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### **Acoustic Consultancy Report**

### **Noise Impact Assessment for Delivery and Service Yard Activity**

### **Asda Garston**

Client: Asda Stores Ltd

Project: Asda Store  
St Mary's Road  
Garston  
L19 1SJ

Our Ref: 10541

Revision: B

Report Prepared By S Fowler M.I.O.A.

Date: 20<sup>th</sup> May 2013



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## 1.0 EXECUTIVE SUMMARY

### Existing Planning Conditions

Condition 5 of the 1992 original planning permission for the store requires the following.

*“The premises shall not be open for business outside the hours of 07.00 and 22.00 hours each day and for the avoidance of doubt there shall be no loading or unloading, or shopping trolley collecting outside these stated times”.*

### Current Delivery Operation and Store Feedback

HGV delivery vehicles currently arrive at the store from 07.00 hrs, 7 days a week and typically finish unloading by approximately 09.00 hrs. The store begins trading at 08.00 hrs on Monday to Saturday and 10.00 hrs on Sunday.

The store manager confirmed it would be preferable to have deliveries completed outside the store trading hours, as this would avoid potential conflict between car park users and delivery vehicles.

The current trading window, Monday to Saturday, begins at 07.00 hrs. It is not always achievable for all the fresh produce to be unloaded within the 1 hour period before the store opens at 08.00 hrs.

The extension of delivery hours in the evening would allow ambient goods to be accepted at this time, which would avoid congestion with the morning chilled deliveries.

### Proposed Delivery Hours

The following extensions to delivery times are proposed

- 06.00hrs to 07.00hrs, Monday to Saturday
- 22.00hrs to midnight, Monday to Saturday

Combined with the existing permitted delivery hours, this would allow deliveries between 06.00hrs to midnight, Monday to Saturday inclusive.



It is important to note that the purpose of the increased delivery hours is give sufficient time for the store to be restocked with fresh produce in the mornings and to allow deliveries to be completed outside the store / store car park opening times. The overall delivery vehicle numbers would not change.

#### Noise Impact Assessment and Conclusion

The change in  $L_{Aeq,T}$  assessment indicates a marginal or better assessment for the proposed extended delivery periods.

The  $L_{AFmax}$  assessment for night time deliveries (23.00hrs to midnight and 06.00hrs to 07.00hrs) indicates the BS8233:1999 and WHO guideline values would be exceeded, but the predicted values would be within the existing  $L_{AFmax}$  noise climate range due to frequent car/bus/lorry movements on St Mary's Road.

The requirements of the National Planning Policy Framework (NPPF) and Noise Policy Statement for England (NPSE) should also be considered. These documents require Planning Authorities to support sustainable growth whilst avoiding noise from giving rise to significant adverse impacts on health and quality of life as a result of the new development. These documents therefore require the avoidance of noise at or above the "significant observed adverse effect level" (SOAEL). As detailed in Appendix D, we believe restricting deliveries to periods where the change in  $L_{Aeq,T}$  assessment indicates a marginal or better impact would achieve the first aim of NPSE by avoiding a significant adverse impact.

We therefore conclude that increased delivery hours between 06.00 to midnight, Monday to Saturday, would result in a negligible to marginal noise impact at the nearest residential properties, which we would consider to be acceptable.



## **2.0 Introduction**

Acoustic Consultancy Partnership Ltd were appointed to complete a noise impact assessment for extended delivery activity on Monday to Saturdays at the Asda Garston Store, for times outside of the existing planning conditions.

There would be no change to the delivery period on a Sunday.

Environmental noise monitoring has been completed at the site during a weekday for the late evening and early morning period. The measurements obtained have established the existing underlying noise climate applicable to the facade of the nearest existing dwellings and the results used as a basis for the noise impact assessment for delivery activity associated with the Asda store.

## **3.0 Site Layout and Nearest Noise Sensitive Receptors**

The store is bordered by St Mary's Road to the north and the A561, Garston Way, to the south. Garston Way is a dual carriageway and is a busy through route. St Mary's Road is also a relatively busy through route with a notable proportion of single and double deck buses that operate late at night and from 05.00 hrs in the morning.

A 24hour petrol filling station is located adjacent to the Asda store, to the north west of the site.

The store service yard is located on the north east side of the store. The store car park is generally positioned on the northern side of the site, with an entrance / exit off St Mary's Road.

Delivery vehicles enter the site from St Mary's Road, turn in the store car park, then reverse up to the warehouse unloading area. On departure, vehicles leave in a forward gear.

The nearest and most affected residential properties are located in St Mary's Road, to the north east of the store car park and unloading area. The front facade of these dwellings have direct line of sight from the upper windows to the delivery vehicle manoeuvring and unloading.

Other residential properties include the flats on the opposite side of Dock Road and houses on the opposite side of Garston Way, but these are less affected by delivery noise than the dwellings on St Mary's Road, due to increased distance, or shielding from the store structure.

A site plan is provided in Appendix B.



#### **4.0 Environmental Noise Monitoring**

Environmental noise monitoring was carried out as detailed in Appendix A. Details of the monitoring position, equipment, measuring periods, weather and results are also included.

The relevant results from the environmental noise monitoring form the basis for the noise impact assessment given in the following sections.

#### **5.0 Current Planning Conditions**

We have been provided with a copy of the original planning permission for the store. Condition 5 of this permission requires the following.

*“The premises shall not be open for business outside the hours of 07.00 and 22.00 hours each day and for the avoidance of doubt there shall be no loading or unloading, or shopping trolley collecting outside these stated times”.*

#### **6.0 Current Delivery Operations**

HGV delivery vehicles currently arrive at the store from 07.00 hrs, 7 days a week and typically finish unloading by approximately 09.00 hrs. The store begins trading at 08.00 hrs on Monday to Saturday and 10.00 hrs on Sunday.

All unloading and reloading of empty containers is undertaken using drop down tail lifts on the rear of the delivery vehicles. Goods are wheeled into the warehouse using cages, crates on wheeled dollies and pallet trucks.

#### **7.0 Store Personnel Feed Back**

The store manager confirmed it would be preferable to have deliveries completed outside the store trading hours, as this would avoid potential conflict between car park users and delivery vehicles.

The current trading window, Monday to Saturday, begins at 07.00 hrs. It is not always achievable for all the fresh produce to be unloaded within the 1 hour period before the store opens at 08.00 hrs.



The extension of delivery hours in the evening would allow ambient goods to be accepted at this time, which would avoid congestion with the morning chilled deliveries.

## **8.0 Proposed Delivery Hours**

The following extensions to delivery times are proposed

- 06.00hrs to 07.00hrs, Monday to Saturday
- 22.00hrs to midnight, Monday to Saturday

Combined with the existing permitted delivery hours, this would allow deliveries between 06.00hrs to midnight, Monday to Saturday inclusive.

It is important to note that the purpose of the increased delivery hours is give sufficient time for the store to be restocked with fresh produce in the mornings and to allow deliveries to be completed outside the store / store car park opening times. The overall delivery vehicle numbers would not change.

## **9.0 Noise Impact Assessment**

We have identified the most affected residential properties, as detailed in section 3.0. Based on our observations and calculations we have selected the following Receptor Position.

Receptor Position A                      Front facade of the nearest dwellings in St Marys Road.

We have carried out a noise impact assessment for the above Receptor Position, based on the methodology and criteria contained in Appendix D.

We have presented our findings in table form for the purposes of clarity.

### Change in LAeqT Noise Level

From the assessment methodologies given in Appendix D, we believe the change in  $L_{Aeq,T}$  methodology to be the most appropriate for this activity. It has the advantage of comparing the activity noise level against the existing noise climate and includes the influence of existing noise sources in the vicinity of the site, including traffic on the surrounding road network. This methodology is widely adopted for this type of activity by acoustic consultants and Local Authorities throughout the UK.



From the activity noise levels given in Appendix C, we have calculated the worst case activity noise level over a 5 minute period for night time (23.00 to 07.00 hrs) and 1hour period for day time (07.00 to 23.00 hrs), as detailed below.

Our calculations confirm the highest predicted 5 minute noise level is controlled by an Asda HGV delivery vehicle arrival, including the reversing manoeuvre. The highest predicted 1hour activity noise level is a combination of vehicle arrival and unloading activity.

To ensure a robust evaluation of the existing noise climate, we have taken the lowest  $L_{Aeq(10min)}$  reading measured during each 1 hour period.

The predicted delivery activity noise levels are given below, together with the lowest existing  $L_{Aeq(10min)}$  noise levels and the resultant increase.

<b>Change in <math>L_{Aeq,T}</math> Noise Assessment</b> <b>Based on Worst Case <math>L_{Aeq(5min)}</math> and <math>L_{Aeq(1hour)}</math> Activity Noise Levels</b>						
Receptor Position	Period		Predicted Noise Level at Residential Facade, dB	Lowest measured $L_{Aeq,T}$ dB	Increase in $L_{Aeq,T}$ dB	Impact
		22:00 – 23:00	55.3 $L_{Aeq(1hour)}$	58.8	1.6	Negligible
		23:00 – 00:00	59.1 $L_{Aeq(5min)}$	57.8	3.7	Marginal
		06:00 – 07:00	59.1 $L_{Aeq(5min)}$	59.3	2.9	Negligible

**Table 1 – Change in  $L_{Aeq,T}$  Assessment**

#### BS8233:1999 and World Health Organisation (WHO)

Assessment of delivery activity against the BS8233:1999 and WHO recommended  $L_{Aeq,T}$  criteria would not be appropriate, due to the relatively short duration of the activity in comparison to the reference time periods required by these documents (8hr at night and 16hr during the day). Assessment against absolute criteria also fails to take into account the existing  $L_{Aeq,T}$  noise climate, which is an important consideration.

However, consideration of the predicted  $L_{AFmax}$  noise levels is appropriate for the night time periods (23.00 to 07.00hrs), with comparison against the recommended criteria given in BS8233:1999 and WHO for sleep disturbance. It is also important to consider the existing  $L_{AFmax}$  noise climate, as the BS8233:1999 / WHO criteria are already regularly exceeded at this site.





Receptor Position	Highest Predicted $L_{AFmax}$ (Outside Bedroom)	BS8233 / WHO $L_{AFmax}$ criteria (Outside Bedroom)	Typical Existing $L_{AFmax}$ Noise Climate (23.00 to 07.00),
A	81.2	60	74 to 83

**Table 2 – BS8233:1999 and World Health Organisation  $L_{AFmax}$  Assessment**

The predicted worst case  $L_{AFmax}$  noise level exceeds the criteria at Receptor Position A. The predicted noise level is however within the range of the existing  $L_{AFmax}$  noise climate for the night time period, due to the frequent car/bus/lorry movements on St Mary's Road.

## 10.0 Assessment Results

### Change in $L_{Aeq,T}$ Noise Level

The assessment indicates a negligible or marginal change in  $L_{Aeq,T}$  assessment for the 06.00hrs to 07.00hrs and 22.00hrs to midnight periods, Monday to Saturday.

### BS8233:1999 and World Health Organisation

The worst case predicted  $L_{AFmax}$  noise level exceeds the BS8233:1999 and WHO guideline values for the night time period (23.00 to 07.00 hrs) at the Receptor Position, but is within the existing  $L_{AFmax}$  noise climate range.

## 11.0 Conclusions

The change in  $L_{Aeq,T}$  assessment indicates a negligible or marginal assessment for the proposed extended delivery periods.

The  $L_{AFmax}$  assessment for night time deliveries (23.00hrs to midnight and 06.00hrs to 07.00hrs) indicates the BS8233:1999 and WHO guideline values would be exceeded, but the predicted worst case value would be within the existing  $L_{AFmax}$  noise climate range due to the frequent car/bus/lorry movements on St Mary's Road.

The requirements of the National Planning Policy Framework (NPPF) and Noise Policy Statement for England (NPSE) should also be considered. These documents require Planning Authorities to support sustainable growth whilst avoiding noise from giving rise to significant adverse impacts on health and quality of life as a result of the new development. These documents therefore require the avoidance of noise at or above the "significant observed adverse effect level" (SOAEL). As detailed in Appendix D, we believe restricting deliveries to



periods where the change in  $L_{Aeq,T}$  assessment indicates a marginal or better impact would achieve the first aim of NPSE by avoiding a significant adverse impact.

We therefore conclude that increased delivery hours between 06.00 to midnight, Monday to Saturday, would result in a negligible to marginal noise impact at the nearest residential properties, which we would consider to be acceptable.



## **APPENDIX A**

### **Environmental Noise Monitoring**

#### **A1.0 Environmental Noise Monitoring Position**

Environmental noise monitoring was carried out in St Mary's Road, as indicated on the site plan in Appendix B. We consider the results to be typical of the existing noise climate affecting the nearest dwellings.

#### **A2.0 Monitoring Equipment**

The noise monitoring equipment comprised of a Svantek 957 type 1 real time analyser, serial numbers 21447, with a weatherproof microphone protection system.

The meter calibration was verified before and after the measurement period by a Svantek SV31 acoustic calibrator, serial number 24688. Any deviation was within an acceptable tolerance.

The meter and calibrator have current calibration certificates available upon request.

#### **A3.0 Environmental Noise Survey Measurement Period and Weather Conditions**

Comprehensive noise monitoring was undertaken, at times detailed in the tables below.

The weather during the survey periods was acceptable for environmental noise monitoring, with dry conditions and light winds.

#### **A4.0 Noise Measurement Parameters**

The survey established the prevailing  $L_{AFmax}$ ,  $L_{Aeq,T}$ ,  $L_{A10}$  and  $L_{A90}$  noise levels, measured using F time weighting, with a 10minute reference time period.



## A5.0 Monitoring Results and Observations

We believe the recorded environmental noise measurements are representative of the existing noise climate applicable to the facade of the nearest noise sensitive receptors.

During our time on site, we noted that the main noise source affecting the measurements was road traffic activity in the surrounding area.

Garston Way is a dual carriage way and a busy through route.

St Mary's way is also relatively busy with regular traffic movements. Of particular note were the number of buses that use this road. During our survey, buses continued to use this route until after 01.00 hrs and started again soon after 05.00 hrs. This has a direct influence on the existing noise climate affecting the nearest residential properties.

The environmental monitoring results that are relevant to the noise impact assessment are summarised in Table 3 below.

Monitoring Position	Period	Typical $L_{AFmax}$ Range Without Service Yard Activity	Lowest $L_{Aeq(10min)}$
	22:00 – 23:00	Not applicable	58.8
	23:00 – 00:00	74 to 78	57.8
	06:00 – 07:00	75 to 83	59.3

**Table 3 – Summary of Existing Measured Noise Levels**

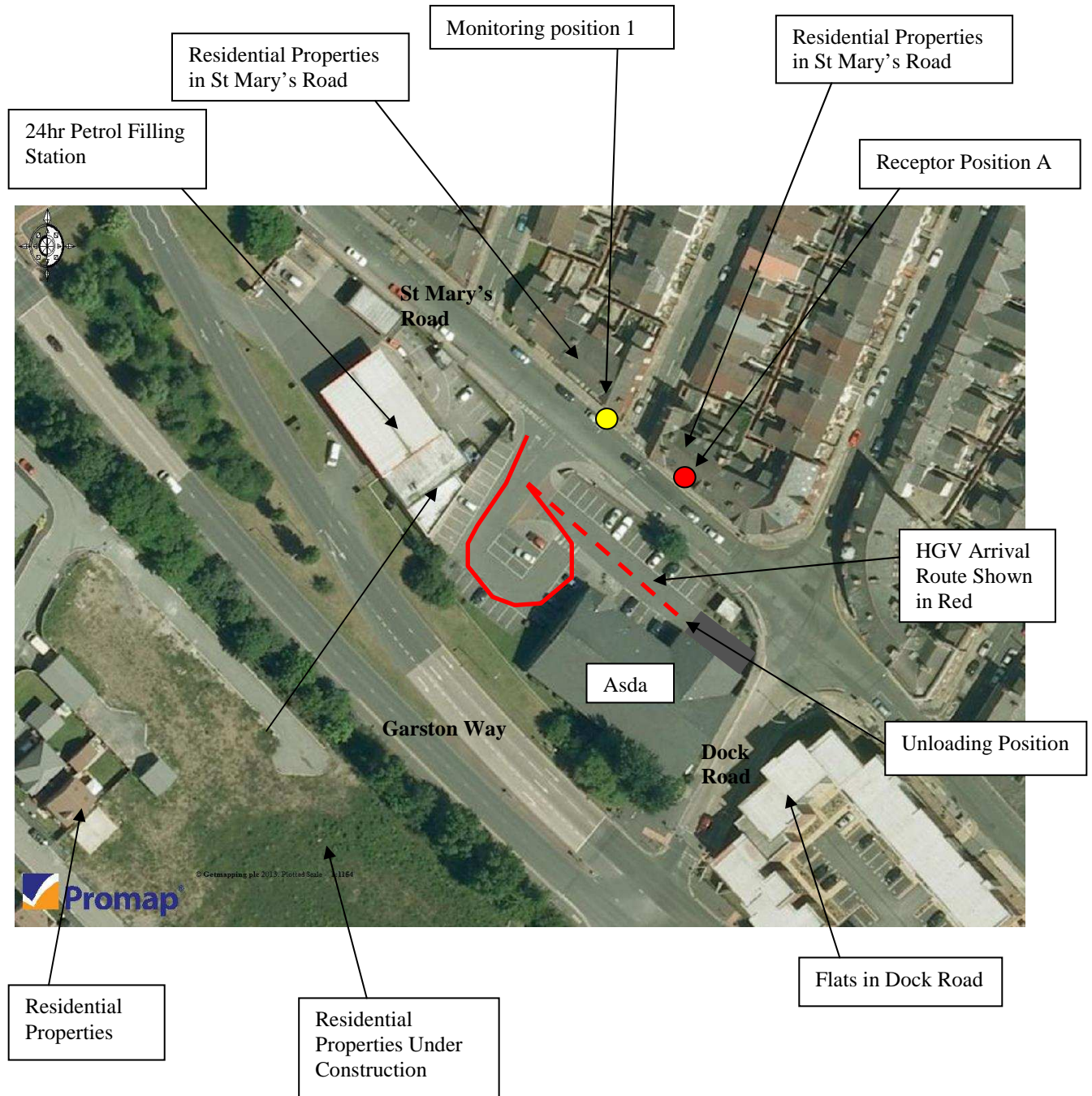
The detailed environmental monitoring results are given below.



## Monitoring Position 1

Date	Time			Measured Noise Level, dB			
				$L_{AFmax}$	$L_{Aeq,T}$	$L_{A10,T}$	$L_{A90,T}$
Thursday 25.04.2013	22:00	to	22:10	77.4	63.1	66.6	52.2
	22:10	to	22:20	75.6	59.9	62.1	51.9
	22:20	to	22:30	78.1	60.0	62.0	48.8
	22:30	to	22:40	76.5	61.3	64.7	50.6
	22:40	to	22:50	82.5	62.2	62.8	52.1
	22:50	to	23:00	75.5	58.8	60.8	50.0
	23:00	to	23:10	75.0	59.2	61.7	48.7
	23:10	to	23:20	78.4	60.3	61.8	49.0
	23:20	to	23:30	75.4	58.0	59.4	45.3
	23:30	to	23:40	76.9	57.8	59.8	43.4
Friday 26.04.2013	23:40	to	23:50	74.2	59.2	62.5	48.5
	23:50	to	00:00	75.0	59.0	61.6	48.8
	06:00	to	06:10	74.5	59.3	62.1	52.6
	06:10	to	06:20	80.3	61.1	62.7	53.1
	06:20	to	06:30	80.5	61.1	63.6	50.2
	06:30	to	06:40	82.0	63.8	65.8	55.6
	06:40	to	06:50	82.7	63.8	65.6	56.9
	06:50	to	07:00	79.3	64.9	67.2	61.2

## APPENDIX B Site Plan





## **APPENDIX C**

### **Delivery Activity Noise Levels**

We have based our delivery activity noise assessment on the following typical Asda delivery noise data. These noise levels have been obtained by ACP by measurement of typical Asda delivery activity at various Asda stores.

All measurements relate to a distance of 10m from the noise source.

#### HGV Arrival (including manoeuvring and reversing)

69.8 dB  $L_{Aeq}$  for 2min 05 seconds

82.9 dB  $L_{AFmax}$

For calculation purposes, this relates to:

90.8 dB  $L_{AE}$

66.0 dB  $L_{Aeq(5min)}$

55.2 dB  $L_{Aeq(1hour)}$

#### HGV Departure (pulling away)

65.6 dB  $L_{Aeq}$  for 1minute, 12 seconds

78.5 dB  $L_{AFmax}$

For calculation purposes, this relates to:

84.2 dB  $L_{AE}$

59.4 dB  $L_{Aeq(5min)}$

48.6 dB  $L_{Aeq(1hour)}$

#### HGV Unloading & Re-loading Using Drop Down Tail Lift, With Wheeled Cages, and Crates/Dollys

62.0 dB  $L_{Aeq}$  for 1 hour, 50 min.

88.0 dB  $L_{AFmax}$

For calculation purposes, this relates to:

97.6 dB  $L_{AE}$  (1 hour of continuous unloading)

62.0 dB  $L_{Aeq(5min)}$

62.0 dB  $L_{Aeq(1hour)}$



## **Appendix D**

### **Noise Impact Assessment Methodology**

We give below a summary of the various British Standards and other published documents that provide guidance on noise impact assessment methodology and noise criteria that can be considered relevant to delivery activity noise.

#### National Planning Policy Framework (NPPF) 2012

The NPPF was published on 27<sup>th</sup> March 2012 and replaces the existing planning framework – which consisted of Planning Policy Guidance and Statements (PPGs and PPS).

The NPPF reflects previous planning guidance, and promotes sustainable economic development. As such the NPPF states that *“planning should operate to encourage and not act as an impediment to sustainable growth. Therefore significant weight should be placed on the need to support economic growth through the planning system”*.

Whilst not providing any specific guidance on assessment methodology, this document confirms in section 123 that 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.”* Furthermore they should aim to *“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”*.

The aims of section 123 are to be read in conjunction with the Explanatory Note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs).

#### Noise Policy Statement for England (NPSE) 2010

NPSE states the following vision *“Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”*.

The first aim of NPSE is to *“Avoid significant adverse impacts on health and quality of life”*

The second aim is to *“Mitigate and minimise adverse impacts on health and quality of life”*

NPSE makes use of the key phrases *“significant adverse”* and *“adverse”* and provides the following guidance, based on established concepts from toxicology.





#### 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.

#### SOAEL – Significant Observed Adverse Effect Level

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

For delivery activity, we believe the NOEL / LOAEL threshold is a change in  $L_{Aeq,T}$  assessment of +3.0 dB and the LOAEL / SOAEL threshold is + 5 dB (below +3dB the impact would be classed as imperceptible / negligible, 3dB to 5dB would be perceptible / marginal and above 5 dB would be significant).

#### BS 4142:1997 Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas

This British Standard describes a method of determining the level of a noise of an industrial nature, together with procedures for assessing whether the noise in question is likely to give rise to complaints from persons living in the vicinity.

The external  $L_{Aeq,T}$  noise level from “factories, or industrial premises, or fixed installations, or sources of an industrial nature in commercial premises” is measured or calculated. The  $L_{A90,T}$  background noise level is also measured, without the specific noise source operating. The “rating level” of the noise source is established, including a +5dB correction if the noise source contains any “acoustic features” (distinguishable note, impulsive characteristic or irregular enough to attract attention). The rating level is then compared to the background noise level, and the likelihood of complaints is predicted as follows.

- A rating level of around +10 dB above the measured background level indicates that complaints are likely
- A rating level of around +5 dB above the measured background level is of marginal significance
- A rating level of 10 dB or more below the measured background noise level is a positive indication that complaints are unlikely.

BS4142:1997 is not suitable for assessing transient type noise sources such as from delivery activity.

The use of  $L_{A90,T}$  to characterise the underlying noise climate will naturally minimise the influence of many existing transient noise sources (such as existing passing traffic) from the assessment. It can therefore lead to an unrealistic assessment of delivery type noise sources, particularly when the site is in a busy area, or subjected to existing road noise.



### Change in existing $L_{Aeq,T}$ Noise levels

The degree of change in  $L_{Aeq,T}$  noise levels can be used to assess the potential impact due to activity noise. The predicted activity noise is added to the existing  $L_{Aeq,T}$  noise climate and the degree of change in noise level assessed as follows.

Change in noise level, dBA	Response	Impact
Less than 3.0	Imperceptible	Negligible
3.0 to 4.9	Perceptible	Marginal
5.0 to 10.0	Up to a doubling of loudness	Significant
Greater than 10	Around a doubling of loudness	Severe

This is a commonly adopted assessment procedure for transient type noise sources, such as delivery activity. It has the advantage of using  $L_{Aeq,T}$  to characterise the existing noise climate, including the influence of all existing transient noise sources, such as passing traffic. It also has the advantage of being site specific, with assessment against the prevailing external noise climate (instead of being based on absolute levels, as per BS8233:1999 or WHO).

### BS8233:1999 Sound insulation and noise reduction for buildings – code of practice

This British Standard provides guidance on acoustic criteria appropriate for various types of internal spaces. The criteria provided for living rooms and bedrooms are given below.

Criteria	Typical Situation	Design range $L_{Aeq,T}$ dB	
		Good	Reasonable
Reasonable resting / sleeping conditions	Living rooms	30	40
	Bedrooms <sup>a</sup>	30	35
<sup>a</sup> For a reasonable standard in bedrooms at night, individual noise events (measured with F time weighting) should not normally exceed 45 dB $L_{Amax}$			

The above criteria are internal noise levels. We would allow a 15 dB reduction through a partially open window, in line with the assumptions made within WHO document, although in practice this can vary due to a number of site variables.



BS8233:1999 specifies absolute criteria and takes no account of the prevailing noise climate of the area. It therefore has the potential to overestimate the impact to residents already exposed to higher noise levels, and underestimate the impact on residents living on a quiet, sheltered site. This is true for both the  $L_{Aeq,T}$  and  $L_{AFmax}$  criteria.

#### World Health Organisation – Guidelines for Community Noise

The World Health Organisation (WHO) Guidelines for Community Noise document provides guideline noise values for residential properties, as detailed below.

Specific environment	Critical health effects(s)	$L_{Aeq}$ , dB	Time base, hours	$L_{AFmax}$ , dB
Dwelling, Indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside Bedrooms	Sleep disturbance, night-time	30	8	45
Outside Bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

It can be seen that the WHO guideline values show close correlation with the recommended values contained within BS8233:1999.

The WHO guideline values specifies absolute criteria and takes no account of the prevailing noise climate of the area. It therefore has the potential to underestimate or overestimate the impact as discussed above for BS8233:1999. WHO itself states *“The difference between the sound levels of a noise event and background sound levels, rather than the absolute level, may determine the reaction probability”*.

#### Draft BS9142

Whilst this document is in draft version, it does provide guidance on generic assessment methodology for various types of noise activity. For a “new noise affecting existing noise sensitive location”, it recommends an assessment is made using absolute levels (as detailed in the various British Standards and other documents), comparison of the source level against the existing noise climate and the degree of change of the noise climate following introduction of the noise source.

This methodology corresponds closely with the guidance contained within the other standards and documents considered in this appendix.



### Freight Transport Association – Delivering The Goods

In 2004, the Freight transport Association, in consultation with various industry bodies and Government departments, carried out detailed investigations on the subject of night-time deliveries with the objective to identify conditions under which delivery curfews imposed on retail stores could be relaxed in exchange for the adoption of best environmental practices at the delivery point. As a result of this investigation, the Freight Transport Association published “Delivering the goods – a toolkit for improving night-time deliveries”

This document provides guidance to those concerned with assessing the potential noise impact of retail deliveries in residential areas that might occur in the evening and night. It states that there are no prescribed guidelines or standards for the assessment of delivery noise, but does make reference to PPG24 (now replaced by NPPF), World Health Organisation Guidelines and BS8233:1999. It confirms the main elements of a noise assessment should include the following

- Characterise the existing (baseline) noise environment
- Predict or measure the noise likely to arise from a proposed activity
- Compare the predicted or measured noise levels with the baseline noise environment, to understand the nature and extent of the change in noise environment that will occur.
- Using relevant but generic standards and guidelines, draw a conclusion about the extent of the impact that those changes will have on those potentially affected.



## **Appendix E**

### **Glossary of Terminology**

#### **$L_{Aeq,T}$**

The  $L_{Aeq,T}$  is defined as the equivalent continuous sound pressure level, over the reference time period “T”. It can be considered as an average of the total sound energy, or the steady continuous level that has the same total energy as a fluctuating sound source.

#### **$L_{A90,T}$**

The  $L_{A90,T}$  is a statistical parameter, defined as the sound pressure level exceeded for 90% of the measurement time period “T”. It is used by BS4142:1997 to characterise the “background noise Level” and can be considered in simple terms as the noise level in the quieter spells eg between passing traffic.

#### **$L_{A10,T}$**

The  $L_{A10,T}$  is a statistical parameter, defined as the sound pressure level exceeded for 10% of the measurement time period “T”. It is commonly used to measure road traffic noise. In simple terms, it is a measurement of the noisier spells eg when traffic is passing.

#### **$L_{AFmax}$**

The  $L_{AFmax}$  is the maximum measured sound pressure level in a given measurement period.