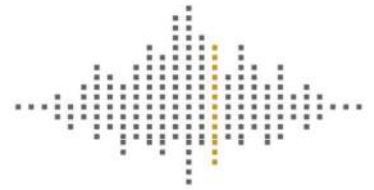


# SHARPS REDMORE

ACOUSTIC CONSULTANTS • Established 1990



## Report

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**Tesco Express, Temple Belle,  
Henderson Drive, Dartford,  
DA1 5LD**

Noise assessment of a  
proposal to extend permitted  
trading hours

### Prepared by

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**Project No** 2422352

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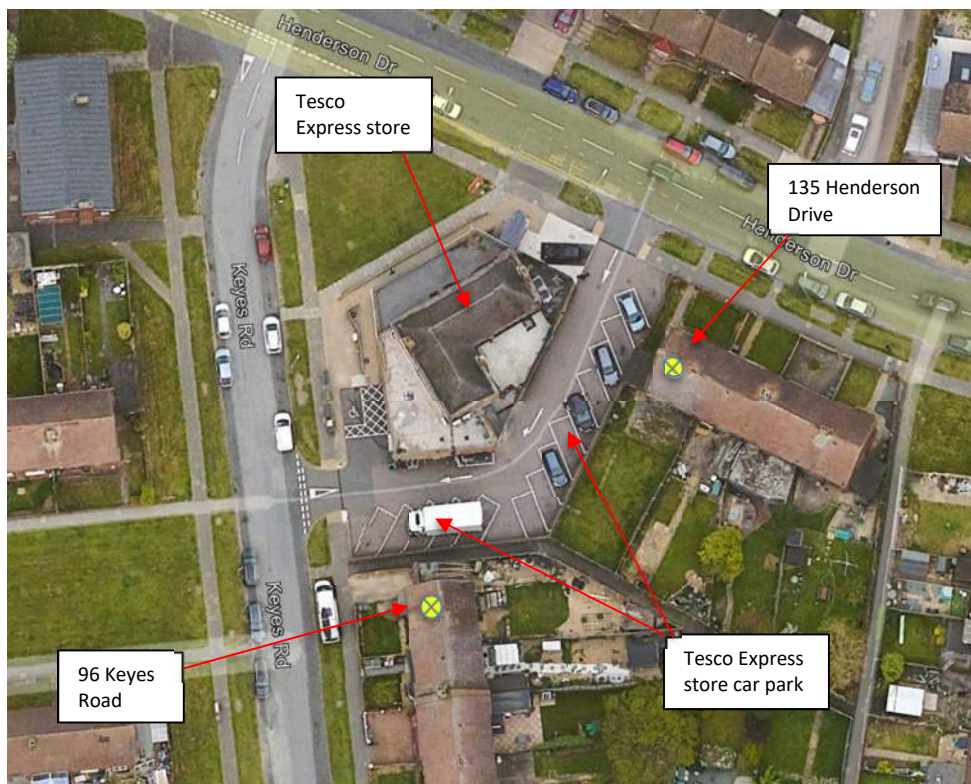
### Disclaimer

This report has been prepared with all reasonable skill, care and diligence commensurate with an acoustic consultancy practice under the terms and brief agreed with our client at that time. Sharps Redmore provides no duty or responsibility whatsoever to any third party who relies upon its content, recommendations or conclusions.

## 1.0 Introduction

- 1.1 Sharps Redmore (SR) has been instructed to undertake a noise assessment of a proposal to seek to extend the permitted trading hours at the Tesco Express store, Temple Belle, Henderson Drive, Dartford.
- 1.2 Trading hours to the store are controlled by planning decision notice DA/08/01602/FUL, planning condition 10, which states:
- “10 The retail use hereby approved shall only trade between 0700-2100 hrs Mon-Sat and 0900 -1900 Sun. Deliveries and collections shall only be carried out between 080-1800 hrs Mon - Sat and 0900-1600 Sun”.
- 1.3 Tesco wishes to seek to trade between 0700 and 2200 hours Monday to Saturday and from 0800 to 2000 hours on Sundays. These proposed trading hours changes would represent an additional hour period after trading hours Monday to Saturday, and an hour before and after on Sundays compared to the existing situation.
- 1.4 The site layout is indicated at Figure 1 below; the closest residential properties to the Tesco Express store are in Henderson Drive to the east and Keyes Road to the south.

**FIGURE 1: Tesco Express, Temple Belle site layout**



- 1.5 The objective of the assessment is to determine how noise that may be generated as a result of the proposed additional trading periods would affect residential amenity.
- 1.6 Section 2 presents details of an environmental noise survey undertaken at the store, with appropriate methods of assessment and criteria discussed in Section 3.
- 1.7 Noise associated with customer activity from the proposed additional trading periods are considered in section 4; the assessment conclusions are contained in section 5.

## 2.0 Noise survey details

2.1 A baseline noise survey was carried out as indicated in Figure 2 below. An attended noise survey was carried out between Friday 16th and Monday 19th February 2024 to establish the existing noise climate during the times that extended trading hours are sought.

**FIGURE 2: Noise monitoring location**



2.2 Noise measurement location A was chosen to represent the noise climate at the closest residential properties in Henderson Drive and Keyes Road.

2.3 Measurements were carried out using a Norsonic 140 sound level meter. The equipment was calibrated before and after the survey with no variation in calibration level observed. The measurements were carried out in free-field conditions, with the microphone at 3 metres above first floor flat roof level.

2.4 The weather conditions during the noise survey were mixed although generally suitable for noise measurements. Weather conditions during the Friday evening period (2000 to 2200 hours) were dry, partly cloudy, 11°C, with a light westerly wind (5m/s). During the Saturday evening (2000 to 2200 hours) the period started dry, with light rain observed at first, becoming more persistent towards the end of this period. Road started dry, but were wet by 2130 hours. Winds were light from the south west and the temperature was 11°C. The last half an hour of the Saturday evening measurements between 2130 and 2200 hours are not considered representative of suitable conditions.

- 2.5 The weather during the Sunday morning measurements was wet at first and then drying out from 0830 hours, although the roads were generally wet throughout. Winds were light and variable locally in direction on the Sunday morning with a temperature of 9°C. The conditions during the Sunday evening measurements were dry (with dry roads), and a light westerly wind (<5m/s) and a temperature of 11°C.
- 2.6 The hourly period measured noise level are summarised below, the shaded cells highlight the noise levels during the period that extended hours trading is sought. The full survey results are presented at Appendix A.

**TABLE 1: Measured noise levels**

Date	Time	Sound level dB					Store open/closed
		L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq T</sub>	L <sub>AFmax</sub>	L <sub>Amin</sub>	
16.2.24	20:00	50.0	40.5	56.8	92.6	37.8	Open
	21:00	49.1	39.0	47.2	73.9	36.3	Closed
17.2.24	20:00	51.6	45.7	51.3	81.5	43.0	Open
	21:00	51.6	46.1	49.4	67.2	43.2	Closed
18.2.24	08:00	50.9	43.1	48.0	61.9	39.6	Closed
	09:00	51.0	42.4	48.0	67.2	40.0	Open
	18:00	50.8	42.1	47.9	75.5	38.5	Open
	19:00	48.8	39.7	45.7	63.5	36.3	Closed

- 2.7 The typical ambient noise climate during the periods when additional trading is sought was 46 to 49 dB L<sub>Aeq 1 hour</sub>. The main noise sources observed during these additional periods were from local and distant road traffic. During the periods when the Tesco Express store was trading, noise from car parking activity was not observed to be particularly noticeable in the context of the general noise climate.

### 3.0 Assessment methodology and criteria

- 3.1 The National Planning Policy Framework (NPPF), December 2023, sets out the Government's planning policies for England and "these policies articulate the Government's vision of sustainable development." In respect of noise, Paragraph 191 of the NPPF states the following:

*"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they 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 the quality of life;*
- 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; and*
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation".*

- 3.2 Guidance on the interpretation of the policy aims contained within the NPPF is contained within National Planning Policy Guidance (NPPG). The NPPG introduces the concept of a noise exposure hierarchy based on likely average response. The guidance contained in the NPPG (NPPG paragraph 005) is summarised in the table below:



**TABLE 2: Noise Exposure Hierarchy**

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



3.3 The NPPF and NPPG reinforce the March 2010 DEFRA publication, “Noise Policy Statement for England” (NPSE), which states three policy aims, as follows:

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

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

3.4 Together, the first two aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

*“... all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur.”*

3.5 Taking an overview of national policy aims and guidance it is clear that when considering the impact of noise that the fact can be heard and causes impact, is not reason to refusal an application as consideration should also be given to the significance of the impact and the mitigation measures available.

3.6 It is possible to apply objective standards to the assessment of noise and the effect produced by the introduction of a certain noise source may be determined by several methods, as follows:

- i) The effect may be determined by reference to guideline noise values, such as those contained in the World Health Organisation (WHO) “*Guidelines for Community Noise*”.
- ii) Alternatively, the impact may be determined by considering the change in noise level that would result from the proposal, in an appropriate noise index for the characteristic of the noise in question. There are various criteria linking change in noise level to effect. This is the method that is suited to, for example, the assessment of noise from road traffic because it is capable of displaying impact to all properties adjacent to a road link irrespective of their distance from the road.
- iii) Another method is described within BS 4142:2014 to determine the significance of sound impact from sources of industrial and/or commercial nature. The sources that the newly revised standard is intended to assess are sound from industrial and manufacturing processes, sound from fixed plant installations, sound from loading and unloading of goods at industrial

and/or commercial premises and the sound from mobile plant and vehicles, such as forklift, train or ship movements.

- 3.7 For the assessment of noise associated with car parking activity the appropriate methods of assessment are guideline values and to consider the proposal in the context of the existing noise climate (change in level).

**Guideline noise values**

- 3.8 The WHO “Community Noise Guidelines” (CNG) values are appropriate to what are termed “critical health effects”. This means that the limits are at the lowest noise level that would result in any psychological or physiological effect. They are, as defined by NPSE, set at the Lowest Observed Adverse Effect Level (LOAEL), but do not define the level above which effects are significant (the SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim.
- 3.9 In 2018 the WHO published the “Environmental Noise Guidelines for the European Region” (ENGER). The new WHO Environmental Noise Guidelines (page 28) explain that *“The current environmental noise guidelines for the European Region supersede the CNG from 1999. Nevertheless, the GDG (Guideline Development Group) recommends that all CNG indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) should remain valid”*. Hence the CNG remain relevant to this assessment.
- 3.10 The WHO ENGER brings together the latest research on the effects of specific types of noise on health in relation to transportation noise sources (road, rail and aircraft noise exposure), wind turbines and leisure noise. Hence in direct relation to the specific proposal that this noise assessment considers, the new WHO ENGER are not of material consideration.
- 3.11 The World Health Organisation guideline noise values are summarised in the Table 3 below.

**TABLE 3: WHO guideline noise values**

Document	Level	Guidance
World Health Organisation “Community Noise 2000”	$L_{AeqT} = 55 \text{ dB}$	Serious annoyance, daytime and evening. (Continuous noise, outdoor living areas)
	$L_{AeqT} = 50 \text{ dB}$	Moderate annoyance, daytime and evening. (Continuous noise, outdoor living areas).
	$L_{AeqT} = 35 \text{ dB}$	Moderate annoyance, daytime and evening. (Continuous noise, dwellings, indoors)
	$L_{AeqT} = 30 \text{ dB}$	Sleep disturbance, night-time (indoors)
	$L_{Amax} = 60 \text{ dB}$	Sleep disturbance, windows open at night. (Noise peaks outside bedrooms, external level).
	$L_{Amax} = 45 \text{ dB}$	Sleep disturbance at night (Noise peaks inside bedrooms, internal level)

### Changes in noise level

- 3.12 Changes in noise levels of less than 3 dBA are not perceptible under normal conditions and changes of 10 dBA are equivalent to a doubling of loudness. This guidance has been accepted by inspectors, at inquiry, to encompass changes in noise levels in the index  $L_{AeqT}$ .
- 3.13 Table 4 below shows the response to changes in noise (known as a semantic scale); this table has been developed from general consensus opinion of acousticians.

**TABLE 4: Change in noise level**

Change in noise level $L_{AeqT}$ dB	Response	Impact
<3	Imperceptible	None
3 – 5	Perceptible	Slight/moderate
6 – 10	Up to a doubling	Moderate/significant
11 – 15	More than a doubling	Substantial
>15	-	Severe

## 4.0 Noise from customer car parking activity

- 4.1 The principle noise source associated with retail store trading is from customer car parking activity.
- 4.2 In planning terms the daytime period is defined as being between 0700 and 2300 hours. The current permitted trading hours 0700 to 2100 hours Monday to Saturday and 0900 and 1900 hours on Sundays, fall within this period. The proposed trading periods from 0700 to 2200 hours Monday to Saturday and 0800 to 2000 hours on Sundays falls within the daytime period. Materially therefore in planning noise terms there is no difference between the current and proposed hours.
- 4.3 SR has undertaken extensive noise monitoring of convenience store car parks; at 10 metres from the boundary of a car park measured noise levels are 43 dB  $L_{Aeq,1hr}$  (free field). Typical noise sources include door slams, car radios, car alarms, customer voices and trolley movements.
- 4.4 The closest residential properties to the Tesco car park are 135 Henderson Drive and 96 Keyes Road, with the rear facades of these properties approximately 6 metres from the closest customer parking spaces. Each of these properties would be afforded just breaking line of sight screening (5 dBA screening attenuation) to the Tesco Express car park from the existing boundary wall structure.
- 4.5 Predicted car parking activity noise levels at 135 Henderson Drive and 96 Keyes Road would be 42 dB  $L_{Aeq, 1 \text{ hour}}$  (43 dB plus 4 dB distance correction less 5 dB screening reduction).
- 4.6 The predicted Tesco Express customer car parking activity noise levels between 2100 and 2200 hours (Monday to Saturday), and between 0800 and 0900 hours and 1900 to 2000 hours on Sundays would comply with the WHO daytime guideline noise value (50-55 dB  $L_{Aeq, 16 \text{ hours}}$ ) and hence would be indicative of low impact.
- 4.7 Predicted car park activity noise levels would be below the existing ambient noise climate (46 to 49 dB  $L_{Aeq, T}$ ) during the proposed additional trading hours. This is further indicative of low noise impact.
- 4.8 Predicted noise associated with Tesco Express customer car parking activity in the proposed additional trading hours would comply with the requirements of the NPPF to avoid significant adverse impact.

## **5.0 Assessment conclusions**

- 5.1 Tesco are seeking to extend the permitted trading hours of the store at Tesco Express store, Temple Belle, Henderson Drive, Dartford. Tesco wishes to trade until 2200 hours Monday to Saturday and from 0800 hours until 2000 hours on Sunday.
- 5.2 This report provides an objective assessment of noise associated with customer car parking activity which concludes that the proposed additional trading hours (from 2100 to 2200 hours Monday to Friday, and from 0800 to 2000 hours on Sunday) would not give rise to significant adverse impact, which is the test under paragraph 191 of the NPPF.

## **APPENDIX A**

### **NOISE SURVEY RESULTS**

## Measurement location A - Tesco Express, Temple Belle, Dartford

Date	Sample start time	Noise Parameter - dB				
		L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	L <sub>AFmax</sub>	L <sub>AFmin</sub>
16.2.24	20:00	48.5	40.3	45.5	59.7	38.2
	20:15	51.9	41.0	62.5	92.6	38.3
	20:30	50.2	40.3	46.6	58.7	37.8
	20:45	49.5	40.4	46.4	59.8	38.3
	21:00	48.1	39.1	47.8	68.2	36.5
	21:15	50.3	39.5	49.0	73.9	36.4
	21:30	48.2	38.7	45.2	59.5	37.0
	21:45	49.7	38.5	45.9	61.2	36.3
17.2.24	20:00	51.5	46.2	53.9	81.5	44.0
	20:15	51.4	45.3	49.2	65.3	43.1
	20:30	51.8	45.6	51.1	72.0	43.7
	20:45	51.7	45.8	49.1	59.3	43.0
	21:00	50.9	46.1	48.9	61.7	44.1
	21:15	51.5	45.7	49.3	61.0	43.2
	21:30	52.1	46.4	49.8	67.2	44.3
	21:45	51.8	46.3	49.6	61.8	44.5
18.2.24	08:00	50.6	43.6	47.9	61.9	41.2
	08:15	50.7	43.7	47.8	60.0	41.2
	08:30	52.2	43.1	48.9	61.6	40.1
	08:45	50.2	41.9	47.0	59.2	39.6
	09:00	50.9	42.8	47.8	59.4	40.9
	09:15	50.6	42.3	47.7	64.0	40.0
	09:30	51.4	42.2	48.0	62.4	41.0
	09:45	51.0	42.3	48.3	67.2	40.1
	18:00	52.4	43.0	49.5	75.5	39.2
	18:15	50.5	42.3	47.4	60.5	38.5
	18:30	50.5	41.9	47.7	63.5	39.0
	18:45	49.8	41.0	46.3	59.6	38.6
	19:00	48.6	40.1	45.5	57.4	37.4
	19:15	49.1	39.8	45.7	60.9	37.1
	19:30	49.4	39.6	46.5	63.5	37.3
19:45	48.1	39.3	44.8	56.0	36.3	



## **APPENDIX B**

### **ACOUSTIC TERMINOLOGY**

## Acoustic Terminology

- B1 Noise, defined as unwanted sound, is measured in units of decibels, dB. The range of audible sounds is from 0 dB to 140 dB. Two equal sources of sound, if added together will result in an increase in level of 3 dB, i.e.  $50 \text{ dB} + 50 \text{ dB} = 53 \text{ dB}$ . Increases in continuous sound are perceived in the following manner:
- 1 dB increase - barely perceptible.
  - 3 dB increase - just noticeable.
  - 10 dB increase - perceived as twice as loud.
- B2 Frequency (or pitch) of sound is measured in units of Hertz. 1 Hertz (Hz) = 1 cycle/second. The range of frequencies audible to the human ear is around 20Hz to 18000Hz (or 18kHz). The capability of a person to hear higher frequencies will reduce with age. The ear is more sensitive to medium frequency than high or low frequencies.
- B3 To take account of the varying sensitivity of people to different frequencies a weighting scale has been universally adopted called "A-weighting". The measuring equipment has the ability automatically to weight (or filter) a sound to this A scale so that the sound level it measures best correlates to the subjective response of a person. The unit of measurement thus becomes dBA (decibel, A-weighted).
- B4 The second important characteristic of sound is amplitude or level. Two units are used to express level, a) sound power level -  $L_w$  and b) sound pressure level -  $L_p$ . Sound power level is an inherent property of a source whilst sound pressure level is dependent on surroundings/distance/directivity, etc. The sound level that is measured on a meter is the sound pressure level,  $L_p$ .
- B5 External sound levels are rarely steady but rise or fall in response to the activity in the area - cars, voices, planes, birdsong, etc. A person's subjective response to different noises has been found to vary dependent on the type and temporal distribution of a particular type of noise. A set of statistical indices have been developed for the subjective response to these different noise sources.
- B6 The main noise indices in use in the UK are:
- $L_{A90}$ : The sound level (in dBA) exceeded for 90% of the time. This level gives an indication of the sound level during the quieter periods of time in any given sample. It is used to describe the "background sound level" of an area.
  - $L_{Aeq}$ : The equivalent continuous sound level in dBA. This unit may be described as "the notional steady noise level that would provide, over a period, the same energy as the intermittent noise". In other words, the energy average level. This unit is now used to measure a wide variety of different types of noise of an industrial or commercial nature, as well as aircraft and trains.
  - $L_{A10}$ : The sound level (in dBA) exceeded for 10% of the time. This level gives an indication of the sound level during the noisier periods of time in any given sample. It has been used over many years to measure and assess road traffic noise.
  - $L_{AMAX}$ : The maximum level of sound measured in any given period. This unit is used to measure and assess transient noises, i.e. gun shots, individual vehicles, etc.

- B7 The sound energy of a transient event may be described by a term SEL - Sound Exposure Level. This is the  $L_{Aeq}$  level normalised to one second. That is the constant level in dBA which lasting for one second has the same amount of acoustic energy as a given A weighted noise event lasting for a period of time. The use of this unit allows the prediction of the  $L_{Aeq}$  level over any period and for any number of events using the equation;

$$L_{AeqT} = SEL + 10 \log n - 10 \log T \text{ dB.}$$

Where

n = Number of events in time period T.

T = Total sample period in seconds.

- B8 In the open, known as free field, sound attenuates at a rate of 6 dB per each doubling of distance. This is known as geometric spreading or sometimes referred to as the Inverse Square Law. As noise is measured on a Logarithmic scale, this attenuation in distance =  $20 \log$  (ratio of distances), e.g. for a noise level of 60 dB at ten metres, the corresponding level at 160 metres is:

$$60 - 20 \log \frac{160}{10} = 60 - 24 = 36 \text{ dB.}$$