



Report No. DLW/6919

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for
Wycombe District Council
Queen Victoria Street
High Wycombe
Buckinghamshire
HP11 1BB

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ENVIRONMENTAL NOISE SURVEY
LAND TO REAR OF CENTENARY COTTAGES
LONGWICK

Report Author: Eur Ing D L Watts BEng CEng FIOA

ACOUSTICAL INVESTIGATION & RESEARCH ORGANISATION LTD

Duxons Turn
Maylands Avenue
Hemel Hempstead
Hertfordshire
HP2 4SB

Telephone: 01442 247146
Facsimile: 01442 256749
E-mail: AIRO@bcs.org.uk
URL: <http://www.airo.co.uk/>

ENVIRONMENTAL NOISE SURVEY**LAND TO REAR OF CENTENARY COTTAGES****LONGWICK****1. INTRODUCTION**

This report presents the results of an environmental noise survey in respect of the land to the rear of Centenary Cottages, Longwick.

The measurements made were made at the site over the period 7 to 21 August 2015.

Reference is made to national planning policy guidance set out in the National Planning Policy Framework (NPPF) (ref 1).

2. DESCRIPTION OF THE AREA

A plan of the area is shown on Data Sheet G/6919/1 on which the proposed housing site is marked, together with the measurement positions.

The proposed housing land lies behind existing ribbon development along the A4129 with Maccabee's Boarding Kennels to the north east, approximately 100 metres from the closest housing land boundary.

3. MEASUREMENT UNITS**3.1 A-Weighted Equivalent Continuous Sound Level - $L_{Aeq,T}$**

Noise levels quoted in this report are, in the main, A-weighted Equivalent Continuous Sound Levels or $L_{Aeq,T}$ in dB. As its name suggests, the $L_{Aeq,T}$ is a measure of the acoustic energy of a fluctuating noise climate over a given period, T , expressed as the single continuous noise level having the same energy as the time varying signal.

The 'A' within the descriptor means A-weighted, an internationally agreed frequency response generally similar to that of the human ear so that A-weighted sound levels in dB correspond reasonably well with what is heard.

For assessment purposes, the day is typically divided into a 16-hour daytime period (07:00 to 23:00) and an 8-hour night-time period (23:00 to 07:00). The period values may be derived from the logarithmic average of the relevant hourly values.

3.2 Maximum Noise Level - L_{AFmax} , L_{ASmax}

In some circumstances it is useful to quantify the maximum level of fluctuating noise and a commonly used descriptor is L_{Amax} . The L_{Amax} represents the maximum reading given by a sound level meter for a given event or period of time and is usually qualified by F for 'Fast' or S for 'Slow' according to the response time setting of the meter.

3.3 A-Weighted Percentile Noise Levels - L_{An}

Percentile noise levels are a statistical representation of the time varying level. The value is the noise level L exceeded for $n\%$ of the period T . To measure background environmental noise levels the statistical index L_{A90} is commonly preferred. The L_{A90} is the Sound Pressure Level that is exceeded for 90% of the measurement period. The L_{A90} therefore discriminates against short duration peaks of noise and is consequently considered to provide a better representation of typical minimum noise levels compared with, for example, the L_{Aeq} .

4. PLANNING REQUIREMENTS FOR NOISE

Since its publication on 27 March 2012 the National Planning Policy Framework (NPPF) (ref 1) provides the current national planning policies for England, including those related to noise.

With particular reference to noise, the NPPF refers to the Noise Policy Statement for England (NPSE) (ref 2), published in March 2010. The NPSE provides the long-term vision of Government noise policy:

"Noise Policy 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 NPSE says that the long-term vision is supported by the following aims:

"Noise Policy Aims

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impact on health and quality of life;*
- *mitigate and minimise adverse impact on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life."*

The Explanatory Note to the NPSE discusses the terms "*Significant adverse*" and "*adverse*" linking concepts from toxicology that are being applied to noise impacts (for example, by the World Health Organization). The concepts are "NOEL" and "LOAEL" which are the "No Observed Effect Level" and "Lowest Observed Adverse Effect Level" respectively. The Note extends these concepts to introduce a "SOAEL" (Significant Observed Adverse Effect Level) but recognises that objective noise measures or limits are not developed for SOAEL.

It is important to note that the NPSE says it makes a "*distinction between 'quality of life' which is a subjective measure that refers to people's emotional, social and physical well-being and 'health' which refers to physical and mental well-being*". The Noise Policy Aims include reference to both of these aspects.

5. MEASUREMENT SURVEY

Measurements of environmental noise levels were made at the site during the period commencing at 12:00 on Friday 7 August 2015 and ending at 09:00 on Friday 21 August 2015.

Noise levels were measured throughout the period using data logging sound level meters which stored the noise level every 10 seconds together with hourly values across a range of indices.

Measurements were made at the two positions indicated on Data Sheet G/6919/1.

At both locations the microphone was mounted on a tripod and positioned at a height of 1.2 to 1.5 metres above local ground level. The positions were well away

from significant structures so as to be in free-field conditions. Position 1 at Maccabee's Kennels was on the roof of a single storey temporary building centrally positioned within the site and with a good view of the dog exercising areas and kennels.

Appendix A presents tabulations of the hourly data measured at both positions.

Details of the measurement equipment used and of the weather conditions are given in Appendix B and C respectively. Summaries of the measured daytime and night-time noise levels are set out in Tables 1 and 2 below.

Table 1 – Daytime and Night-time L_{Aeq} Noise Levels – 7 to 21 August 2015				
Date	Period Noise Level (L_{Aeq} in dB)			
	Daytime		Night-time	
	Position 1 (Maccabees)	Position 2 (Centenary Cottages)	Position 1 (Maccabees)	Position 2 (Centenary Cottages)
Friday 7 August	65	48	59	44
Saturday 8 August	67	47	55	40
Sunday 9 August	67	47	57	40
Monday 10 August	69	47	60	43
Tuesday 11 August	70	47	54	43
Wednesday 12 August	69	50	54	44
Thursday 13 August	70	49	51	45
Friday 14 August	69	50	55	43
Saturday 15 August	70	46	58	42
Sunday 16 August	69	46	61	42
Monday 17 August	69	47	53	41
Tuesday 18 August	70	53	55	39
Wednesday 19 August	69	54	58	42
Thursday 20 August	71	48	56	46
Mean	69	49	56	42

Table 2 – Daytime and Night-time L_{A90} Noise Levels – 7 to 21 August 2015				
Date	Noise Level Range (L_{A90} in dB)			
	Daytime		Night-time	
	Position 1 (Maccabees)	Position 2 (Centenary Cottages)	Position 1 (Maccabees)	Position 2 (Centenary Cottages)
Friday 7 August	34-42	31-36	25-48	26-35
Saturday 8 August	31-59	30-40	26-46	25-30
Sunday 9 August	31-60	30-38	26-41	25-34
Monday 10 August	30-57	27-42	25-51	25-38
Tuesday 11 August	33-57	30-39	25-36	26-37
Wednesday 12 August	31-57	30-43	26-42	26-39
Thursday 13 August	28-57	34-46	25-34	26-34
Friday 14 August	28-57	28-45	25-43	25-33
Saturday 15 August	31-61	29-41	25-40	25-33
Sunday 16 August	27-59	26-37	25-41	25-38
Monday 17 August	34-61	31-41	25-38	25-36
Tuesday 18 August	33-56	29-40	25-41	25-34
Wednesday 19 August	39-55	35-42	25-43	25-36
Thursday 20 August	33-59	33-42	27-45	28-36

6. DISCUSSION

The environmental noise effects of development proposals are generally assessed by considering the expected noise levels with and without development and any change in noise level.

Consideration is given where relevant to the effects of introducing new noise producing development on noise sensitive receptors and of the effects of existing environmental noise on noise sensitive development.

Residential development is generally regarded as noise sensitive and not noise producing.

Accordingly, in this case the main consideration is the effect of existing environmental noise on the proposed residential development.

Since residential development is not considered to be noise producing, there should be no significant change in the noise environment.

The measured environmental noise level at Centenary Cottages may be considered to be indicative of the noise levels that would affect the development site. The measured levels are relatively low and are below guideline limits such as those provided by the World Health Organization (WHO) (ref 3) that are generally regarded as stringent.

WHO says: ***“To protect the majority of people from being moderately annoyed during the daytime the outdoor sound pressure level should not exceed 50 dB L_{Aeq} ”.***

It may be seen that the mean daytime noise level at Centenary Cottages was 49 dB L_{Aeq} .

Similarly, the mean night-time period noise level of 42 dB L_{Aeq} is below the level of 45 dB L_{Aeq} which WHO says should enable people to sleep with bedroom windows open.

The proposed development would bring noise sensitive receptors closer to Maccabee’s Kennels. Dog barking was heard whilst at the measurement position at Centenary Cottages.

Such noise can be a source of complaint and such complaints made to a local authority would be investigated under the provisions of the Environmental Protection Act 1990. Complaints found to amount to a statutory nuisance could lead to a noise abatement notice being served on the person responsible for the noise and require the noise to be abated.

The provisions of the Environmental Protection Act 1990 do not require a judgement about noise nuisance to be based on any specific test using noise level measurements and do not require any account to be taken as to whether the business or the complainant was established first in the area.

In any case, there is no established objective noise measurement method specifically related to assessing the potential for complaint or other effects from barking dogs, as far as AIRO is aware.

A comparison of the measured levels at Centenary Cottages with those at Maccabee's Kennels indicates that there is no obvious correlation that could be linked to noise from dogs barking.

For example, the highest daytime period noise level of 71 dB L_{Aeq} at Maccabee's Kennels corresponded with a level of 48 dB L_{Aeq} at Centenary Cottages, a value 1 dB below the mean at Position 2. There is no systematic difference between the measured levels at the two positions that could indicate kennel noise was the main contributor to measured noise levels at Centenary Cottages.

Based on the comparison of the relative distance to the closest housing land boundary to Maccabee's Kennels, compared with the Centenary Cottages measurement position, kennel noise only could be estimated to be approximately 2 to 4 dB higher at the closest development boundary than at Centenary Cottages.

7. CONCLUSIONS

This report has presented the results of environmental noise measurements in the vicinity of land at the rear of Centenary Cottages, Longwick.

The data have been discussed by reference to relevant planning guidance in respect of the proposed housing development at the site.

Report Approved by:

Report Author:

A J Jones

D L Watts

A J Jones BSc PhD CPhys MInstP HonFIOA
Managing Director

Eur Ing D L Watts BEng CEng FIOA
Principal Consultant

REFERENCES

1. National Planning Policy Framework
Department for Communities and Local Government
March 2012

2. Noise Policy Statement for England
Department for Environment, Food and Rural Affairs
2010

3. Guidelines for Community Noise
World Health Organization, 1999

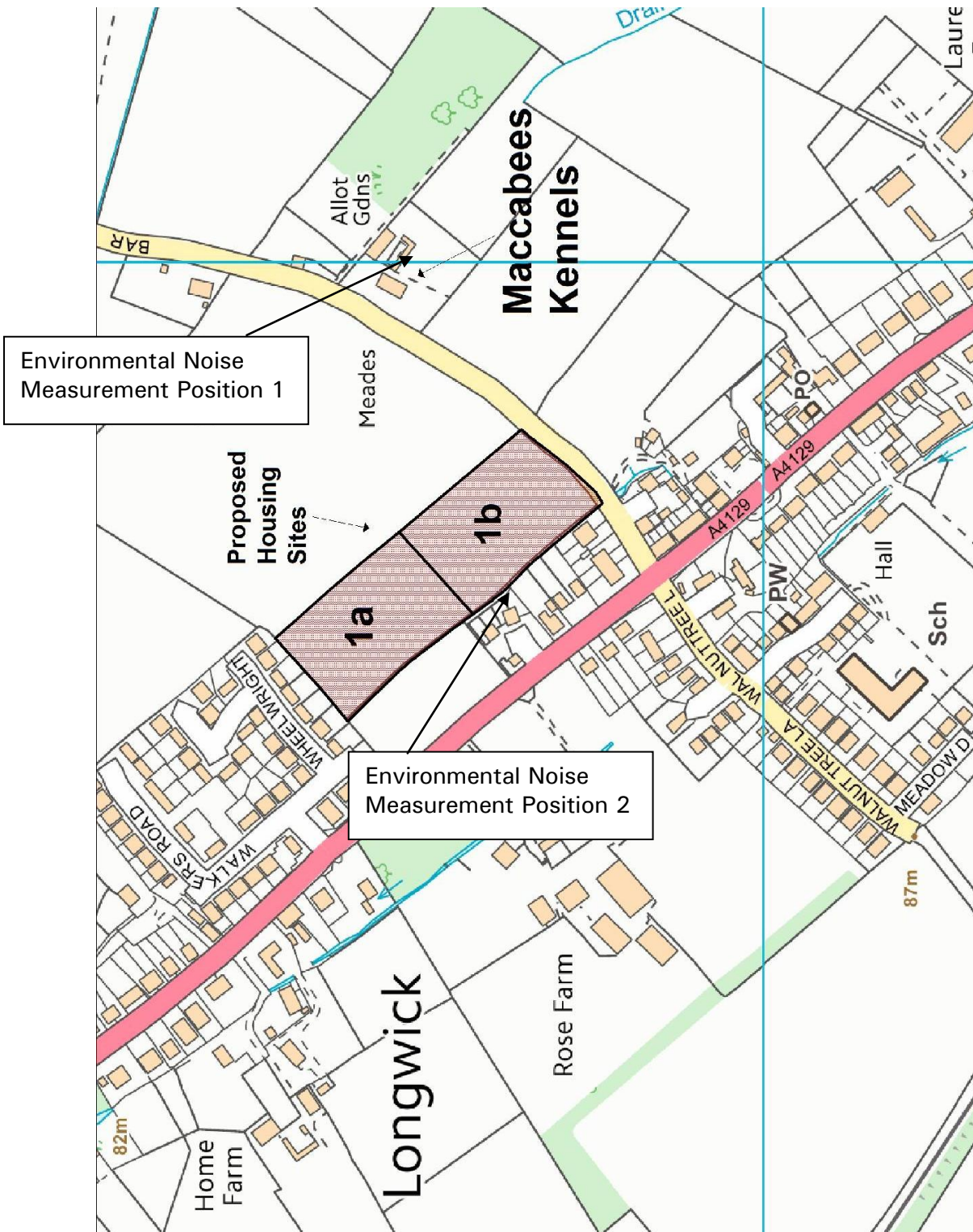
Date AUGUST 2015

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Client Wycombe District Council and Longwick Parish Council

Land at Rear of Centenary Cottages

Extract drawing indicating environmental noise measurement positions



APPENDIX A

Hourly Measurement Data

Date	Start	Noise Level, Hour by Hour in dB					
		Maccabees Kennels			Centenary Cottages		
		L_{AFmax}	L_{Aeq}	L_{A90}	L_{AFmax}	L_{Aeq}	L_{A90}
Friday 7 August 2015	12:00	87.5	67.9	42.2	73.0	50.2	36.2
	13:00	85.9	63.2	38.9	75.1	49.1	35.1
	14:00	92.3	61.1	38.8	66.8	47.1	35.0
	15:00	91.2	68.1	41.2	66.5	46.0	36.9
	16:00	87.8	67.6	48.4	67.8	49.1	37.6
	17:00	84.7	66.2	46.8	74.5	47.6	37.8
	18:00	81.3	64.3	40.4	87.7	55.6	35.6
	19:00	79.7	64.0	41.7	87.4	52.6	34.8
	20:00	76.4	60.6	37.4	74.6	46.8	33.6
	21:00	74.7	55.9	32.8	59.9	40.9	31.0
	22:00	74.2	58.7	34.3	67.9	40.8	31.3
	23:00	70.9	52.1	29.8	65.5	37.3	30.3
Saturday 8 August 2015	00:00	72.6	52.4	29.1	65.9	38.9	26.6
	01:00	66.5	44.6	25.7	53.7	32.5	25.7
	02:00	67.1	40.4	25.3	71.2	32.9	25.5
	03:00	52.8	31.8	25.5	59.4	33.0	25.8
	04:00	75.9	60.8	27.0	59.2	35.8	25.8
	05:00	79.3	63.9	48.3	71.2	48.5	31.0
	06:00	80.4	64.4	47.0	72.0	49.5	35.4
	07:00	78.5	64.5	47.3	76.3	48.5	34.2
	08:00	83.6	70.8	58.7	69.0	45.6	34.8
	09:00	86.4	71.0	48.6	71.8	46.2	37.2
	10:00	89.2	70.9	51.8	72.2	52.2	39.8
	11:00	88.5	70.6	50.2	72.2	49.7	39.6
	12:00	86.8	68.6	43.2	77.0	49.8	38.0
	13:00	90.8	67.7	38.9	77.9	50.1	35.9
	14:00	88.6	68.7	45.1	67.1	46.2	35.0
	15:00	89.1	66.2	43.0	62.5	44.1	36.0
	16:00	81.4	65.5	49.4	68.7	48.1	37.2
	17:00	78.2	61.5	42.6	61.2	43.8	36.9
	18:00	87.0	66.7	46.9	67.1	44.9	36.3
	19:00	75.9	61.7	39.5	69.4	44.7	33.9
	20:00	74.6	50.2	35.4	63.4	42.3	32.1
	21:00	73.8	45.7	31.5	61.1	38.9	30.3
	22:00	67.9	40.8	30.9	61.4	38.6	29.5
23:00	72.4	50.9	30.9	58.9	36.5	28.3	

Date	Start	Maccabees Kennels			Centenary Cottages		
		L_{AFmax}	L_{Aeq}	L_{A90}	L_{AFmax}	L_{Aeq}	L_{A90}
Sunday 9 August 2015	00:00	65.6	43.7	28.1	60.7	37.4	26.5
	01:00	73.1	51.4	25.9	50.3	29.8	25.4
	02:00	80.0	54.1	25.8	61.7	29.4	25.4
	03:00	72.6	55.5	26.1	52.1	31.1	25.4
	04:00	71.6	49.0	25.6	57.1	33.7	25.4
	05:00	77.0	54.6	29.0	68.3	44.0	27.1
	06:00	78.0	61.7	46.3	67.8	45.0	30.2
	07:00	80.1	64.6	50.1	72.3	44.8	30.7
	08:00	87.5	70.9	59.7	75.5	46.7	32.9
	09:00	89.5	70.5	57.6	68.0	44.6	34.7
	10:00	88.6	69.8	51.4	67.9	48.0	37.7
	11:00	84.6	69.2	52.6	71.3	46.2	36.0
	12:00	89.1	69.8	45.7	63.4	45.5	37.6
	13:00	87.8	68.6	46.0	71.3	46.8	36.9
	14:00	87.4	67.7	44.5	86.0	49.0	36.6
	15:00	86.1	67.5	47.3	65.9	46.2	36.1
	16:00	83.6	67.8	50.5	71.1	48.7	38.2
	17:00	84.5	63.7	44.2	63.5	44.6	37.8
	18:00	78.5	65.6	43.9	71.1	47.8	36.0
	19:00	75.8	56.3	38.3	90.9	49.6	35.7
	20:00	72.4	46.8	34.6	82.8	44.8	31.3
	21:00	68.0	45.8	32.0	60.5	39.7	29.7
	22:00	68.7	45.7	31.3	57.2	39.0	31.4
	23:00	70.2	43.9	28.4	58.2	35.8	25.6
Monday 10 August 2015	00:00	66.2	41.9	25.8	52.7	32.8	25.6
	01:00	74.0	47.5	25.8	59.4	33.2	25.6
	02:00	75.5	55.1	26.1	53.9	32.6	26.2
	03:00	78.8	58.4	25.9	47.6	27.6	25.4
	04:00	76.6	58.6	25.5	59.1	35.7	25.6
	05:00	78.5	60.4	36.7	67.4	43.9	28.3
	06:00	77.6	61.1	41.1	70.9	46.4	33.5
	07:00	78.4	64.0	47.4	72.8	47.5	37.7
	08:00	82.2	69.5	57.0	75.6	46.4	38.2
	09:00	90.5	71.8	55.1	70.2	47.8	39.1
	10:00	89.5	71.1	49.8	68.2	46.8	39.0
	11:00	89.8	74.3	55.1	76.1	53.8	40.5
	12:00	90.9	72.8	49.8	61.6	46.4	40.9
	13:00	87.6	67.9	44.8	59.4	47.2	41.7
	14:00	89.7	69.8	48.3	61.3	47.4	41.6
	15:00	89.9	70.2	50.2	63.3	46.1	39.3
	16:00	89.5	70.1	49.1	65.9	46.1	40.0
17:00	88.2	67.3	47.9	65.2	46.1	40.3	

Date	Start	Maccabees Kennels			Centenary Cottages		
		L_{AFmax}	L_{Aeq}	L_{A90}	L_{AFmax}	L_{Aeq}	L_{A90}
10 August 2015	18:00	76.5	62.9	42.4	67.6	46.1	39.0
	19:00	73.5	55.2	37.4	81.9	46.7	35.3
	20:00	74.0	55.6	35.3	65.3	41.6	33.1
	21:00	68.3	43.6	32.2	63.0	40.0	30.9
	22:00	74.9	49.3	30.2	60.2	38.3	27.1
	23:00	72.5	47.4	26.2	63.6	39.6	25.8
Tuesday 11 August 2015	00:00	72.6	41.0	25.4	58.1	34.8	25.4
	01:00	63.3	38.4	25.4	60.0	34.0	25.5
	02:00	74.6	53.5	25.4	59.9	33.5	25.5
	03:00	51.8	27.9	25.3	58.6	32.2	25.4
	04:00	75.2	50.7	25.4	58.0	35.3	25.5
	05:00	76.4	60.1	34.0	65.8	43.7	29.8
	06:00	81.1	67.5	51.0	81.2	50.8	38.0
	07:00	82.5	66.1	49.1	70.8	47.8	39.1
	08:00	82.2	69.8	56.8	69.0	45.8	37.9
	09:00	93.8	71.6	52.8	76.8	46.8	37.4
	10:00	93.6	71.6	43.4	73.8	49.7	37.6
	11:00	91.5	73.5	44.6	73.9	49.3	36.4
	12:00	91.6	72.3	42.0	64.6	47.0	36.4
	13:00	93.5	70.5	40.9	76.2	45.0	35.6
	14:00	92.5	72.6	44.9	77.5	50.2	37.9
	15:00	91.3	75.0	52.3	70.1	48.5	37.7
	16:00	94.1	67.9	46.1	65.2	46.0	38.4
	17:00	81.1	64.9	41.1	65.0	44.8	39.1
	18:00	79.3	63.5	41.4	71.3	46.5	39.3
	19:00	77.8	52.3	36.8	76.6	46.9	35.8
	20:00	73.8	51.9	34.7	71.5	48.1	32.8
	21:00	73.5	45.6	32.7	65.1	40.7	30.4
	22:00	73.6	54.6	33.7	68.1	44.2	31.1
	23:00	74.8	60.5	29.9	65.6	37.6	26.8
Wednesday 12 August 2015	00:00	75.9	52.2	25.7	68.3	38.2	25.7
	01:00	61.3	37.4	25.5	73.6	43.4	25.6
	02:00	52.9	29.5	25.4	61.4	31.6	25.5
	03:00	65.0	39.5	25.4	59.2	36.6	25.7
	04:00	71.7	39.1	25.8	67.9	33.3	25.8
	05:00	75.3	56.8	32.1	69.5	47.0	31.9
	06:00	76.7	53.1	35.6	71.6	47.6	37.1
	07:00	80.2	61.6	41.1	64.7	45.4	39.4
	08:00	82.1	69.3	56.5	65.4	47.2	42.5
09:00	90.2	72.3	55.0	62.9	48.6	42.9	

Date	Start	Maccabees Kennels			Centenary Cottages		
		L_{AFmax}	L_{Aeq}	L_{A90}	L_{AFmax}	L_{Aeq}	L_{A90}
Wednesday 12 August 2015	10:00	90.8	72.2	47.2	69.4	48.1	42.2
	11:00	96.8	70.3	42.4	68.3	48.6	42.2
	12:00	97.5	74.8	47.7	70.7	49.1	42.0
	13:00	91.7	70.8	43.2	62.2	45.3	40.3
	14:00	94.9	70.7	41.2	80.9	48.7	40.4
	15:00	94.4	71.3	42.8	96.6	57.5	41.6
	16:00	87.2	66.1	43.6	79.2	52.0	42.7
	17:00	81.6	65.1	45.3	89.4	53.3	42.9
	18:00	80.3	64.5	41.6	67.8	44.7	39.2
	19:00	76.3	57.8	37.9	82.4	45.2	36.9
	20:00	75.8	58.1	37.2	68.5	42.3	35.1
	21:00	78.7	52.8	33.5	75.3	43.6	31.6
	22:00	68.9	38.8	30.9	62.6	38.6	30.4
23:00	66.9	36.8	28.0	80.3	46.1	29.9	
Thursday 13 August 2015	00:00	69.9	42.0	26.3	77.1	43.6	27.6
	01:00	72.2	50.1	25.6	58.8	37.2	28.1
	02:00	67.2	40.3	25.5	63.0	36.2	26.6
	03:00	54.7	36.6	25.6	56.0	34.0	27.3
	04:00	70.4	36.4	25.5	57.1	33.9	26.1
	05:00	77.3	58.6	30.2	71.0	46.3	30.4
	06:00	76.2	61.3	41.5	72.0	48.9	38.6
	07:00	80.6	64.8	44.5	72.3	50.1	40.6
	08:00	83.7	71.7	56.1	67.2	49.8	44.9
	09:00	94.9	73.4	56.7	66.6	47.8	42.5
	10:00	96.5	75.2	54.5	69.2	49.4	43.2
	11:00	96.6	73.0	50.6	72.0	49.1	42.2
	12:00	97.5	73.7	47.8	68.7	48.4	40.2
	13:00	87.7	71.7	49.2	72.8	50.5	45.6
	14:00	86.0	67.4	41.9	66.5	48.5	43.3
	15:00	85.9	69.4	44.8	71.7	49.5	44.2
	16:00	87.7	67.9	47.4	71.2	50.0	43.7
	17:00	87.3	64.6	40.8	81.9	52.9	41.6
	18:00	74.1	54.9	35.9	70.8	46.5	39.7
	19:00	76.6	48.5	32.9	63.0	43.4	37.5
	20:00	74.5	55.9	31.2	74.6	43.6	34.6
	21:00	76.6	52.7	29.3	63.3	40.7	34.5
	22:00	77.8	57.6	28.3	59.9	39.9	34.4
23:00	75.3	50.3	27.9	60.1	45.8	33.8	

Date	Start	Maccabees Kennels			Centenary Cottages			
		L_{AFmax}	L_{Aeq}	L_{A90}	L_{AFmax}	L_{Aeq}	L_{A90}	
Friday 14 August 2015	00:00	66.3	40.0	25.3	57.6	35.2	28.1	
	01:00	65.1	33.7	25.5	52.1	33.6	26.2	
	02:00	74.8	45.8	25.9	63.1	34.4	26.5	
	03:00	65.6	32.6	25.4	51.9	31.2	25.7	
	04:00	62.4	32.5	25.4	58.3	34.5	25.6	
	05:00	68.4	47.2	27.5	73.5	47.6	27.0	
	06:00	76.9	59.4	33.6	77.6	51.1	32.2	
	07:00	77.0	61.7	38.7	65.6	49.7	37.7	
	08:00	82.8	69.9	53.5	66.0	50.1	44.6	
	09:00	80.7	69.6	56.8	66.4	48.6	43.3	
	Interrupted for data download, calibration check and reset							
	11:00	89.2	72.2	50.8	78.5	50.4	39.8	
	12:00	90.9	71.2	46.3	74.5	46.3	38.8	
	13:00	92.4	72.9	52.9	72.3	46.5	39.2	
	14:00	89.3	71.4	42.6	87.3	58.4	38.5	
	15:00	95.7	72.0	50.4	91.0	52.5	39.5	
	16:00	81.6	68.1	51.2	76.0	47.6	40.5	
	17:00	81.2	67.1	47.4	62.1	45.5	40.5	
	18:00	80.2	62.7	40.2	80.6	47.9	40.0	
	19:00	75.9	55.6	37.3	64.9	43.6	36.0	
	20:00	69.0	46.5	32.7	74.0	45.2	32.4	
	21:00	67.9	44.4	29.4	67.8	41.0	30.4	
	22:00	65.1	40.2	27.6	57.9	37.8	27.5	
23:00	73.6	44.7	27.4	59.7	38.1	26.4		
Saturday 15 August 2015	00:00	70.2	45.1	25.6	54.5	33.2	25.3	
	01:00	67.3	38.4	25.2	58.1	35.9	25.3	
	02:00	60.9	32.0	25.1	63.0	34.2	25.2	
	03:00	65.5	38.9	25.1	53.8	31.5	25.3	
	04:00	57.8	29.1	25.1	58.7	33.2	25.3	
	05:00	75.9	57.3	31.0	73.4	49.7	26.9	
	06:00	79.3	62.8	43.1	66.9	46.1	32.6	
	07:00	80.3	64.2	48.0	66.3	45.1	35.9	
	08:00	86.3	69.9	59.0	69.7	46.0	38.4	
	09:00	94.5	76.1	61.1	61.6	46.7	40.6	
	10:00	91.0	74.3	52.1	69.9	49.9	41.1	
	11:00	92.7	73.9	49.1	69.0	48.2	39.8	
	12:00	91.2	70.2	45.3	68.2	46.6	38.1	
	13:00	90.4	71.5	46.1	73.6	49.0	39.5	
	14:00	90.5	66.8	45.5	71.8	47.3	38.0	
	15:00	89.5	69.4	53.1	62.8	44.6	38.6	
	16:00	80.7	67.6	53.3	69.7	47.4	37.4	
	17:00	79.0	66.2	51.3	70.0	46.5	36.3	
18:00	90.7	68.6	46.4	66.4	44.1	35.9		

Date	Start	Maccabees Kennels			Centenary Cottages		
		L_{AFmax}	L_{Aeq}	L_{A90}	L_{AFmax}	L_{Aeq}	L_{A90}
Sat 15 Aug 2015	19:00	81.0	58.9	34.7	64.5	44.5	32.5
	20:00	76.5	51.2	34.4	67.4	44.9	31.0
	21:00	70.8	46.1	31.1	68.1	38.3	28.6
	22:00	76.6	55.7	31.0	65.2	39.6	28.9
	23:00	68.6	45.6	29.1	55.7	36.6	26.5
Sunday 16 August 2015	00:00	74.9	46.8	25.5	55.5	34.5	25.2
	01:00	68.0	46.7	25.5	53.8	31.7	25.1
	02:00	76.0	46.5	25.2	62.3	38.2	25.0
	03:00	76.3	56.5	25.8	51.1	31.4	25.1
	04:00	77.3	61.9	26.4	50.8	35.6	25.3
	05:00	75.9	55.7	31.3	66.1	46.2	27.9
	06:00	78.1	64.8	40.1	72.7	48.4	33.4
	07:00	82.1	67.9	53.4	69.9	45.7	33.6
	08:00	85.8	70.8	59.4	64.0	44.3	34.5
	09:00	90.6	72.8	56.0	62.1	44.9	36.2
	10:00	90.5	69.8	42.5	66.8	49.1	37.0
	11:00	90.3	71.6	46.9	75.7	46.6	37.1
	12:00	88.9	71.3	44.6	75.4	48.4	36.7
	13:00	89.1	74.0	48.4	68.5	46.4	36.0
	14:00	87.8	68.1	38.4	71.7	45.5	34.0
	15:00	94.0	70.8	44.5	71.4	47.7	35.5
	16:00	86.4	67.0	48.8	71.6	45.2	34.9
	17:00	79.7	66.2	42.9	65.8	46.3	35.1
	18:00	80.6	66.3	40.8	72.8	47.2	35.7
	19:00	78.5	58.1	34.8	77.3	42.0	31.9
	20:00	74.9	50.7	34.8	64.3	41.8	31.5
	21:00	73.4	55.4	32.7	60.9	37.8	28.6
	22:00	74.9	56.9	27.4	59.8	39.2	25.9
23:00	74.9	58.5	28.4	58.1	36.9	25.7	
Mon 17 Aug 2015	00:00	77.9	63.7	28.1	64.9	38.8	25.8
	01:00	77.4	61.0	25.3	54.7	35.7	25.1
	02:00	77.4	62.3	25.3	63.8	35.7	25.1
	03:00	75.4	53.3	25.2	65.5	34.8	25.0
	04:00	71.7	49.7	25.5	61.2	34.3	25.2
	05:00	78.1	61.4	33.1	70.2	47.7	29.9
	06:00	80.7	64.6	41.2	69.8	46.2	38.0
	07:00	82.2	68.9	49.8	67.7	47.5	41.1
	08:00	86.8	71.5	61.0	68.8	47.9	40.7
	09:00	90.1	72.8	55.3	74.3	50.4	39.4
	10:00	93.0	72.0	47.0	72.2	48.3	38.9
11:00	93.8	70.6	43.2	65.3	44.8	38.9	

Date	Start	Maccabees Kennels			Centenary Cottages		
		L_{AFmax}	L_{Aeq}	L_{A90}	L_{AFmax}	L_{Aeq}	L_{A90}
Monday 17 August 2015	12:00	93.7	70.6	43.9	70.4	45.6	38.9
	13:00	94.0	72.4	46.3	67.4	46.8	38.6
	14:00	92.7	70.3	40.5	86.0	48.8	39.0
	15:00	92.3	70.5	47.3	64.3	44.7	38.4
	16:00	82.4	67.5	47.0	64.5	45.3	38.6
	17:00	87.4	65.2	41.7	76.2	51.5	39.9
	18:00	80.2	56.6	37.1	69.6	44.1	37.1
	19:00	78.3	55.3	35.6	69.9	43.1	35.8
	20:00	77.1	53.6	33.5	62.9	43.6	33.3
	21:00	77.6	53.5	34.2	60.5	39.5	31.3
	22:00	76.6	57.5	33.8	65.6	41.3	31.7
23:00	78.7	55.1	29.0	64.8	40.8	27.5	
Tuesday 18 August 2015	00:00	77.3	55.7	25.5	59.5	38.5	25.2
	01:00	73.2	47.8	25.2	54.6	30.4	25.3
	02:00	73.7	47.0	25.2	53.7	30.7	25.2
	03:00	54.0	37.3	25.1	53.8	29.0	25.0
	04:00	74.2	49.6	25.4	54.1	30.7	25.0
	05:00	73.4	50.4	29.6	70.8	45.6	26.8
	06:00	81.5	58.1	38.0	70.5	46.2	36.2
	07:00	80.6	66.4	47.7	63.0	47.0	39.8
	08:00	81.5	69.9	54.0	71.2	46.7	39.0
	09:00	90.3	72.4	56.3	65.6	46.7	38.1
	10:00	91.4	72.1	49.3	67.1	46.8	37.5
	11:00	91.5	73.9	45.6	76.0	48.5	39.0
	12:00	91.4	73.0	47.7	62.7	46.0	39.3
	13:00	97.3	72.0	46.1	96.5	62.9	38.5
	14:00	90.4	73.9	45.6	67.8	46.3	38.8
	15:00	94.6	71.9	48.1	70.3	46.5	38.3
	16:00	83.9	65.4	47.3	70.1	47.3	39.2
	17:00	82.4	64.4	46.8	67.2	46.0	39.4
	18:00	78.8	54.0	41.5	62.7	45.3	36.7
	19:00	70.7	48.9	39.2	70.0	45.2	35.3
	20:00	79.9	55.6	37.9	89.6	54.8	34.9
	21:00	73.0	46.2	36.0	70.9	43.1	33.6
	22:00	73.3	47.2	32.8	66.4	42.5	29.4
23:00	69.5	42.8	29.0	57.3	37.9	27.1	
Wed 19 Aug 2015	00:00	62.2	39.4	27.6	57.3	36.9	28.0
	01:00	63.4	37.6	26.3	57.2	34.4	26.1
	02:00	64.7	38.1	25.6	58.3	34.0	25.3
	03:00	46.1	29.9	25.2	56.0	31.6	25.5
	04:00	64.1	38.1	25.2	53.6	31.7	25.2
	05:00	73.5	55.5	30.8	69.8	42.2	28.1

Date	Start	Maccabees Kennels			Centenary Cottages		
		L_{AFmax}	L_{Aeq}	L_{A90}	L_{AFmax}	L_{Aeq}	L_{A90}
Wednesday 19 August 2015	06:00	81.7	63.1	41.2	66.1	44.7	33.5
	07:00	81.5	67.0	45.1	69.1	45.8	37.0
	08:00	82.1	68.9	52.6	62.8	46.2	38.9
	09:00	89.8	69.9	51.4	90.2	64.8	39.5
	10:00	91.9	67.7	45.8	81.9	55.4	41.0
	11:00	88.5	69.9	47.1	67.6	45.5	38.4
	12:00	88.5	70.6	47.2	80.5	48.7	40.6
	13:00	90.6	73.9	52.4	67.2	47.0	40.2
	14:00	91.8	72.9	51.1	69.4	49.7	40.8
	15:00	93.5	71.1	53.1	68.6	47.6	39.9
	16:00	87.2	67.6	47.6	78.0	48.9	42.4
	17:00	89.2	67.8	55.2	58.6	46.5	42.1
	18:00	81.4	63.2	43.5	60.8	45.3	39.7
	19:00	73.1	51.7	40.5	77.9	45.8	37.0
	20:00	68.2	49.6	38.9	73.2	44.7	34.9
	21:00	67.1	48.8	39.3	83.3	46.1	37.2
22:00	65.7	49.1	38.7	76.4	44.0	37.7	
23:00	69.0	48.9	35.8	68.3	43.3	35.5	
Thursday 20 August 2015	00:00	77.9	52.6	33.6	63.9	41.4	35.2
	01:00	65.6	42.6	28.1	58.7	37.6	31.4
	02:00	65.7	38.6	26.2	55.8	34.5	26.9
	03:00	72.2	55.3	25.4	56.1	33.0	25.3
	04:00	73.8	58.5	26.8	55.5	34.3	25.5
	05:00	72.9	56.7	29.0	69.1	45.4	26.6
	06:00	81.8	64.8	43.1	68.5	46.6	32.9
	07:00	81.3	67.5	51.1	66.7	48.2	39.3
	08:00	82.9	70.6	58.6	65.0	47.2	39.1
	09:00	89.8	73.7	50.6	71.3	49.5	38.4
	10:00	93.4	72.8	43.5	67.8	47.1	38.0
	11:00	94.4	77.3	49.5	68.1	46.2	37.2
	12:00	93.1	75.4	52.6	63.7	45.8	38.0
	13:00	89.1	71.7	46.2	63.8	45.3	38.2
	14:00	92.9	73.0	52.0	75.2	50.8	40.3
	15:00	90.7	71.4	49.0	64.8	48.0	39.7
	16:00	82.6	66.4	48.3	70.9	50.0	40.4
	17:00	77.3	63.6	46.2	69.5	50.2	42.0
	18:00	80.3	64.2	44.4	74.5	48.5	40.0
	19:00	76.8	55.7	41.2	85.6	47.8	37.9
	20:00	70.5	54.0	38.4	69.5	43.3	35.4
	21:00	70.3	52.4	36.2	60.3	41.3	34.4
	22:00	68.3	44.2	33.4	63.6	40.8	32.9
23:00	61.8	40.0	32.2	59.3	41.0	33.0	

Date	Start	Maccabees Kennels			Centenary Cottages		
		L_{AFmax}	L_{Aeq}	L_{A90}	L_{AFmax}	L_{Aeq}	L_{A90}
Friday 21 August 2015	00:00	58.3	38.3	27.7	57.6	39.0	29.2
	01:00	66.8	43.1	27.3	54.0	37.0	27.8
	02:00	63.8	41.1	28.0	54.4	37.7	30.3
	03:00	60.1	38.8	29.3	53.3	37.8	30.7
	04:00	71.4	49.1	28.0	53.3	37.0	29.1
	05:00	73.1	59.8	34.3	70.2	45.0	33.1
	06:00	80.4	63.8	45.2	82.9	53.2	36.2
	07:00	80.4	66.8	51.8	64.6	46.8	40.0
	08:00	83.0	69.9	58.5	69.7	47.2	41.0

APPENDIX B - Details of Measurement Instrumentation

Table A1 - Schedule of Noise Instrumentation			
Use	Type		Serial No.
Measuring System	Cirrus CR 703B	Unit X	43056
Microphone	Cirrus MK 226	Unit X	110792
Calibrator	Cirrus CR 511E	Unit X	43023
Measuring System	Cirrus CR 703B	Unit Y	43057
Microphone	Cirrus MK 226	Unit Y	110793
Calibrator	Cirrus CR 511E	Unit Y	43024

AIRO is accredited by the United Kingdom Accreditation Service as a UKAS testing laboratory No. 0483 and although the measurements carried out for this survey are not listed on our schedule of accreditation, all of AIRO's measurement equipment is routinely calibrated as part of the calibration regime in our Quality Manual and these calibrations are traceable to National Standards.

In addition, the calibration level of the measuring equipment was checked at the start and the end of each survey period using the appropriate calibrator for the relevant meter.

APPENDIX C – Weather Conditions

Summary of Weather Conditions during the Measurement Survey				
Date	Temperature °C	Humidity % RH	Wind Speed m/s	Direction
Friday 7 August	17-21	45-69	1-3	N
Saturday 8 August	13-23	40-90	1-3	NE –SW
Sunday 9 August	13-21	54-83	2-4	SW
Monday 10 August	14-21	71-90	2-5	SW
Tuesday 11 August	11-19	59-92	0-3	NW
Wednesday 12 August	16-21	57-73	4-5	E
Thursday 13 August	14-19	77-99	3-6	NE
Friday 14 August	16-17	99-100	0-2	NE-SE
Saturday 15 August	12-17	49-91	2-5	NW
Sunday 16 August	12-18	46-85	1-2	N
Monday 17 August	14-18	46-83	1-2	NE
Tuesday 18 August	14-17	55-80	1-3	SW
Wednesday 19 August	12-18	72-94	1-4	SW
Thursday 20 August	14-21	65-99	2-6	SW