



Noise Assessment

Hand Car Wash & Valeting Service, Cudworth, Barnsley

June 2013

Waterman Energy, Environment & Design Limited

2ND Floor , South Central, 11 Peter Street, Manchester, M2 5QR , United Kingdom
www.watermangroup.com

Noise Assessment

Hand Car Wash & Valeting Service, Cudworth, Barnsley

Client Name: L&C London Limited
Document Reference: EED13552-100-R-1.1.4-IU
Project Number: EED13552

Quality Assurance – Approval Status

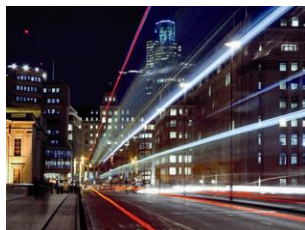
This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2008 and BS EN ISO 14001: 2004)

Issue	Date	Prepared by	Checked by	Approved by
Draft	June 2013	Innes Urbanski Senior Consultant	Laurence Evans Principle Consultant	Mark Maclagan Associate Director

Our Markets



Property & Buildings



Transport & Infrastructure



Energy & Utilities



Environment

Disclaimer

This report has been prepared by Waterman Energy, Environment & Design Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

Content

Executive Summary

1. Introduction.....	1
2. Site Description and Development Proposals.....	2
2.1 Site Description	2
2.2 Development Proposals	2
3. Planning Policy Legislation and Guidance	3
3.1 National Planning Policy Framework (2012).....	3
3.2 BS 4142:1997	3
3.3 Consultation	4
4. Baseline Conditions	5
4.1 Noise Sensitive Receptors	5
4.2 Environmental Noise Survey.....	5
5. Impact Assessment.....	7
5.1 Jet Wash & Vacuum Noise Levels	7
5.2 BS4142 Noise Assessment	7
6. Conclusions	9

Figures

Figure 1: Site Location, Noise Monitoring and NSR Locations	10
Figure 2: Noise Contour Plot (1.5m above ground level).....	11

Tables

Table 1: Likelihood of Complaints (BS4142).....	4
Table 2: Noise Sensitive Receptors	5
Table 3: Noise Monitoring Locations.....	5
Table 4: Noise Monitoring Equipment.....	5
Table 5: Baseline Noise Measurements	6
Table 6: Jet Wash & Vacuum Noise Levels	7
Table 7: BS4142 Assessment.....	8

Appendices

Appendix A Acoustic Terminology

Appendix B Baseline Noise Monitoring Data

EXECUTIVE SUMMARY

L&C London Limited (hereafter 'the Applicant') are seeking planning permission for the operation of a Hand Car Wash and Valeting Service on the site of the former Star Filling Station, Pontefract Road, Cudworth Barnsley, S72 8AY. A previous planning application (Ref. 2011/1553) was refused planning permission on 16 February 2012. One of the grounds for refusal was noise. An appeal was lodged on the 1st March 2012 but was dismissed on 2nd October 2012, with one of the reasons for dismissal that there was no supporting evidence that the proposed development would not cause a noise nuisance.

A noise assessment has been undertaken by Waterman Energy, Environment & Design Ltd (hereafter 'Waterman EED'), to provide evidence that the proposed use, incorporating mitigation measures integral to the design, meets the noise requirements of Barnsley Council.

The mitigation measures integral to the design of the Development include 2m high perspex partitions between and either side of the two jet wash bays, up-grading of the existing site boundary fencing on the northern, eastern and western boundaries to 1.8m high acoustic grade close-board fencing, together with a 1.8m high close-board fence on the Pontefract Road boundary extending between the Site entrance and exit.

As part of this examination the Environmental Health Department of Barnsley Council have been consulted to establish their requirements for the assessment. It has been agreed that assessment should be undertaken in accordance with BS4142:1997¹ 'Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas' to demonstrate that the 'rating' noise level from the operation of significant noise generating plant associated with the proposed Hand Wash and Valeting Service would not exceed the prevailing background noise level by more than 5dB at the nearest NSRs (i.e. $L_{A,T} = \leq +5\text{dB } L_{A90,T}$).

Measured background noise levels representative of nearby noise-sensitive properties along with field measurement data of plant noise emissions were used to assess noise levels at the nearest noise sensitive premises using the acoustic software package CADNA--A, having regard to the noise requirements of Barnsley Council.

Based on assessment results there can be a high level of confidence that the rating noise level from the operation of Hand Car Wash and Valeting Service will be satisfactorily controlled by intrinsic design proposals as to comply with the noise requirements of Barnsley Council during the proposed weekday and weekend hours sought. Indeed, at Garden Cottages, the nearest receptor to the Site, the rating noise level is predicted to be more than 5dB below the prevailing background noise level, except during the quiescent early morning (0700-0800 hour) period.

¹ British Standards Institution. (1997) British Standard 4142: Method for Rating industrial noise affecting mixed residential and industrial areas.BSI.

1. Introduction

L&C London Limited (hereafter 'the Applicant') is seeking planning permission for the operation of a Hand Wash and Valeting Service on the site of the former Star Filling Station, Pontefract Road, Cudworth Barnsley, S72 8AY. A previous planning application (Ref. 2011/1553) was refused planning permission on 16th February 2012. One of the grounds for refusal was noise. An appeal was lodged on the 1st March 2012 but was dismissed on 2nd October 2012, with one of the reasons for dismissal that there was no supporting evidence that the proposed development would not cause a noise nuisance.

In view of this Waterman Energy, Environment & Design Ltd (hereafter 'Waterman') has been appointed to undertake a noise assessment to provide evidence that the proposed use, with appropriate controls if required, will not cause nuisance to noise sensitive receptors (NSRs) within the vicinity of the site.

The noise assessment has been conducted in consultation with the Environmental Health Department of Barnsley Council to establish their requirements for the assessment. It has been agreed that assessment should be undertaken in accordance with BS4142:1997 to demonstrate that the 'rating' noise level from the operation of significant noise generating plant associated with the proposed Hand Wash and Valeting Service should not exceed the prevailing background noise level by more than 5dB at the nearest NSRs (i.e. $L_{A,r,T} = \leq +5\text{dB } L_{A90,T}$). Accordingly, this report presents the results of the baseline noise survey and source noise data used to inform the assessment (Section 4) whilst assessment of noise impacts associated with development proposals are presented in Section 5. Preceding this is a description of the site location and development proposals in Section 2 and details of the agreed assessment methodology and noise standard to be met in Section 3 against which the assessment is based. A summary conclusion of the assessment findings is provided in Section 6.

A glossary of acoustic terms is contained within Appendix A.

2. Site Description and Development Proposals

2.1 Site Description

The proposed development Site was previously a Fuel Filling Station called Star Garage, which in addition to the provision of fuel had a car jet wash facility within the north-east area of the site and vacuum and air facility adjacent to the kiosk building. Following its closure in 2004 all that now remains are the hard-standing forecourt area and canopy together with a brick building with flat roof which is the former kiosk.

The site is bound by Pontefract Road to the west with residential terraced housing beyond at approximately 15 metres from the Site boundary. To the north are the gardens of the dwelling houses on Intake Lane which themselves are located to the east of the Site at approximately 10 metres from the Site boundary. To the south is Intake Lane beyond which is land which is being redeveloped for residential use with residential housing and gardens beyond. The residential area of Thruxton Close is located approximately 30 metres southeast of the Site boundary.

2.2 Development Proposals

It is proposed that the vacant site be used for a Hand Car Wash and Valeting Service. In this respect the design provision is for two service bays each with a jet wash facility under the existing canopy with vacuum service adjacent to the existing Kiosk. The Kiosk would, in part, be used by clients waiting for their car to be washed and/or valeted as well as general office space. Parking provision along the northern boundary fence also forms part of the proposal for both staff and clients waiting for their cars to be cleaned.

Intrinsic to the design are 2m high perspex partitions between and either side of the jet wash bays, together with an acoustic grade close-board fence 1.8m in height on the Pontefract Road boundary extending between the Site entrance and exit. The existing site boundary fence on the northern, eastern and western boundary will be upgraded to an acoustic grade close-boarded fence up to 1.8m in height.

A hand car wash and valeting service is proposed between 07:00 to 18:00 hours Monday to Friday, 08:00 to 18:00 hours on Saturdays and 09:00 to 16:00 hours on Sundays. No service is proposed on Bank Holidays.

During peak hours, 12 cars per hour are forecast, taking five minutes for jet-washing and five minutes for vacuuming as part of the valeting service, should this service be chosen.

3. Planning Policy Legislation and Guidance

3.1 National Planning Policy Framework (2012)

The National Planning Policy Framework (NPPF)² sets out the Government's planning policies for England and how these are expected to be applied. The NPPF is a material consideration in planning decisions.

With regard to noise the NPPF states that:

"The planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of noise pollution."

In support of this, paragraph 123 states that planning decisions should aim to:

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

Pollution, including noise, is defined as anything that might lead to an adverse impact on human health, the natural environment or general amenity.

Annex 3, states that the NPPF replaces Planning Policy Guidance 24 'Planning and Noise'³ (PPG24). There are currently no technical advice notes however supporting the NPPF in relation to the assessment of the suitability of land for residential development or with regard to the assessment of industrial noise. PPG24 referred to British Standard (BS) 4142 'Method for Rating industrial noise affecting mixed residential and industrial areas'⁴, with BS 4142 still considered relevant and appropriate to this assessment.

3.2 BS 4142:1997

BS 4142:1997⁵ 'Method for Rating industrial noise affecting mixed residential and industrial areas' provides an objective method for rating the likelihood of complaint from industrial and commercial operations. It also provides a means of determining noise levels from fixed plant installations and background noise levels that prevail on and around the proposed developments.

The likelihood of noise provoking complaints is assessed by subtracting the background noise level from the rating noise level, which is the specific noise level increased by +5dB if it has a distinguishable acoustic character (e.g.. tonal, impulsive, irregular feature) that would attract attention. The likelihood of complaints is then assessed against the criteria provided in Table 1.

² Communities and Local Government. (2012) 'The National Planning Policy Framework'. HMSO.

³ DoE (1994). Planning Policy Guidance 'Planning and Noise'. HMSO.

⁴ British Standards Institute. (1997). Method for Rating industrial noise affecting mixed residential and industrial areas. BSI.

⁵ British Standards Institution. British Standard 4142: Method for Rating industrial noise affecting mixed residential and industrial areas. 1997.

Table 1: Likelihood of Complaints (BS4142)

Noise Level Difference dB(A)	Likelihood of complaints
-10	Complaints unlikely
+5	Results are of marginal significance
+10	Positive indication that complaints are likely

3.3 Consultation

The Environmental Health Department of Barnsley Council were consulted over the scope of the baseline environmental noise survey, the assessment methodology and noise standard to be met. Barnsley Council have advised that they require a BS4142:1997 assessment demonstrating that the rating noise level from the jet wash and vacuum facilities is no greater than 5dB above the prevailing background ($L_{A90,T}$) noise level:

- Rating Noise Level ($L_{A,T,r}$) = $\leq +5\text{dB } L_{A90,T}$.

4. Baseline Conditions

4.1 Noise Sensitive Receptors

The closest residential noise sensitive receptors to the Site were identified from inspection of aerial imagery and during two site visits. The identified noise sensitive receptors are summarised in Table 3.

Table 2: Noise Sensitive Receptors

NSR	Description	Distance from Site Boundary
A	Semi-detached residential dwellings, Intake Lane	10m (east)
B	Terrace residential dwellings, Pontefract Road	15m (west)
C	Proposed new residential dwellings, Intake Lane	10m (south)

4.2 Environmental Noise Survey

A noise survey was undertaken between Thursday 9th May and Tuesday 14th May 2013. The noise monitoring strategy and assessment methodology was agreed in advance with Environmental Health of Barnsley Council. Long-term unattended noise measurements were conducted within the garden of Garden Cottages, Intake Lane. A mobile weather station was also installed at this location for the duration of the monitoring period. Additional attended noise measurements were conducted on Tuesday 14th May 2013 at 4 metres from Pontefract Road on the development site. This short-term location was considered to be representative of the noise climate at the closest residential properties to the site on Pontefract Road. The monitoring locations are described in Table 3 and illustrated on Figure 1.

Table 3: Noise Monitoring Locations

Monitoring Location (Figure 1)	Description
LT1	A continuous 120 hour unattended free-field survey at rear of Garden Cottages, Intake Lane.
ST1	Attended 1 hour free-field survey 4 metres from the kerbside of Pontefract Road.

Monitored noise levels were recorded at five minute intervals throughout each survey period. The parameters logged were the L_{Aeq} , L_{A90} , L_{AFmax} and L_{A10} noise indices. The indices are described in Appendix A of this report, but roughly translated they describe in turn the average, background, road traffic and maximum noise level. The noise monitoring equipment used during the surveys is described in Table 4.

Table 4: Noise Monitoring Equipment

Item	Garden Cottages, Intake Lane	Pontefract Road
Meter Model	Rion NA-28	Rion NL-32
Serial Number	570397	613614
Calibrator Model	NC-74	
Serial Number	34262040	

The sound level meter was field calibrated before and on completion of the noise survey with no significant drift (± 0.2 dB) detected in the calibration level.

A summary of the noise survey results is presented as Table 5 with full details presented within Appendix B. It should be noted that where the wind speed was above 5 m/s and/or rain was present, the data sets were not included in the data analysis.

Table 5: Baseline Noise Measurements

Monitoring Location (Figure 1)	Monitoring Period	Average Noise Level dB ^[1]			
		L _{Aeq,T}	L _{AFMAX,T} ^[2]	L _{A10,T}	L _{A90,T}
	Weekday				
LT1	Early Morning (0700-0800)	57	72	60	49
	Early Morning (0800-0900)	58	71	60	52
	Morning (0900-1000)	58	76	59	49
	Quiet Day (1000-1500)	58	74	60	51
	Afternoon (1500-1800)	58	74	61	52
Saturday					
LT1	Early Morning (0700-0800)	53	64	57	41
	Early Morning (0800-0900)	55	69	58	45
	Morning (0900-1000)	55	70	58	46
	Quiet Day (1000-1500)	57	71	59	50
	Afternoon (1500-1800)	57	72	59	51
Sunday					
LT1	Early Morning (0700-0800)	51	66	55	39
	Early Morning (0800-0900)	53	71	56	39
	Morning (0900-1000)	54	71	57	42
	Quiet Day (1000-1500)	58	81	60	48
	Afternoon (1500-1800)	58	77	61	47
Weekday					
ST1	Morning (1040-1140)	70	83	74	55

Notes: Note 1: All figures rounded to the nearest whole decibel.
Note 2: 90th percentile reported.

The dominant noise source at both survey positions (LT1 and ST1) was road traffic noise from Pontefract Road.

5. Impact Assessment

5.1 Jet Wash & Vacuum Noise Levels

Table 6 presents source noise levels for Jet Wash and Vacuum activities at a reference distance of 1m. The noise levels are based on historic survey data acquired at a comparable site and are representative of plant noise levels of other reported third party Hand Car Wash and Valeting facilities.

Table 6: Jet Wash & Vacuum Noise Levels

Item	Sound Pressure Level – dB $L_{Aeq,T}$								dB $L_{Aeq,T}$
	Octave Band Centre Frequency (Hz)								
	63	125	250	500	1000	2000	4000	8000	
Jet Wash at 1 metre	40	51	64	69	71	75	76	74	81
Vacuum at 1 metre	74	72	67	67	64	62	59	55	78

5.2 BS4142 Noise Assessment

Noise levels from the operation of two jet washes and one vacuum have been calculated utilising CADNA/A noise modeling software. The noise model is 3-dimensional taking account of the intervening topography between the various noise sources and the closest receptors. Mitigation, inherent to the design of the facility, namely, perspex partitions between and either side of the jet wash bays, together with acoustic grade 1.8m high close-board boundary fencing have been included in the model.

To identify the “greatest” environmental impact that might reasonably be expected assessment has been based on a simple (and worst case) scenario in that it has been assumed that all plant would be operating simultaneously and continuously for 100% of the assessment period. However, in reality this is considered unlikely. Additionally, as a matter of precaution, to account for any potential acoustic features associated with proposed jet wash and valeting activities, a 5dB acoustic penalty has been applied to obtain a ‘rating’ noise level.

The BS4142 assessment results are presented as Table 7, comparing the rating noise level and the prevailing background noise level for the relevant time period. A noise contour plot showing the dispersion of noise across the site at 1.5m above ground level is presented as Figure 2.

Table 7: BS4142 Assessment

NSR	Monitoring Period	Average Noise Level dB (rounded to nearest whole dB)		
		Rating Noise Level dB $L_{Aeq,Tr}$	$L_{A90,T}$	Noise Level Difference
		Weekday		
Garden Cottages, Intake Lane	Early Morning (0700-0800)	41	49	-8
	Early Morning (0800-0900)	41	52	-10
	Morning (0900-1000)	41	49	-8
	Quiet Day (1000-1500)	41	51	-9
	Afternoon (1500-1800)	41	52	-11
Saturday				
Garden Cottages, Intake Lane	Early Morning (0700-0800)	41	41	0
	Early Morning (0800-0900)	41	45	-4
	Morning (0900-1000)	41	46	-5
	Quiet Day (1000-1500)	41	50	-9
	Afternoon (1500-1800)	41	52	-10
Sunday				
Garden Cottages, Intake Lane	Early Morning (0700-0800)	41	39	2
	Early Morning (0800-0900)	41	39	2
	Morning (0900-1000)	41	43	-1
	Quiet Day (1000-1500)	41	48	-7
	Afternoon (1500-1800)	41	47	-5
Weekday				
Pontefract Road	Morning (1040-1140)	51	55	-4

Note: ^[1] 90th Percentile reported.

Based on assessment results there can be a high level of confidence that the rating noise level from plant associated with the proposed Hand Wash and Valeting Service will be satisfactorily controlled by design proposals as to comply with the noise requirements of Barnsley Council during the proposed weekday and weekend hours sought. Indeed, at Garden Cottages, the nearest receptor to the Site, the rating noise level is predicted to be more than 5dB below the prevailing background noise level, except during the quietest early weekend morning period.

It should also be noted that prevailing ambient (L_{eq}) levels are typical 6-10dB higher than prevailing background (L_{90}) levels and can be expected to afford worthwhile masking of residual activity noise at the closest receptors.

6. Conclusions

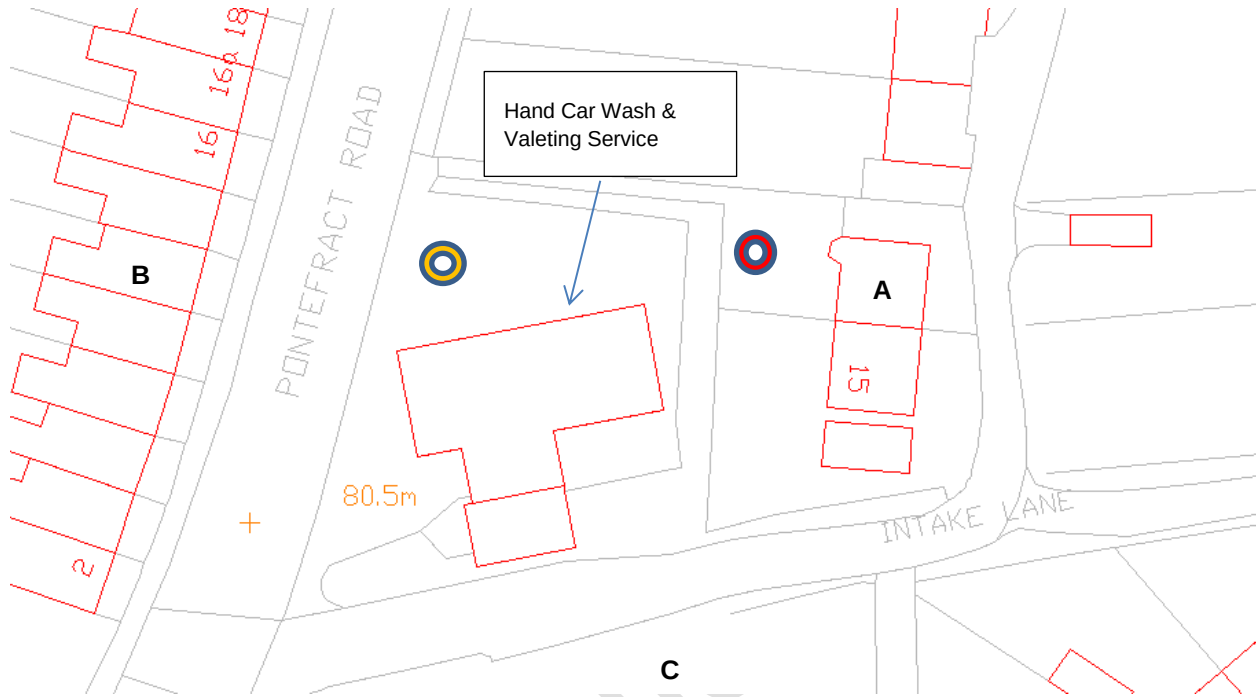
Waterman Energy, Environment & Design Ltd has been appointed by L&C London Ltd to undertake a noise impact assessment for the proposed operation of a Hand Wash and Valeting Service on the site of the former Star Filling Station, Pontefract Road, Cudworth Barnsley, S72 8AY.

Measured background noise levels representative of nearby noise-sensitive properties along with field measurement data of plant noise emissions were used to assess noise levels at the nearest noise sensitive premises using the acoustic software package CADNA-A, having regard to the noise requirements of Barnsley Council.

Based on assessment results there can be a high level of confidence that the rating noise level from plant associated with the Hand Wash and Valeting Service will be satisfactorily controlled by design proposals as to comply with the noise requirements of Barnsley Council ($L_{A,r,Tr} = \leq +5\text{dB } L_{A90,T}$) during the proposed weekday and weekend hours sought. Indeed, at Garden Cottages, the nearest receptor to the Site, the rating noise level is predicted to be more than 5dB below the prevailing background noise level, except during the quiescent early weekend morning period.

FIGURES

Figure 1: Site Location, Noise Monitoring and NSR Locations

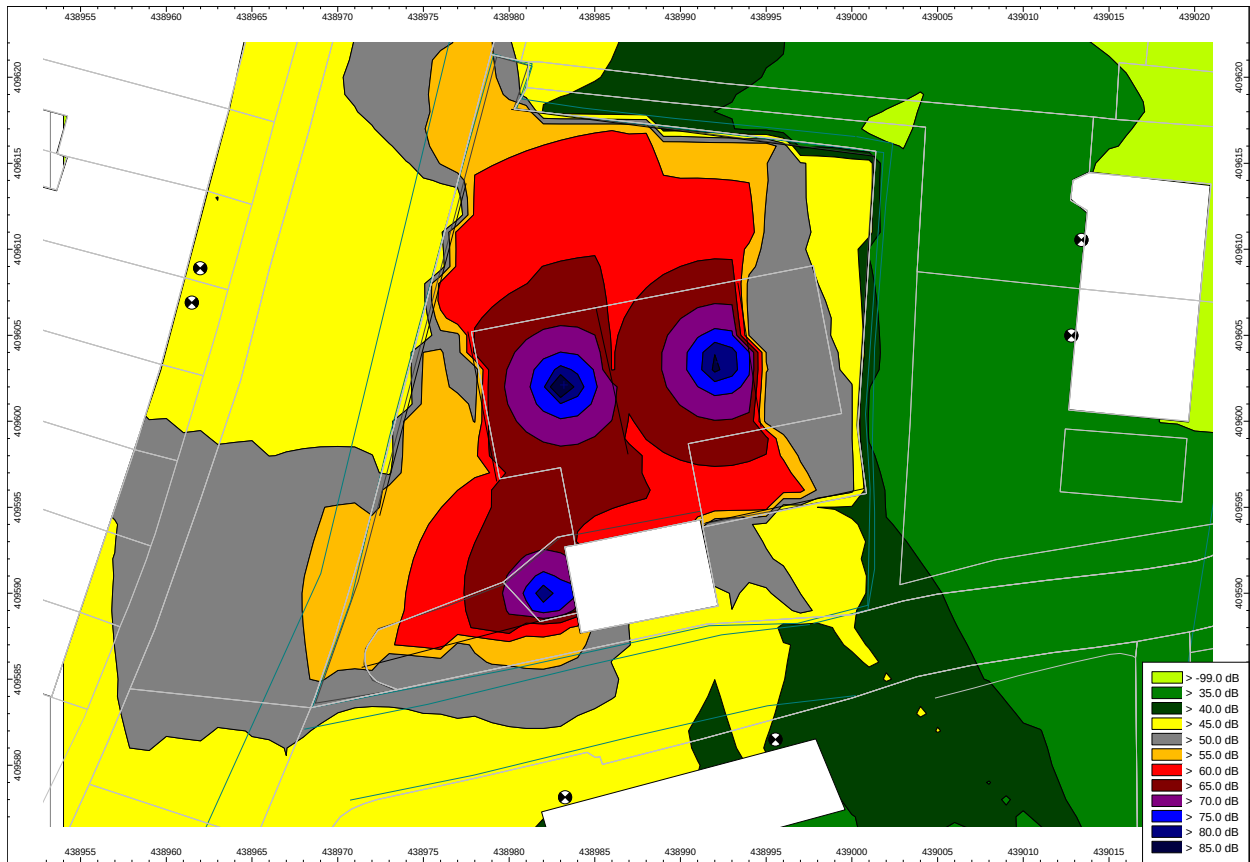


Source: emapsite

Key:

-  Long Term Noise Monitoring Location
-  Short Term Noise Monitoring Location

Figure 2: Noise Contour Plot (1.5m above ground level)



Source: CADNA/A

APPENDICES

Draft for discussion

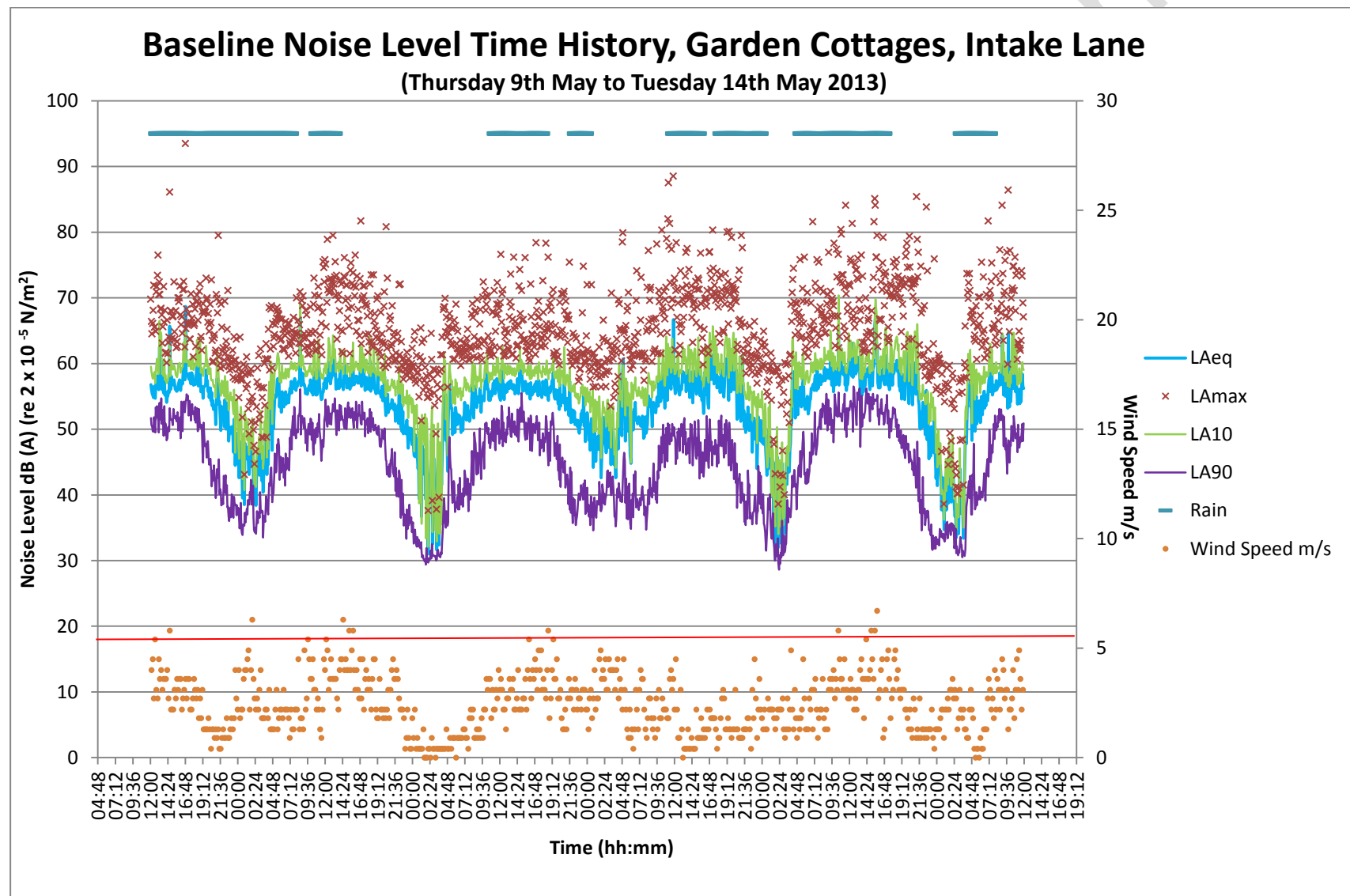
Acoustic Terminology

Noise Assessment Appendices

L₁	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L₁₀	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L_{10,1-hour}	The L ₁₀ level measured over a 1 hour period.
L_{A10,18-hour}	The arithmetic average of the A-weighted L _{10,1-hour} levels for the 18 hour period between 6am and 12 midnight on a normal working day. It is a common traffic noise descriptor.
L₉₀	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L ₉₀ noise level. The A-weighted L ₉₀ is expressed as the L _{A90} .
L_{eq}	Equivalent sound pressure level - the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
L_{Aeq,1-hour}	The A-weighted L _{eq} noise level for a specific one-hour period.
L_{Amax}	The maximum RMS A-weighted sound pressure level occurring within a specified time period.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on. That is, the sound of 85 dB is 400% times the loudness of a sound of 65 dB.
Microphone	An electro acoustic transducer which receives an acoustic signal and delivers a corresponding electric signal.
Noise	Sound which a listener does not wish to hear.
Sound exposure level (L_{AE})	A measure of A-weighted sound energy used to describe noise events such as the passing of train or aircraft; it is the A-weighted sound pressure level which, if occurring over a period of 1 second, would contain the same amount of A-weighted sound energy as the event.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.

Appendix B

Baseline Noise Monitoring Data



Location ST1: Pontefract Road

NIGHT	Measured Noise Level dB			
Date / Start Time	L _{Aeq}	L _{AFmax}	L _{A10}	L _{A90}
14/05/2013 10:40	69.8	79.4	74.1	57.4
14/05/2013 10:45	70.2	83.1	74.3	57.2
14/05/2013 10:50	70.5	86.4	74.5	54.7
14/05/2013 10:55	69.7	81.8	74.4	51.4
14/05/2013 11:00	69.0	80.4	73.4	53.3
14/05/2013 11:05	71.1	82.5	75.2	59.3
14/05/2013 11:10	69.3	79.9	74.0	53.6
14/05/2013 11:15	70.4	81.3	75.2	52.9
14/05/2013 11:20	69.7	81.4	74.5	51.6
14/05/2013 11:25	69.0	81.9	72.9	55.3
14/05/2013 11:30	69.8	80.2	74.8	53.9
14/05/2013 11:35	70.1	81.8	74.3	55.7
AVERAGE ^[1]	70	83	74	55

Note: ^[1] L_{AFmax} 90th Percentile

