NSL
Noise Solutions Ltd

P/2022/00302
Received 09/03/2022

Convenience Store

Land Off High Street
Rocester
Uttoxeter
ST14 5JU

Car Park Noise Assessment

On behalf of

SEP
Properties Limited

Project Reference: 90461 | Revision: 01 | Date: 4th February 2022
Revised Date: 1st March 2022

Document Information

Project Name	:	**Convenience Store High Street, Rocester**
Project Reference	:	**90461**
Report Title	:	**Car Park Noise Assessment**
Doc Reference	:	**90461/CPNA**
Date	:	**4th February 2022**

	Name	Qualifications	Initials	Date
Prepared by:	Dean Chapman	MSc(Hons), AMIOA	DC	4th February 2022
Reviewed and approved by:	Nigel Chandler	BSc(Hons), MIOA	NAC	8th February 2022
For and on behalf of Noise Solutions Ltd				

Revision	Date	Description	Prepared	Reviewed/ Approved
01	1/3/2022	Updated car parking layout	DC	NAC

Reg no. 3483481 Trading office Unit 5, Oriel Court, Omega Park, Alton, Hampshire, GU34 2YT

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Appendices

1.0 Introduction

1.1. Noise Solutions Ltd (NSL) has been commissioned by SEP Properties to undertake a noise impact assessment of operations at the proposed convenience store to be sited on the Land off High Street in Rocester.

1.2. An environmental sound survey has been undertaken to establish the prevailing ambient sound pressure levels at a location representative of the sound levels outside the nearest noise sensitive receptors to the site.

1.3. Potential operational noise levels have been predicted to determine whether noise from customers and their vehicles is likely to have an adverse effect on neighbouring residents.

1.4. To assist with the understanding of this report a brief glossary of acoustic terms can be found in **Appendix A**. A more in-depth glossary of acoustic terms can be assessed at the following web address http://www.acoustic-glossary.co.uk/.

2.0 Site layout and development proposals

2.1. It is proposed to develop a new convenience store on the land off High Street and on the corner of Riversfield Drive.

2.2. The proposed development comprises a two storey building with the sales area and the BOH service area on the ground floor with the BOH area continuing on the first floor.

2.3. Car parking for store lies between the west of the store and Riversfield Drive. A total of 14 parking spaces are proposed. One of the spaces is dedicated for disabled persons and one for parent and child parking.

2.4. **Appendix B** contains an aerial photograph showing the site and surrounding area, with an overlay of the proposed development. A site plan is shown in **Appendix C**.

3.0 Nearest noise sensitive receptors

3.1. The area surrounding the site is predominantly residential in nature.

3.2. The house directly south of the car park. The front windows of the house at 2 Riversfield Drive and front windows of the house of 51 High Street (Receptors R2, R3 and R4 respectively) overlook parts of the car park. It is to be noted that for consistency with other assessments concerning this development, receptor labels are to remain the same. The side windows of the flats above 50 High Street (Receptor R1 from other assessments) have an obstructed view of the whole car park due to the building geometry of the store, which in turn will experience less noise from car parking activity. As a result, only Receptors R2, R3 and R4 have been included in this assessment.

3.3. An aerial photograph showing the site and surrounding area, the nearest noise sensitive properties and noise monitoring location used in this assessment is presented in **Appendix B**.

4.0 Existing noise climate

Environmental sound surveys

4.1. An unattended environmental sound pressure level survey was undertaken between 14.15 hours on Friday 14 January and 12.30 hours on Monday 17 January 2022. Measurements were made on Riversfield Drive, at position L1 as shown in **Appendix B**.

4.2. Full details of the survey are provided in **Appendix D** with a history graph of the unattended measurements.

4.3. The relevant results of the survey have been summarised in Table 1 below.

Table 1 Summary of survey results

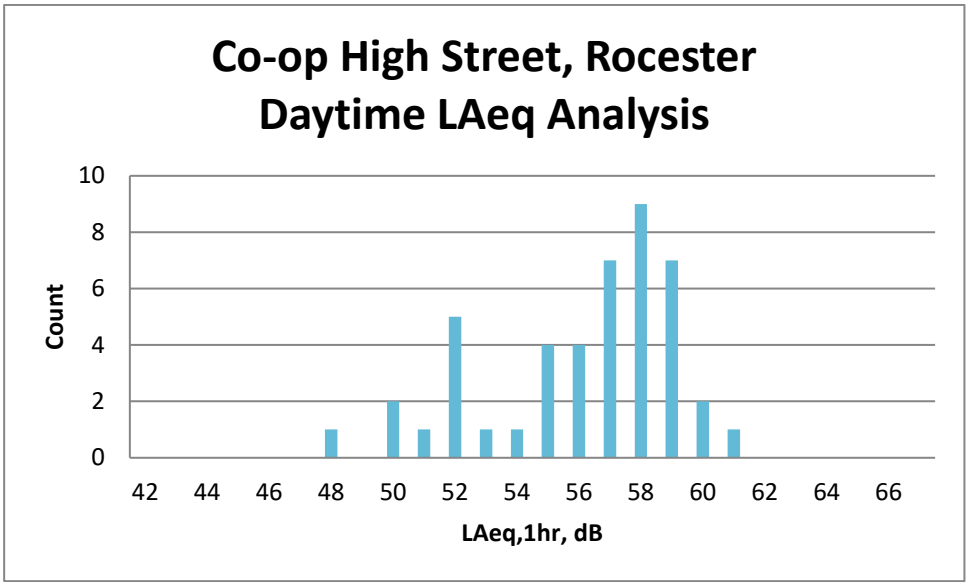
Measurement location	Measurement period	Range of recorded sound pressure levels (dB)			
		$L_{Aeq(15mins)}$	$L_{AFmax(15mins)}$	$L_{A10(15mins)}$	$L_{A90(15mins)}$
Riversfield Drive (L1) (14-17 Jan)	Daytime (07.00 – 23.00 hours)	43-66	59-92	40-69	35-52
	Night-time (23.00 – 07.00 hours)	35-57	41-78	36-60	33-50

4.4. The data presented above are the free-field levels recorded from the sound level meter.

Ambient sound levels

4.5. The measured sound levels have been analysed to determine representative values. Data has been analysed for the daytime period.

Figure 1 Histogram of $L_{Aeq\ 1hour}$ sound pressure levels, daytime



4.6. From reviewing the above histogram, it is clear that the existing ambient sound level on Riversfield Drive is typically around 58 dB $L_{Aeq\ 1hour}$. As may be expected, the lowest noise levels during trading hours were measured between 22.00 and 23.00 hours on Sunday evening.

5.0 Noise policy

Noise Policy Statement for England

5.1. The Noise Policy Statement for England (NPSE[1]), published in March 2010, sets out the long-term vision of Government noise policy. The Noise Policy aims, as presented in this document, are: "*Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *avoid significant adverse effects on health and quality of life;*
- *mitigate and minimise adverse effects on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.*"

5.2. The NPSE makes reference to the concepts of NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level) as used in toxicology but applied to noise impacts. It also introduces the concept of SOAEL (Significant Observed Adverse Effect Level) which is described as the level above which significant adverse effects on health and quality of life occur.

[1] Noise Policy Statement for England, Defra, March 2010

5.3. The first aim of the NPSE is to avoid significant adverse effects, taking into account the guiding principles of sustainable development (as referenced in Section 1.8 of the NPSE). The second aim seeks to provide guidance on the situation that exists when the potential noise impact falls between the LOAEL and the SOAEL, in which case: *"…all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development."*

5.4. Importantly, the NPSE goes on to state that: "This does not mean that such adverse effects cannot occur."

5.5. The NPSE does not provide a noise-based measure to define SOAEL, acknowledging that the SOAEL is likely to vary depending on the noise source, the receptor and the time in question. NPSE advises that: *"Not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."*

5.6. It is therefore likely that other guidance will need to be referenced when applying objective standards for the assessment of noise, particularly in reference to the SOAEL, whilst also taking into account the specific circumstances of a proposed development.

National Planning Policy Framework

5.7. A new edition of NPPF was published in July 2021 and came into effect immediately. The original National Planning Policy Framework (NPPF[2]) was published in March 2012, with revisions in July 2018 and February 2019 - this document replaced the existing Planning Policy Guidance Note 24 (PPG 24) "Planning and Noise." The 2021 revised edition contains no new directions or guidance with respect to noise, and hence, all previous references remain extant. The paragraph references quoted below relate to the July 2021 edition.

5.8. Paragraph 174 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by (amongst others) *"preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, water or noise pollution or land stability."*

5.9. The NPPF goes on to state in Paragraph 185:

"planning policies and decisions should …

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 quality of life;

[2] National Planning Policy Framework, DCLG, March 2012

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

5.10. The NPPF document does not refer to any other documents or British Standards regarding noise other than the Noise Policy Statement for England (NPSE[3]).

5.11. Paragraph 2 of the NPPF states that *"planning law requires that applications for planning permission must be determined in accordance with the development plan unless material considerations indicate otherwise."*

5.12. Paragraph 12 of the NPPF states that *"The presumption in favour of sustainable development does not change the statutory status of the development plan as the starting point for decision making. Where a planning application conflicts with an up-to-date development plan (including any neighbourhood plans that form part of the development plan), permission should not usually be granted. Local planning authorities may take decisions that depart from an up-to-date development plan, but only if material considerations in a particular case indicate that the plan should not be followed".*

5.13. Paragraph 119 states that *"Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or 'brownfield' land".*

Planning Practice Guidance – Noise

5.14. An updated Planning Practice Guidance (PPG[4]) for noise was published on 22 July 2019 and provides additional guidance and elaboration on the NPPF. It advises that when plan-making and decision-taking, the Local Planning Authority should consider the acoustic environment in relation to:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

[3] Noise Policy Statement for England, DEFRA, March 2010
[4] Planning Practice Guidance – Noise, https://www.gov.uk/guidance/noise--2, 22 July 2019

5.15. This guidance introduced the concepts of NOAEL (No Observed Adverse Effect Level), and UAEL (Unacceptable Adverse Effect Level). NOAEL differs from NOEL in that it represents a situation where the acoustic character of an area can be slightly affected (but not such that there is a perceived change in the quality of life). UAEL represents a situation where noise is 'very disruptive' and should be 'prevented' (as opposed to SOAEL, which represents a situation where noise is 'disruptive' and should be 'avoided').

5.16. As exposure increases above the LOAEL, the noise begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. As the noise exposure increases, it will then at some point cross the SOAEL boundary.

5.17. The LOAEL is described in PPG[5] as the level above which *"noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard"*.

5.18. PPG identifies the SOAEL as the level above which *"noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present."*

5.19. In line with the Explanatory Note of the NPSE, the PPG goes on to reference the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG[6] acknowledges that *"...the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation."*

5.20. The relevant guidance in the PPG in relation to the adverse effect levels is summarized below:

Table 2 PPG Noise effects table

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not Present	No Effect	No Observed Effect	No specific measures required

[5] Paragraph: 005 Reference ID: 30-005-20190722
[6] Paragraph: 006 Reference ID: 30-006-20190722

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Adverse Effect Level			
Present and not Intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and Intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and Disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very Disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

5.21. The Planning Practice Guidance[7] states the following in relation to mitigation measures:

> *"For noise sensitive developments, mitigation measures can include avoiding noisy locations in the first place; designing the development to reduce the impact of noise from adjoining activities or the local environment; incorporating noise barriers; and optimising the sound insulation provided by the building envelope."*

[7] Paragraph: 010 Reference ID: 30-010-20190722

5.22. In addition, the Guide notes that it may also be relevant to consider[8]:

> *"... whether any adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time (and the effect this may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations".*

Local Policy

5.23. The NPPF is very clear in that local authorities must update their local plans (one year from publication of the NPPF) and that if the local plan contains policies which do not closely align with the aims of the NPPF, then a decision must be made based on an assessment which shows compliance with the NPPF. Therefore, it is of paramount importance that local authorities have updated local plans which closely align with the aims in the NPPF.

6.0 Acoustic Standards and Guidance

BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings.

6.1. This Standard provides recommended guideline values for internal noise levels within dwellings which are similar in scope to guideline values contained within the World Health Organisation (WHO) document, Guidelines for Community Noise (19999). These guideline noise levels are shown in Table 3, below:

Table 3 BS 8233:2014 Desirable Internal Ambient Noise Levels for Dwellings

Activity	Location	07:00 to 23:00 hours	23:00 to 07:00 hours
Resting	Living room	35 dB $L_{Aeq,16h}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$

6.2. BS 8233:2014 advises that: *"regular individual noise events...can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values."* While the current edition of the standard gives no specific guidance on internal night-time L_{Amax} sound levels, the previous edition[10] recommended that:

[8] Paragraph: 006 Reference ID: 30-006-20190722
[9] World Health Organisation Guidelines for Community Noise, 1999
[10] BS 8233:1999 Sound insulation and noise reduction for buildings – Code of practice

For a reasonable standard in bedrooms at night, individual noise events (measured with F time-weighting) should not normally exceed 45 dB L_{AMax}.

6.3. The standard also provides advice in relation to design criteria for external noise. It states that:

"for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable.

In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

…

In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55 dB $L_{Aeq,T}$ or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space."

7.0 Customer noise assessment

7.1. The main source of operational noise associated with a convenience store of the type proposed is the arrival and departure of customers, and particularly car movements to and from the car park.

7.2. BS 4142:2014 'Methods for Rating and Measuring Industrial and Commercial Sound' is explicit in its scope that noise from people should not be assessed using its methodology. Guidance in BS 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' confirms that for sporadic sources it may not be appropriate to set specific noise limits and that bespoke limits may be set instead. Therefore, for the purposes of this assessment and in line with guidance in BS 8233:2014, an internal level of 35dB L_{Aeq} is proposed as a *Lowest Observed Adverse Effect Level*, with a *Significant Observed Adverse Effect Level* of 50dB[11] L_{Aeq}. BS 8233:2014 indicates

[11] HS2 noise impact assessment which has been approved by the secretary of state implies a 15dB difference between the LOAEL and SOAEL for transportation noise.

that a reduction of approximately 15 dBA between the external and internal noise levels results when a window is partially open for ventilation.

7.3. The noise from the car park will comprise the noise produced from vehicles entering and departing the car park, engines starting, car doors closing etc. The patrons of the store may also converse with each other or on the phone whilst they walk back and forth from their vehicles. Other patrons who may not drive may also be present.

7.4. For the purposes of the assessment, it is necessary to estimate the likely number of car park movements in the busiest hour of the day, with each movement consisting of the arrival of car, its occupants walking from the car to the store and back, and the car departing. To give a robust assessment it is assumed that all customers will talk during their journeys.

7.5. For calculation purposes the car park is divided into four "zones", as shown in **Appendix C**. These are:

- Zone A – P1 (disabled), P2 (parent and child), P3 (east)
- Zone B – P4-P6 (southeast)
- Zone C – P7-P10 (south)
- Zone D – P11-P14 (west)

7.6. It is assumed that during the peak hour there will be a total of forty-two separate sets of car movements to the store. Outside the peak times the number of visits is likely to be substantially lower.

7.7. Table 4, below details typical source noise level used in this assessment with the data presented in terms of SEL.

Table 4 Reference noise data for assessment

Activity	Measurement Data				
	$L_{Aeq,T}$	Distance (m)	Time (s)	SEL (dB)	SEL normalised to 10m
Car movement	58	3	15	70	60
A person talking	60	1	15	72	52

Predicted impact of noise from car park

7.8. The information in Table 4 was used to calculate a source noise level based on the number of activity events over the assessment period.

7.9. The noise level associated with each part of a visit is calculated by considering each visit in stages:

- Car arrives through car park access from Riversfield Drive and drives to parking space
- Customers walk to the store, and return
- Car starts, manoeuvres and leaves car park onto Riversfield Drive

7.10. With regard to the likely usage of the car parking spaces, it is assumed that the spaces closest to the store entrance (Zones A and B in **Appendix C**) are used more frequently than the other spaces, with the following predicted rates:

- Zone A – three arrivals and departures to each space (total nine vehicles)
- Zone B – three arrivals and departures to each space (total nine vehicles)
- Zone C – two arrivals and departures to each space (total eight vehicles)
- Zone D – three arrivals and departures to each space (total twelve vehicles)

7.11. In addition, it is assumed that during the peak hour a further 30 customers arrive and depart on foot or by cycle.

7.12. The noise level due to car park and associated activities within the peak hour is calculated in **Appendix E** and summarised below:

Table 5 Predicted car park sound levels at receptors

Receptor	$L_{Aeq,1hr}$	
	External	Internal (open window)
R2 – Windows south of car park	37	22
R3 – 2 Riversfield Drive	48	33
R4 – 51 High Street	47	32

7.13. The predictions above include the effects of acoustic screening provided by the proposed building but exclude any potential attenuation provided by the boundary wall around the site.

7.14. Using the method described above, the predicted car park noise level, during the busiest hour, is below the *Lowest Observed Adverse Effect Level* within all receptors. During less-busy periods, the noise level will be lower than the levels predicted in Table 5.

7.15. It should be noted that the lowest ambient noise level measured during the proposed store trading hours was 48dB $L_{Aeq\ 1hour}$, between 22.00 and 23.00 hours on Sunday evening. Therefore, at all times and all receptors, the predicted peak hour noise level due to store operations is no higher than would be expected due to normal activities in the area.

7.16. In practice, however, peak trading hours are likely to be between 07.00 and 09.00 hours and 17.00 to 19.00 hours on weekdays. Ambient noise levels during those periods would typically be 53dB $L_{Aeq\ 1hour}$ or higher, and therefore higher than the predicted peak hour noise level due to store operations at all the identified receptors.

8.0 Summary

8.1. Noise Solutions Ltd (NSL) has been commissioned to undertake an assessment of noise from customers and cars at the proposed convenience store which is to be sited on the land off High Street in Rocester.

8.2. The results of the assessments were analysed and reviewed in line with the aims and advice contained within the relevant planning policies and recognised Standards and guidance.

8.3. Absolute noise levels resulting from car park activities and customers during the peak trading hour will be no higher than the *Lowest Observed Adverse Effect Level* at all noise sensitive receptors.

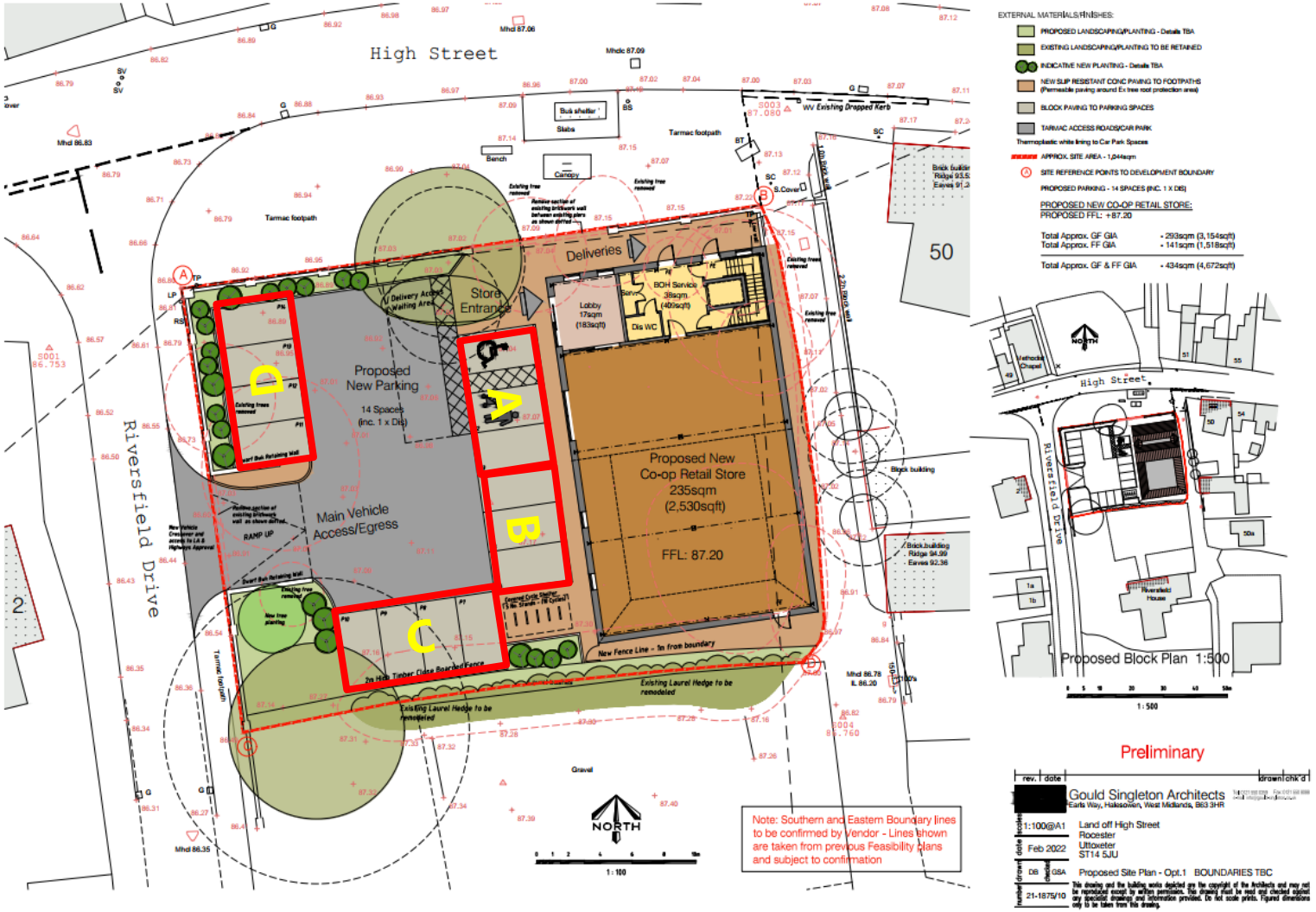
8.4. Peak trading hours (07.00 to 09.00 hours and 17.00 to 19.00 hours daily on weekdays) are not likely to coincide with periods when ambient noise levels are lowest (22.00 to 23.00 hours on Sundays). It is therefore considered unlikely that noise from cars and customers within the store car park will lead to an adverse noise impact on the neighbouring existing and proposed residential properties.

Appendix A Acoustic terminology

Parameter	Description
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 $\log_{10}$ (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20µPa. The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.
dB(A), L_{Ax}	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
Fast Time Weighting	Setting on sound level meter, denoted by a subscript F, that determines the speed at which the instrument responds to changes in the amplitude of any measured signal. The fast time weighting can lead to higher values than the slow time weighting when rapidly changing signals are measured. The average time constant for the fast response setting is 0.125 (1/8) seconds.
Free-field	Sound pressure level measured outside, far away from reflecting surfaces (except the ground), usually taken to mean at least 3.5 metres
Façade	Sound pressure level measured at a distance of 1 metre in front of a large sound reflecting object such as a building façade.
$L_{Aeq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level recorded during a noise event with a period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise. $L_{A10,18h}$ is the A –weighted arithmetic average of the 18 hourly $L_{A10,1h}$ values from 06:00-24:00.
$L_{90,T}$	A noise level index. The noise level that is exceeded for 90% of the measurement time interval, T. It gives an indication of the lower levels of fluctuating noise. It is often used to describe the background noise level and can be considered to be the "average minimum" noise level and is a term used to describe the level to which non-specific noise falls during quiet spells, when there is lull in passing traffic for example.

Appendix B Aerial photograph of site with overlaid development plan

Appendix C Development plan and elevations



Appendix D Environmental sound survey

Details of environmental sound survey

D.1 Measurements of the existing background sound levels were undertaken between 14.15 hours on Friday 14 January and 12.30 hours on Monday 17 January 2022.

D.2 The sound level meter was programmed to record the A-weighted L_{eq}, L_{90}, L_{10} and L_{max} noise indices for consecutive 15-minute sample periods for the duration of the survey.

Measurement position

D.3 Unattended measurements were made at position L1 shown in **Appendix B**. The meter was secured to a lamp column with the microphone approximately 3m above the ground.

D.4 In accordance with BS 7445-2:1991 *'Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use'*, the measurements were undertaken under free-field conditions.

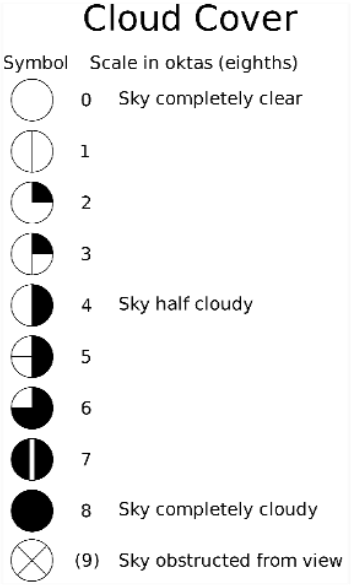
Equipment

D.5 Details of the equipment used during the survey are provided in the table below. The sound level meter was calibrated before and after the survey; no significant change (+/-0.2 dB) in the calibration level was noted.

Period	Description	Model / serial no.	Calibration date	Calibration certificate no.
14-17 January	Class 1 Sound level meter	Rion NL-52 / 00654035	07/06/2021	1500431
	Condenser microphone	Rion UC-59 /08290		
	Preamplifier	Rion NH-25 / 54080		
	Calibrator	Rion NC-74 /34235932	23/09/2021	1500910-1

Weather Conditions

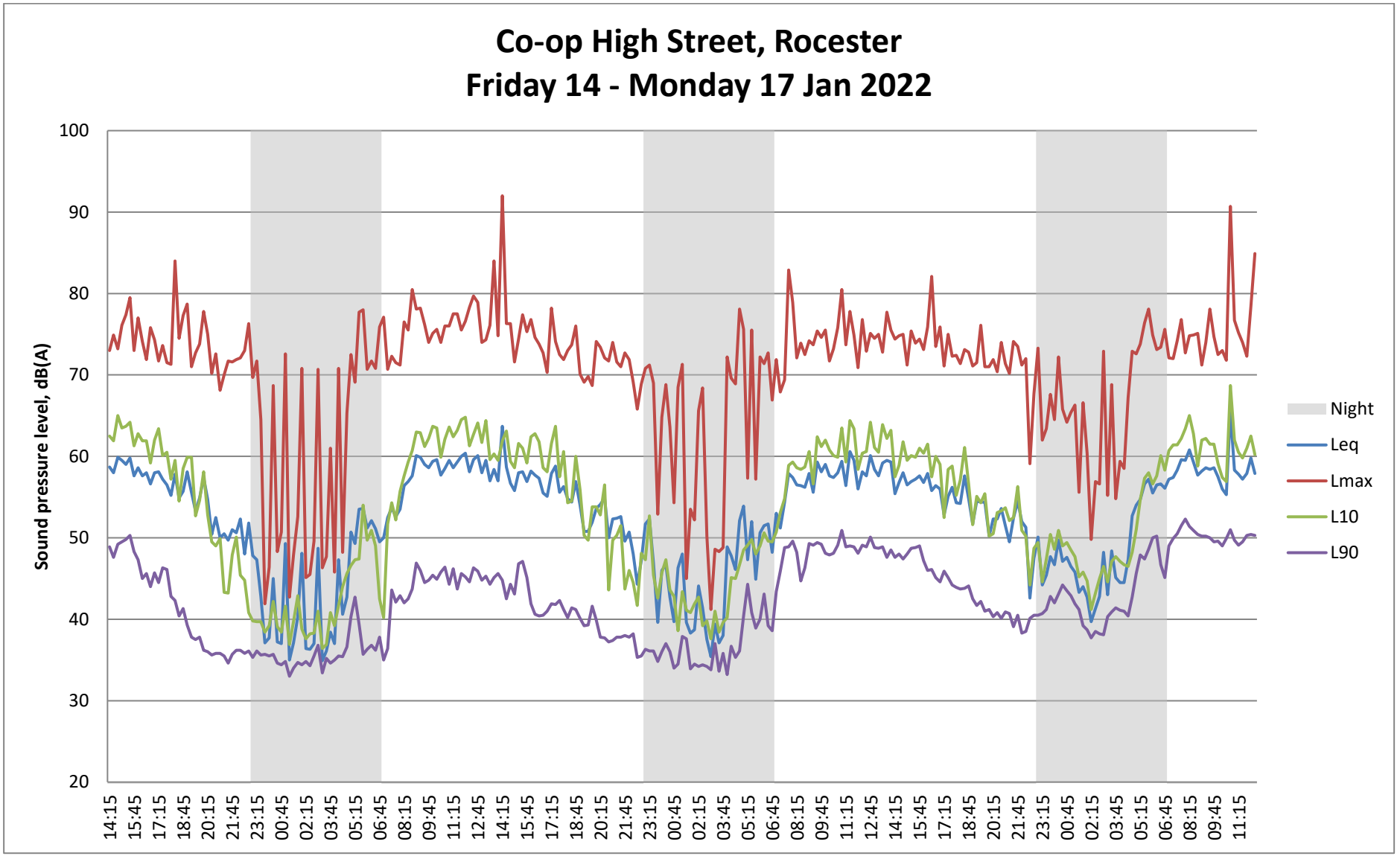
D.6 Weather conditions were determined both at the start and on completion of the survey. It is considered that the meteorological conditions were appropriate for environmental noise measurements. The table below presents the weather conditions recorded on site at the beginning and end of the survey.

Weather Conditions				
Measurement Location	**Date/Time**	**Description**	**Start of Survey**	**End of survey**
As indicated on Appendix B	14.15 14 Jan - 12.30 17 Jan 2022	Temperature (°C)	4	7
		Precipitation:	No	No
		Cloud cover (oktas - see guide)	1	0
		Presence of fog/snow/ice	No	No
		Presence of damp roads/wet ground	Damp	Damp/Wet
		Wind Speed (m/s)	<1	1.9
		Wind Direction	S	SW
		Conditions that may cause temperature inversion (i.e. calm nights with no cloud)	n/a	n/a

Results and observations

D.7 The noise climate at the measurement position was dominated by local road traffic and birdsong.

D.8 The results of the unattended survey are presented in a time history graph overleaf.


Co-op High Street, Rocester
Friday 14 - Monday 17 Jan 2022
Sound pressure level, dB(A)
100
90
80
70
60
50
40
30
20
14:15
15:45
17:15
18:45
20:15
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11:15
Night
Leq
Lmax
L10
L90

Appendix E Predicted operational noise (customer arrivals and departures)

Location	Activity	SEL, 10m	Receptor R2					
			No. Events / Hour	$L_{Aeq, 1hr}$ @ 10m	Receptor Distance, m	Distance correct'n, dB	Screening correct'n, dB	Resultant at R2 dB(A)
Car park entrance	Car Passby	60	76	43	36	-11	0	32
Closest approach to window	Car Passby	60	38	40	24	-8	0	32
	People talking	52	19	29	24	-8	0	21
Front of store	People talking	52	68	35	45	-13	0	22
Car Park Zone A	Car Passby	60	9	34	40	-12	0	22
	People talking	52	9	26	40	-12	0	14
Car Park Zone B	Car Passby	60	9	34	32	-10	0	24
	People talking	52	9	26	32	-10	0	16
Car Park Zone E	Car Passby	60	8	33	26	-8	0	25
	People talking	52	8	25	26	-8	0	17
Car Park Zone F	Car Passby	60	12	35	45	-13	0	22
	People talking	52	12	27	45	-13	0	14
			Resultant at Receptor, $L_{Aeq\ 1\ hour}$					**37**

Location	Activity	SEL, 10m	Receptor R3					
			No. Events / Hour	$L_{Aeq, 1hr}$ @ 10m	Receptor Distance, m	Distance correct'n, dB	Screening correct'n, dB	Resultant at R3, dB(A)
Car park entrance	Car Passby	60	76	43	11	-1	0	42
Closest approach to window	Car Passby	60	38	40	5	6	0	46
	People talking	52	19	29	5	6	0	35
Front of store	People talking	52	68	35	35	-11	0	24
Car Park Zone A	Car Passby	60	9	34	30	-10	0	24
	People talking	52	9	26	30	-10	0	16
Car Park Zone B	Car Passby	60	9	34	30	-10	0	24
	People talking	52	9	26	30	-10	0	16
Car Park Zone E	Car Passby	60	8	33	23	-7	0	26
	People talking	52	8	25	23	-7	0	18
Car Park Zone F	Car Passby	60	12	35	16	-4	0	31
	People talking	52	12	27	16	-4	0	23
			Resultant at Receptor, $L_{Aeq\ 1\ hour}$					**48**

Location	Activity	SEL, 10m	Receptor R4					
			No. Events / Hour	$L_{Aeq, 1hr}$ @ 10m	Receptor Distance, m	Distance correct'n, dB	Screening correct'n, dB	Resultant at R1A, dB(A)
Car park entrance	Car Passby	60	76	43	50	-14	0	29
Closest approach to window	Car Passby	60	38	40	5	6	0	46
	People talking	52	19	29	4	8	0	37
Front of store	People talking	52	68	35	27	-9	0	26
Car Park Zone A	Car Passby	60	9	34	30	-10	-10	14
	People talking	52	9	26	30	-10	-10	6
Car Park Zone B	Car Passby	60	9	34	40	-12	-10	12
	People talking	52	9	26	40	-12	-10	4
Car Park Zone E	Car Passby	60	8	33	50	-14	-5	14
	People talking	52	8	25	50	-14	-5	6
Car Park Zone F	Car Passby	60	12	35	43	-13	0	22
	People talking	52	12	27	43	-13	0	14
			Resultant at Receptor, $L_{Aeq\ 1\ hour}$					**47**