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Project:

Unit 1, Dukes Walk, Waterlooville

Title:

Delivery Noise Assessment

quietly moving forward

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1 INTRODUCTION

- 1.01 Environmental Equipment Corporation Limited has been commissioned by Waitrose Ltd to undertake a delivery noise assessment to support an application for the extension of deliveries at the existing Waitrose store at Unit 1, Dukes Walk, Waterloooville, located at Stakes Hill Road, PO7 7HS.
- 1.02 This assessment is provided to support an application to allow deliveries between 0600 – 2200 Monday to Saturday and 0800 – 2000 hours on Sunday.
- 1.03 This noise assessment has been conducted in accordance with the policies and requirements of Havant Borough Council and is based on a noise survey carried out at the site over a midweek and weekend period.
- 1.04 This assessment includes the prediction of impacts at the closest existing noise sensitive properties based on the proposed extended delivery periods of the store.
- 1.05 This report is prepared solely for Waitrose Ltd. Environmental Equipment Corporation Ltd accepts no responsibility for its use by any third party.
- 1.06 Whilst every effort has been made to ensure that this report is easy to understand, it is necessarily technical in nature. To assist the reader, an explanation of the terminology used in this report is contained in Appendix A.

2 SITE

- 2.01 The store is located centrally within Waterloooville in a mixed retail / residential area of the town adjacent to Stakes Hill Road, with car parking associated with the site located to the north east of the main building.
- 2.02 The pedestrian entrance is located off the north-eastern elevation of the store adjacent to the car park, which is accessed off Stakes Hill Road.
- 2.03 The delivery yard is located off the south-western elevation of the site, which is located at a lower level than the car-park but at grade with the site access route and the adjacent residential property.
- 2.04 The delivery yard is surrounded by a perimeter wall to the north-eastern and the lower part of the south-eastern sections, of a minimum height of 2.6m. The remainder of the south-eastern section is gated to allow access for vehicles.
- 2.05 The back of house area is at ground floor level, and therefore a scissor lift is used to transport goods from the height of the rear trailer at high-level to ground floor level.
- 2.06 The service yard is bound by the following;
- North-East– adjacent retail buildings and the car-park associated with the store;
 - South-East – car-park access road with the three storey residential property Chapel Court beyond;
 - South-West – Stakes Hill Road with both retail and residential dwellings beyond; and
 - North-West – Site, with Dukes Walk Service Road with retail units beyond.
- 2.07 This application is for the extension of the current deliveries associated with the store from the permitted hours of 0700-2100 hours Monday to Saturday and 0900-1700 hours on a Sunday to 0600-2200 hours Monday to Saturday and 0800-2000 hours on a Sunday.
- 2.08 In terms of the existing deliveries, the main delivery vehicles access the delivery yard off the site access route, driving directly into the service yard and reversing up towards the roller shutter doors and the scissor lift that provide access to the back of house area.
- 2.09 Goods from the main delivery vehicles are then loaded onto the lift and lowered to ground floor level. The above process is all undertaken within the back of house area and all takes place using metal cages. Each main Waitrose delivery usually consists of the movement of approximately 45 metal cages.
- 2.10 Further to the above the other main delivery process is that associated with the home delivery service provided by the store - Waitrose Deliver.
- 2.11 As with the main delivery, Waitrose Deliver vehicles access the site off the site access road driving directly into service yard. There is parking for the delivery vehicles at the northern portion of the yard, however the main movement of goods is undertaken towards the southern area of the yard adjacent to the goods lift and roller shutter doors.
- 2.12 Typically the Waitrose Deliver process consists of the following;
- LGV is brought from the northern portion of the delivery yard and parked closer to the back of house area;
 - Plastic trolleys (typically two sets of trolleys) are wheeled to be closer to the LGV;

- Non refrigerated items are loaded in the rear of the LGV;
- Refrigerated items are loaded in the side of the LGV; and
- LGV exits the delivery yard area.

2.13 The following table presents the approximate frequencies and time periods of deliveries at the site during a worst-case day (understood to be Thursday / Friday). Please note that during a Sunday the deliveries are restricted between the hours of 0900 and 1700 hours.

Delivery Type	No of Vehicles	Approximate Arrival Time (Hours)
Main Waitrose HGV	1	0700
	1	1100
	1	1700
Click and Collect HGV	1	1000
Lenhams Paper HGV	1	1200
City Link LGV	1	0900-1700
Packing Delivery HGV	1	0900-1700
Waitrose Deliver LGV	6	0730-0900
Waitrose Deliver LGV	6	0900-1300
Waitrose Deliver LGV	6	1300-1400
Waitrose Deliver LGV	6	1400-1800
Waitrose Deliver LGV	6	1800-2200

Table 2.1: Typical Existing Worst-case Deliver Schedule

- 2.14 The closest noise sensitive receptors to the delivery yard area are the windows of Chapel Court, approximately 15 metres from the external wall of the delivery yard.
- 2.15 Screening is provided by the intervening wall to both ground and first floor levels of Chapel Court. However, windows of the third floor of the property are likely to have a direct view into the site and therefore the delivery operations. The third floor will therefore not have the benefit of any acoustic screening between noise generated by the delivery process and the noise sensitive receptor.
- 2.16 There is a outside amenity space associated with Chapel Court, however, the location of the space is only marginally closer than the north-western elevation of Chapel Court and will be subject to a significant level of acoustic screening by the intervening structures, which include both the 2.6m high wall that surrounds the delivery yard and the wall that surrounds the outside amenity space which is circa 2 metres.
- 2.17 All other noise sensitive receptors are further from the proposed delivery yard and are subject to more screening from intervening structures, and as such will be subject to lower levels of noise than those assessed in this report.
- 2.18 Appendix B includes a figure showing the location of the delivery yard, and location of the closest noise sensitive receptor.

3 GUIDANCE

3.01 Comment from Laurent Lemagnen, a Senior Environmental Health Officer at Havant Borough Council has previously been made with regards to the submitted application for the change to the operating delivery periods.

3.02 In email conversation Laurent stated the following;

"I have looked into our complaint record system and have not find(sic) complaints made to deliveries with the current permitted delivery times. if the applicant can prove that the change of hours will not impact the current background noise levels between 06:00 to 07:00am and 21:00 to 22:00 Monday to Saturday or 08:00 to 09:00 and 17:00 to 20:00 Sundays I see no objection

The acoustical report must discuss the current background noise levels and predict the background noise levels if the permission was to be granted for the proposed extra hours. The report must include the use of the lorries (engine noise and refrigeration noise from the lorries), Tail gate noise and rolling cages used to transport goods from the lorries to shop and shop to lorries."

3.03 Subsequent to the above email, consultation has been undertaken with Laurent with regards to a suitable assessment methodology.

3.04 The comments made above were discussed as to the efficacy of using measured background noise levels to assess noise impacts associated with the delivery process.

3.05 It was confirmed that the assessment method that would likely best correlate to human perception would be in relation to hourly L_{Aeq} (ambient) noise levels and the impact scale presented in the IEMA guidelines.

3.06 The above document and assessment will be framed with respect to the National Planning Policy.

3.07 National and Local Planning Policy and the IEMA guidance document are presented in Appendix C of this document.

4 ENVIRONMENTAL NOISE SURVEY

- 4.01 Environmental noise measurements were carried over a weekday, commencing on Friday 11th April 2014 at approximately 0730 hours and concluded at 0730 hours on Tuesday 15th April to establish the existing noise levels at the site. The survey methodology and results are set out below.
- 4.02 Noise measurements were carried out at the following long term location, as shown in Appendix B and described as:
- Position 1: 7 metres west of the kerbside of the site access at a height of 1.5 metres above ground level. This location was approximately 20 metres from the majority of the delivery processes. The measurement location was not within 3.5 metres of any reflecting surface other than the floor. Therefore this location is considered to be free-field.
- 4.03 The distance from the road traffic noise source to the microphone was similar to the distance from the road to the closest window at Chapel Court. Therefore this location is considered to represent the noise levels that would likely be experienced at Chapel Court as a result of both the delivery processes and road traffic using the surrounding routes.

5 EQUIPMENT

5.01 The equipment used for the survey was as follows:-

- 01dB Metravib Black Solo Integrating Sound Level Meter conforming to Class 1 BS EN 61672, Type 1 BS EN 60804 & BS EN 60651: 1994;
- 01dB Metravib MCE 212 Condenser Microphone, PRE 21 S Pre-amp and Connecting Leads;
- 01dB Outdoor Microphone Kit and a
- Tripod.

5.02 The equipment holds current UKAS or equivalent accreditation and serial numbers as follows:

Sound Level Meter 01dB Black Solo	Serial No.	61719
	Calibration Date	1/04/2014
	Cal Certificate No.	01755/2
½" MCE 212 Condenser Mic.	Serial No.	103326
	Calibration Date	1/04/2014
	Cal Certificate No.	01755/2
Calibrator CAL 21	Serial No.	34344442
	Calibration Date	27/03/2014
	Cal. Certificate No.	CV-DTE-T-14-PVE-73174

N.B. Copies of calibration certificates are available upon request.

6 RESULTS AND SOURCE MEASUREMENTS

- 6.01 The weather during the survey was suitable for noise measurement, it being dry with little wind for the duration.
- 6.02 The dominant noise source at the site is road traffic using both the site access and the surrounding routes, most notably Stakes Hill Road.
- 6.03 Noise levels associated with the various delivery processes at the site were incident on the measurement location during the current permitted delivery periods, however, no delivery activity took place outside the stated permitted delivery hours. As such, noise measurements made outside the current permitted hours were not subject to existing delivery noise.
- 6.04 There were no other significant sources of noise during the survey, other than those typical to a retail / commercial location.
- 6.05 A summary of the average L_{Aeq} noise levels and range of measured L_{AF} maximum measured noise levels are presented in the table below. The minimum L_{A90} noise levels are presented for reference.

Day	Period	Average $L_{Aeq,T}$	Minimum $L_{A90, 15}$ min	L_{AFmax} Range
Friday	Daytime	60.4	38.7	66.2 to 90.8
	Night-time	50.5	36.9	49.2 to 86.4
Saturday	Daytime	61.5	34.4	66.4 to 95.3
	Night-time	52.1	44.8	50.0 to 79.8
Sunday	Daytime	58.6	41.1	65.4 to 94.0
	Night-time	55.6	40.6	34.5 to 83.2
Monday	Daytime	60.2	39.3	67.8 to 101
	Night-time	53.1	38.6	48.5 to 82.5

**Table 6.1: Measured Ambient and Maximum Noise Levels, free-field
Daytime (0700-2300hrs), Night time (2300-0700hrs)**

- 6.06 In terms of the ambient noise level data specific to the application periods, Table 6.2 presents noise levels between the periods that the extended deliveries are applied for.
- 6.07 It should be noted that the presented ambient noise levels are the 1 hour measured L_{Aeq} noise levels in the specified time period.

Day	Period	$L_{Aeq,T}$	Minimum $L_{A90, 15}$ min	L_{AFmax} Range
Friday	2100-2200	56.2	38.7	69.9 to 78.9
Saturday	0600-0700	54.1	36.9	68.6 to 86.4
	2100-2200	50.3	34.4	68.4 to 69.7
Sunday	0800-0900	61.4	44.8	79.2 to 88.8
	1700-1800	55.1	41.1	71.2 to 81.2
	1800-1900	52.6	40.6	67.8 to 73.4
	1900-2000	51.7	39.3	67.1 to 71.7
Monday	0600-0700	63.5	38.6	66.8 to 83.2
	2100-2200	53.1	41.7	70.8 to 74.4

Table 6.2: Measured Noise Levels during Application Periods, free-field

- 6.08 With reference to the Sunday morning measurements undertaken between 0800-0900 hours, it can be seen that the measured ambient and background noise levels are higher than those recorded during other periods. Measurements were unmanned during this period, therefore it is difficult to establish the cause of the higher ambient and background noise level at the site.
- 6.09 However, the table below presents the same periods during different days, and shows similarly high ambient and background noise level during the same periods, therefore the measured noise levels presented in Table 6.2 are considered to be robust and representative of the local noise environment.

Day	$L_{Aeq,T}$	Minimum $L_{A90, 15 \text{ min}}$
Friday	59.9	48.7
Saturday	59.4	46.9
Sunday	61.4	44.8
Monday	58.0	46.6

Table 6.3: Measured Noise Levels during 0800-0900, free-field

- 6.10 Source noise measurements have been undertaken at an existing Waitrose site to establish noise levels of various delivery activities.
- 6.11 The two types of delivery processes considered here are the main Waitrose HGV delivery which is proposed to take place during the morning delivery window and the Waitrose Deliver operations that will likely take place during the evening delivery window.

6.12 The summarised results of the source noise measurements are presented in Table 6.4 below. All L_{Aeq} measurements have been converted to an SEL at 3m (whereby the SEL noise levels are calculated as the logarithmic averages of a number of measured similar operations), to provide a meaningful comparison and a basis for future noise predictions.

Delivery Type	Activity	SEL Noise level at 3m	L_{AFmax} noise Level at 3m
Waitrose Deliver	Transit Arrival/Departure	88.6	83.2
	Trolleys Wheeled onto lift	75.7	75.3
	Lowering Lift	72.6	71.1
	1 Trolley Movement	88.7	84.7
	Raising Lift	84.6	87.6
	Loading Trays	75.8	81.2
	Door Slam	83.8	90.5
	Transit Idling	77.4	74.0
Waitrose HGV	HGV Arrival	99.8	89.7
	HGV Departure	99.9	96.2
	Full Trolleys on HGV	79.8	78.7
	Empty Trolleys on HGV	76.6	75.8
	Empty Trolleys on Ground	82.4	84.1
	HGV Refridge Noise	80.5	75.1

Table 6.4: Measured Normalised Delivery Noise Levels, dBA at 3m

7 DELIVERY NOISE ASSESSMENT

- 7.01 Noise from delivery vehicles is generally similar in content, and provided the traffic volumes are known, the overall noise emissions can be calculated and assessed.
- 7.02 Calculations have been undertaken based on the following assumptions and using the measured source noise data presented in Table 6.4. it is worth noting that the assumptions are based on a typical hour period;

Morning periods (0600-0700 Monday-Saturday, 0800-0900 Sunday)

1 No Main Waitrose HGV Delivery to take place in 1 hour period

- 1 No Main Waitrose HGV arrival and departure;
- HGV refrigeration noise on for 10 second arrival / 10 second departure;
- 45 No cages moved from the rear of the trailer;
- Raising and lowering scissor lift 16 times;
- 20 No empty cages returned to the rear of the trailer;
- 10 No empty cages moved to outside yard area; and
- 30m distance from the noise source to Chapel Court windows.

Evening Periods (2100-2200 Monday-Saturday, 1700-2000 Sunday)

5 No Waitrose Deliver operations to take place in 1 hour period

- 5 No arrival and departure of the LGV Van Home Delivery vehicle ;
- 35 metre distance between delivery vehicle and residential receptor; and
- 2 No trolley movements for each LGV movement.

Common assumptions

- Standard point source acoustic calculations;
- 13dB noise reduction based on an open window; and
- Direct view to all delivery operations based on third floor window of Chapel Court.

- 7.03 Table 7.1 presents the source noise levels normalised to 3m and multiplied by the typical number of movements to calculate a cumulative L_{Aeq} over 1 hour for the anticipated morning period as described above.

Activity	SEL Noise level at 3m, dBA	Number of Activity	Total L _{Aeq} Noise Level, dB
HGV Arrival	99.8	1	99.8
HGV Refrigeration Noise	80.5	2	83.5
Full Trolleys on HGV	79.8	45	96.3
Raising Lift	84.6	16	96.6
Lowering Lift	72.6	16	84.6
Empty Trolleys on HGV	76.6	20	89.6
Empty Trolleys on Ground	82.4	10	92.4
HGV Departure	99.9	1	99.9
Total Average SEL Noise Level for morning hour			105.0
Total Average L_{Aeq} Noise Level Based on 1 hour Duration			69.4
Noise Level at 30m distance (Chapel Court)			49.4

Table 7.1: Cumulative Noise Level for 1 HGV Delivery Movement in the Morning Hour, at Chapel Court

Activity	SEL Noise level @ 3m, dBA	Number of Activity	Total L _{Aeq} Noise Level, dB
Transit Arrival	88.6	5	95.6
Lowering Lift	72.6	5	79.6
Trolleys on floor	88.7	10	98.7
Raising Lift	84.6	5	91.6
Loading Trays	75.8	5	82.8
Door Slam	83.8	5	90.8
Transit Idling	77.4	5	84.4
Transit Departure	88.6	5	95.6
Total Average SEL Noise Level for evening hour			102.5
Total Average L_{Aeq} Noise Level Based on 1 hour Duration			66.9
Noise Level at 35m distance (Chapel Court)			45.6

Table 7.2: Cumulative Noise Level for 5 Waitrose Deliver Movements in the Evening Hour, at Chapel Court

IEMA Guidelines Assessment

- 7.04 The tables below present the existing ambient noise levels at the facade of the closest noise sensitive receptor based on the measured noise levels presented in Table 6.1, and predicts the change in future ambient noise level as a result of the delivery noise calculations presented in Tables 7.1 and 7.2.

Day	Period	Measured $L_{Aeq,T}$	Predicted Noise Level	Cumulative Noise Level	Noise Level Change
Friday	2100-2200	56.2	45.6	56.6	+0.4
Saturday	0600-0700	54.1	49.4	55.4	+1.3
	2100-2200	50.3	45.6	51.6	+1.3
Sunday	0800-0900	61.4	49.4	61.7	+0.3
	1700-1800	55.1	45.6	55.6	+0.5
	1800-1900	52.6	45.6	53.4	+0.8
	1900-2000	51.7	45.6	52.7	+1.0
Monday	0600-0700	63.5	49.4	63.7	+0.2
	2100-2200	53.1	45.6	53.8	+0.7

Table 7.3: Predicted Noise Level Change at Chapel Court Receptors, dBA Free Field

- 7.05 It can be seen from Table 7.3 that the predicted maximum change in the measured 1 hour L_{Aeq} ambient noise levels based on the proposed operations of the extended delivery hours is +1.3dB. A change of between +0.1 to +2.9dB is considered a barely perceptible change and a slight impact, when assessed against the significance scale of the IEMA Guidance presented in Appendix C of this document.
- 7.06 Table 7.3 also shows that the predicted noise levels during all of the extended hours periods are all circa 5dB below the existing ambient noise levels measured at the site.

- 7.07 With regard to the predicted impacts and the aspirations of the NPPF, a change of up to +3dB is considered to be equivalent to the Lowest Observed Adverse Effect Level (LOAEL).
- 7.08 In terms of the L_{AFmax} noise levels and their 'dominance' of the existing noise environment Table 7.4 compares the measured onsite maximum noise levels with the predicted maximum noise levels associated with the delivery process.
- 7.09 Predicted L_{AFmax} noise levels have been based on the maximum measured level of the associated delivery process presented in Table 6.4, predicted at the closest facade to the delivery yard.

Day	Period	Existing Maximum L_{AFmax} at Facade	Predicted Delivery Maximum L_{AFmax} at Facade
Friday	2100-2200	69.9 to 78.9	69.2
Saturday	0600-0700	68.6 to 86.4	76.2
	2100-2200	68.4 to 69.7	69.2
Sunday	0800-0900	79.2 to 88.8	76.2
	1700-1800	71.2 to 81.2	69.2
	1800-1900	67.8 to 73.4	69.2
	1900-2000	67.1 to 71.7	69.2
Monday	0600-0700	66.8 to 83.2	76.2
	2100-2200	70.8 to 74.4	69.2

Table 7.4: Comparison of Predicted L_{AFmax} Noise Level with Existing Maximum Noise Levels, dBA Free Field

- 7.10 It can be seen from Table 7.4 that the predicted L_{AFmax} noise levels as a result of the delivery process are within the range of measured L_{AFmax} noise levels during the same periods. In light of the above the predicted L_{AFmax} noise levels at the receptor are considered to be consistent with the existing noise environment.
- 7.11 As such, the residents of the building will already be accustomed to similar maximum noise levels and therefore are unlikely to be disturbed by maximum noise levels as a result of the delivery movements. In terms of the NPPF the above would be considered a LOAEL.

8 CONCLUSIONS

- 8.01 Waitrose Ltd has appointed Environmental Equipment Corporation Limited to undertake a delivery noise assessment for extended deliveries at the Waitrose store at Unit 1, Dukes Walk, Waterloooville, located at Stakes Hill Road, PO7 7HS.
- 8.02 The delivery noise impact assessment has shown predicted noise levels from deliveries will have a barely perceptible change and a slight impact, when assessed against the significance scale based on the *draft Guidelines for Noise Impact Assessment*.
- 8.03 Maximum noise levels at the closest noise sensitive receptor are predicted to be similar to those already experienced at the site, and therefore are not likely to disturb the residents of the closest noise sensitive receptors.
- 8.04 Assessing the site in accordance with the principles of the National Planning Policy Framework has shown that noise levels would be below the level at which adverse effects are observed to occur, the LOAEL during all periods.
- 8.05 On the basis of this assessment it is considered that noise does not pose a material constraint to the deliveries taking place between the stated hours of 0600 – 2200 Monday to Saturday and 0800 – 2000 hours on Sunday.

APPENDIX A

GLOSSARY OF TECHNICAL TERMS

TECHNICAL TERMS AND UNITS

Decibel (dB) - This is the unit used to measure sound. The human ear has an approximately logarithmic response to sound over a very large dynamic range (typically 20 micro-Pascals to 100 Pascals). We therefore use a logarithmic scale to describe sound pressure levels, intensities and power levels. The logarithms used are to base 10; hence, an increase of 10 dB in sound pressure level corresponds to a doubling in perceived loudness of the sound.

Sound Power Level (SWL) - This is a function of the noise source alone and is independent of its surroundings. It is a measure of the amount of sound power output measured in decibels.

Sound Pressure Level (SPL) - This is a function of the source and its surroundings and is a measure of the sound pressure at a point in space. For example, a sound pressure level measured at 1 metre from a sound source of certain sound power in reverberant room will not be the same as the sound pressure level 1 metre from the sound source measured in open space.

Octave and One-Third Octave Bands - The human ear is sensitive to sound over a range of approximately 20 Hz to 20 KHz and is generally more sensitive to medium and high frequencies than to low frequencies. In order to define the frequency content of a noise, the spectrum is divided into frequency bands and the sound pressure level is measured in each band. The most commonly used frequency bands are octave bands, in which the mid frequency of each band is twice that of the band below it. For finer analysis, each octave band may be split into one-third octave bands.

SEL - The SEL is the sound level over 1 second which would have the same sound energy as the whole event.

Noise Rating (NR) Curves - The "A" weighted sound pressure level cannot be used to define a spectrum or to compare sounds of different frequencies. NR curves convey frequency information in a single-figure index. This is done by defining the maximum permissible sound pressure level at each frequency for each curve. To measure the noise rating of a given environment, the SPL is measured in octave or one-third octave bands and the noise rating is then the highest NR curve touched by the measured levels.

Intermittency and Time-Weighting - The degree of annoyance caused by a noise also depends on its duration and intermittency of a noise. Intermittent, impulsive or repetitive noises tend to be more annoying than continuous noises. Various time-weightings have been derived to measure sounds of differing intermittences and these can be measured directly on modern equipment. The most common time-weightings in use are as follows:-

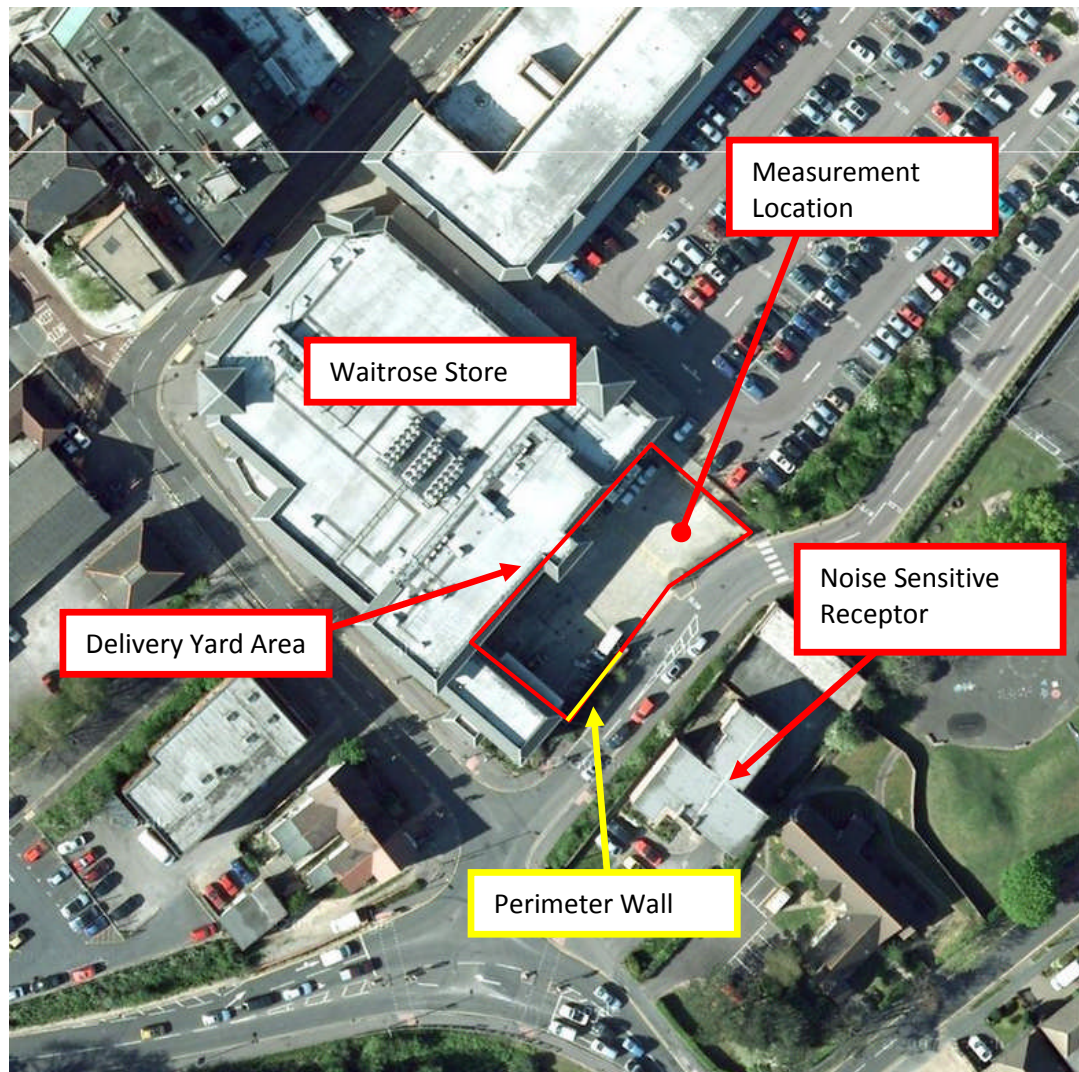
L_{90} This is the sound pressure level exceeded for 90% of the measurement period. It is widely used to measure background noise levels.

L_{10} This is the sound pressure level exceeded for 10% of the measurement period. It is widely used to measure traffic noise. For a given measurement period, the L_{10} level is by definition greater than or equal to the L_{90} level.

L_{eq} The equivalent continuous noise level is often used to measure intermittent noise. It is defined as the notional steady noise level that would contain the same acoustic energy as the varying noise. Because the averaging process used is logarithmic, the L_{eq} level tends to be dominated by the higher noise levels measured.

APPENDIX B

SITE AND MEASUREMENT LOCATION



APPENDIX C

GUIDANCE AND PLANNING POLICY

Planning Policy in Havant

The Havant Borough Core Strategy is the principal document in the council's Local Plan. It covers the Borough of Havant, setting out the spatial planning strategy for the area up to 2026.

With reference to noise, the Core Strategy states the following;

Chapter 7, *Caring for the Borough* states the following in the Design section

"Policy CS16 High Quality Design

Planning permission will be granted for development that is designed to a high standard, which helps to create places where people want to live, work and relax. All development should demonstrate that its design:

1. Responds to, draws inspiration from and respects local context and:

e) The development does not cause unacceptable harm to the amenity of neighbours through smell, the loss of privacy, outlook, noise and overlooking."

Chapter 10, Development Management Policies states;

"DM10 Pollution

Development that may cause pollution of water, air or soil or pollution through noise, smell, smoke, fumes, gases, steam, dust, vibration, light, heat, electromagnetic radiation and other pollutants will only be permitted where all of the following relevant criteria can be met:

1. The health and safety of existing and future users of the site, or nearby occupiers and residents is not put at risk. "

National Planning Policy Framework and the Noise Policy Statement for England

The Department for Communities and Local Government published the National Planning Policy Framework (NPPF) on 27th March 2012 and upon its publication, the majority of planning policy statements and guidance notes were withdrawn, including Planning Policy Guidance 24 Planning and Noise, which previously presented the government's overarching planning policy on noise.

The NPPF contains four aims, which are set out at paragraph 123 in Section 11 of the document, titled *Conserving and enhancing the natural environment*:

"Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
- mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and*
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*

The Department for Environment Food and Rural Affairs published the Noise Policy Statement for England (NPSE) in March 2010. The explanatory note of NPSE defines the following terms used in the NPPF:

"NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

2.21 Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur."

The NPSE does not define any of the above effect levels numerically.

The NPSE presents the Noise Policy Aims as:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy and 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.”*

It can be seen that the first two bullet points are similar to Section 11 of the NPPF, with a third aim that seeks to improve health and quality of life. The NPSE later expands on the Noise Policy Aims, stating:

2.23 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development (paragraph 1.8).

2.24 The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that 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 (paragraph 1.8). This does not mean that such adverse effects cannot occur.

2.25 This aim (the third aim), seeks where possible, positively to improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development (paragraph 1.8), recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.”

It is clear that noise described in the NPSE as SOAEL that would lead to significant adverse effects should be avoided, although there is no definition as to what constitutes a significant adverse effect. Similarly, noise should be mitigated where it is high enough to lead to adverse effects, termed the LOAEL, but not so high that it leads to significant adverse effects.

Draft Guidelines for Noise Impact Assessment

The draft Guidelines for Noise Impact Assessment produced by the Institute of Acoustics/Institute of Environmental Management and Assessment Working Party has been referenced in relation to the potential changes in ambient noise level during the proposed delivery process.

The findings of the Working Party are draft at present although they are of some assistance in this exercise. The draft guidelines state that for any assessment, the noise level threshold and significance statements should be determined by the assessor, based upon the specific evidence and likely subjective response to the noise

The impact scale adopted in this assessment is shown below.

Change in Noise Level dB(A)	Subjective Response	Significance
0	No change	Negligible/Neutral
0.1-2.9	Barely perceptible	Slight Impact
3.0-9.9	From a noticeable change to a doubling or halving in loudness	Moderate impact
10.0 or more	More than a doubling or halving in loudness	Large impact

Impact scale for comparison of future noise against existing noise

The criteria above reflect key benchmarks that relate to human perception of sound. A change of 3dB is generally considered to be the smallest change in noise that is perceptible. A 10dB change in noise represents a doubling or halving of the noise level.

Considering the benchmarks set out above in terms of the aspirations of the NPPF, a change of +3dB is considered to be equivalent to the Lowest Observed Adverse Effect Level (LOAEL). A change in noise level of 10dB or more is considered to be equivalent to the Significant Observed Adverse Effect Level (SOAEL).

Increases in noise level of between 3dB and 10dB will require mitigation to minimise the potential effect. Increases of more than 10dB are considered to fall foul of the aspirations of the NPPF and as such should not be permitted.

APPENDIX D

SURVEY RESULTS
(TABULATED)

APPENDIX E
SURVEY RESULTS
(GRAPHICAL