AIRO

for
Crest Nicholson Chiltern
Building 1
Abbey View
St Albans
Hertfordshire
AL1 2QU

Dated: 22 April 2025

CONDITION 59

OUTLINE PLANNING PERMISSION

O/2014/2280

MITIGATION SCHEME

ARBORFIELD PARCEL N

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: +44(0)1442 247146
E-mail: airo@airo.co.uk
Web: https://www.airo.co.uk/

CONDITION 50

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MITIGATION SCHEME

ARBORFIELD PARCEL N

1. INTRODUCTION

It is understood that the development of Arborfield Parcel N is subject to the following Condition 59 of Outline Planning Permission O/2014/2280:

"The dwellings hereby approved shall be designed and/or insulated so as to provide attenuation against externally generated noise in accordance with a mitigation scheme to be submitted to and approved in writing by the Local Planning Authority before commencement of development within any phase. The scheme shall ensure that all noise implications are mitigated so that internal ambient noise levels for dwellings shall not exceed 35 dB LAeq (16 hour) 07:00-23:00 during the daytime and 30 dB LAeq (8 hour) 23:00-07:00 during the night assuming full road traffic flows at the outset. The design and/or insulation measures identified in the scheme shall ensure that ambient internal noise levels and the noise levels within gardens for the dwellings meet the BS8233/1999 Sound insulation and noise reduction for buildings design range 'good' for living accommodation. The approved mitigation measures to serve each dwelling shall be implemented prior to occupation and retained thereafter."

This report provides the mitigation scheme referred to in Condition 59 based on an environmental sound survey conducted at the site over the period 3 to 4 April 2025.

2. DESCRIPTION

Parcel N at Arborfield is shown in Figure 1 and a reserved matters application to build approximately 71 units on the site is to be made.

3. NOISE MEASUREMENT UNITS

3.1 A-Weighted Equivalent Continuous Sound Level - $L_{Aeq,T}$

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.

4. SOUND LEVEL MEASUREMENT SURVEY

Sound level measurements were made over a 24-hour period at the site commencing at 13:00 on Thursday 3 April 2025.

The sound level measurements were made using data logging sound level meters (as listed in Appendix A) at the 2 positions indicated in Figure 1 below.

Observed weather conditions for the survey are given in Appendix B.

The sound levels measured each hour during the survey are tabulated in Appendix C.

From the data, daytime (07:00 to 23:00) and night-time (23:00 to 07:00) period values have been calculated, together with the night-time maximum sound level.

Figure 1 – Measurement Positions

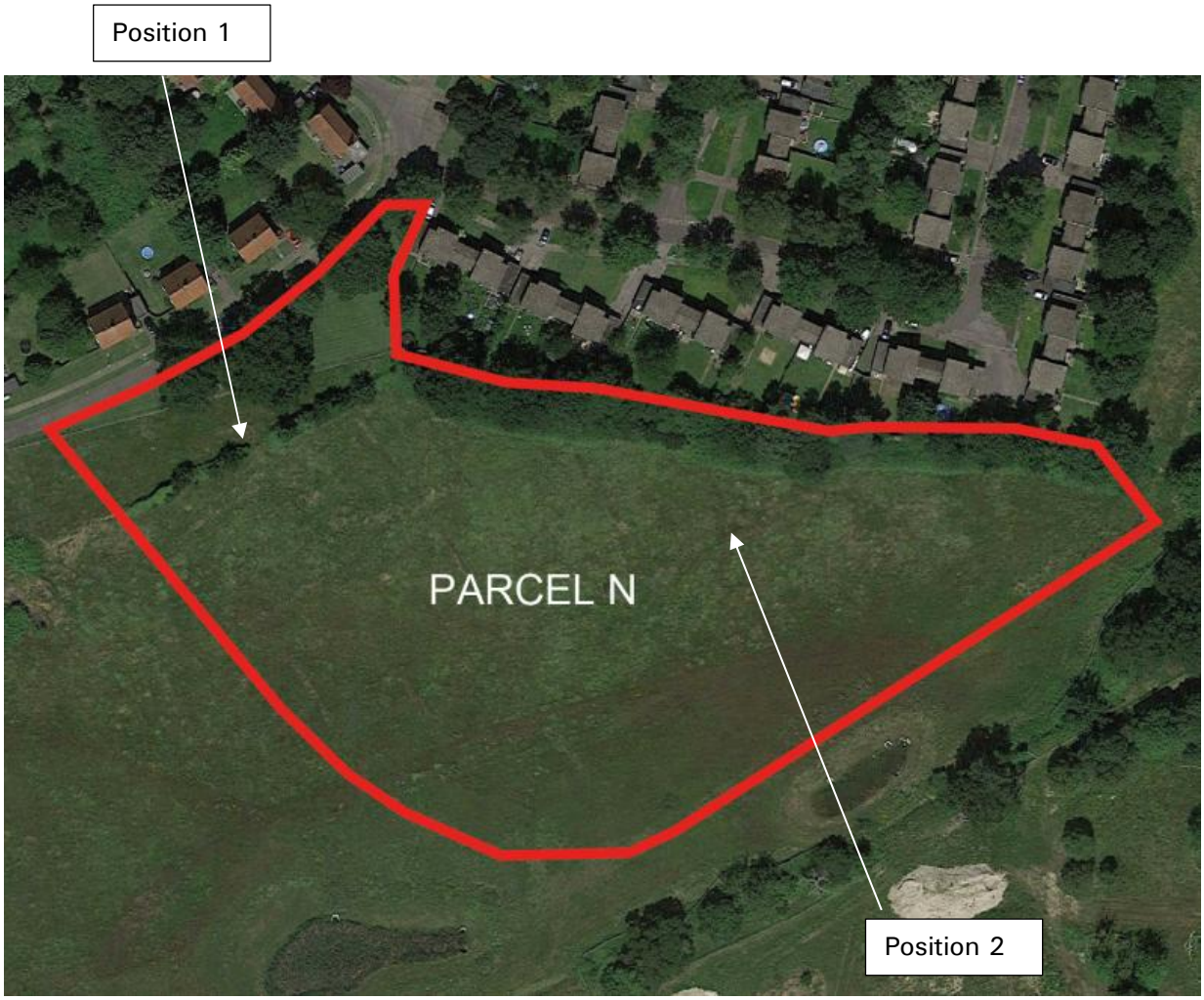

Table 1 below sets out the calculated full period and maximum sound levels.

The night-time period maximum sound level is the maximum sound level exceeded by 10 events in line with the detailed guidance from the World Health Organisation and normally applied by planning authorities and acoustic consultants.

Table 1 – Period Sound Levels, Parcel N, Arborfield			
Position	Period	Sound Level (dB)	
		L_{Aeq}	L_{AFmax}
1	Daytime	48	--
	Night-time	43	63
2	Daytime	49	--
	Night-time	42	58

5. ASSESSMENT AND SOUND INSULATION MEASURES

It may be seen from Table 1 that the external sound levels during the daytime were measured to be 48 to 49 dB. The sound level criterion for gardens expressed in BS 8233:1999 (ref 1) is: ***"In gardens and balconies etc. it is desirable that the steady noise level does not exceed 50 dB $L_{Aeq,T}$ and 55 dB $L_{Aeq,T}$ should be regarded as the upper limit".*** Accordingly, it is considered that sound levels in gardens can be expected to meet BS 8233 guidelines without the need for any specific mitigation measures.

From the measured sound levels (see Table 1), the required minimum reductions in sound level from outside to inside in order to achieve the criteria expressed in Condition 59 are shown below in Tables 2 and 3.

Table 2 – Minimum Outside to Inside Period Sound Level Reductions				
Position	Period	Free-field Sound Level $L_{Aeq,T}$ (dB)		Minimum Reduction (dB)
		Outside	Inside	
Position 1	Daytime	48	35	13
	Night-time	43	30	13
Position 2	Daytime	49	35	14
	Night-time	42	30	12

Table 3 – Minimum Outside to Inside Night-time Maximum Sound Level Reductions			
Position	Night-time Maximum Sound Level L_{AFmax} (dB)		Minimum Reduction (dB)
	Outside	Inside	
Position 1	63	45	18
Position 2	58	45	13

Typical windows fitted to houses when closed, together with trickle ventilators in the open position to provide continuous background ventilation, reduce sound levels from outside to inside a dwelling by up to about 25 dB. This exceeds the required minimum reductions shown in Tables 2 and 3. Accordingly, it is considered that no specific mitigation measures are necessary.

Generally, it is assumed that the sound level reduction from outside to inside with partially open windows is 10 to 15 dB. Therefore, it is likely that internal sound level criteria should still be met, or marginally exceeded, even with partially open windows.

The opening of windows is sometimes employed as the sole means of controlling overheating. The guidance in the November 2024 publication "Approved Document O, Noise Guide, Version 1.1" by the Association of Noise Consultants (ref 2) is that the sound level criteria for bedrooms in Approved Document O can be met using partially open windows as the sole means of controlling overheating, provided the external sound level does not exceed 50 dB $L_{Aeq,8h}$ and 65 dB L_{AFmax} in a medium risk area at night (23:00 to 07:00). According to Approved Document O, the site is in a medium risk area. Consequently, the sound level requirements of Approved Document O are expected to be met when employing the opening of windows as the sole means of controlling overheating.

6. CONCLUSIONS

This report has set out the results of environmental sound level measurements made over a 24-hour period on 3 and 4 April 2025 at Parcel N, Arborfield.

Based on the environmental sound survey results, the sound level requirements expressed in Condition 59 would be met externally (i.e. for any garden) and would be met internally in dwellings.

Consequently, no specific mitigation scheme is considered necessary for Parcel N.

The planning authority is invited to discharge Condition 59 in relation to Parcel N on this basis.

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. British Standard BS 8233:1999
Sound insulation and noise reduction for buildings – Code of Practice
British Standards Institution, 1999

2. Approved Document O
Noise Guide
Version 1.1
Association of Noise Consultants
November 2024

APPENDIX A – Details of Measurement Instrumentation

Table A1 - Schedule of Noise Instrumentation		
Use	Type	Serial No.
Measuring System	Cirrus CR 703B	43056
Microphone	Cirrus MK 226	110792
Calibrator	Cirrus 511E	43023
Measuring System	Cirrus CR 703B	43057
Microphone	Cirrus MK 224	891199
Calibrator	B&K 4230	543357

CALIBRATION

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 noise and vibration 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 B – Weather Conditions

Table B1 – Weather Conditions – 3 and 4 April 2025		
	3rd	4th
Temperature °C	19	21
Relative Humidity %	66	53
Wind Speed m/s	4-5	5-7
Wind Direction	E	E

APPENDIX C - Hourly Data

Table C1 – Hourly Sound Levels measured at Parcel N, Arborfield

Start	Sound Level in dB			
	Position 1		Position 2	
	L_{Aeq}	L_{AFmax}	L_{Aeq}	L_{AFmax}
3/4/25				
13:00	49.4	--	52.3	--
14:00	47.5	--	47.5	--
15:00	47.1	--	47.0	--
16:00	47.8	--	48.3	--
17:00	48.2	--	49.7	--
18:00	49.6	--	49.4	--
19:00	44.8	--	43.7	--
20:00	44.5	--	45.0	--
21:00	42.5	--	42.9	--
22:00	40.5	--	41.5	--
23:00	33.9	52.3	37.4	54.8
4/4/25				
00:00	49.4	56.5	36.9	51.1
01:00	47.5	45.4	37.1	44.9
02:00	47.1	48.9	37.6	45.9
03:00	47.8	40.4	37.3	40.4
04:00	48.2	45.9	37.7	46.8
05:00	49.6	68.7	41.4	57.8
06:00	44.8	74.8	49.0	67.3
07:00	44.5	--	50.9	--
08:00	42.5	--	49.7	--
09:00	40.5	--	49.8	--
10:00	33.9	--	50.5	--
11:00	49.4	--	51.2	--
12:00	47.5	--	50.1	--