



Acoustic Consultancy Partnership Ltd

Ground Floor, Building 1000, Lakeside North Harbour

Western Road, Portsmouth, Hampshire, P06 3EZ

Tel: 023 9270 4133 | Fax: 023 9270 4001 | info@acpltd.org.uk

Acoustic Consultancy Report

Environmental Noise Survey Report and Noise Impact Assessment for Fixed Plant

Asda Waterlooville

Client: CBES Ltd

Project: Asda Store
Portland Road
Waterlooville
Portsmouth
PO7 7XR

Our Ref: 10927

Revision: -

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

Date: 5th January 2016



Index

Executive Summary	3
Section A – General	4
Section B – Environmental Monitoring	6
Section C – Fixed Plant	9
Appendix 1 – Environmental Monitoring Results	13
Appendix 2 – Site Plan	14
Appendix 3 – Glossary of Terms	15
Appendix 4 – Noise Impact Assessment Methodology	16



EXECUTIVE SUMMARY

Acoustic Consultancy Partnership Ltd have been appointed to undertake an environmental noise survey and complete a noise impact assessment for the proposed additional fixed plant at the Asda Waterloooville store.

Section A - General

The assessment has established the predicted plant noise levels at the nearest and most affected residential properties in Forest End which are to the south west of the store and on the opposite side of Maurepas Way.

Full details of the noise impact assessment are given in Section C within the report and summarised below.

Section B – Environmental Monitoring

We have undertaken environmental noise monitoring adjacent to the nearest residential properties. Weekday evening and night time measurements have been recorded.

Section C – Plant

We are not aware of any planning condition relating to plant noise for this site. We have therefore recommended a noise criteria at the receptor position based on the methodology given in BS4142:2014.

Allowing for the nil excess of the rating level above the background sound level and also taking context into account, we conclude the overall impact of the cumulative operation of the plant for 24 hours a day, 7 days a week would be significantly less than low impact.

This would be acceptable in accordance with BS 4141:2014 without any mitigation measures to the new plant items.



SECTION A - GENERAL

1.0 Introduction

- 1.1 Acoustic Consultancy Partnership Ltd have been appointed to undertake an environmental noise survey and complete a noise impact assessment for the proposed additional fixed plant at the Asda Waterlooville store
- 1.2 We have undertaken environmental noise monitoring adjacent to the nearest residential properties. Weekday evening and night time measurements have been recorded.
- 1.3 A noise impact assessment has been completed, in accordance with the methodology given in BS4142:2014 and based on the measured existing $L_{A90,T}$ background noise levels.
- 1.4 Technical terms or references are occasionally used within this report. To assist the reader, a Glossary of Terminology is included in Appendix 3.

2.0 Site Layout and Nearest Noise Sensitive Receptors

- 2.1 The existing Asda store is located to the south east of the roundabout joining Maurepas Way with Hambledon Road. Adjacent to the southern corner of the store is a large Southern Electric sub-station.
- 2.2 Two new condensers are to be located on the loading bay canopy roof at the rear of the store adjacent to the sub-station. The new units replace four existing condensers located near to the new condenser position.
- 2.3 The nearest noise sensitive properties would be the two storey dwellings in Forest End, which are to the south west of the store and on the opposite side of Maurepas Way. The nearest properties are approximately 85m from the plant location and we assess there is line of sight from the plant to the properties.



3.0 Receptor Position

3.1 For the plant noise impact assessment, we have selected one receptor position as detailed below.

Receptor Position RPA	The upper windows of the two storey properties in Forest End
-----------------------	--

4.0 Project Information

4.1 Our noise impact assessment is based on the current plant drawings and plant noise data provided by CBES Ltd.



SECTION B – ENVIRONMENTAL MONITORING

5.0 Environmental Noise Monitoring Position

- 5.1 To determine the existing $L_{A90,T}$ background and $L_{Aeq,T}$ ambient noise levels of the surrounding area, a monitoring position was adopted in Forest End, level with the facade of the nearest properties facing the store.
- 5.2 The results obtained were considered typical of the existing noise climate applicable to the nearest noise sensitive receptors.
- 5.3 The monitoring position is indicated on the site layout given in Appendix 2.

6.0 Noise Monitoring Period and Survey Weather Conditions

- 6.1 The noise monitoring periods were as follows.

Late evening	22.00 to 23:00 hours on Tuesday 8 th December 2015.
--------------	--

Night Time	02:00 to 03:00 hours on Wednesday 9 th December 2015.
------------	--

- 6.2 The weather during the evening survey was dry with no cloud cover and very light winds. The temperature was 8°C at the start of the survey dropping to 6°C at the end. During the night survey conditions were dry and still with no cloud cover. The temperature was 3°C.
- 6.3 Conditions were acceptable for environmental monitoring during both periods.

7.0 Monitoring Equipment

- 7.1 The noise monitoring equipment comprised of a Svantek 957 type 1 real time analyser, serial no 20607, with a weatherproof microphone protection system.

- 7.2 The meter calibration was verified before and after the measurement period, using a Svantek SV31 acoustic calibrator, serial number 24688. Any deviation was within an acceptable tolerance.
- 7.3 This meter and calibrator have current calibration certificates, available upon request.

8.0 Noise Measurement Parameters

- 8.1 The environmental survey established the prevailing L_{AFmax} , $L_{Aeq,T}$, $L_{A10,T}$ and $L_{A90,T}$ noise levels measured using an “F” time weighting with a 10 minute reference time period.
- 8.2 A Glossary of Terminology is given in Appendix 3.

9.0 Monitoring Results and Observations

- 9.1 We believe the recorded environmental noise measurements are representative of the existing noise climate levels applicable to the nearest noise sensitive receptor.
- 9.2 BS4142:2014 states “In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods”
- 9.3 Furthermore, BS4142:2014 states “There can be variability in the derivation of statistical parameters, so use integers when expressing the background sound level. A background sound level expressed to a precision of one decimal place implies incorrectly that the background sound level is exactly that value. Rounding is to be done on the basis that a value of 0.5 is rounded up.”

- 9.4 The typical measured background noise levels assessed in accordance with BS4142:2014 and applicable to the operating periods of the plant are given below. A full set of measurements are provided in Appendix 1.

Receptor Position	Period	Typical Measured Background Noise Level dB $L_{A90(15min)}$
RPA	07.00-23.00	45
	23.00-07.00	41

Table 1 – Typical Measured Background Noise Level

- 9.5 During the evening survey period, the dominant noise source was traffic activity from the A3 London Road. During the night time survey period, traffic activity was more intermittent and the Southern Electric Sub Station was audible.



SECTION C – FIXED PLANT

10.0 Proposed Hours of Operation

- 10.1 We understand the new plant items would operate on demand, 24hrs a day, 7 days a week.

11.0 Plant Noise Criteria

- 11.1 The two new refrigeration condensers are to be installed on a plant platform above the service yard canopy. We have confirmed in section 2.0 of this report that there would be line of sight from the plant to both receptor positions.
- 11.2 During the day (07.00-23.00), the British Standard requires the rating sound level to be established over a 1 hour reference time period and to be compared to the typical existing background sound level. During the night (23.00-07.00), the British Standard requires the rating sound level to be established over a 15 minute time period and compared to the typical existing background sound level.
- 11.3 For our assessment we have assumed that all plant items could run continuously during any day or night reference time periods.
- 11.4 In accordance with BS4142:2014 a +3dB acoustic correction has been applied to the plant activity for “other sound characteristics”.
- 11.5 Also, in accordance with BS4142:2014, we have taken the typical background sound level for each of the assessment periods.



- 11.6 Based on the above, the new plant target noise level at the nearest dwelling would be as follows.

Receptor Position	New Plant Target Noise Level	
	07.00-23.00	23.00-07.00
RPA- Forest End	45 dB $L_{Aeq}(1hour)$	41 dB $L_{Aeq}(15min)$

Table 2 – New Plant Target Noise Level

12.0 Calculation Procedure

- 12.1 Calculations are based on our Excel programmes which provide the individual plant item noise levels at the receptor position enabling an overall combined plant noise level to be determined. The calculations are based on standard methodology and take into account the distance correction and the barrier effects, where appropriate, of screens and any buildings.

13.0 Plant Noise Data

- 13.1 The manufacturers noise data used within this assessment is given below.

Plant Item	Sound Pressure level, dB
Searle RF-PA102L4H-091M-AV condenser	46 dBA at 10m day and night
Searle RF-PD203L3H-091M-AV condenser	47 dBA at 10m day and night

Table 3 – Plant Sound Pressure Levels

14.0 Un-attenuated Plant Noise Level

14.1 We have completed a calculation of the proposed **un-attenuated** cumulative new plant noise levels at the facades of nearest residential properties, based on the plant noise levels detailed above. The cumulative new plant rating sound level, typical background sound level and the excess of rating level above the background are given below.

Receptor Position	Time Period	Cumulative New Plant Rating Sound Level, dBA	Typical Background Sound Level, L_{A90T}	Excess of Rating Level above Background
RPA	07.00-23.00	34	45	Nil
	23.00-07.00	34	41	Nil

Table 4 – Plant Rating Level, Typical Background Sound Level and Resulting Excess

14.2 We consider the level of uncertainty of the measurements and assessment to be low and have no significant influence on the outcome of the assessment. The plant noise levels have been provided by the manufacturers for day and night operation and background sound levels were recorded adjacent to the receptor position during a period of good weather conditions.

15.0 Fixed Plant Conclusions

15.1 The rating level of the cumulative plant does not exceed the typical background sound level at the receptor position for any periods of operation.

15.2 BS 4142:2014 provides the following guidance on obtaining an initial estimate of the impact of the specific sound, based on the excess of the rating level above the background sound level.

- Typically, the greater this difference, the greater the magnitude of the impact.
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context

- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

15.3 BS4142:2014 also requires context to be taken into account. For this site, the following point is therefore of importance when considering the overall impact.

- A constant noise was audible from the electricity sub-station throughout the night and this controlled the acoustic environment.

15.4 Allowing for the nil excess of the rating level above the background sound level and also taking context into account, we conclude the overall impact of the cumulative operation of the new plant for 24 hours a day, 7 days a week would be significantly less than low impact.

15.5 This would be acceptable in accordance with BS 4141:2014 without any mitigation measures to the new plant items.



Appendix 1

Environmental Monitoring Results

Evening

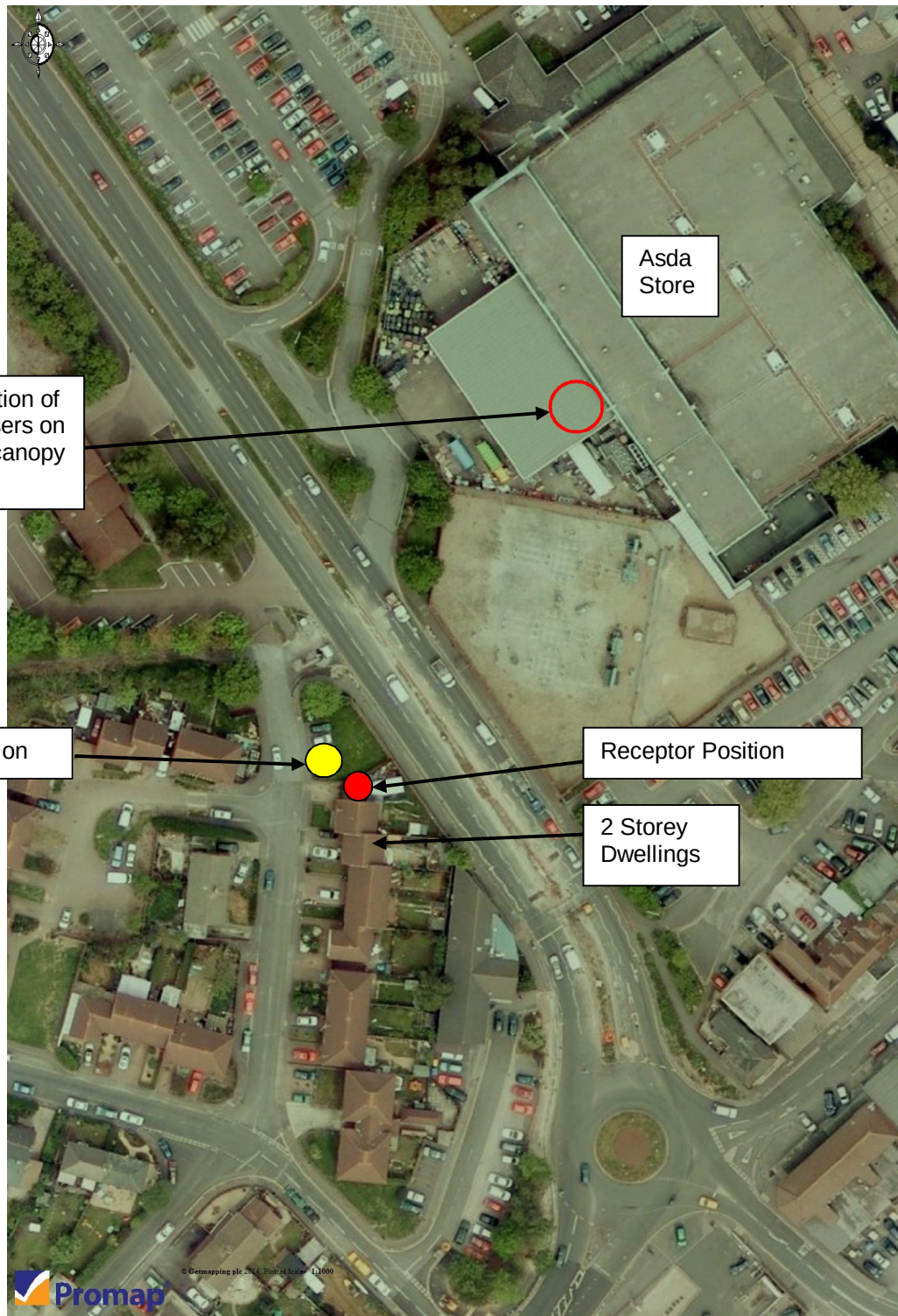
Time			Measured Sound Pressure Level, dB			
			L _{AFmax}	L _{Aeq,T}	L _{A10,T}	L _{A90,T}
22.00	to	22.15	71	58	62	48
22.15	to	22.30	72	57	61	45
22.30	to	22.45	72	57	61	45
22.45	to	23.00	67	56	60	45

Night

Time			Measured Sound Pressure Level, dB			
			L _{AFmax}	L _{Aeq,T}	L _{A10,T}	L _{A90,T}
02.00	to	02.15	66	49	49	42
02.15	to	02.30	67	49	50	41
02.30	to	02.45	68	49	49	41
02.45	to	03.00	65	47	47	41

Appendix 2

Site Plan





Appendix 3

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.



Appendix 4

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 store plant noise.

BS 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound

This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature, which includes

- a) Sound from industrial and manufacturing processes
- b) Sound from fixed installations which comprise mechanical and electrical plant and equipment
- c) Sound from the loading and unloading of goods and materials at industrial and/or commercial premises
- d) Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes

The methods described in the British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

The Standard confirms that certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where appropriate, a rating penalty should be established based on a subjective assessment of its characteristics at the receptor position. This method is appropriate where a new source cannot be measured because it is only proposed at that time, but the characteristics of similar sources can subjectively be assessed.



National Planning Policy Framework (NPPF)

The NPPF was published on 27th 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). Again, this document does not provide any specific guidance on assessment methodology.