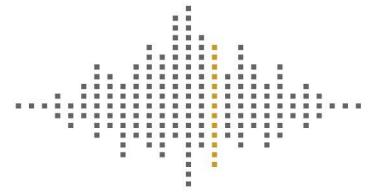


SHARPS REDMORE

ACOUSTIC CONSULTANTS ▪ Established 1990



Report

New Lane, Havant

Environmental Noise
Assessment

Prepared by

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Date November 2022

Project No 2221292

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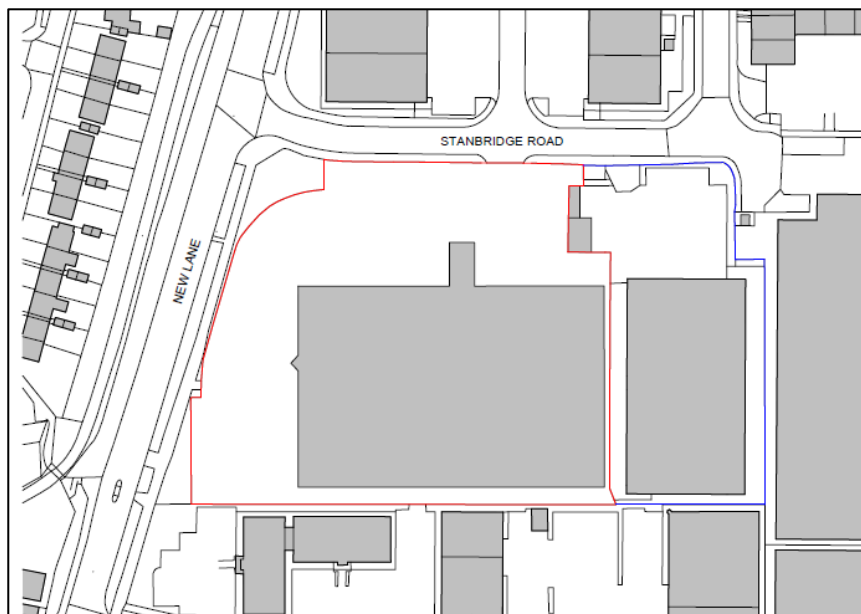
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1.0 Introduction

- 1.1 Sharps Redmore (SR) has been instructed to undertake an acoustic assessment for redevelopment of the existing industrial site at 36 New Lane, Havant, PO9 2JL. The site location is shown in Figure 1 below:

FIGURE 1: Site Location



- 1.2 The site is located at the junction of New Lane and Stanbridge Road just north of Hayling Island in the administrative area of Havant Borough Council. The site is part of New Land Industrial Estate and the neighbouring properties to the North, East and South are all commercial sites. The site to the North (spring Business Park) has recently been redeveloped to provide 12 units. The western boundary of the site is formed by New Lane beyond which are the residential properties in Littlegreen Avenue.
- 1.3 Planning permission is being sought for redevelopment of the site to create 6 new units. The site layout is shown in Appendix A to this report.
- 1.4 The purpose of this report is therefore to determine the impact of noise from the proposed new logistics hub on the surrounding noise sensitive properties.
- 1.5 A guide to the assessment methodology and criteria used within this report is included in section 2.0. Details of the noise survey to establish the existing noise climate and to determine suitable design criteria at the closest residences are presented in section 3.0.
- 1.6 Sections 4.0 contains an assessment of the impact of noise from the development on the adjacent residential properties.
- 1.7 A guide to the acoustic terminology used in this report is displayed in Appendix B.

2.0 Second section

National Policy

- 2.1 The National Planning Policy Framework (NPPF), July 2021, 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 185 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".*

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

TABLE 1: Noise Exposure Hierarchy

Response	Examples of Outcomes	Increasing Effect Level	Action
No observed effect Level			
Not present	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 or attitude. 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 and/or attitude, 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 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 and/or attitude, 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
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

- 2.3 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.”*

- 2.4 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.”

- 2.5 Taking an overview of national policy it is clear that when considering the impact of noise, one must consider the significance of any impact. The presence of an adverse impact in itself is not sufficient to refuse permission.

Local Policy

- 2.6 The Havant Borough Core Strategy (March 2011) Plan provides guidance on local policy aims. In relation to noise impact policy DM 10 ‘Pollution’ is considered relevant, which states that noise from development should cause the health and safety of existing and future users of the site, or nearby occupiers and residents is not put at risk.

Guidance

- 2.8 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. British Standard (BS) 8233:2014 and World Health Organisation “Guidelines for Community Noise” contain such guidelines.
 - 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 to compare the resultant noise level against the background noise level (L_{A90}) of the area. This is the method employed by BS 4142:2014 to determine the

impact of noise of an industrial or industrial type nature. It is best suited to the assessment of steady or pseudo-steady noise.

Guideline noise values

- 2.9 There are a number of guidance documents that contain recommended guideline noise values. These are discussed below.
- 2.10 British Standard 8233:2014 is principally intended to assist in the design of new dwellings; however, the Standard does state that it may be used in the assessment of noise from new sources being brought to existing dwellings.
- 2.11 The original BS 8233 was based on the advice contained in the draft World Health Organisation document “Guidelines for Community Noise”. This document was released in final form in 2000. The World Health Organisation guidance is referenced in the NPSE.
- 2.12 The WHO advice is the most useful, comprehensive, and pertinent advice in this case, because it is not specific to the circumstances of the assessment. Instead, it provides guidance on acceptable limits in, for example, schools, dwellings and offices.
- 2.13 The WHO guideline 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, physiological or sociological 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 may be considered significant (SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim.
- 2.14 The WHO LOAEL guideline values are summarised in the following table.

TABLE 2

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)
BS 8233:2014 “Sound Insulation and noise reduction for buildings”	$L_{AeqT} = 55 \text{ dB}$	Upper limit for external steady noise. (Gardens and balconies).
	$L_{AeqT} = 50 \text{ dB}$	Desirable limit for external steady noise. (Gardens and balconies).
	$L_{AeqT} = 35 \text{ dB}$	Resting conditions for living rooms during the day. (Internal – steady noise)
	$L_{AeqT} = 40 \text{ dB}$	Dining, dining room day. (Internal – steady noise)
	$L_{AeqT} = 35 \text{ dB}$	Good resting/sleeping conditions for bedrooms, daytime

		(Internal – steady noise)
	$L_{Aeq} = 30 \text{ dB}$	Sleeping, bedroom night (internal – steady noise)

- 2.15 For L_{AeqT} criteria the time base (T) given in the document is 16 hours for daytime limits and 8 hours for night time limits. When assessing impact, this has the tendency to smooth out the hourly variations in noise level. As such, our calculations are carried out to a 1 hour time base, which is more stringent assessment than is given in the guidance but is reflective of the actual duration of the delivery process.

Changes in noise level

- 2.16 Changes in noise levels of less than 3 dBA are not perceptible under normal conditions and changes of 10 dB 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 $L_{Aeq,T}$ in relation to road traffic noise and therefore if of limited use in this case.
- 2.17 The following table shows the response to changes in noise level (known as the Semantic Scale).

TABLE 3: Changes in noise level

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

BS 4142:2014+A1:2019

- 2.18 As discussed, this BS described a method for rating and assessing sound of industrial and/or commercial nature according to the following summary process:
- Carry out a numerical assessment of the noise, taking into the character and areas of uncertainty, by comparing the noise against the existing background noise level. The greater the difference between the two, the greater the impact.
 - By considering the noise impact against the context in which it is placed. There are many contextual points to consider when considering an assessment of sound impact.
- 2.19 In terms of context at night the main issue will be noise from bangs and crashes (L_{Amax}) affecting sleep disturbance. During the night time period generally, people are inside their properties. Therefore, the outcome of a BS 4142 assessment which considers the difference between the external background noise level at the receptor and the external rating level of the specific noise source under consideration, does not reflect the true nature of the noise impact at the receptors. The critical factor is how maximum noise levels (L_{Amax}) associated with servicing activity compares to the WHO Guidelines for Community Noise.

Local Design Guidance

- 2.20 Sharps Redmore are not aware of any specific local design guidance or any planning conditions which restrict the existing use of the site. However, for similar developments SR is aware that that Havant Borough Council, Environmental Health has requested that noise from fixed plant e.g. air handling units or air conditioning units should increase the existing background levels. In practice this will require that noise from plant is at least 10dB below existing background levels. This is significantly more stringent than that required by planning policy, specifically at night when as advised above people are inside sleeping.

3.0 Survey Details

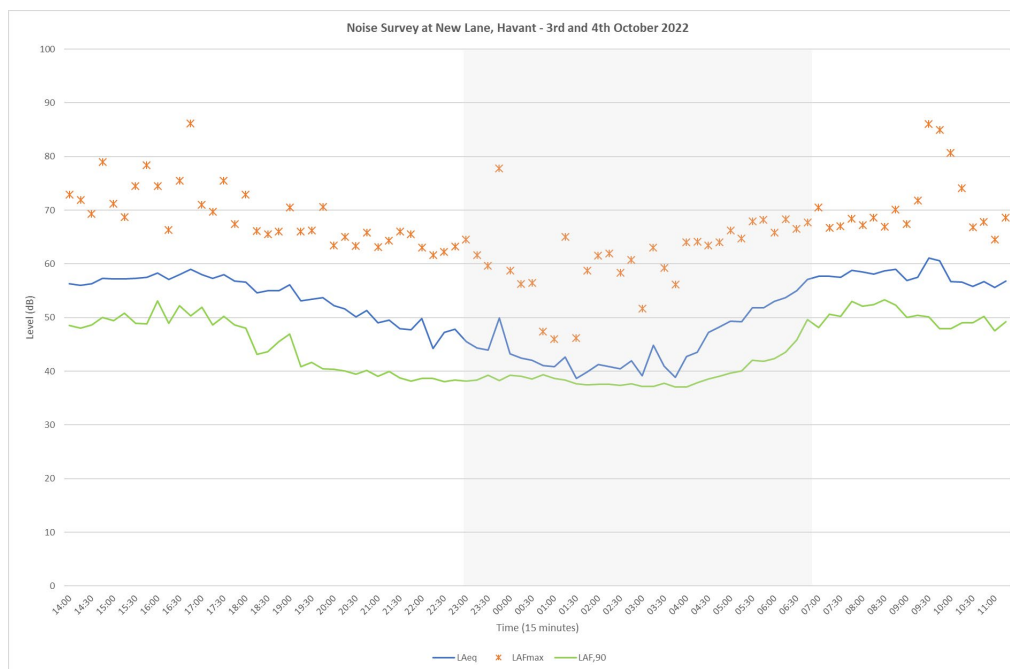
- 3.1 To determine existing noise levels a noise survey was carried out between 3 and 4 October 2022 at the site. Measurements were carried out on the eastern part of the site set back approximately 20 metres from the New Lane, which is a similar distance to how far the properties in Littlegreen Avenue are set back from New Lane. The monitoring location as shown in Figure 2 is therefore considered representative of the nearest noise sensitive properties.

FIGURE 2: Monitoring Location



- 3.3 Unattended measurements were taken at 15 minute intervals from 1400 hrs on 3 October to 1100 hrs on 4 October. Measurements were taken using Norsonic 118 type 1 sound level meters which was calibrated before and after the survey with no drift in accuracy noted. At each location the steady noise level, L_{AeqT} , non-steady noise level, L_{Amax} and background noise level, L_{A90} .
- 3.4 A summary of the survey results are shown in Figure 3 below. Full details of the survey are included in Appendix B.

FIGURE 3: Survey Results



- 3.5 Existing noise levels are dominated by road traffic noise (RTN) on New Lane. Background noise levels have been determined from survey data and are 49 dB during the day and 38 dB during night.

4.0 Noise Assessment

- 4.1 Based on experience of similar industrial sites the main impacts from the site will be the following:

- Noise from fixed plant;
- Noise from external activity; and

Noise from fixed plant

- 4.2 The exact details of the plant are not known at this stage, and therefore it is appropriate to set noise criteria. In determining suitable plant sound criteria SR have considered measured background sound levels taken during the noise survey. Typical background noise levels during the daytime period were 49 dB L_{A90} reducing to 38 dB L_{A90} during the night time period.
- 4.3 To prevent significant adverse impacts on the health and quality of life of existing noise sensitive receptors, the “rating noise level” (the predicted noise level plus any penalty for character), should not exceed the typical measured daytime and night time background noise level by more than 10 dB, and to prevent adverse harm by around 5 dB depending on context. Where the rating level does not exceed the background noise level, this is an indication of a specific sound having a low impact.
- 4.4 For similar developments it is noted that the Environmental Health Department at Havant Borough Council have recommended that noise from fixed plant should not increase the existing background levels. In practice this would require that noise from plant should be at least 10 dB below existing background levels i.e. 39 dB during the day and 28 dB during the night.
- 4.5 The above criteria is significantly more stringent than that required by planning policy to avoid significant adverse impacts and does not take into account any contextual considerations as required by BS 4142.
- 4.6 Unlike the previous version (1997) version of BS 4142 the latest version no longer refers to what sound levels are considered to be very low; BS 4142:1997 stated that rating levels of 35 dB were considered very low. This information was used to justify a lower level limit for setting plant sound criteria, in situations especially during the night, when background levels were low.
- 4.7 The context of noise sensitive receptors at night is that people will be inside bedrooms, the inference is that in considering receptors at night it less important to consider the difference between the rating sound level and external background level when determining impact.
- 4.8 It is therefore proposed to adopt a daytime plant rating sound level of 39 dB during the day (i.e. not to increase background levels) and a night time limit of 35 dB in accordance with the ‘very low’ rating level in the 1997 version of BS 4142. The above limits can be secured by a suitably worded planning condition.

Noise from servicing activity

- 4.9 Each unit will be served by a loading bay which at the front of each unit. Vehicles will drive into the central area of the site and then reverse onto the loading bays provided. Unloading at units, 1,2,3 and 5,6 will be significantly screened from the residential properties in Littlegreen by the buildings on site.
- 4.10 The noise levels of the different components of delivery event activity have been measured at a large number of similar sites, and the following maximum noise levels and typical event durations have been used extensively in the planning and design of similar stores:

TABLE 4: Delivery activity - baseline source noise levels (free field)

Event Noise Level (at 10 metres)						L _{Amax} dB
Arrival		Unloading		Departure		
Level (dB)	Duration (mins)	Level (dB)	Duration (mins)	Level (dB)	Duration (mins)	
69	2.0	66	30	67	0.5	75-79

- 4.11 All these sound levels are representative at 10 metres and are measured with the microphone in free field, away from any reflecting surfaces. The levels stated are realistic worst case noise levels from a large collection of sample measurements and include all delivery activity noise including, vehicle manoeuvres and use of fork lift trucks.
- 4.12 Table 5 below shows the predicted noise levels from servicing activity from each unit at the residential properties in Littlegreen Avenue.

TABLE 5: Predicted noise levels Littlegreen Avenue

Unit	Predicted Noise Level	
	L _{Aeq1hr}	L _{Amax}
1	22 dB	38 dB
2	22 dB	38 dB
3	22 dB	38 dB
4	43 dB	59 dB
5	26 dB	42 dB
6	26 dB	42 dB
Combined	43 dB	59 dB

- 4.13 Using the above predicted noise levels a noise assessment in accordance with the guidance in BS 4142 has been carried out. The results are shown in Table 6 below:

TABLE 6: BS 4142 Assessment -Daytime

	Level dB	Commentary
Specific Level L_{Aeq1hr}	43 dB	Calculated from Table 7 above
Feature correction	+3 dB	+3dB for impulsivity associated with unloading activity
Rating level	46 dB	
Background level	49 dB	As measured paragraph 3.5 above
Difference	-3 dB	Assessment level low subject to context
Uncertainty	To reduce uncertainty have considered all units receiving a delivery at the same time.	
Contextual Considerations	The site is an existing industrial site, in a predominantly industrial area. Noise from unloading activity will not be out of character with the existing area.	

- 4.14 The impact of noise from loading/unloading activity during the day is considered low.

Night time

- 4.15 As discussed in section 2.0 of this report during the night time period the critical factor is the maximum noise level (L_{Amax}) associated with servicing activity rather than the difference between the external background noise level at the receptor and the external rating level of the specific noise source under consideration
- 4.16 As shown in Table 7 above maximum noise levels from all units will be below the criteria for the onset of sleep disturbance recommended in the WHO Guideline for sleep disturbance. The WHO guideline 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, physiological or sociological effect. They are, as defined by NPSE, set at the Lowest Observed Adverse Effect Level (LOAEL). Therefore, it is concluded that noise from servicing activity at night will not cause adverse impact to future residents.

Noise break-out from units

- 4.17 With regard to noise the weak point of any building are doors and windows, which may be left open. In accordance with the good acoustic design principles the proposed development has been designed with the closest units 1,2 and 3 with doors and windows facing inwards to the site.
- 4.18 SR has measured noise levels at similar sites and typical reverberant noise levels within similar sized units have been found to be no greater than 75 dB.
- 4.19 Using the above internal noise levels noise break-out from the building has been calculated based on site drawings. For the purposes of the assessment it has been assumed that unit is constructed using a composite metal panel system which will provide a sound reduction performance of 30 dB.

- 4.20 The sound pressure level (LP) at a distance (r) from a façade with an average sound reduction RW can be calculated by using the following equation.

$$L_p = L_{p\text{internal}} - (20 \log r) - 14 + 10 \log (S) - R_w$$

Where S is the surface area of the façade.

- 4.21 Based on the above approach the predicted level from internal activity has been determined using the above assumptions. For the purpose of the assessment only break out from the rear façade and roof has been considered.

TABLE 7: Noise Break-out

	Copse Hall	
	Wall	Roof
Lp Internal	75 dB	75 dB
Distance loss (20 log r)	-34 dB	-34 dB
Constant	-14 dB	-14 dB
10 log (S)	+28 dB	+32 dB
Rw	-30 dB	-30 dB
Correction for angle of view	n/a	-5dB
Lp (receptor)	25 dB	24 dB
Overall	28 dB	

- 4.22 Predicted noise levels from internal activity will be below the daytime and night time background levels and therefore there is no technical reason to restrict operating hours.

5.0 Summary and Conclusions

- 5.1 Sharps Redmore has carried out a noise assessment for the redevelopment of the existing industrial site at 36 New Lane, Havant. The site is an established industrial area. The assessment has considered the impact of noise from fixed plant, delivery activity and noise break-out from the unit.
- 5.2 Noise criteria have been set for fixed plant based on the guidance in BS 4142:2014+A1:2019.
- 5.3 The impact of delivery activity has been assessed and concluded that noise will not cause significant adverse impact on noise sensitive properties in the area at any time.
- 5.4 Noise break out from the closest units has been considered and predicted noise levels will be below existing background levels.
- 5.5 It is concluded, therefore, that the proposed development could operate on an unrestricted basis without associated noise causing significant adverse impact, in accordance with both national and local policy aims.

APPENDIX A

SITE LAYOUT

APPENDIX B

SURVEY RESULTS

Appendix B: Survey Results

Date	L _{Aeq}	L _{Afmax}	L _{Afmin}	L _{Af,10}	L _{Af,90}
(2022/10/04 00:00:00.00)	43.2	58.7	37	44.3	39.3
(2022/10/04 00:15:00.00)	42.4	56.3	37.4	44.7	39.1
(2022/10/04 00:29:59.00)	42	56.5	36.8	43.9	38.6
(2022/10/04 00:45:00.00)	41.1	47.4	38.2	42.7	39.4
(2022/10/04 00:59:59.00)	40.9	46	37.2	43	38.7
(2022/10/04 01:15:00.00)	42.6	65	37.1	41.5	38.4
(2022/10/04 01:30:00.00)	38.7	46.2	36.4	39.8	37.7
(2022/10/04 01:45:00.00)	39.9	58.7	36.5	39.3	37.5
(2022/10/04 02:00:00.00)	41.3	61.5	36.3	39.1	37.6
(2022/10/04 02:15:00.00)	40.9	61.9	36.1	39.8	37.6
(2022/10/04 02:30:00.00)	40.5	58.3	36.2	39.2	37.4
(2022/10/04 02:44:59.00)	41.9	60.7	36.7	43	37.7
(2022/10/04 03:00:00.00)	39.2	51.7	35.9	40.3	37.2
(2022/10/04 03:14:59.00)	44.8	63	36.1	43.8	37.2
(2022/10/04 03:30:00.00)	41	59.2	36.9	40.5	37.8
(2022/10/04 03:44:59.00)	38.9	56.2	36	39.1	37.1
(2022/10/04 04:00:00.00)	42.7	64	36.1	39	37.1
(2022/10/04 04:15:00.00)	43.5	64.1	36.9	40.8	37.9
(2022/10/04 04:30:00.00)	47.2	63.4	37.1	50.2	38.6
(2022/10/04 04:45:00.00)	48.2	64	37.7	52.2	39.1
(2022/10/04 05:00:00.00)	49.3	66.2	37.9	51.4	39.7
(2022/10/04 05:15:00.00)	49.2	64.7	37.8	52.8	40.1
(2022/10/04 05:30:00.00)	51.8	67.9	39.9	56.1	42
(2022/10/04 05:45:00.00)	51.8	68.2	40	56.2	41.8
(2022/10/04 05:59:59.00)	53	65.8	39.9	57.4	42.3
(2022/10/04 06:15:00.00)	53.7	68.3	41.5	57.9	43.5
(2022/10/04 06:30:00.00)	55	66.5	43.5	58.9	45.8
(2022/10/04 06:45:00.00)	57.1	67.7	44.2	60.5	49.6
(2022/10/04 07:00:00.00)	57.7	70.5	44.3	61.3	48.1
(2022/10/04 07:15:00.00)	57.7	66.7	46.1	60.9	50.6
(2022/10/04 07:30:00.00)	57.5	67	45	60.6	50.2
(2022/10/04 07:45:00.00)	58.8	68.4	46.4	61.5	53
(2022/10/04 08:00:00.00)	58.5	67.2	48.2	61.5	52.1
(2022/10/04 08:14:59.00)	58.1	68.6	48.7	61	52.4
(2022/10/04 08:30:00.00)	58.7	66.9	47.6	61.6	53.3
(2022/10/04 08:45:00.00)	59	70.1	46.7	61.9	52.3
(2022/10/04 09:00:00.00)	56.9	67.4	45.5	60.2	50
(2022/10/04 09:15:00.00)	57.5	71.8	45.1	60.9	50.4
(2022/10/04 09:30:00.00)	61.1	86.1	46.3	60.8	50.1
(2022/10/04 09:45:00.00)	60.6	85	44.5	58.9	47.9
(2022/10/04 10:00:00.00)	56.7	80.7	44.2	59.5	47.9
(2022/10/04 10:15:00.00)	56.6	74.1	45.3	59.9	49
(2022/10/04 10:29:59.00)	55.8	66.8	45.5	59	49

Date	L _{Aeq}	L _{Afmax}	L _{Afmin}	L _{Af,10}	L _{Af,90}
(2022/10/04 10:45:00.00)	56.7	67.8	45.1	59.6	50.2
(2022/10/04 11:00:00.00)	55.6	64.5	44.1	59.2	47.5
(2022/10/04 11:15:00.00)	56.8	68.6	45.7	61	49.2

APPENDIX C

DELIVERY CALCULATIONS

Assessment project: Unit 1,2 and 3	Delivery component		
	Arrival	Unloading	Departure
Delivery noise activity - predicted ambient noise levels (L _{Aeq T}) *			
Closest residential property address:	Littlegreen Avenue		
Source noise level at 10 metres L _{Aeq T}	69	66	67
Time - minutes	2	30	0.5
Distance between noise source and residential property in metres	95	75	95
Screening attenuation dB	18	25	18
Convert to 1 hour - dB	-14.8	-3.0	-20.8
Convert to 15 mins - dB	-8.8	-0.3	-
Distance attenuation correction - dB	-19.6	-17.5	-19.6
Activity L _{Aeq 1 hr}	16.7 dB	20.5 dB	8.7 dB
Activity L _{Aeq 15 mins}	22.7 dB	23.2 dB	-
Overall delivery activity noise (arrival, unloading, departure) L _{Aeq 1 hr}	22 dB		
Overall delivery activity noise (arrival + unloading) L _{Aeq 15 mins}	26 dB		
Delivery noise activity - predicted peak noise levels (L _{Amax})			
Source noise level at 10 metres L _{amax}	76	79	76
Distance between noise source and residential property in metres	95	75	95
Screening attenuation dB	18	25	18
Distance attenuation correction - dB	-19.6	-17.5	-19.6
Peak noise level L _{max}	38 dB	36 dB	38 dB

Assessment project: Unit 5 and 6	Delivery component		
	Arrival	Unloading	Departure
Delivery noise activity - predicted ambient noise levels (L _{Aeq T}) *			
Closest residential property address:	Littlegreen Avenue		
Source noise level at 10 metres L _{Aeq T}	69	66	69
Time - minutes	2	30	0.5
Distance between noise source and residential property in metres	95	120	95
Screening attenuation dB	18	16	18
Convert to 1 hour - dB	-14.8	-3.0	-20.8
Convert to 15 mins - dB	-8.8	-0.3	-
Distance attenuation correction - dB	-19.6	-21.6	-19.6
Activity L _{Aeq 1 hr}	16.7 dB	25.4 dB	10.7 dB
Activity L _{Aeq 15 mins}	22.7 dB	28.1 dB	-
Overall delivery activity noise (arrival, unloading, departure) L _{Aeq 1 hr}	26 dB		
Overall delivery activity noise (arrival + unloading) L _{Aeq 15 mins}	29 dB		
Delivery noise activity - predicted peak noise levels (L _{Amax})			
Source noise level at 10 metres L _{Amax}	76	80	76
Distance between noise source and residential property in metres	95	120	95
Screening attenuation dB	18	16	18
Distance attenuation correction - dB	-19.6	-21.6	-19.6
Peak noise level L _{Amax}	38 dB	42 dB	38 dB

Assessment project: Unit 4	Delivery component		
	Arrival	Unloading	Departure
Delivery noise activity - predicted ambient noise levels (L _{Aeq T}) *			
Closest residential property address:	Littlegreen Avenue		
Source noise level at 10 metres L _{Aeq T}	69	66	69
Time - minutes	2	30	0.5
Distance between noise source and residential property in metres	95	115	95
Screening attenuation dB	0	0	0
Convert to 1 hour - dB	-14.8	-3.0	-20.8
Convert to 15 mins - dB	-8.8	-0.3	-
Distance attenuation correction - dB	-19.6	-21.2	-19.6
Activity L _{Aeq 1 hr}	34.7 dB	41.8 dB	28.7 dB
Activity L _{Aeq 15 mins}	40.7 dB	44.5 dB	-
Overall delivery activity noise (arrival, unloading, departure) L _{Aeq 1 hr}	43 dB		
Overall delivery activity noise (arrival + unloading) L _{Aeq 15 mins}	46 dB		
Delivery noise activity - predicted peak noise levels (L _{Amax})			
Source noise level at 10 metres L _{Amax}	76	80	76
Distance between noise source and residential property in metres	95	115	95
Screening attenuation dB	0	0	0
Distance attenuation correction - dB	-19.6	-21.2	-19.6
Peak noise level L _{Amax}	56 dB	59 dB	56 dB

Acoustic Terminology

Ambient noise:

The totally encompassing sound in a given situation at a given time. Most often described in terms of the index L_{AeqT} .

Atmospheric absorption:

The excess acoustic attenuation, over and above that caused by distance attenuation, due to the interaction of an acoustic wave with air molecules.

A-weighting:

A frequency weighting which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Units may be denoted as dB(A) or as sound pressure levels L_{pA} in dB. 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.

Background noise:

See L_{A90} .

Correction (for characteristic features of noise source):

A 5 dB penalty applied to the specific noise level if the noise being assessed “contains a distinguishable, discrete continuous note”, contains “distinct impulses”, or is “irregular enough to attract attention” (ref BS 4142:1997).

Decibel (dB):

A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20 μ Pa, 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.

Façade noise level:

The noise level adjacent to the façade of a building, usually at a distance of 1 metre.

Free-field noise level:

The noise level away from the façade of a building or other structure.

Hertz (Hz):

Unit of frequency, equal to one cycle per second. Frequency is related to the pitch of a sound.

L_{A10T} : The A weighted level of noise exceeded for 10% of the specified measurement period, T. It gives an indication of the upper limit of fluctuating noise such as that

from road traffic. $L_{A10,18hr}$ is the arithmetic average of the 18 hourly $L_{A10,1hr}$ values from 0600 hrs to 2400 hrs.

L_{A90T} : The A weighted noise level exceeded for 90% of the specified time period, T. In BS 4142:1997 it is used to define background noise level.

L_{AeqT} : The equivalent continuous sound level - the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period, T. This period is taken to be 16 hours (0700 hrs to 2300 hrs) and 8 hours (2300 to 0700 hrs) to describe day and night, in PPG 24 L_{AeqT} is used to describe many types of noise and can be measured directly with an integrating sound level meter.

SEL or L_{AE} : The sound exposure level is the A-weighted sound energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparisons to be made between different noise events which occur for different lengths of time.