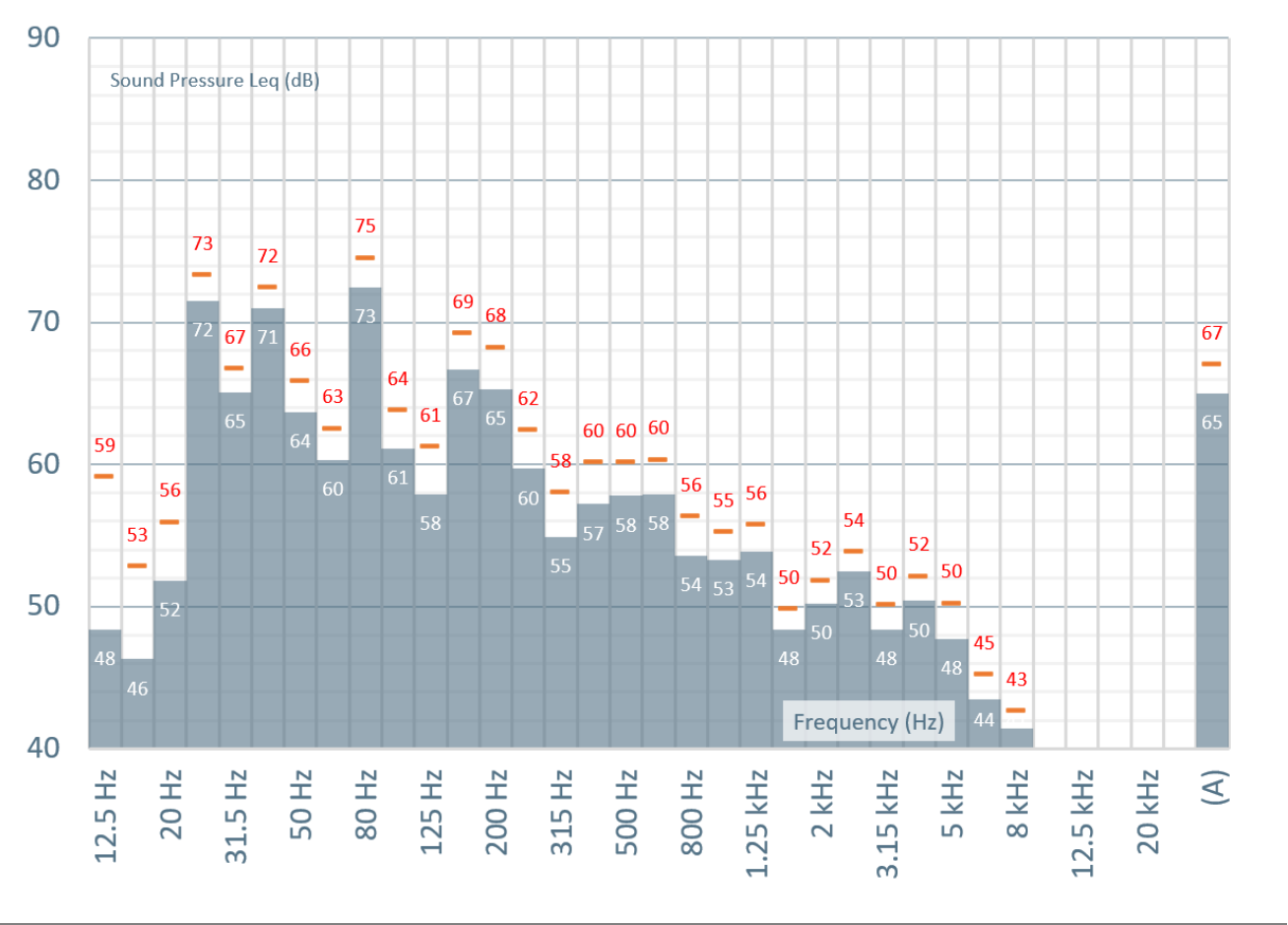
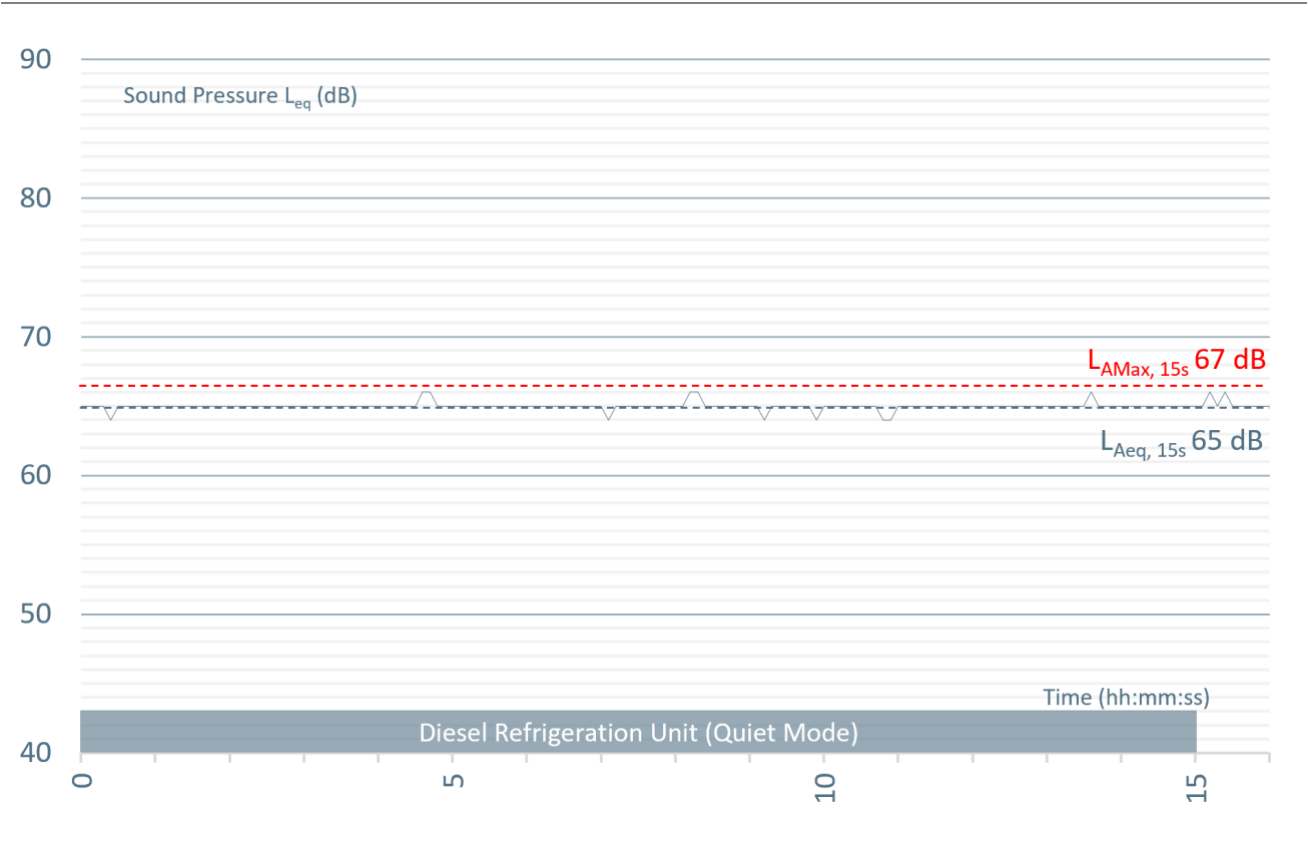


4.3. Resultant Noise Levels at Nominal 1m Distance

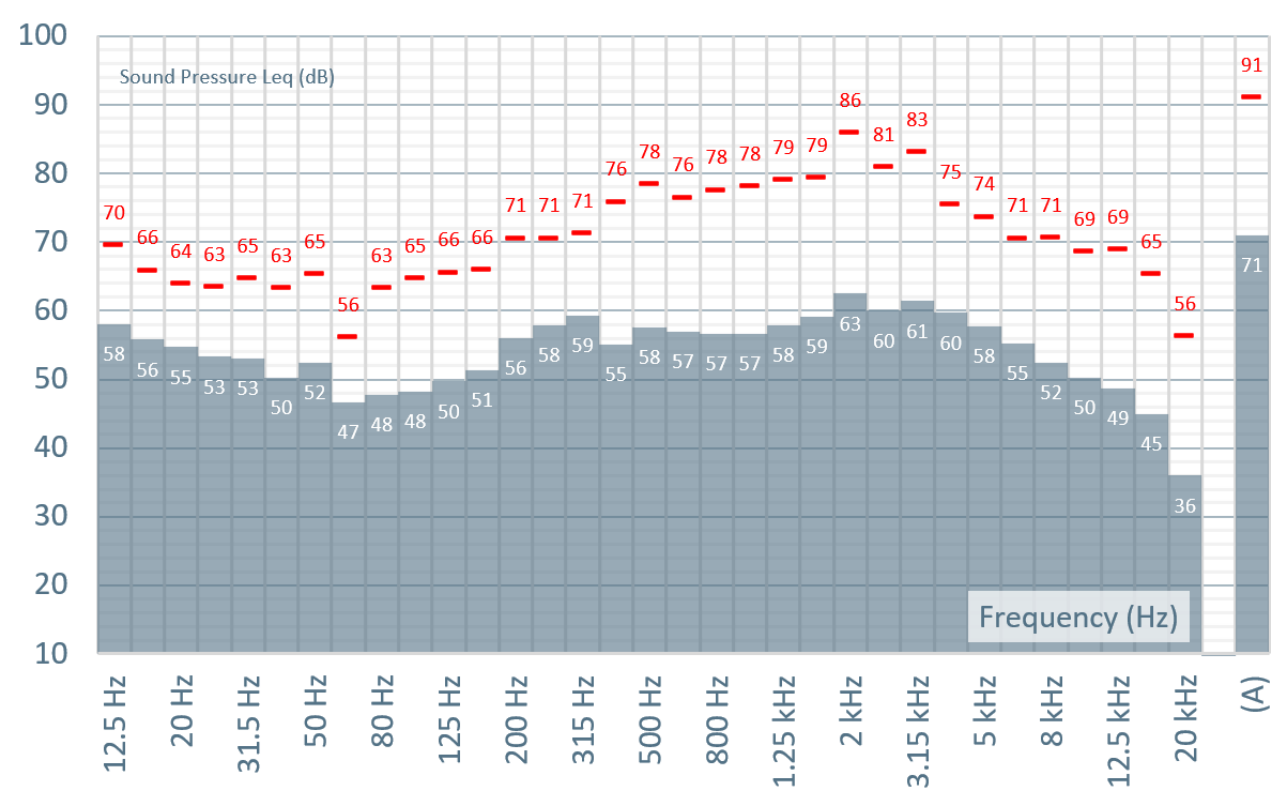
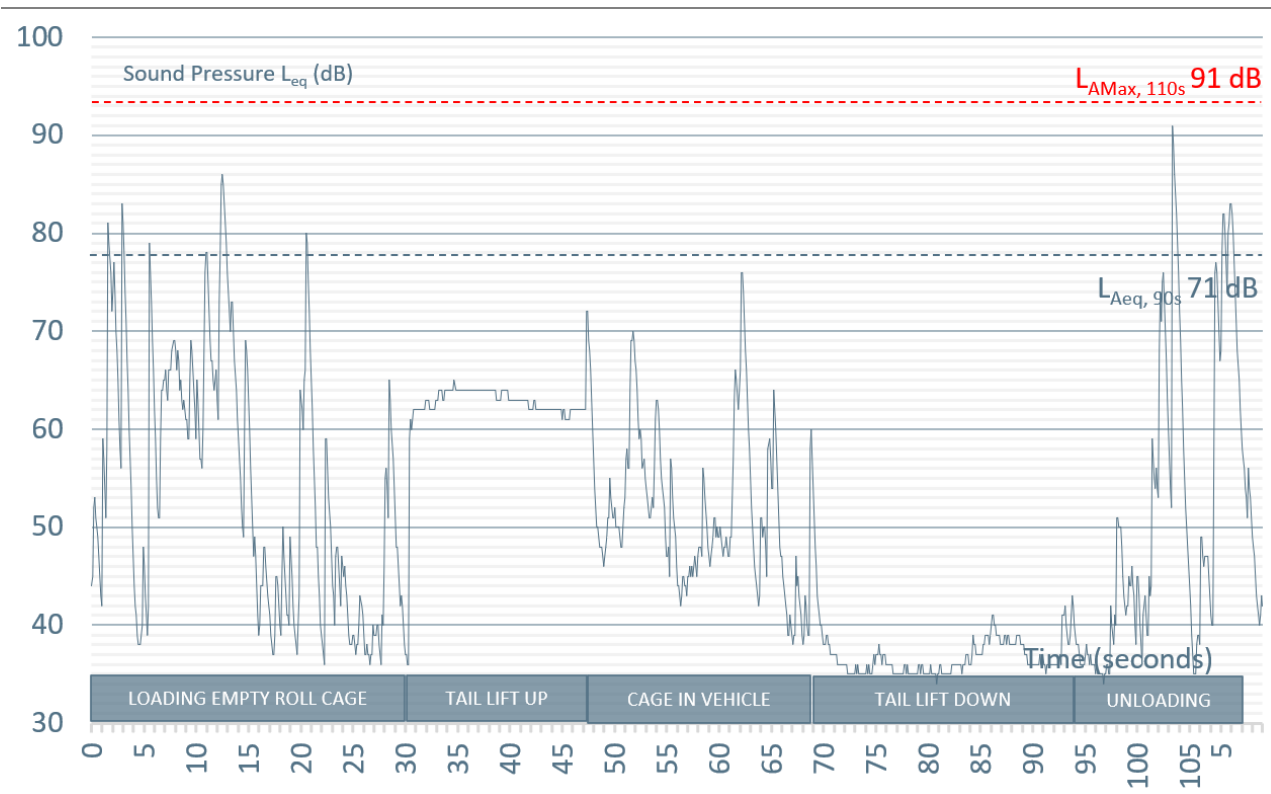
4.3.1 Lorry Engine



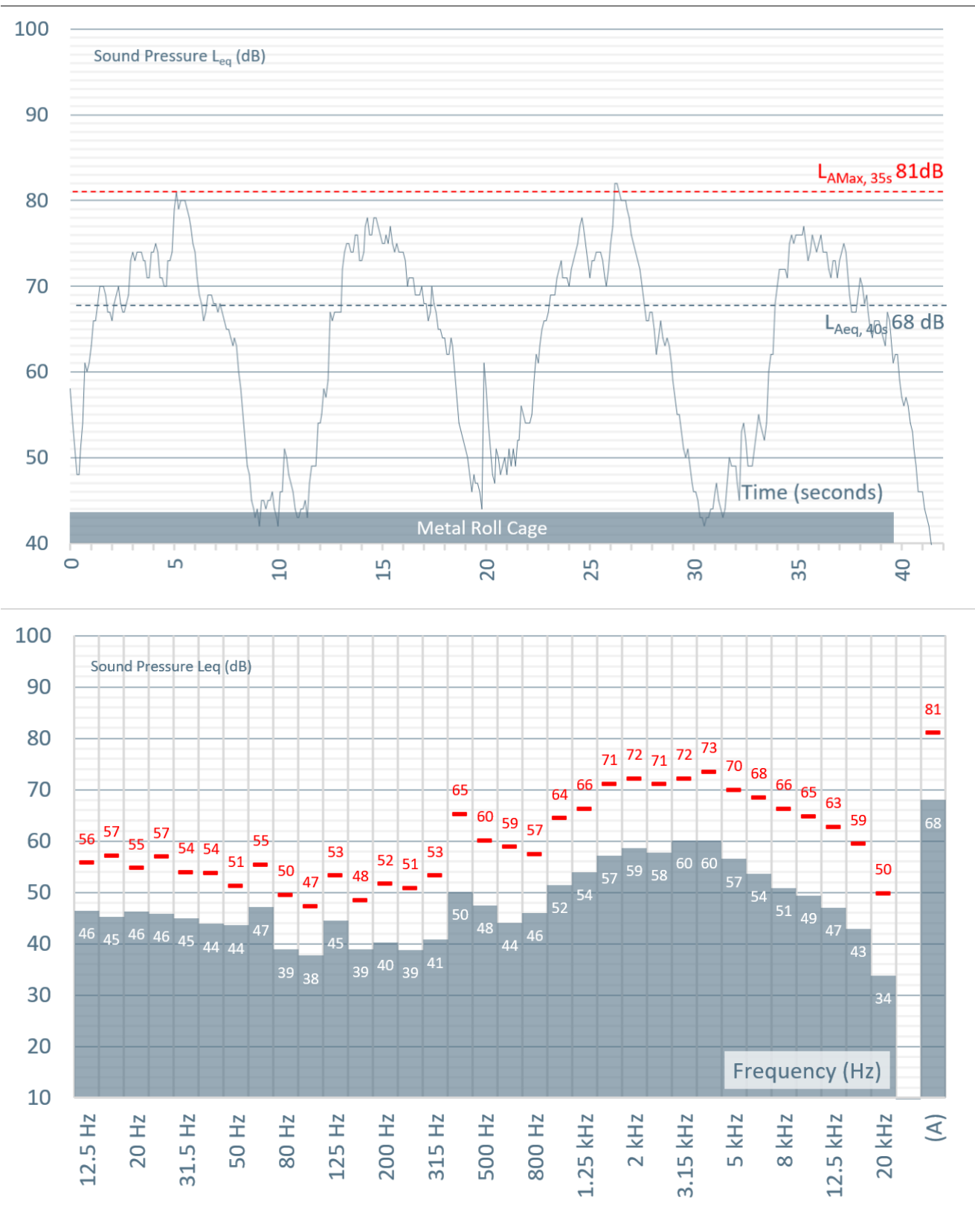
4.3.2 Lorry Refrigeration Unit (Running on Diesel in Quiet Mode)



4.3.3 Unloading / Loading of Metal Roll Cages onto Lorry



4.3.4 Movement of Metal Roll Cages on Concrete



4.3.5 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 $2 \times 10^{-5} \text{ Nm}^{-2}$

4.3.6 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 $2 \times 10^{-5} \text{ Nm}^{-2}$

4.3.7 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.

4.3.8 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

4.3.9 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

4.4. Car Park Noise

It has been assumed in the calculation that the car park will be 100% full for the hour duration and that the dwell time in each space will be 10 minutes. There are 8 available spaces and the delivery lorry is parked across the remaining two space. The calculations has therefore assumed 48 car movements travelling in and out of the site at 20 mph and switching of their engines and closing their doors.

Due to the calculations being undertaken with the delivery in progress the movement of the car park is masked by the delivery noise. For robustness the noise from the car park is included within the delivery noise assessment.

Figure 10: Use of Car Park by Customers. The figure includes a photograph of a car park and a graph showing noise levels over time. The graph is titled '%Project 001 in Calculations' and displays noise levels in dB on the y-axis (ranging from 50 to 80) against time on the x-axis (from 13:57:30 to 14:02:00). A green line represents the 'LAFmax' noise level, which fluctuates between approximately 50 dB and 75 dB. A red vertical line is drawn at 14:00:25. Above the graph, a bar chart shows the duration of car door and engine noise events, with green bars for car doors and blue bars for engine noise. The legend indicates: Green square = Car Door, Blue square = Engine Noise.

The following are the resultant noise levels at the noise sensitive property assuming a constant delivery and maximum use of the car park



4.6. Assessment of Delivery and Car Park Noise Levels

The following is an assessment in line with the general principles of British Standard 4142: 2014 + A1: 2019 to determine the impact on the residents.

Delivery Times:	07:00 to 18:30 Monday to Saturday
Specific Noise Levels	$L_{Aeq,15 \text{ minutes}}$ 30 dB
Impulsivity Feature	+3 dB
Intermittency Feature	+3 dB
Rating Noise Levels	$L_{Aeq,15 \text{ minutes}}$ 36 dB
Background Noise Levels	$L_{A90,15 \text{ minutes}}$ 48 dB
BS 4142 Assessment	-12 dB (Below Low Impact)
Uncertainty	+2 dB – 4 dB (95% confidence assuming $k=2$)

5. Calculations of Noise Levels...

5.1. ISO 9613 – Part 2:1996

The International Standards Organisation (“ISO”) published ISO 9613 – Part 2: 1996 entitled “*Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculations*” details the corrections that are required to establish the resultant noise levels of the existing and proposed plant at the assessment position.

5.1.1 Source Directivity (D_c)

A correction is made to account for the location of the source and the effect of additional reflective surfaces excluding the ground and is contained within section 6 of ISO 9613 - Part 2: 1996.

Number of Surfaces	Correction in dB (D_c)
1 Reflective Surface	+3 dB
2 Reflective Surfaces	+6 dB
3 Reflective Surfaces	+9 dB

5.1.2 Geometric Divergence (A_{div})

A correction is made for the distance between the source and assessment position using the following formula defined in section 7.1 of ISO 9613-Part 2: 1996.

Formula	Symbols
$A_{div} = 20 \cdot \log_{10} (d/d_0) + 11$	A_{div} = Reduction due to Geometric Divergence (dB) d = Distance from source to receiver (m) d_0 = reference distance (1m)

5.1.3 Ground Absorption (A_{gr})

A correction is made for the effect of the ground between the source and receiver depending on whether it is considered hard or soft ground.

Type of ground	Correction in dB (A_{gr})
Hard Ground	+ 3 dB
Soft Ground	+ 0 dB

5.1.4 Atmospheric Absorption (A_{atm})

As the source was less than 100m from the receiver position (assessment position) no correction was made for atmospheric absorption.

5.1.5 Barrier Effect (A_{bar})

A correction is made for any barrier in the direct line of sight between the source and the assessment position and is detailed in section 7.4 of ISO 9613-Part 2: 1996. For clarity, the K_{met} meteorological correction has been ignored and C_2 equals 40 and C_3 equals 1.

Formula	Symbols
$A_{bar} = 10 \cdot \log_{10} [3 + (40 \cdot \delta / \lambda) - A_g]$ *Note 1 where $\delta = a + b - r$ and $\lambda = c / f$	A_{bar} = Effective barrier attenuation (dB) A_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. Sound Power Level of Sources

Source	Description of Source	Sound Power Level $L_w(A)$		
		07:00 – 19:00	19:00 – 23:00	23:00 – 07:00
Source 5	Lorry Engine – 1700 rpm	$L_{w(A)}$ 68 dB	$L_{w(A)}$ 68 dB	$L_{w(A)}$ 58 dB
Source 6	Daikin AZAS 140 AC Heat Pump (Low Noise Card)	$L_{w(A)}$ 58 dB	$L_{w(A)}$ 58 dB	Not Operating
Source 7	Daikin AZAS 140 AC Heat Pump (Low Noise Card)	$L_{w(A)}$ 58 dB	$L_{w(A)}$ 58 dB	
Source 8	Bakery Extract (250 Diameter fan with 1800mm Attenuator)	$L_{w(A)}$ 53 dB	$L_{w(A)}$ 53 dB	
Source 9	Other Extract (250 Diameter fan with 1800mm Attenuator)	$L_{w(A)}$ 53 dB	$L_{w(A)}$ 53 dB	

5.3. Calculation of Plant Noise Levels

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
5	Packaged ECO Packaged CO2 Gas Cooler	68 dB	+6 dB	-37 dB	+3 dB	-0 dB	-9 dB	25 dB
6	Daikin AZAS 140 AC Heat Pump (Low Noise Card)	58 dB	+3 dB	-37 dB	+3 dB	-0 dB	-12 dB	12 dB
7	Daikin AZAS 140 AC Heat Pump (Low Noise Card)	58 dB	+3 dB	-36 dB	+3 dB	-0 dB	-12 dB	13 dB
8	Bakery Extract Fan 250 Dia + 1800 Attenuator	53 dB	+3 dB	-36 dB	+3 dB	-0 dB	-9 dB	11 dB
9	General Extract Fan 250 Dia + 1800 Attenuator	53 dB	+3 dB	-35 dB	+3 dB	-0 dB	-9 dB	11 dB
Specific Noise Level at Residential Façade (07:00 to 23:00), $L_{Aeq, 1 \text{ hour}}$								26 dB

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

Day 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
5	Packaged ECO Packaged CO2 Gas Cooler	58dB	+6 dB	-37 dB	+3 dB	-0 dB	-9 dB	15 dB
Specific Noise Level at Residential Façade (07:00 to 23:00), $L_{Aeq, 1 \text{ hour}}$:								15 dB

5.4. Assessment of Average Noise Levels (BS 4142: 2014 + A1: 2019)

BS 4142: 2014	Day Time - 07:00 to 19:00	Evening – 19:00 to 23:00	Night Time – 23:00 to 07:00
Residual Noise Levels	$L_{Aeq, 1 \text{ hour}}$ 51 dB	$L_{Aeq, 1 \text{ hour}}$ 47 dB	$L_{Aeq, 15 \text{ minutes}}$ 41 dB
Specific Noise Levels	$L_{Aeq, 1 \text{ hour}}$ 25 dB	$L_{Aeq, 1 \text{ hour}}$ 25 dB	$L_{Aeq, 15 \text{ minutes}}$ 15 dB
Impulsivity Feature	+2 dB	+2 dB	+4 dB
Tonality Feature	+0 dB	+3 dB	+3 dB
Rating Noise Levels	$L_{Aeq, 1 \text{ hour}}$ 27 dB	$L_{Aeq, 1 \text{ hour}}$ 30 dB	$L_{Aeq, 15 \text{ minutes}}$ 22 dB
Background Noise Levels	$L_{A90, 1 \text{ hour}}$ 42 dB	$L_{A90, 1 \text{ hour}}$ 42 dB	$L_{A90, 15 \text{ minutes}}$ 36 dB
BS 4142 Assessment	-15 dB (Low Impact)	-12 dB (Low Impact)	-14 dB (Low Impact)
Uncertainty (95% Confidence, $k=2$)	+/- 1.76 dB	+/- 1.80 dB	+/- 1.89 dB

6. Conclusions...

6.1. Assessment Position

The 1st floor bedrooms at the rear of 331 Leigh Road are located between 16 m and 20 m from the dedicated plant area for the packaged gas cooler and the 3-No AC units located on the rear wall. There is a garden room within the garden of 331 Leigh Road which is adjacent to the boundary but the main windows face in the opposite direction.

6.2. Background Noise Measurements

Day Time (07:00 – 19:00)			Evening (19:00 – 23:00)			Night Time (23:00 – 07:00)		
L _{Amax,1h}	L _{Aeq,1h}	L _{A90,1h}	L _{Amax,1h}	L _{Aeq,1h}	L _{A90,1h}	L _{Amax,15m}	L _{Aeq,15m}	L _{A90,15m}
68 - 105 dB	57 - 79 dB	42 - 59 dB	72 - 84 dB	60 - 66 dB	43 - 55 dB	46 - 88 dB	40 - 65 dB	36 - 49 dB
Modal Background		48 dB	Modal Background		48 dB	Modal Background		38 dB

6.3. Criterion at Assessment Position

Condition 15 of planning permission F/22/94159 requires the combined Rating Noise Level from all sources associated with the convenience store to be at least 10 dB below the background noise levels when assessed in accordance with British Standard 414: 2104 + A1: 2019.

6.4. Combined Noise Levels from Deliveries and Plant

Rating Noise Levels	Day Time - 07:00 to 19:00	Evening – 19:00 to 23:00	Night Time – 23:00 to 07:00
Delivery Noise	L _{Aeq,15 minutes} 36 dB	L _{Aeq,15 minutes} 36 dB	No Deliveries
Plant Noise	L _{Aeq,1 hour} 27 dB	L _{Aeq,1 hour} 30 dB	L _{Aeq, 15 minutes} 22 dB
Combined Levels	L _{Aeq,15 minutes} 37 dB	L _{Aeq,15 minutes} 37 dB	L _{Aeq, 15 minutes} 22 dB

6.5. Assessment Against Condition 15 of F/22/94159

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
37 dB	48 dB	-11 dB	37 dB	48 dB	-11 dB	22 dB	38 dB	-14 dB

6.6. Conclusions

The resultant Rating Noise Levels from the combined noise emissions from the proposed convenience store will comply in full with condition 15 of planning permission F/22/94159. It should be noted that condition 15 also requires a post installation noise survey once the development is complete before it opens. A Noise Management Plan (“NMP”) is included within Appendix A with a shortened version in Appendix B which staff can read.

END OF REPORT (1st and last page not numbered)

7. Appendix A – Noise Management Plan...

7.1. Mitigation Measures

The mitigation measures will be required to minimise the impact of deliveries on the surrounding residential dwellings.

7.1.1 Signs on Inside of Fence

A3 sized signs should be fixed to the inside of the north west boundary fence facing the car park area with a yellow backing and black bold writing.

- “Please be quiet and respect our neighbours” (Every 4m)

7.1.2 Signs in Loading Bay

A3 sized signs should be fixed along the south west façade and the fence surrounding the loading bay with a yellow backing and black bold writing.

- “Please be quiet and respect our neighbours” (Every 4m)
- “Quiet Zone” (Every 4m in between the other signs)

7.1.3 Reversing Beepers

Reversing beepers for all lorries will be turned off when they are on the Tesco site and any reversing manoeuvres undertaken using a trained and competent banksman.

7.2. Noise Policy...

7.2.1 Scope of Policy

The Tesco Store will be operated in line with the following policies relating to deliveries to the site.

7.2.2 Consideration of Noise

Noise impact will be considered as part of the day to day operation of deliveries to the site.

7.2.3 Mitigation Measures

Noise will be controlled primarily at source by the retention and continued maintenance of the equipment and noise control measures already installed on site.

7.2.4 Staff Members

All staff will as part of their ongoing training be made aware of the potential for noise from the operation of the deliveries to the site will have an adverse impact on the Local residents.

7.2.5 Feedback from Residents

The operators of the store will proactively seek feedback from residents and wherever practical look to proactively introduce quieter equipment and practices to continually reduce overall noise emissions.

7.2.6 Permitted Hours

Deliveries will not be undertaken outside the permitted hours and no lorries will arrive on site or in the nearby vicinity within these hours.

7.2.7 Management Control

The site will be operated in considerate manner with customer asked to obey a 5 mph site speed limit and a policy of turning of the engines and radios down of stationary cars. The site will be operated by well trained staff and all equipment regularly inspected and maintained.

7.2.8 Proactive Approach to Noise

The designated site manager will be responsible for the quiet operation of the site and will keep a site log of the inspections, maintenance and any ordinary activities that could give rise to complaints. Complaints will be dealt with in a proactive manner.

7.2.9 Staff Training

All staff will be made aware of the sensitive nature of the location of the Tesco store in relation to the residential neighbours and where appropriate will have training in the use of the mechanical equipment in line with the methods detailed above. The staff will be required as a minimum to read the summary of the Noise Management Plan in Appendix A.

7.2.10 Site Speed Limit

At least two sign will be displayed on site showing that speed limit on site is 5 mph. If a staff member sees a customer driving at more than 10 mph on site they will politely remind them of the site speed limit and point out the speed limit signs.

At no time shall any vehicle be driven at a speed greater than 10 mph.

7.2.11 Vehicle Radios / Refrigeration Units

Vehicle radios should be turned off prior to the vehicle entering the site and should remain off while the vehicle is on site. The refrigeration condenser providing cooling to the chilled or frozen stock should be turned off when the vehicle first stops on site and should not be turned on until the vehicle is ready to leave the site.

7.2.12 Site Log

A book shall be kept in the office for logging the beginning of the shift, end of the shift and any complaints received along with the following details relating to each delivery:

- Arrival and Departure Time.
- Type of Lorry and Delivery Type

7.2.13 Beginning of Each Shift

At the beginning of each shift the DSM will remind the staff that the site is located in a sensitive area and that during the shift they should undertake their work as they have been trained.

All staff will be required to read this Noise Management Plan or as a minimum the shortened version contained within Appendix A. Any new staff or staff returning from a break of more than 28 days shall be asked to read this NMP or as a minimum Appendix A and be given a short induction by the DSM.

7.2.14 Site Inspection

Prior to starting the shift the DSM shall quickly inspect the site to determine the physical acoustic mitigation measures are still in place.

7.2.15 Initial Complaint

If a complaint is received from any of the neighbours relating to noise the complaints should be documented within the site log with the following minimum information:

- Name of DSM.
- Date of Complaint.
- Name and address of complainant.
- Details of the complaint.
- Agreed actions.

7.2.16 Resolution of Complaint within 48-hours

The DSM should investigate the complaint and if appropriate resolve the complaint within 48 hours. Once the complaint is resolved the following minimum log shall be made within the site log:

- Name of DSM
- Date of Resolution.
- Further Actions Required.

7.2.17 Outstanding Complaint

If a complaint is not resolved within 48-hours then the DSM shall inform Tesco headoffice. Tesco head office will then determine if the deliveries can be undertaken during the extended period and if further actions are required.

7.2.18 Audit of Site Logs

Tesco will audit the site log at least once every month to ensure the daily logs have been entered within the Site Log. A review of complaints received will be undertaken and where appropriate actions put in place to resolve any recurring problems.

8. Appendix B – Noise Management Plan (Shortened Version)...

8.1. Restriction on Site due to Noise from Deliveries

The Tesco store is located in close proximity of residential properties on the Eastern and Southern Boundary. In order to ensure noise from deliveries does not disturb these residents the site was granted planning permission with the following restriction to delivery hours.

“14. For a period of 12 months from the opening of the store deliveries associated with the development hereby approved shall only take place between 06.00hrs - 00.00hrs Monday to Saturday, and 08.00hrs - 20.00hrs on Sundays....”

8.2. Noise Management Plan

This document provides the details of the measures that are required to be taken by all staff employed at the Tesco Store to ensure deliveries to the site do not disturb the residents within the permitted hours. These requirements are summarised below.

8.3. Physical Mitigation Measures

The site has been constructed with timber acoustic fences installed around the boundary of the site and around the loading bay to control the noise from the deliveries. There noise control signs displayed around the site.

8.4. Deliveries

Delivery vehicles can only be on site during the permitted times, must not exceed the site speed limit of 10 mph and must ensure their radios and refrigeration units are turned off.

8.5. Staff Requirements

At the beginning of each shift the store manager must ensure all staff member have read this Noise Management Plan and undertake their duties in an approved manner. Staff should take care when working outside especially in the early morning or late evening to work in a quiet fashion and not to create unnecessary noise. Each morning the store manager will undertake a quick visual inspection to ensure all the mitigation measures are in place.

8.6. Site Logs

Details of the delivery (arrival time, departure time and type of delivery) along with any complaints relating to deliveries will be noted daily within the site log.

8.7. Complaints

Any complaints received from customer or nearby residents relating to noise from deliveries must be logged within the site log and the store manager immediately informed.

KR Associates (UK) Ltd

Quietly **confident...**



Southampton: 02380 55 04 55