



Pepper Mill Barn
Old Salisbury Lane
Romsey
SO51 0GD

T: 01794 515999
F: 01794 515100

**ACE LIFTAWAY LTD
YOKESFORD HILL ESTATE, ROMSEY
NOISE IMPACT ASSESSMENT**

Technical Report: R4436-1 Rev 0

Date: 9th November 2012

For: Ace Liftaway Ltd
The Waste Centre
Yokesford Hill Estate
Romsey
SO51 0PF

24 Acoustics Document Control Sheet

Project Title: Ace Liftaway Ltd, Yokesford Hill Estate, Romsey – Noise Impact Assessment

Report Ref: R4436-1 Rev 0

Date: 9th November 2012

	Name	Position	Signature	Date
Prepared by	Chris McConnell BSc MSc AMIOA	Consultant		
Approved by	Stephen Gosling BEng MIOA	Principal Consultant		
For and on behalf of 24 Acoustics Ltd				

Document Status and Approval Schedule

Revision	Description	Prepared By	Approved By
0	Approved For Issue	Chris McConnell	Stephen Gosling

DISCLAIMER

This report was completed by 24 Acoustics Ltd on the basis of a defined programme of work and terms and conditions agreed with the Client. The report has been prepared with all reasonable skill, care and diligence within the terms of the Contract with the Client and taking into account the project objectives, the agreed scope of works, prevailing site conditions and the degree of manpower and resources allocated to the project.

24 Acoustics Ltd accepts no responsibility whatsoever, following the issue of the report, for any matters arising outside the agreed scope of the works.

This report is issued in confidence to the Client and 24 Acoustics Ltd has no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk.

Unless specifically assigned or transferred within the terms of the agreement, 24 Acoustics Ltd retains all copyright and other intellectual property rights, on and over the report and its contents.

© 24 Acoustics Ltd 2012

CONTENTS	PAGE
1.0 Introduction	4
2.0 Site Description	4
3.0 Criteria and Planning Conditions	5
4.0 Noise Measurements and Results	7
5.0 Noise Impact Assessment	10
6.0 Conclusions	12
References	13
Figure 1 Site Location Plan and Noise Measurement Locations	14
Appendix A Acoustic Terminology	15
Appendix B Measured Noise Levels	17

1.0 INTRODUCTION

1.1 Ace Liftaway Ltd is submitting an application to vary a planning condition in relation to the construction of a new building (Building 3) to enclose existing plant and machinery at their waste transfer facility at Yokesford Hill, Romsey. 24 Acoustics Ltd has been instructed by Ace Liftaway Ltd to undertake an assessment of the noise impact from current operations within Building 3, on nearby residential properties.

1.2 Accordingly, this noise impact assessment has included:

- Ambient noise monitoring at nearby residential properties;
- Source-term measurements of noise from site operations;
- Assessment of the noise impact of site operations at nearby residential properties.

1.2 This report presents the results of the assessment, following a site visit on 23rd October 2012 and a background noise survey undertaken between 25th October and 30th October 2012.

1.3 An explanation of acoustical terms used in this report is provided in Appendix A. All noise levels in this report are presented in dB relative to 20 μ Pa.

2.0 SITE DESCRIPTION

2.1 The proposed location of Building 3 is located within the confines of Ace Liftaway's existing premises and is shown in Figure 1. The substructure of Building 3 has been constructed, but there is currently no roof or cladding in place. Construction has halted and is the subject of a legal dispute. Current site operations within Building 3 comprise large mechanical sorting plant and machinery as well as mobile items of loading plant for the movement of materials. The site operating hours are understood to be between 07:00 and 17:00 hours Monday to Saturday. The Building 3 area is understood to operate on 'light line' for the majority of each week, with 'heavy line' operations typically on one or two days each week.

2.2 The surrounding area is a mixture of industrial and residential premises. Several other industrial premises are located within the adjacent Wyndford Farm Estate. The nearest residential properties to Building 3 are located off Sandy Lane, approximately 250 m to the south east (beyond Wyndford Farm) and also approximately 260 m to the south-west on Belbins. The locations of the nearest residential properties are shown in Figure 1.

3.0 CRITERIA AND PLANNING CONDITIONS

National Planning Policy Framework and Noise Policy Statement for England

3.1 The National Planning Policy Framework (NPPF) [Reference 1] was published by the Department for Communities and Local Government in March 2012, and is now effective. This document is intended to replace specific guidance contained within previous planning policy guidance and statement documents which are currently in force. This document therefore supersedes PPG 24 [Reference 2] which previously provided guidance on noise relating to planning and new development. For noise the NPPF policy states 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;
- 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, while recognising that many developments will create some noise.

3.2 The NPPF also refers to the Noise Policy Statement for England (NPSE) [Reference 3] which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term vision to 'promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development' which is supported by the following aims.

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life;
- Where possible, contribute to the improvement of health and quality of life.

- 3.3 The NPSE defines the concept of a 'significant observed adverse effect level' (SOAEL) as 'the level above which significant adverse effects on health and quality of life occur'. The following guidance is provided within the NPSE:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

BS 4142 (Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas)

- 3.4 For noise from site operations at the waste transfer facility, it is appropriate to use British Standard (BS) 4142: 1997 [Reference 4] as an indication of whether complaints regarding noise are likely at the nearest residential properties.
- 3.5 BS 4142 provides a method for rating the effects of industrial noise on mixed residential and industrial areas. The standard advocates a comparison between the typical measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction of +5 dB is applied. The standard states that a difference between the rating level and the background level of +10 dB indicates that 'complaints are likely', a difference of +5 dB is of 'marginal significance' and a difference of -10 dB is a 'positive indication that complaints are unlikely'.

Planning History and Local Authority Consultation

- 3.6 In 2007, planning consent was granted (Ref: 07/01429/CMA) for the enlargement of the Ace Liftaway's waste transfer facility, including the construction of Building 3 with associated plant and machinery enclosed within it.

- 3.7 A further planning consent was granted in 2010 (Ref: 10/01992/CMAS) to vary conditions 13 and 24 of the 2007 Permission, in relation to site layout and height of stockpiles. The 2010 consent includes condition 19 which states that Building 3 shall be constructed and completed by 30th October 2012. Condition 20 of the 2010 consent also states that the external building fabric should be in accordance with the scheme approved under the 2007 consent.
- 3.8 Mark Lee, principal environmental health officer from Test Valley Borough Council, has been consulted in relation to the noise impact assessment and proposed criteria. For site operations in Building 3, a target criterion of 0 dB relative to the background noise level at noise sensitive properties, assessed in accordance with BS 4142, has been agreed with Mark Lee.

4.0 NOISE MEASUREMENTS AND RESULTS

Measurement Instrumentation and Procedure

- 4.1 An environmental noise survey was undertaken at the site between 25th and 30th October 2012 to determine the prevailing background noise levels at nearby residential properties. Noise measurements were also undertaken at the site boundary and in the vicinity of nearby residential properties, whilst the plant was in operation, on 23rd October 2012, in order to determine source noise levels from site operations.
- 4.2 Noise measurements were undertaken using the following equipment:
- | | |
|-------------------------------------------------------|--------------|
| Norsonic precision sound level meter | Type Nor-140 |
| Rion precision sound level meter / real time analyser | Type NA27 |
| Bruel and Kjaer acoustic calibrator | Type 4231 |
- 4.3 The background noise survey location is described below and shown in Figure 1:
- Location 1 – Near to the boundary of the residential property to the south-east, at a height of approximately 2m above ground level.

- 4.4 The instrumentation setup at Location 1 was configured to continuously measure and store overall A-weighted statistical parameters such as L_{Aeq} , L_{Amax} and L_{A90} (all measured on fast response) in 5 minute intervals. Measurements were made in accordance with BS 7445: 1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use [Reference 5].
- 4.5 The meter at Location 1 was equipped with an environmental microphone and an extension cable. The instrumentation was powered by external batteries and stored in a weatherproof case. The calibration of the instrumentation was checked before and after the tests and no signal variation occurred. Calibration of 24 Acoustics' equipment is traceable to National Standards. The weather and the start and end of the survey period was dry and the wind speed was considered to be less than 5 m/s. The weather during the survey period was variable with some periods of precipitation which have been removed from the analysis.

Results – Background Noise Survey

- 4.6 A background noise survey was previously undertaken at residential properties on Belbins by 24 Acoustics in May 2006. The full procedure and results are presented in 24 Acoustics report 1726-1 Rev 3 dated 24th July 2007. From the results of the previous background noise survey, for the purposes of this assessment, the typical daytime background noise level at properties on Belbins is determined to be 45 dB $L_{A90, 1 \text{ hour}}$.
- 4.7 The results of the environmental noise survey at Location 1 are shown in full in Appendix B. Hourly background noise levels at Location 1 during daytime periods have been calculated from the measured 5 minute samples. During the set up and collection of the instrumentation at Location 1 it was noted that the background noise level was affected by general ambient noise including noise from distant road traffic and operational noise from other industrial units. Noise from Ace Liftaway site operations was just audible at Location 1, when the Building 3 plant was understood to be operating on 'light line'.
- 4.8 In order to determine background noise levels in the absence of noise from Building 3, noise levels measured outside of the site operating hours (07:00 to 17:00 hours Monday to Saturday) have been analysed. Based on noise levels measured at Location 1 between 17:00 and 18:00 Monday to Saturday, and between 07:00 and 17:00 on Sunday, the typical daytime background noise level at Location 1 is determined to be 38 dB $L_{A90, 1 \text{ hour}}$.

Results –Noise Survey of Building 3 Site Operations

4.9 24 Acoustics visited the site during the afternoon of 23rd October 2012. Noise measurements were undertaken whilst the Building 3 plant and machinery were understood to be operating on 'heavy line'. For the purposes of this assessment, 'heavy line' operations are taken as a worst case in terms of noise emissions from Building 3. Noise measurements were undertaken at the following locations, indicated in Figure 1:

- Location 1 – Near to the boundary of the residential property to the south-east, at a height of approximately 2m above ground level.
- Location 2 – At the south-eastern site boundary, approximately 12m from the edge of Building 3.

4.10 Noise measurements were undertaken over short periods at each location. Measurements were also undertaken at Location 1 when the Building 3 plant was shut down, in order to correct the noise levels for residual noise. The measured noise levels at Location 1 are presented in Table 1 and the measured noise levels at Location 2 are presented in Table 2.

Description	Sound Pressure Level, dB L_{Aeq}
Building 3 Plant ON	44
Building 3 Plant OFF	40

Table 1: Measured Noise Levels at Location 1 - Heavy Line Operations

Description	Sound Pressure Level (dB) L_{eq} per Octave Band Frequency, Hz								dBA
	63	125	250	500	1k	2k	4k	8k	
Building 3 Plant ON	75	75	75	75	74	74	69	59	79

Table 2: Measured Noise Levels at Location 2 - Heavy Line Operations

5.0 NOISE IMPACT ASSESSMENT

BS 4142 Assessment of Building 3 Site Operations

- 5.1 Based on the measured noise levels during heavy line operations, calculations have been undertaken to determine the noise levels from Building 3 at the nearest residential properties. The calculations have taken into account losses due to distance. For properties on Belbins the calculation has also included acoustic screening from the intervening buildings.
- 5.2 The impact of the operational noise upon the nearest residential properties has been assessed using the rating method of BS 4142 by comparing the predicted noise level from the operations with the typical L_{A90} background noise level. As the noise associated with the operations contains occasional impulsive sounds, a + 5 dB rating correction as defined in BS 4142 has been applied. The assessment at the property to the south-east, off Sandy Lane, is shown below:

Measured Noise Level (Location 1)	$L_{Aeq} = 44$ dB
Residual Noise Level (Location 1)	$L_{Aeq} = 40$ dB
Specific Noise Level (Location 1)	$L_{Aeq, 1 \text{ hour}} = 41$ dB
Specific Noise Level (at property)	$L_{Aeq, 1 \text{ hour}} = 39$ dB
Feature Correction	+ 5 dB
Rating Level (at property)	$L_{Aeq, 1 \text{ hour}} = 44$ dB
Background Level	$L_{A90, 1 \text{ hour}} = 38$ dB
Excess of rating over background level	+ 6 dB
BS 4142 Assessment Semantic	'Marginal Significance'

- 5.3 The BS 4142 assessment at properties to the south-west, on Belbins, is shown below:

Specific Noise Level (by calculation)	$L_{Aeq, 1 \text{ hour}} = 37$ dB
Feature Correction	+ 5 dB
Rating Level	$L_{Aeq, 1 \text{ hour}} = 42$ dB
Background Level	$L_{A90, 1 \text{ hour}} = 45$ dB
Excess of rating over background level	- 3 dB
BS 4142 Assessment Semantic	Lower than 'Marginal Significance'

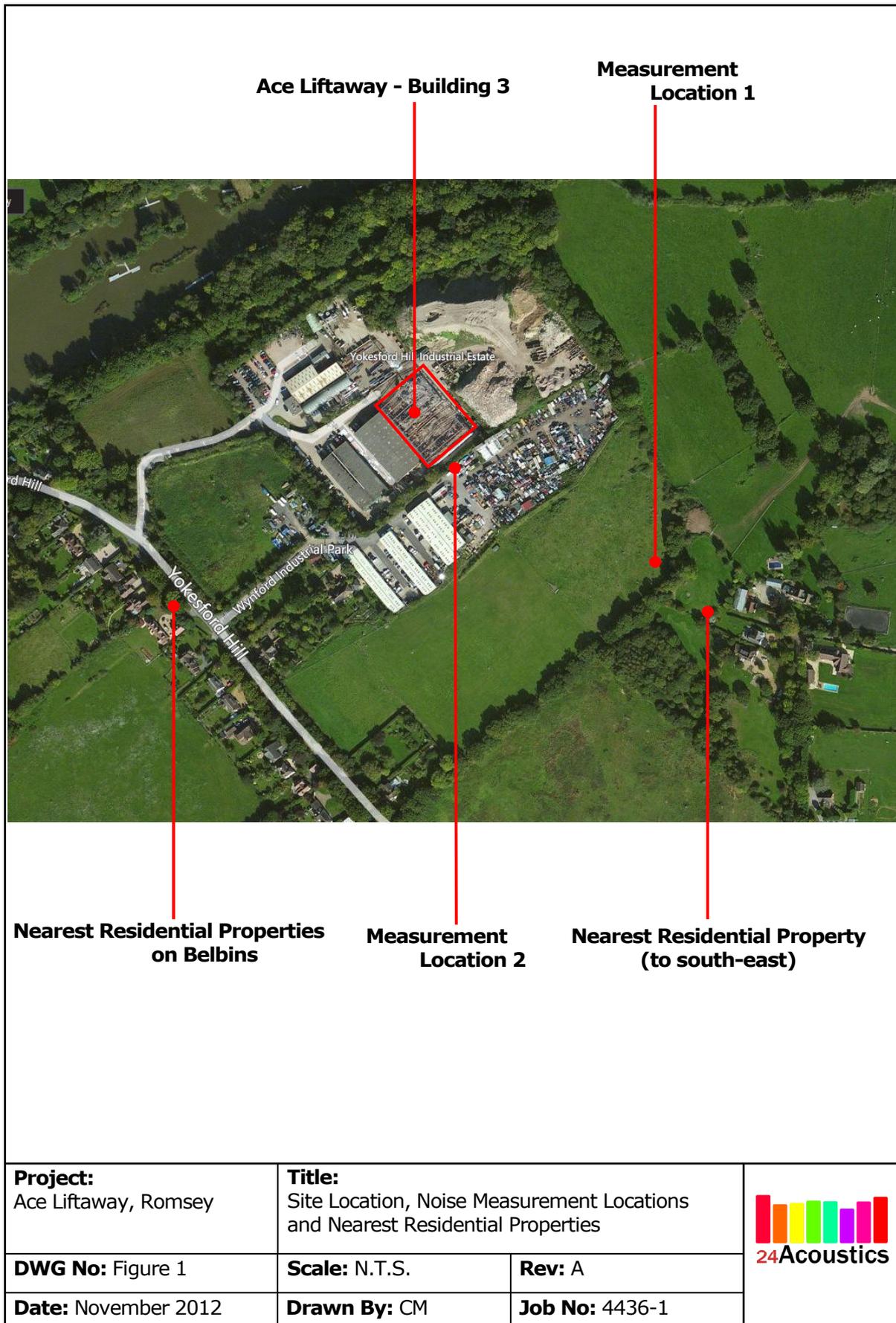
- 5.4 The BS 4142 assessment at receptors to the south-west, on Belbins, indicates that the noise impact is better than 'marginal significance' and achieves the target level of 0 dB relative to the background noise level.
- 5.5 The assessment at the property to the south-east, off Sandy Lane, indicates that the noise impact is of marginal significance and exceeds the target level of 0 dB relative to the background noise level. Noise mitigation measures would therefore be required to achieve the target noise limit at the property to the south-east, off Sandy Lane.
- 5.6 It is recommended that the external fabric (i.e. cladding and roof) of Building 3 should be selected in order to reduce noise breakout, to achieve a noise rating level of no greater than 38 dB $L_{Aeq, 1 \text{ hour}}$ when assessed at the property to the south-east, off Sandy Lane. It is considered that this noise limit is achievable based on the current noise levels and subject to the appropriate design and specification of the outer skin of the building. In outline terms, it is recommended that the outer skin of the building should achieve a minimum sound reduction performance of 40 dB R_w .

6.0 CONCLUSIONS

- 6.1 24 Acoustics Ltd has been instructed by Ace Liftaway Ltd to undertake an assessment of the noise impact from current operations within their Building 3, on nearby residential properties.
- 6.2 A background survey has been carried out to determine prevailing background noise levels at nearby residential properties, in addition to background noise surveys previously undertaken. Noise levels from site operations within Building 3 have been measured for the current scenario with no roof or cladding in place on the building.
- 6.3 This report details the results of the assessment and indicates that current noise from Building 3 operations is better than 'marginal significance' (as defined in BS 4142) at the nearest residential properties on Belbins, and achieves the target noise limit.
- 6.4 The assessment also indicates that current noise from Building 3 operations is of 'marginal significance' (as defined in BS 4142) at the nearest residential property to the south-east, off Sandy Lane, and exceeds the target noise limit. Noise mitigation measures are therefore required to reduce noise levels from Building 3 in order to meet the target noise limit at the property to the south-east, off Sandy Lane. An outline recommendation has been provided, in terms of the minimum sound reduction performance of the outer skin of Building 3.
- 6.5 It is suggested that an enforceable alternative planning condition be introduced along the following lines: 'Noise from Building 3 shall not exceed a rating level of 38 dB $L_{Aeq, 1 \text{ hour}}$ (as defined in BS 4142: 1997) when assessed at 3.5m external to the nearest residential properties to the south-east.'

REFERENCES

1. Department for Communities and Local Government. National Planning Policy Framework, March 2012.
2. Department for the environment, Planning Policy Guidance 24, Planning and Noise, 1994.
3. DEFRA, Noise Policy Statement for England, March 2010.
4. British Standards Institution. British Standard 4142. Method for Rating Industrial noise affecting mixed residential and industrial areas, 1997.
5. British Standards Institution. British Standard 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use'



APPENDIX A: ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dBA corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

- i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

- ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 [1] as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

- iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B: MEASURED NOISE LEVELS - LOCATION 1

Environmental Noise Levels - Wyndford Farm 25th-30th October 2012

(Note clocks went back 1 hour on 28 October 2012 at 02:00, hence presented data after this time is 1 hour ahead of actual time)

