EXTERNAL NOISE ASSESSMENT

CLIENT

Brooks Murray Architects
8 – 10 New North Place
London
EC2A 4JA

SITE

The Magdala
2a South Hill Park
London
NW3 2SB

SURVEY DATE (S)

17th – 20th September 2014

Report By

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Introduction:

Sound Advice Acoustics Ltd has been instructed by Brooks Murray Architects, to carry out the relevant noise assessments and calculations at the site The Magdala, 2a South Hill Park, London NW3 2SB. It is proposed that the existing second floor is to be remodelled and an existing floor built.

Ambient noise levels were measured 17th – 20th September 2014. This report by Sound Advice Acoustics Ltd gives the results of these measurements and an assessment in accordance with government planning guidelines and relevant standards together with mitigation measures as required.

With regards to external ambient noise, environmental noise levels are be monitored at the site in accordance with British Standard 7445: 2003 'Description and measurement of environmental noise assessments and calculation made in accordance with BS 8233: 2014 Sound Insulation and Noise Reduction for Buildings Code of Practice.

BS 8233: 2014 set the following parameters as target levels that should be designed to within rooms such as Living Rooms and Bedrooms.

Table 2 Indoor ambient noise levels in spaces when they are unoccupied and privacy is also important

Objective	**Typical situations**	**Design Range $L_{Aeq,t}$ dB**
Typical noise levels for acoustic privacy in shared spaces	Restaurant	40 – 55
	Open plan office	45 – 50
	Night club, public house	40 – 45
	Ballroom, banqueting hall	35 – 40
	Living room	35 – 40

NOTE See Noise control in building services [28] and BS EN ISO 3382.

Table 4 Indoor ambient noise levels for dwellings

Activity	Location	07:00 – 23:00	23:00 – 07:00
Resting	Living Room	35 dB $L_{Aeq\ 16\ HOUR}$	--
Dining	Dining Room / Area	40 dB $L_{Aeq\ 16\ HOUR}$	--
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq\ 16\ HOUR}$	30 dB $L_{Aeq\ 8\ HOUR}$

Calculations and assessments are therefore to be carried out in order to satisfy the above requirements of BS 8233: 2014.

References and evaluations are to be made to the National Planning Policy Framework 2012 (NPPF) and the Noise Policy Statement for England 2010 (NPSE). The purpose of this document is to include all aspects of environmental noise within assessments i.e. environmental noise, neighbour noise and neighbourhood noise. Noise is to be considered alongside other relevant issues relating to the site and should not be considered in isolation, according to the NPSE.

There are several key phrases within the NPSE aims and these are discussed below.

"*Significant adverse" and "adverse"*

There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

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.

In addition, calculations are to be made for the predicted daytime noise levels within the outdoor living area and assessments made against the recommended levels within the World Health Organisation's 'Guidelines for Community Noise'. In order to evaluate these levels accurately, the 3D modelling software CADNA A is to be adopted for the purpose of this assessment. It should be noted that the land to the north of this proposed development is also being developed for residential housing and therefore the proposed layout is to be superimposed onto the CADNA A model in order to accurately calculate resultant façade levels to be used within the BS 8233 : 2014 calculations.

Finally, assessments and references are to be made to the World Health Organisation Night Time Noise Guidance 2009.

Procedure:

External noise levels were recorded over a typical period and analysis date extrapolated between 07:00 hrs 17th – 20th September 2014 at position 1 as detailed on the attached plan sketch layout.

Position 1 was located at the front façade of the site in order to capture the noise levels associated with the nearby roads. Sample measurements were recorded over continuous 5 minute samples and from this data the hourly LAeq daytime values have been evaluated. Sound Pressure Levels were recorded on the following setting along with a full octave band frequency analysis measured simultaneously and between 31.5 Hz and 16.0 kHz.

Daytime 07:00 – 23:00 (Slow Weighting)		**Night Time 23:00 – 07:00 (Slow Weighting)**	
$L_{Aeq\ 1\ HOUR}$ dB	$L_{A10\ 1\ HOUR}$ dB	$L_{Aeq\ 5\ MINUTES}$ dB	$L_{A10\ 5\ MINUTES}$ dB
$L_{AMAX\ 1\ HOUR}$ dB	$L_{A50\ 1\ HOUR}$ dB	$L_{AMAX\ 5\ MINUTES}$ dB	$L_{A50\ 5\ MINUTES}$ dB
$L_{AMIN\ 1\ HOUR}$ dB	$L_{A90\ 1\ HOUR}$ dB	$L_{AMIN\ 5\ MINUTES}$ dB	$L_{A90\ 5\ MINUTES}$ dB

Calculations have been made in accordance with BS 8233: 2014 'Sound Insulation and Reduction of Buildings - Code of Practice'. Recommendations were made for any additional acoustics measures to conform to these standards.

From the downloaded recorded results the daytime and night time periods were assessed and used within the above calculations as $L_{Aeq\ 16\ HOUR}$ dB levels for daytime and $L_{Aeq\ 8\ HOUR}$ dB levels for night time. These are detailed on the attached figures 1 – 3 inclusive. All data averaged throughout the day has been done so on a logarithmic basis to give accurate $L_{Aeq\ 16\ Hour}$ dB daytime and $L_{Aeq\ 8\ Hour}$ dB night time noise levels.

Finally it should be noted that calculations are carried out with façade levels corrected from the recorded noise levels to the calculated façade levels.

Apparatus:

The equipment was calibrated using a sound pressure level of 114.0 dB at an octave band centre frequency of 1000Hz with reference to 2 x 10^{-5} Nm^{-2} before and after the tests and the equipment set to have no inaccuracy greater than 0.2 dB.

All the following equipment was calibrated in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service (UKAS) on the following dates. Calibration schedules are implemented within Sound Advice Acoustics Ltd in accordance with UKAS directive LAB 23.

Description	Make	Type	Serial No.	Calibration Intervals	Last Calibrated	Next Due Calibration
Integrated Sound Level Meter	Norsonic	118	31632	2 YEARS	06.03.2014	06.03.2016
12.5mm Microphone (with windshield)	Norsonic	1220	57535	2 YEARS	06.03.2014	06.03.2016
Microphone Pre – Amplifier	Norsonic	1201	30687	2 YEARS	06.03.2014	06.03.2016
Calibrator	Norsonic	1251	31963	1 YEAR	21.05.2014	21.05.2015

Full calibration certificates are available upon request.

Environmental Conditions:

START OF TEST	17th September 2014
Temperature:	18.0^{0}C
Relative Humidity	78%
Average Wind Speed:	<0.5 m/s
Cloud Cover:	Overcast
Road Surface	Dry
Atmospheric Pressure:	996mb

END OF TEST	-	20th September 2014
Temperature:		15.5^{0}C
Relative Humidity		63%
Average Wind Speed:		<0.5 m/s
Cloud Cover:		None
Road Surface		Dry
Atmospheric Pressure:		1026mb

* Wind speed, temperature and relative humidity were all recorded using standard equipment supplied by RS Components, Hedge End, Southampton and are taken as an average over the designated time period.

Results:

$L_{Aeq,t}$ - The equivalent A weighted sound pressure level recorded over a time interval of 5 minutes night time and 1 hourly daytime.

$L_{A90,t}$ - The A weighted sound pressure level that is exceeded for 90% of the time period 5 minutes night time and 1 hourly daytime.

$L_{A50,t}$ - The A weighted sound pressure level that is exceeded for 50% of the time period 5 minutes night time and 1 hourly daytime.

$L_{A10,t}$ - The A weighted sound pressure level that is exceeded for 10% of the time period 5 minutes night time and 1 hourly daytime.

L_{Amax} - The maximum A weighted sound pressure level recorded over a time interval of 5 minutes night time and 1 hourly daytime.

L_{Amin} - The minimum A weighted sound pressure level recorded over a time interval of 5 minutes night time and 1 hourly daytime.

See attached figures 1 - 2 for full downloaded results, and averages.

17th – 18th September 2014 – POSITION 1																
Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 23:00 DAYTIME AVERAGE $L_{Aeq\ 16\ HOUR}$	59.8	77.2	49.6	62.8	55.5	51.7	65.6	66.2	61.0	56.9	53.8	54.9	54.0	48.3	43.3	30.8
23:00 - 07:00 NIGHT TIME AVERAGE $L_{Aeq\ 8\ HOUR}$	57.6	74.2	43.5	59.0	47.8	45.2	60.3	61.8	59.7	54.5	52.3	53.5	50.9	45.0	38.8	24.4

18th – 19th September 2014 – POSITION 1																
Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 23:00 DAYTIME AVERAGE $L_{Aeq\ 16\ HOUR}$	59.5	76.1	48.8	62.5	55.8	51.2	66.5	66.4	61.0	57.5	53.7	54.3	53.6	47.9	42.4	30.2
23:00 - 07:00 NIGHT TIME AVERAGE $L_{Aeq\ 8\ HOUR}$	60.5	80.3	46.0	60.2	52.9	47.7	61.8	63.6	62.6	57.3	54.6	55.3	53.3	51.3	47.2	31.6

19th – 20th September 2014 – POSITION 1																
Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 23:00 DAYTIME AVERAGE $L_{Aeq\ 16\ HOUR}$	60.2	78.5	48.8	62.8	55.8	51.3	66.1	66.5	60.8	57.2	53.8	54.7	53.9	51.4	42.8	29.3
23:00 - 07:00 NIGHT TIME AVERAGE $L_{Aeq\ 8\ HOUR}$	59.9	75.7	49.2	61.5	54.3	51.3	61.0	61.9	61.4	55.0	53.8	55.0	53.7	49.3	45.9	32.7

Discussion of Results:

It can be seen from the attached graph and downloaded results that the external noise levels have followed the expected path and remained fairly constant throughout the day. The levels then gradually dropped off as the evening progressed and began to rise when morning traffic levels increased.

Recommendations:

For the purpose of this assessment, the corresponding façade levels will be used within the BS 8233: 2014 calculations in order evaluate the worst case scenario and select the correct window specification.

Therefore in order to achieve the required noise levels of $L_{Aeq\ 16\ HOUR}$ 35 dB for habitable room's daytime and $L_{Aeq\ 8\ HOUR}$ 30 dB for Bedroom at night within the proposed residential properties, the following additional acoustic measures have been calculated. (Details on calculation sheets figure's 4 - 6 inclusive).

It should be noted that the calculations have been made with the proposed windows closed. Additional calculations were made for the top floor due to the influence of sound transmission into the various rooms via the roof / ceiling i.e. an increased impeding façade.

MINIMUM CONSTRUCTION DETAILS

STANDARD WALL CONSTRUCTION – MINIMUM VALUE

125	250	500	1.0k	2.0k	4.0k	Frequency (Hz)
47.0	53.0	61.0	68.0	73.0	78.0	dB reduction

WINDOW CONSTRUCTION 4mm glass / 16mm air gap / 4mm glass

125	250	500	1.0k	2.0k	4.0k	Frequency (Hz)
21.1	19.7	31.1	38.2	41.3	38.7	dB reduction

WINDOW CONSTRUCTION 4mm glass / 14mm air gap / 6mm glass

125	250	500	1.0k	2.0k	4.0k	Frequency (Hz)
24.4	26.5	36.2	41.7	40.3	42.6	dB reduction

ROOF CONSTRUCTION – MINIMUM VALUE

125	250	500	1.0k	2.0k	4.0k	Frequency (Hz)
28.0	34.0	40.0	45.0	49.0	53.0	dB reduction

TRICKLE VENT – MINIMUM VALUE (ACOUSTIC THROUGH FRAME SLOT VENT)

125	250	500	1.0k	2.0k	4.0k	Frequency (Hz)
40.0	38.0	37.0	34.0	37.0	38.0	dB reduction

Night Noise Guidelines for Europe 2009:

The Night Noise Guidelines 2009 make direct reference to the World Health Organisations Guidelines for Community Noise 1999 with recommended guideline criteria of L_{Aeq} 30 dB indoors for continuous noise. The document goes on to explain that sleep disturbance correlates best with L_{Amax} and effects have been observed at 45 dB or less. This is particularly true if the background noise level is low. Noise events exceeding 45 dB(A) should therefore be limited.

It should be noted that BS 8233: 2014 makes no reference to a criteria under this British Standard to L_{Amax} dB limits within bedrooms at night. The aforementioned documents are Guidelines and therefore should be used for reference purposes only.

Figure 5 calculates and internal bedroom level at night of $L_{Aeq\ 8\ HOUR}$ 29.6 dB. The corresponding night time external level of $L_{Aeq\ 8\ HOUR}$ 60.5 dB was recorded as detailed of figure 2, thus giving a calculated façade attenuation of 30.9 dB. Applying this to the L_{Amax} 45 dB level above results in an L_{Amax} target level of L_{Amax} 75.9 dB.
There have only been a total of 56 exceeded 5 minute levels over a total evaluated period of 24 night time hours. This equates to an L_{Amax} dB level exceedance of just 19.4 % over the three nights.

Therefore, in our professional opinion we would consider this to be an acceptable level increase and no further remedial works need be introduced over and above those already contained within this report.

Outdoor Living Areas:

The World Health Organisation 'Guidelines for Community Noise gives guidance as to desirable noise levels that should be achieved within outdoor living areas such as gardens, patios and verandas etc.

Table 1: Guideline values for community noise in specific environments, details the desirable target noise levels within various areas.

Outdoor Living Area	
Serious Annoyance, daytime and evening	$L_{Aeq\ 16\ HOUR}$ 55 dB
Moderate Annoyance, daytime and evening	$L_{Aeq\ 16\ HOUR}$ 50 dB

It should be noted that there is to be no outside space provided for the proposed flats on the second and third floors. Therefore no assessment for this has been carried out.

Plan Sketch Layout:

NPPF & NPSE:

The National Planning Policy Framework 2012 (NPPF) and assessments to the Noise Policy Statement for England 2010 (NPSE) should be made in conjunction with each other. Paragraph 123 of the National Planning Policy Framework (NPPF) states the following:

Planning polices 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;
- ✓ 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.

The Noise Policy Statement for England gives various levels of effect as detailed within this report.

With the external noise level M & E criteria and glazing / ventilation specifications achieved within this report, the development can be implemented within the guidelines of the aforementioned documents and ensure a development conclusion of **NOEL – No Observed Effect Level** This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

Conclusion:

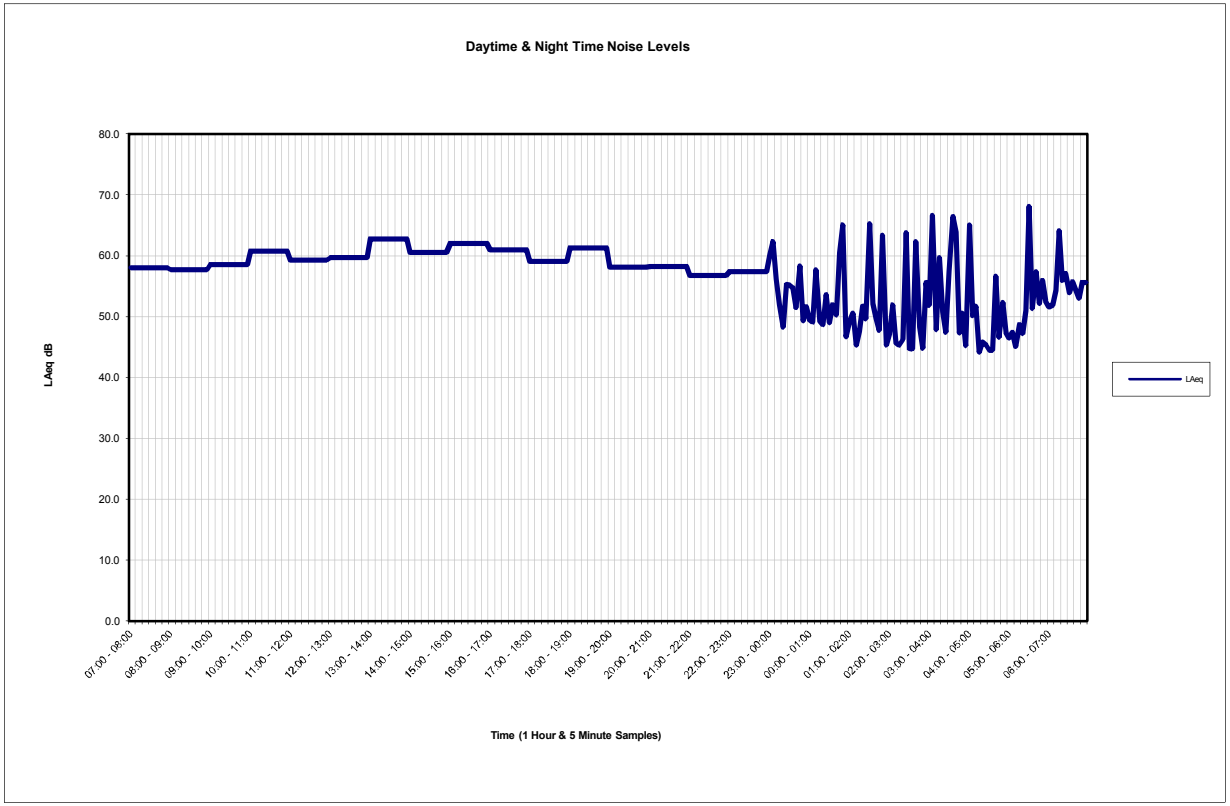
Levels have been recorded and assessments made in accordance with the relevant standards. Internal criteria's have been set and calculations made in order to determine the minimum construction details required in order to meet the desired level within the proposed residential dwellings and satisfy the local council's requirements.

The development should be designed with a 4 / 16 / 4 standard double glazed window and acoustic through frame trickle vents to the second floor and a 4 / 14 / 6 standard double glazed window, again with an acoustic through frame slot vent to the third floor.

An assessment in accordance with the World Health Organisation's 'Guidelines for Community Noise' has also been carried out in order to calculate and demonstrate the predicted noise levels at any balconies. Compliance is likely to be achieved to these guidelines.

This report and subsequent calculations and assessments have demonstrated that mitigation measures can be introduced to the site in order to ensure compliance with BS 8233: 2014 for predicted internal noise levels within dwellings and the WHO guidelines for community noise for external living areas.

NOISE LEVEL SUMMARY ASSESSMENT																
Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 23:00 DAYTIME AVERAGE $L_{Aeq\ 16\ HOUR}$	59.8	77.2	49.6	62.8	55.5	51.7	65.6	66.2	61.0	56.9	53.8	54.9	54.0	48.3	43.3	30.8
23:00 - 07:00 NIGHT TIME AVERAGE $L_{Aeq\ 8\ HOUR}$	57.6	74.2	43.5	59.0	47.8	45.2	60.3	61.8	59.7	54.5	52.3	53.5	50.9	45.0	38.8	24.4



EXTERNAL NOISE ASSESSMENT
2a South Hill Park, London

DOWNLOADED RESULTS
RECORDED 17th - 18th September 2014

DAYTIME NOISE LEVELS 07:00 - 23:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	58.1	75.4	47.3	61.3	53.8	49.8	66.4	66.1	58.5	55.5	52.5	53.1	52.3	45.4	39.7	25.5
08:00 - 09:00	57.8	76.4	48.2	61.0	54.4	50.6	64.4	63.5	57.8	54.4	51.6	53.0	52.2	45.6	39.0	25.1
09:00 - 10:00	58.6	74.7	48.6	61.3	54.3	50.5	64.2	65.5	59.4	55.8	52.2	53.4	53.3	46.7	41.1	28.0
10:00 - 11:00	60.8	74.9	48.3	63.5	55.1	50.8	66.1	66.0	62.0	56.9	54.6	55.9	54.6	49.9	48.9	33.2
11:00 - 12:00	59.3	74.5	48.6	62.9	54.9	51.1	65.5	65.9	60.2	56.6	53.4	54.5	53.4	47.8	41.5	28.9
12:00 - 13:00	59.8	75.0	48.0	63.2	55.2	50.8	66.6	68.9	62.3	56.9	53.6	54.7	54.0	48.3	42.2	34.0
13:00 - 14:00	62.8	81.9	55.7	64.8	59.0	56.8	65.7	68.5	64.0	59.8	56.9	57.9	56.4	52.7	48.1	37.0
14:00 - 15:00	60.6	80.4	48.3	63.0	55.8	50.9	66.7	67.0	62.5	56.7	54.1	56.6	54.0	49.2	41.7	30.8
15:00 - 16:00	62.1	79.0	48.6	65.2	55.6	51.1	65.3	65.1	61.9	58.1	56.0	57.3	56.8	49.2	45.0	29.5
16:00 - 17:00	61.0	80.3	48.4	63.6	56.4	51.0	65.4	65.7	61.2	56.7	54.1	55.9	56.3	47.4	40.1	27.6
17:00 - 18:00	59.1	74.1	48.2	62.8	55.8	50.8	66.0	66.5	61.0	57.9	54.1	54.1	52.8	46.4	39.9	27.4
18:00 - 19:00	61.3	79.8	53.4	64.4	58.3	55.0	68.0	67.7	61.5	57.9	55.4	55.9	55.4	51.2	46.4	34.6
19:00 - 20:00	58.2	72.8	47.5	61.4	55.0	50.0	66.2	66.4	59.4	55.6	52.1	53.2	52.6	45.9	38.8	25.8
20:00 - 21:00	58.2	72.9	46.3	61.1	52.5	48.7	63.9	64.8	60.4	56.7	52.5	53.3	52.0	45.8	41.3	26.8
21:00 - 22:00	56.8	70.4	45.8	61.5	51.8	48.2	63.9	64.0	59.8	55.3	51.3	51.6	50.8	43.9	37.3	25.1
22:00 - 23:00	57.5	74.2	49.0	59.5	54.2	51.5	61.7	62.7	59.2	56.0	51.7	50.8	51.9	46.9	35.5	21.3

NIGHT TIME NOISE LEVELS 23:00 - 07:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 00:00	60.2	67.3	57.3	61.4	59.8	58.7	59.9	58.8	57.4	53.7	48.5	48.1	56.3	52.9	32.2	19.4
	62.4	78.9	44.5	62.8	55.0	46.3	63.3	61.2	65.9	63.1	58.3	56.1	55.6	49.7	38.9	24.7
	56.2	74.7	44.6	58.8	49.9	46.3	64.6	65.6	59.1	52.7	50.0	50.4	51.0	44.5	42.7	27.5
	52.0	66.4	44.3	50.7	47.7	45.6	57.2	56.6	54.4	51.6	48.3	47.8	43.8	37.1	29.9	14.9
	48.3	59.7	43.0	50.7	47.3	44.7	55.6	55.7	53.0	50.2	43.3	42.9	40.5	33.0	29.0	13.9
	55.3	71.0	43.7	59.1	51.3	46.2	63.7	62.6	53.9	51.1	50.2	50.6	50.0	40.6	33.6	20.8
	55.2	66.9	42.1	60.0	48.6	43.7	58.7	59.7	53.4	50.2	45.1	45.6	51.0	47.4	30.8	15.4
	54.8	68.0	42.3	59.4	49.8	44.5	57.9	62.4	55.8	52.0	48.7	48.9	49.7	43.0	33.7	20.2
	51.6	68.2	42.6	55.2	46.6	44.0	55.0	56.5	53.4	49.5	46.7	46.0	46.3	36.8	28.2	14.2
	58.4	72.3	41.4	62.5	46.8	44.0	62.9	66.4	61.7	56.7	55.0	53.9	50.5	44.2	36.6	20.1
	49.3	65.3	42.2	50.6	46.1	43.7	52.6	55.1	53.5	49.3	44.1	45.0	41.6	34.2	28.0	13.9
	51.7	65.8	41.5	53.6	45.3	43.3	56.0	56.3	52.5	49.9	48.8	46.7	44.1	37.6	30.8	15.5
00:00 - 01:00	49.5	63.5	41.1	51.8	45.1	42.9	55.0	56.1	52.0	49.3	43.7	44.6	42.9	36.3	28.9	14.2
	49.1	63.6	41.6	49.8	45.4	43.2	54.5	57.9	52.1	49.3	43.8	44.3	42.1	35.3	27.7	14.2
	57.8	70.1	42.4	62.2	48.7	44.7	61.5	61.5	58.4	56.0	54.7	52.4	51.1	44.6	36.5	19.6
	49.3	63.8	42.7	50.0	45.7	43.9	54.6	54.2	52.9	49.5	43.8	45.1	41.9	32.1	23.8	11.9
	48.7	63.8	42.8	49.1	45.7	44.1	54.1	54.1	52.8	49.3	43.1	44.5	40.9	31.9	24.3	12.0
	53.6	70.5	42.5	52.1	44.9	43.6	58.1	60.5	54.9	50.6	47.4	50.2	46.6	38.9	33.8	22.1
	49.0	64.0	41.6	49.5	45.7	43.4	53.8	57.7	52.0	49.0	43.8	44.8	41.6	33.2	24.8	12.2
	52.0	64.9	43.0	54.9	47.7	44.7	57.2	57.6	53.0	52.2	46.5	47.0	45.3	38.9	31.2	18.0
	50.3	65.5	42.5	51.6	47.7	44.3	55.7	56.4	53.6	50.5	45.2	45.8	43.2	34.7	27.5	15.1
	60.6	76.5	42.6	60.9	46.6	43.7	60.9	66.1	62.1	56.6	54.3	57.3	53.5	47.1	39.9	23.9
	65.1	80.4	42.9	65.8	48.3	44.6	65.8	70.9	67.6	61.5	59.7	61.3	58.2	51.6	43.7	25.6
	46.7	55.4	42.3	49.7	45.2	43.7	53.2	52.5	51.5	48.7	42.2	41.9	38.3	27.2	17.4	8.8
01:00 - 02:00	49.0	61.9	42.0	52.5	47.0	43.2	53.7	55.2	52.6	49.8	44.0	43.1	42.8	35.4	25.7	11.8
	50.6	64.5	42.1	52.2	46.9	43.6	55.7	56.3	52.8	50.1	45.2	45.8	44.1	36.3	26.8	13.6
	45.3	49.8	42.0	47.6	44.5	43.2	50.9	52.2	51.0	47.7	40.9	40.0	36.1	26.6	19.2	9.6
	47.7	61.0	42.3	49.6	45.3	43.4	52.7	52.3	51.4	48.8	42.7	43.3	39.8	30.1	21.2	10.7

NIGHT TIME NOISE LEVELS 23:00 - 07:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
	51.8	68.1	41.4	52.6	46.3	43.9	52.5	53.4	52.5	50.6	46.1	47.9	45.2	36.4	29.1	14.9
	49.7	64.2	42.3	51.1	47.7	44.8	61.1	59.4	52.7	49.8	44.3	44.9	42.5	36.2	27.9	16.1
	65.3	81.0	42.0	68.8	45.9	43.5	62.9	66.3	63.7	60.9	60.7	62.2	57.3	51.9	44.1	33.9
01:00 - 02:00 *Continued*	52.2	67.8	42.2	52.8	45.4	43.6	55.6	61.7	55.7	51.5	45.7	47.1	45.7	40.4	33.6	20.6
	49.8	64.9	41.8	50.7	44.8	43.0	56.1	55.5	54.4	49.7	44.0	44.8	42.8	37.2	30.2	17.6
	47.8	71.1	41.6	49.0	45.5	43.5	62.3	57.2	52.5	49.0	42.7	42.7	39.5	34.4	31.3	21.7
	63.4	80.2	41.6	61.8	45.0	43.3	62.8	64.9	63.8	59.0	57.7	59.3	57.1	50.5	42.5	24.1
	45.3	52.0	41.9	47.5	44.4	43.4	52.2	53.2	51.3	48.1	41.3	39.9	35.6	24.9	15.8	8.9
	47.2	61.9	41.9	48.2	44.5	43.2	56.0	53.9	51.5	48.9	42.8	42.1	39.2	30.1	21.4	10.1
	52.0	70.1	42.0	50.6	44.6	43.3	62.2	70.3	62.3	49.1	43.8	44.0	46.1	39.0	31.0	18.1
	45.8	54.2	41.9	47.4	44.8	43.5	50.7	51.4	51.0	49.4	41.3	39.7	35.7	26.8	19.8	9.1
	45.3	54.1	42.3	47.1	44.4	43.4	51.2	52.5	52.2	48.5	41.5	39.5	34.8	25.4	16.6	9.0
02:00 - 03:00	46.3	55.3	41.5	49.1	44.9	43.3	52.4	55.2	55.4	49.8	42.1	39.6	34.9	25.3	17.3	9.1
	63.8	79.4	40.8	66.6	44.7	43.0	68.4	66.7	66.9	60.0	58.8	59.9	56.9	50.4	42.2	25.2
	44.8	55.7	41.5	46.6	43.9	42.7	50.9	51.5	50.6	47.5	40.7	39.3	35.5	27.2	18.7	9.3
	44.7	50.9	41.5	46.1	44.3	43.2	50.5	51.3	51.1	48.0	40.7	38.9	34.3	22.7	12.8	8.5
	62.4	77.8	42.0	56.6	45.7	43.5	64.5	59.4	56.3	55.0	55.6	58.1	55.6	52.9	52.7	37.8
	48.3	66.9	42.1	47.3	44.2	43.3	57.4	56.4	52.4	48.5	42.7	42.8	41.7	35.4	28.7	15.8
	44.8	60.4	40.9	45.6	43.3	42.4	50.0	50.4	50.1	46.8	40.2	38.8	36.0	33.2	26.4	12.8
	55.7	79.5	42.1	53.5	44.9	43.4	55.1	55.9	53.1	51.9	48.0	51.1	49.9	44.9	38.8	38.0
	51.9	80.3	41.4	47.2	44.2	43.1	55.1	54.7	52.4	49.3	45.5	46.2	46.9	41.1	30.1	16.3
	66.7	82.2	42.3	68.8	46.6	43.6	63.3	67.0	66.6	61.1	61.8	62.4	60.6	54.6	47.6	31.1
	47.9	65.2	41.2	47.5	44.0	42.8	53.9	56.6	51.7	48.2	42.1	42.0	41.5	35.6	26.3	13.5
	59.8	76.2	41.1	64.7	44.0	42.5	63.2	59.7	57.0	55.6	55.8	54.4	52.2	50.6	48.7	24.1
03:00 - 04:00	50.8	64.8	42.0	53.8	44.8	43.4	54.0	56.5	54.6	51.5	47.2	45.4	43.3	36.5	30.1	17.5
	47.5	72.5	41.7	47.9	44.5	43.2	55.6	55.0	51.7	48.7	45.3	41.6	38.5	34.1	26.4	13.8
	57.5	72.4	42.1	58.8	44.7	43.3	56.5	57.0	56.5	56.0	55.0	51.7	50.7	44.5	35.9	20.0
	66.5	85.5	40.9	63.3	45.1	42.6	67.1	68.5	71.0	63.9	60.2	63.6	58.8	51.6	43.2	25.2
	63.9	80.9	41.3	65.4	44.8	42.9	67.3	67.0	63.4	59.9	58.3	60.4	56.8	50.6	43.4	31.3
	47.3	61.8	41.2	48.0	44.0	42.6	55.7	52.9	51.3	48.1	42.1	42.3	40.1	32.6	25.0	16.5
	50.6	67.1	41.9	47.3	44.9	43.3	56.2	56.7	52.1	49.4	43.9	45.2	45.1	38.0	33.5	21.5
	45.2	53.9	41.3	47.5	43.8	42.5	50.3	50.8	51.3	47.2	40.2	40.1	36.4	28.7	23.3	11.6
	65.1	80.8	41.6	65.2	44.6	43.2	63.9	67.4	66.3	60.9	59.2	61.9	57.4	51.1	44.0	28.6
	50.2	65.3	41.3	47.6	43.9	42.7	56.2	54.3	54.8	51.8	46.4	44.3	42.3	36.4	28.1	12.7
	51.8	64.8	40.6	48.8	43.2	42.1	57.1	53.7	52.2	50.2	48.6	46.3	45.0	39.3	32.5	15.6
	44.2	52.6	40.8	45.5	43.4	42.3	50.1	50.1	50.1	47.1	39.9	39.1	34.2	24.7	18.7	9.6
04:00 - 05:00	45.9	55.2	40.8	48.4	44.2	42.6	53.0	50.4	50.3	47.6	40.8	41.1	37.7	28.9	21.6	10.4
	45.3	54.1	41.5	47.2	43.8	42.7	50.4	51.4	50.8	47.9	40.9	40.1	36.3	26.2	16.2	8.7
	44.5	52.0	41.5	45.9	44.0	42.8	50.4	50.4	50.6	47.4	40.2	39.0	34.8	27.3	18.9	9.5
	44.5	55.0	40.2	45.3	43.1	42.1	49.3	49.7	49.8	46.8	39.8	39.5	35.5	24.6	17.2	9.2
	56.7	69.4	41.1	63.7	44.2	42.8	62.3	59.4	55.9	54.7	54.3	52.3	48.2	44.1	39.4	22.2
	46.6	65.2	41.0	47.9	43.8	42.5	52.0	51.8	52.6	47.2	41.1	40.8	38.9	35.8	29.3	15.8
	52.4	65.8	41.5	56.2	46.7	43.0	61.7	60.4	60.3	54.3	48.2	45.8	45.4	37.5	31.7	18.4
	47.5	64.5	40.8	47.2	44.1	42.4	54.7	54.5	50.7	48.2	42.3	42.8	40.1	31.6	23.9	11.7
	46.5	54.9	40.9	49.4	44.8	42.8	56.5	51.5	50.1	47.7	41.6	41.8	39.2	28.6	20.0	10.3
	47.4	59.1	40.3	49.1	44.5	42.3	63.7	52.5	50.4	47.2	43.4	43.2	39.3	31.0	22.7	10.4
05:00 - 06:00	45.1	51.9	40.8	46.8	44.1	43.0	54.7	51.8	50.0	47.3	40.7	40.3	36.1	25.9	16.8	8.9
	48.7	62.9	41.1	50.7	45.3	42.9	55.2	55.4	51.3	48.8	43.3	44.1	41.9	33.1	26.0	12.9
	47.2	58.6	42.4	49.7	45.6	43.8	56.0	53.4	51.9	48.6	42.1	42.3	39.1	30.1	31.9	12.4
	51.0	65.3	41.8	52.1	47.0	43.3	58.7	60.3	52.0	49.4	45.0	46.1	44.7	39.1	34.4	18.5

NIGHT TIME NOISE LEVELS 23:00 - 07:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
	68.2	84.5	42.4	68.3	48.7	44.1	65.2	69.4	71.5	62.9	62.5	64.2	61.7	55.0	47.5	29.0
	51.3	65.0	42.7	54.8	46.7	44.1	56.1	55.7	53.3	50.2	45.2	45.4	45.9	39.3	36.4	17.0
05:00 - 06:00 *Continued*	57.4	70.8	42.4	60.0	47.1	44.2	64.6	60.3	59.0	55.7	54.5	52.1	50.4	43.5	36.9	20.0
	52.2	67.5	42.0	52.9	47.5	44.2	55.8	54.6	52.5	50.3	47.1	48.9	43.7	40.0	35.3	15.0
	56.0	75.1	41.8	53.6	48.1	43.9	56.7	62.4	55.4	52.4	48.5	49.7	51.0	46.6	41.4	25.9
	52.6	67.8	43.1	53.7	48.0	44.9	56.8	55.0	52.0	50.6	46.9	48.9	44.1	42.6	38.0	17.1
	51.7	63.8	42.8	54.2	48.6	44.9	60.0	56.6	52.7	49.8	44.3	45.7	45.3	43.3	38.7	19.6
	52.0	67.3	43.8	54.2	48.6	45.4	59.9	64.4	56.0	51.2	46.3	46.6	46.0	37.8	32.1	16.5
	54.4	71.5	42.6	56.9	49.2	44.8	60.9	64.2	56.6	50.7	49.0	49.2	48.9	39.7	33.7	17.7
	64.2	82.0	43.5	58.9	49.1	46.3	63.2	64.1	64.8	60.4	59.2	60.1	57.7	51.0	43.2	26.1
06:00 - 07:00	56.0	74.1	44.0	59.5	50.9	47.1	61.8	67.3	57.2	52.7	50.6	50.8	50.1	43.3	37.4	22.7
	57.1	68.3	42.6	62.6	49.4	45.7	68.3	69.0	61.0	53.5	51.2	52.2	51.2	45.1	35.8	19.3
	54.0	68.5	43.1	56.7	50.0	46.5	58.9	59.2	56.9	52.7	48.1	48.6	48.6	38.7	31.4	17.7
	55.8	74.2	42.7	58.6	50.5	45.3	57.6	58.1	56.3	52.6	50.9	51.8	49.4	39.0	32.9	18.1
	54.4	69.4	44.8	56.7	50.8	47.1	59.4	57.4	54.0	51.6	47.8	50.6	48.6	38.6	32.6	17.3
	53.0	65.7	44.2	56.0	50.4	48.0	58.4	58.3	53.5	50.5	47.3	47.9	47.4	40.1	35.2	21.7
	55.7	71.0	45.3	59.8	51.6	47.6	58.7	61.0	55.6	52.3	50.2	50.8	50.2	42.5	35.7	22.0

NOISE LEVEL SUMMARY ASSESSMENT																
Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 23:00 DAYTIME AVERAGE $L_{Aeq\ 16\ HOUR}$	59.5	76.1	48.8	62.5	55.8	51.2	66.5	66.4	61.0	57.5	53.7	54.3	53.6	47.9	42.4	30.2
23:00 - 07:00 NIGHT TIME AVERAGE $L_{Aeq\ 8\ HOUR}$	60.5	80.3	46.0	60.2	52.9	47.7	61.8	63.6	62.6	57.3	54.6	55.3	53.3	51.3	47.2	31.6

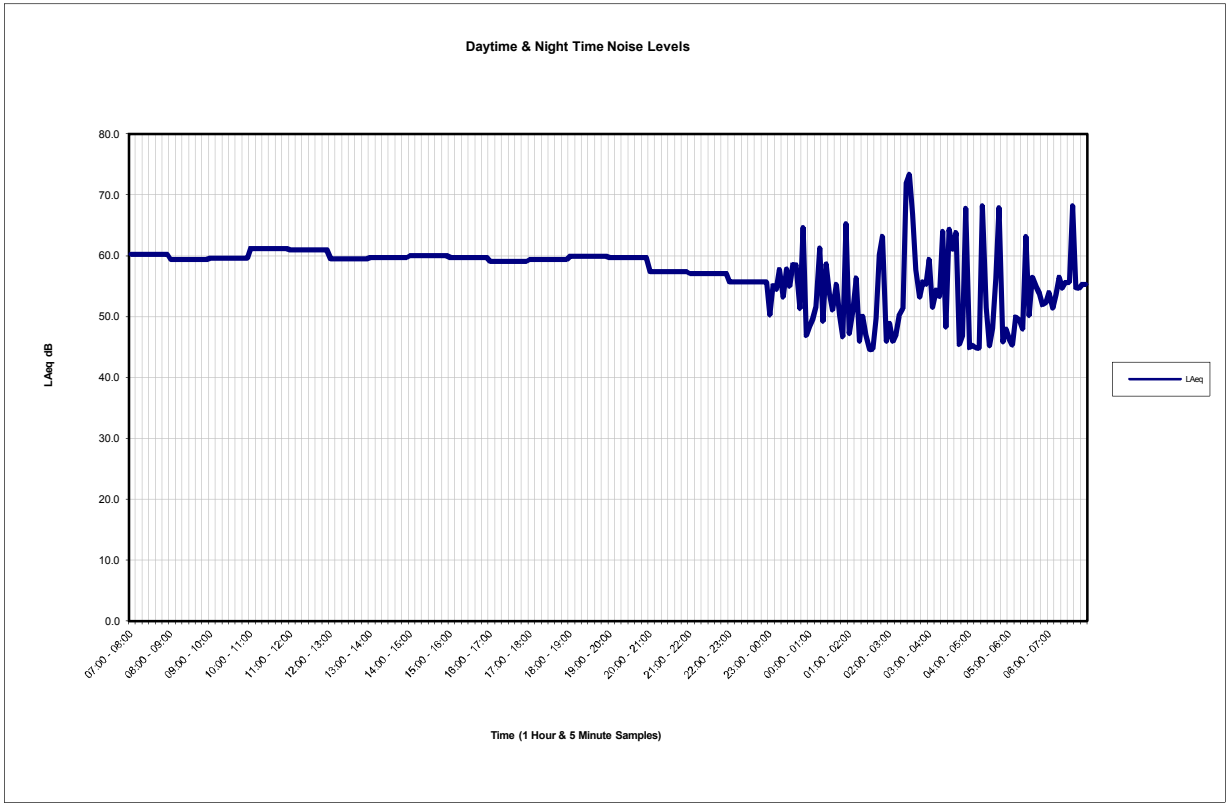


FIGURE 2

DAYTIME NOISE LEVELS 07:00 - 23:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz)									
							31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	60.3	77.5	47.2	62.0	54.3	49.7	64.5	66.9	60.8	58.2	54.4	55.3	54.5	47.9	42.0	28.8
08:00 - 09:00	59.5	74.6	49.0	62.7	56.2	51.6	69.1	68.3	60.4	56.2	53.0	54.4	53.8	48.0	43.2	32.6
09:00 - 10:00	59.6	72.2	49.4	62.8	55.9	51.9	67.3	68.4	60.2	56.2	53.1	54.4	54.2	48.1	42.1	28.5
10:00 - 11:00	61.2	76.4	49.7	63.6	56.4	52.0	67.0	66.6	62.2	58.5	55.6	56.6	55.2	49.1	43.2	29.6
11:00 - 12:00	61.0	80.8	49.1	64.0	56.4	51.6	67.3	68.0	64.0	60.4	55.3	55.6	54.5	50.2	42.9	30.7
12:00 - 13:00	59.6	74.0	49.9	62.7	56.8	52.2	66.6	66.4	60.2	56.6	53.1	54.3	53.9	48.6	44.4	31.3
13:00 - 14:00	59.8	76.9	48.6	62.6	56.8	52.2	69.9	67.1	61.6	57.8	54.1	54.5	53.8	48.3	41.9	28.2
14:00 - 15:00	60.1	74.4	49.3	63.3	56.7	51.8	67.6	67.0	61.1	57.0	53.3	54.8	54.3	50.2	44.4	29.4
15:00 - 16:00	59.8	76.1	49.9	63.5	56.8	52.3	65.2	66.0	60.9	56.9	54.1	54.8	53.6	48.8	44.7	29.4
16:00 - 17:00	59.1	76.4	49.7	62.4	56.7	51.8	66.3	65.1	59.7	57.2	53.7	54.1	53.0	46.7	42.2	29.8
17:00 - 18:00	59.4	75.0	49.3	62.5	56.6	51.6	64.3	65.4	63.3	59.5	54.8	53.8	52.7	46.3	39.5	26.9
18:00 - 19:00	59.9	75.9	48.9	62.1	56.5	51.3	66.7	66.1	60.8	58.2	54.1	55.0	54.5	45.9	40.3	26.9
19:00 - 20:00	59.8	77.5	48.0	61.7	55.8	50.5	65.6	65.6	61.1	57.2	53.1	53.2	54.9	49.2	42.1	27.3
20:00 - 21:00	57.5	76.9	47.5	60.6	53.3	49.5	64.9	64.7	58.4	55.9	52.1	52.2	51.7	44.4	43.8	36.8
21:00 - 22:00	57.1	71.2	47.0	61.9	51.9	49.0	62.1	63.8	59.2	56.2	52.3	52.7	50.1	43.2	37.0	22.9
22:00 - 23:00	55.8	70.7	46.1	59.4	52.2	48.4	62.5	61.8	58.3	54.4	50.0	50.8	49.8	43.1	36.3	23.7

NIGHT TIME NOISE LEVELS 23:00 - 07:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz)									
							31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 00:00	50.3	61.4	44.5	53.1	48.3	46.5	55.8	55.8	53.9	50.5	45.1	45.3	43.9	34.4	26.3	13.2
	55.1	70.2	45.2	58.3	49.6	47.6	58.8	61.4	56.0	52.5	50.0	50.1	49.2	42.8	36.4	23.6
	54.5	69.2	44.0	58.7	49.4	46.4	60.8	57.9	55.2	52.3	48.7	49.7	48.9	40.1	33.7	19.7
	57.7	76.4	45.0	57.8	50.1	47.0	65.2	66.4	58.7	53.0	49.7	50.4	52.5	49.0	48.0	33.2
	53.2	69.0	45.0	57.1	49.4	47.2	61.7	61.2	55.7	51.5	48.4	48.7	46.3	39.2	31.8	18.5
	57.9	71.3	45.7	61.9	54.1	48.8	62.7	65.2	61.3	54.2	52.3	52.5	52.5	45.2	39.1	25.1
	55.0	67.3	45.1	59.3	50.2	47.3	59.6	58.9	56.5	53.1	48.9	50.8	48.9	41.2	36.2	22.6
	58.6	77.7	46.8	61.6	53.4	49.1	57.5	60.0	54.5	52.3	50.6	55.6	52.1	46.2	36.8	23.3
	58.5	79.2	44.2	61.2	50.2	46.3	58.6	60.4	54.5	53.0	49.8	55.2	52.5	44.0	34.6	19.2
	51.3	64.1	43.3	54.3	47.2	44.8	55.0	58.6	53.9	51.9	46.5	46.5	43.7	36.8	28.5	14.2
	64.7	80.7	43.5	68.1	49.0	45.2	63.6	65.7	66.1	62.1	60.0	61.0	57.1	52.0	46.9	34.4
	46.9	51.0	42.3	48.8	46.6	44.2	53.1	53.0	51.4	49.4	42.3	41.6	38.1	28.4	19.3	9.4
00:00 - 01:00	48.4	61.5	42.6	49.3	45.8	44.1	57.9	53.4	51.5	50.1	43.5	44.0	40.1	31.3	24.2	11.5
	49.7	63.5	42.4	53.0	46.7	43.9	53.5	53.6	51.7	49.8	44.9	44.5	43.3	33.3	25.1	12.3
	51.7	63.9	43.2	55.3	47.1	45.0	60.5	57.3	52.3	50.5	47.4	46.4	45.4	38.0	30.9	17.8
	61.3	73.7	44.4	65.3	55.9	46.3	68.4	71.3	65.8	59.9	57.9	55.7	53.8	49.0	42.9	26.0
	49.2	61.6	42.6	50.3	45.9	44.1	56.2	54.7	52.0	50.4	44.6	44.1	41.7	33.2	25.3	12.6
	58.7	80.6	42.5	57.7	47.7	44.8	58.3	62.1	56.0	53.4	50.1	51.7	50.7	47.2	55.2	34.2
	53.9	72.4	42.5	53.7	46.0	44.1	56.9	60.5	54.8	52.7	47.7	49.3	47.8	41.0	37.0	19.5
	51.1	66.0	42.8	52.7	45.8	44.1	54.1	55.2	53.3	50.9	45.2	46.5	44.5	36.5	30.1	17.1
	55.3	75.5	42.4	51.4	46.0	44.0	57.0	56.7	54.5	51.1	51.8	50.7	46.3	42.2	46.8	31.1
	50.2	65.2	42.5	51.4	46.0	43.9	59.5	56.0	53.3	50.9	45.1	45.3	43.1	35.5	28.8	16.2
	46.7	66.5	42.7	47.8	45.1	44.0	51.8	50.4	51.3	49.0	43.0	41.1	37.8	27.8	19.6	10.0
	65.3	82.9	43.3	61.5	46.9	44.8	68.3	69.4	70.0	61.1	59.6	61.5	58.2	52.1	46.4	31.1
01:00 - 02:00	47.2	60.4	42.4	49.8	46.1	44.3	54.1	51.4	51.8	49.3	42.2	41.9	39.5	31.0	21.2	10.1
	51.2	72.2	42.9	53.4	49.2	45.4	53.7	54.4	52.7	50.6	45.7	45.0	45.4	40.5	30.9	16.8
	56.4	76.9	42.2	50.1	45.2	43.7	54.6	54.3	55.3	60.8	55.2	46.0	42.0	32.8	23.1	11.4
	46.0	53.3	41.9	47.6	45.5	43.6	51.2	50.5	51.0	48.4	41.5	41.2	36.8	26.6	17.9	9.2

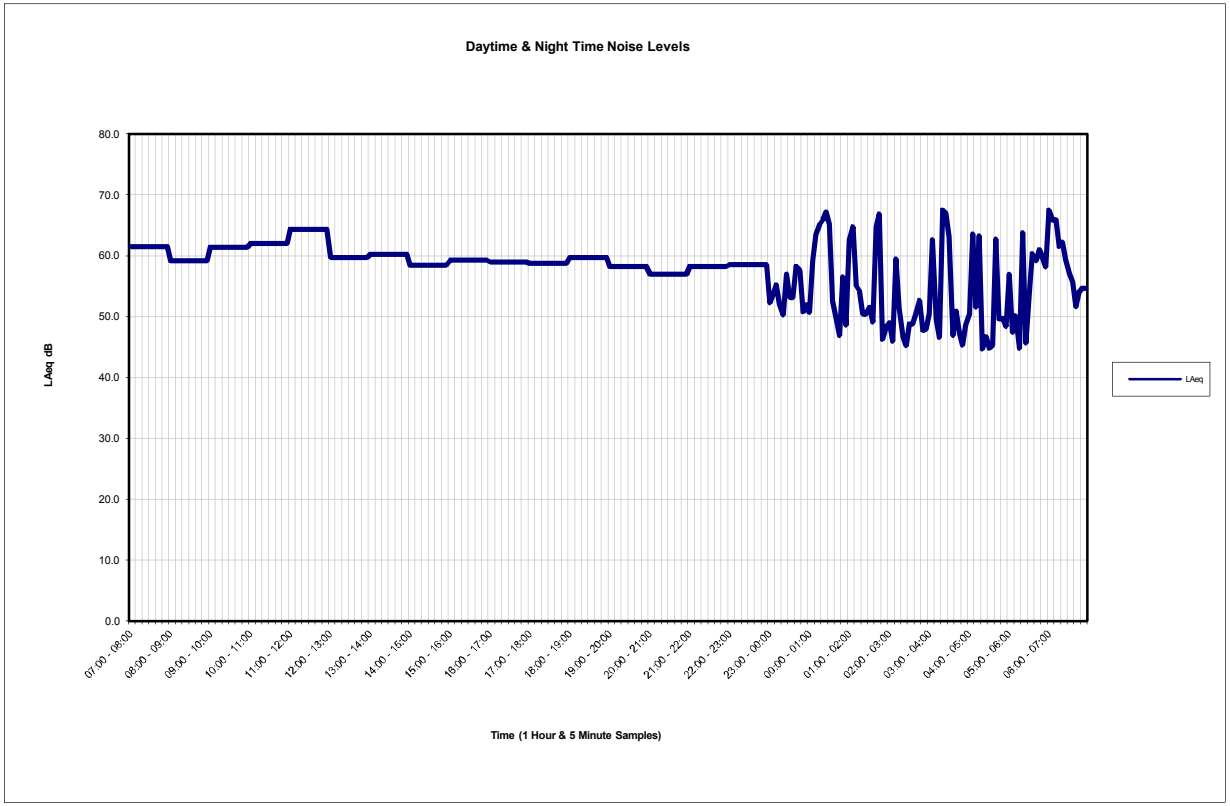
NIGHT TIME NOISE LEVELS 23:00 - 07:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
	50.1	57.9	41.6	53.8	47.2	43.5	52.7	50.3	51.4	52.7	46.3	45.7	40.3	29.9	20.6	10.1
	47.0	60.5	41.8	48.9	44.7	43.2	50.8	50.4	50.5	48.6	41.9	42.5	39.0	28.4	21.3	10.7
	44.6	53.5	40.5	46.4	43.9	42.6	50.0	49.3	49.5	46.9	40.1	39.4	35.2	28.8	22.1	10.8
01:00 - 02:00 *Continued*	44.7	51.1	41.1	46.9	44.1	42.6	49.3	48.9	49.7	47.2	40.6	39.5	35.6	27.8	22.3	11.0
	49.8	67.9	41.1	48.8	45.0	43.2	54.1	58.9	52.2	49.0	43.6	44.5	43.8	36.5	28.2	14.8
	60.3	71.4	42.0	67.1	46.1	43.7	62.9	63.7	62.4	58.7	55.5	53.8	54.4	49.9	41.9	25.3
	63.2	79.2	42.5	64.0	45.6	43.7	68.6	68.7	70.4	60.2	58.0	58.1	56.2	50.6	46.9	36.0
	46.0	63.7	42.5	47.1	45.3	43.8	53.0	51.1	51.3	49.3	41.5	40.3	35.7	29.6	25.2	14.8
	48.9	64.3	43.5	50.0	47.0	45.4	63.1	54.1	52.7	50.4	43.7	43.6	41.0	34.8	34.6	20.2
	46.0	54.5	42.9	47.0	45.1	44.2	52.3	51.9	52.4	49.5	41.4	40.1	35.6	23.9	14.2	8.7
	47.1	66.1	42.9	47.5	45.2	44.0	53.9	54.7	56.0	51.5	42.2	39.8	35.3	24.7	13.9	8.6
	50.2	68.4	43.3	50.5	46.7	44.8	58.8	62.8	61.2	54.0	44.6	41.1	38.8	34.3	29.3	15.5
02:00 - 03:00	51.3	69.7	42.9	52.9	48.8	44.3	62.8	62.2	60.7	53.5	44.7	42.3	43.3	40.1	35.1	20.5
	71.9	92.6	44.6	66.4	50.4	46.0	68.1	69.0	68.5	62.2	61.6	63.4	60.3	68.3	63.3	37.8
	73.4	96.8	54.4	71.4	68.0	56.2	72.7	77.4	77.4	72.8	68.9	67.9	66.1	61.8	59.2	47.2
	66.9	70.2	60.9	69.4	67.1	62.0	57.3	59.6	57.0	53.3	54.5	59.2	61.9	60.0	57.9	45.9
	57.8	87.1	29.6	59.5	54.0	49.9	65.1	63.4	61.0	56.4	52.7	51.1	51.3	48.5	44.9	32.9
	53.2	67.4	46.6	55.7	49.2	48.1	60.9	61.0	57.8	52.4	46.5	46.0	47.3	44.3	38.6	25.3
	55.8	80.9	45.2	52.1	47.3	46.3	66.7	72.4	67.5	58.9	48.4	44.8	44.2	41.6	36.4	23.4
	55.3	78.0	47.2	55.5	54.2	48.8	64.6	65.2	64.8	55.4	48.2	46.6	48.5	45.2	39.9	26.1
	59.4	71.9	47.8	61.3	50.5	48.8	64.4	63.2	61.4	58.3	55.5	54.9	52.0	46.3	39.9	24.9
	51.6	65.5	47.6	52.7	50.0	48.7	55.7	58.4	56.4	50.3	43.7	44.7	45.8	42.6	37.8	24.1
	54.4	64.9	48.5	56.0	54.0	50.5	58.0	58.4	56.8	50.6	44.6	47.3	49.4	46.3	41.5	27.5
	53.3	66.6	49.4	55.4	52.1	50.3	59.4	61.3	60.0	51.3	44.4	45.7	47.6	44.5	39.5	25.7
03:00 - 04:00	64.1	80.4	45.6	61.9	48.9	46.8	62.1	66.8	66.2	60.2	58.7	60.1	57.4	51.2	43.4	26.6
	48.3	58.6	44.1	50.9	47.2	45.3	54.1	53.1	52.3	48.4	42.6	42.3	41.7	37.2	32.6	19.7
	64.4	80.4	44.3	64.0	47.4	45.6	68.1	68.2	70.5	60.3	59.1	59.9	57.2	52.7	46.7	28.5
	61.1	71.6	43.6	66.7	47.7	44.7	65.4	62.1	60.2	58.2	57.2	57.0	54.0	48.0	40.5	25.5
	63.9	79.5	42.3	68.1	46.0	43.7	68.4	67.6	64.6	61.1	57.9	59.3	56.9	52.5	53.6	39.4
	45.4	53.3	41.8	47.2	44.6	43.2	50.2	50.1	49.6	46.6	40.2	39.7	37.9	33.1	28.3	15.9
	46.9	62.6	41.1	46.3	43.9	42.9	49.6	52.8	50.4	47.2	41.0	41.4	40.1	35.0	29.5	16.8
	67.8	84.4	41.7	64.1	46.5	43.2	65.1	67.6	69.0	62.9	62.7	63.7	61.5	55.0	47.2	29.8
	44.9	51.4	41.0	47.0	44.2	42.4	50.3	50.4	50.0	46.9	40.4	39.4	36.5	30.4	24.6	12.8
	45.3	53.1	41.3	48.0	43.8	42.6	50.1	49.6	50.2	47.6	40.7	39.5	37.1	31.0	25.1	12.9
	44.9	53.4	41.6	46.7	44.1	42.9	50.1	50.2	50.5	47.6	40.5	39.1	36.0	29.8	23.1	11.9
	44.8	50.2	42.0	46.5	44.4	43.2	50.3	50.2	50.7	47.7	40.5	39.4	34.8	26.6	21.0	11.0
04:00 - 05:00	68.3	84.9	41.8	67.0	47.5	43.3	64.8	68.0	69.2	63.3	62.0	64.0	61.6	58.5	51.5	35.9
	51.5	68.5	41.0	49.1	44.3	42.4	55.2	56.0	51.8	49.1	43.7	45.3	46.3	41.8	37.4	24.5
	45.2	56.5	41.1	48.5	43.7	42.3	49.6	51.0	51.1	47.4	40.5	39.9	36.7	30.0	24.6	12.6
	48.2	64.5	41.6	49.7	44.3	42.8	51.1	54.1	49.9	47.6	41.8	43.8	42.0	33.2	25.5	13.0
	56.3	68.4	42.5	61.7	47.1	43.8	61.8	61.2	58.5	55.8	53.4	51.0	48.0	44.5	39.7	25.9
	67.9	85.7	41.2	60.9	43.9	42.6	61.0	65.4	67.5	60.7	62.8	64.3	61.5	54.3	46.2	29.0
	45.9	56.0	41.4	47.0	44.3	42.9	52.2	51.3	50.4	48.3	41.6	40.3	37.5	29.7	23.7	11.2
	48.0	59.7	41.6	51.1	45.4	43.7	54.8	51.5	50.7	50.4	43.4	43.0	39.6	30.1	22.3	10.2
	46.4	56.7	41.8	48.4	45.0	43.6	54.2	52.2	50.6	47.9	41.7	41.5	38.3	30.1	24.6	11.3
	45.3	53.8	41.1	47.1	44.2	42.9	50.6	50.6	50.2	47.2	40.6	40.4	36.9	28.2	20.2	9.9
05:00 - 06:00	50.0	63.9	41.9	51.7	45.1	43.2	62.5	59.1	51.7	49.0	44.2	45.7	43.1	36.3	31.1	15.5
	49.4	66.4	42.5	50.3	45.1	43.6	58.4	57.1	52.4	49.4	43.8	44.8	42.7	34.3	27.4	14.8
	48.0	58.9	42.8	50.4	46.3	44.4	54.2	54.0	52.7	50.0	43.2	42.9	40.2	29.6	21.5	10.6
	63.2	81.3	43.3	60.6	47.9	44.9	62.7	66.4	63.5	57.4	56.7	60.0	56.2	49.3	41.7	24.3

NIGHT TIME NOISE LEVELS 23:00 - 07:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
	50.2	66.7	42.2	51.3	45.8	43.8	59.1	54.5	51.5	49.1	43.6	44.8	43.8	38.5	39.3	17.9
	56.5	69.2	43.7	61.9	47.9	45.4	61.3	60.3	58.3	55.4	53.9	51.2	49.1	42.2	36.4	19.7
05:00 - 06:00 *Continued*	54.9	70.0	43.6	56.7	48.6	45.0	61.5	60.5	55.1	52.1	48.3	49.4	49.5	43.8	39.4	24.8
	53.9	67.6	44.5	55.2	48.9	46.5	56.5	57.1	54.6	52.6	48.7	50.3	46.5	38.7	32.9	18.2
	52.0	71.9	44.5	51.3	47.9	46.0	54.0	56.8	56.0	51.7	46.4	47.7	45.1	34.0	25.8	14.1
	52.3	67.1	42.9	53.0	46.5	44.6	53.9	52.4	52.3	50.5	46.8	48.5	45.6	37.7	30.7	14.2
	54.0	68.6	44.0	57.0	48.8	45.7	60.2	62.4	55.5	52.3	47.5	49.3	47.8	41.9	35.8	20.6
	51.4	64.0	43.6	54.0	48.6	45.5	59.6	56.3	53.2	50.6	45.0	46.3	44.3	41.7	38.2	18.9
	53.6	69.0	43.4	56.9	49.6	46.1	55.0	53.6	52.6	50.3	48.0	47.7	48.5	42.1	35.1	15.9
	56.5	75.0	43.9	57.4	49.9	45.6	61.7	60.5	54.9	52.7	48.2	50.4	51.8	46.8	38.2	21.6
06:00 - 07:00	54.7	72.6	45.1	56.4	52.1	49.3	57.4	56.4	54.7	53.4	49.1	50.0	48.3	41.8	38.8	18.8
	55.7	69.2	49.5	58.1	54.3	51.7	60.1	60.9	55.9	54.9	49.3	49.8	49.9	45.0	38.1	20.3
	55.6	68.3	47.1	57.7	52.7	50.0	60.2	59.1	56.9	54.7	49.4	50.5	49.6	43.0	35.7	22.6
	68.3	86.4	46.1	65.2	53.4	49.0	65.3	67.3	66.5	61.5	62.4	64.8	62.1	54.0	45.5	27.8
	54.8	65.5	44.7	58.3	52.1	48.1	60.0	60.3	55.4	53.0	48.5	49.6	49.6	41.2	33.6	18.2
	54.7	70.9	44.8	57.7	51.2	47.7	59.7	60.0	56.2	52.2	49.1	49.0	49.9	39.9	32.0	17.6
	55.3	68.8	47.1	58.0	51.8	49.4	62.0	62.6	56.3	53.3	50.1	50.2	49.4	41.1	37.3	19.8

NOISE LEVEL SUMMARY ASSESSMENT																
Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 23:00 DAYTIME AVERAGE $L_{Aeq\ 16\ HOUR}$	60.2	78.5	48.8	62.8	55.8	51.3	66.1	66.5	60.8	57.2	53.8	54.7	53.9	51.4	42.8	29.3
23:00 - 07:00 NIGHT TIME AVERAGE $L_{Aeq\ 8\ HOUR}$	59.9	75.7	49.2	61.5	54.3	51.3	61.0	61.9	61.4	55.0	53.8	55.0	53.7	49.3	45.9	32.7



EXTERNAL NOISE ASSESSMENT
2a South Hill Park, London

DOWNLOADED RESULTS
RECORDED 19th - 20th September 2014

DAYTIME NOISE LEVELS 07:00 - 23:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	61.5	81.6	48.1	63.5	54.9	50.6	66.2	67.0	62.0	57.2	54.8	56.6	55.7	51.4	43.4	30.5
08:00 - 09:00	59.2	73.7	49.0	62.7	56.2	51.6	67.4	66.3	61.3	56.5	53.0	54.3	53.4	47.2	41.3	29.9
09:00 - 10:00	61.5	82.0	49.7	64.2	57.6	52.1	70.7	71.9	60.6	57.0	53.8	55.8	56.3	51.2	47.3	33.3
10:00 - 11:00	62.1	84.3	50.3	63.8	57.5	53.4	65.9	66.1	61.8	56.9	54.7	55.6	55.5	55.9	44.5	31.5
11:00 - 12:00	64.4	84.2	48.9	65.2	56.6	51.6	66.6	66.9	61.6	58.5	55.2	56.5	57.0	60.1	43.8	31.3
12:00 - 13:00	59.7	75.8	49.0	62.9	56.5	51.8	66.9	66.4	60.7	57.6	53.7	54.7	53.7	48.1	43.6	30.8
13:00 - 14:00	60.3	75.9	48.4	62.5	55.5	50.6	66.1	66.0	61.2	57.0	54.2	55.6	54.4	48.3	42.4	28.5
14:00 - 15:00	58.5	72.1	48.0	61.7	55.2	50.5	66.4	67.2	62.8	58.3	53.4	53.1	51.8	45.3	38.8	26.4
15:00 - 16:00	59.3	75.5	48.4	62.8	55.2	50.5	65.2	66.0	62.2	57.3	54.1	54.4	53.3	46.5	38.9	24.7
16:00 - 17:00	59.0	71.4	49.4	62.3	56.8	52.5	65.1	65.3	59.9	57.3	53.5	53.8	53.2	46.1	40.0	25.8
17:00 - 18:00	58.8	71.1	48.6	62.6	56.1	51.1	64.4	65.6	60.6	58.0	53.8	53.5	52.5	45.9	39.7	25.7
18:00 - 19:00	59.8	73.3	49.8	62.7	56.8	52.4	66.4	65.6	60.1	58.0	54.4	55.1	53.7	46.5	40.9	28.3
19:00 - 20:00	58.2	71.9	49.0	61.3	55.5	51.5	65.0	65.5	59.7	56.5	52.7	53.4	52.3	45.1	39.0	25.3
20:00 - 21:00	57.0	71.7	47.6	60.4	52.9	49.8	62.5	62.6	57.6	55.3	52.0	52.2	51.0	43.7	37.1	23.7
21:00 - 22:00	58.3	72.9	48.0	61.6	52.5	50.0	61.7	61.8	58.8	56.6	53.6	53.9	51.7	44.7	37.5	22.7
22:00 - 23:00	58.6	75.9	46.5	61.9	52.7	48.7	62.8	63.6	59.5	55.8	52.3	53.3	51.9	48.5	47.5	32.4

NIGHT TIME NOISE LEVELS 23:00 - 07:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 00:00	52.3	70.6	45.2	52.9	48.9	47.1	57.5	57.6	55.2	51.1	46.2	47.6	46.2	38.6	32.5	20.4
	53.7	69.0	45.2	56.1	50.2	47.3	60.2	59.8	54.1	51.7	48.5	49.2	47.8	39.2	30.1	17.3
	55.2	69.1	44.8	58.7	49.8	46.6	60.8	64.3	56.6	54.9	50.2	50.1	48.7	41.7	34.9	21.0
	52.1	69.9	44.4	53.6	48.0	46.2	57.0	54.2	58.3	54.2	49.3	46.1	41.7	31.6	22.6	11.2
	50.3	64.3	44.9	51.8	48.2	46.5	55.7	56.8	53.0	50.6	46.2	45.5	42.6	35.6	29.9	18.3
	57.0	71.1	46.2	60.8	54.5	48.4	63.1	61.0	56.1	54.3	52.6	52.0	51.3	43.3	36.5	21.6
	53.2	65.5	44.7	55.7	49.3	46.3	57.6	58.4	56.0	52.2	47.6	48.2	47.1	39.8	33.6	20.4
	53.1	69.0	44.1	55.7	48.5	46.1	56.2	57.1	54.7	51.8	47.4	48.5	46.9	38.4	32.6	18.4
	58.3	71.8	44.2	60.7	53.6	47.0	61.5	65.2	60.4	55.7	53.2	53.4	52.1	45.9	38.9	23.5
	57.6	77.4	44.2	59.6	48.8	46.1	62.2	62.6	58.2	54.1	49.5	51.3	52.8	47.9	41.3	28.1
	50.8	66.5	43.6	52.0	47.7	45.8	62.8	56.6	54.8	50.7	45.9	45.9	43.6	36.5	30.5	17.3
	52.0	66.0	43.6	53.1	47.1	45.4	56.5	57.6	53.5	51.5	47.7	47.9	44.3	37.1	28.9	14.5
00:00 - 01:00	50.7	61.1	44.4	53.2	48.0	46.3	57.0	57.7	53.6	51.2	45.7	46.0	43.3	35.9	28.8	15.3
	59.2	72.7	43.9	65.1	48.4	45.5	68.9	62.5	61.0	56.7	55.5	54.3	52.1	48.0	42.4	25.2
	63.5	82.6	44.2	66.8	49.7	47.0	62.2	64.1	62.8	61.2	57.6	57.2	55.2	53.1	57.9	40.8
	65.2	82.2	43.3	64.4	49.0	45.0	69.2	69.6	69.2	61.0	59.7	61.3	58.0	52.4	47.8	32.7
	66.0	82.6	43.6	66.7	48.4	45.8	66.6	70.5	66.3	61.4	60.5	62.7	58.8	52.2	45.2	28.5
	67.2	84.6	42.9	68.5	47.9	44.5	67.7	69.5	69.9	62.2	62.6	63.2	60.3	53.7	47.6	31.7
	65.2	81.8	43.0	68.9	47.7	44.5	62.8	65.7	65.7	62.0	60.1	61.7	58.0	51.8	44.1	31.8
	52.6	70.0	43.3	53.9	47.6	45.3	56.6	60.9	53.8	51.2	46.8	48.6	45.6	39.5	34.3	21.4
	49.6	66.0	43.3	50.4	46.9	44.8	56.7	54.2	51.8	49.9	43.8	44.9	42.7	36.1	28.9	13.7
	46.9	58.1	42.5	48.9	46.1	44.6	54.2	52.4	51.5	49.5	43.0	41.4	37.6	28.1	19.2	9.6
	56.6	70.9	42.5	60.3	47.6	44.6	63.4	60.6	57.4	53.6	51.6	50.1	49.5	48.5	42.8	24.7
	48.6	60.1	43.0	50.2	46.4	44.5	54.3	57.5	53.2	50.2	44.0	43.9	40.2	30.4	22.2	11.4
01:00 - 02:00	62.6	80.1	43.5	61.7	47.3	45.1	67.4	68.6	71.9	59.9	56.2	57.7	54.9	50.5	43.2	24.9
	64.8	78.3	43.3	70.7	49.0	45.2	58.5	59.8	60.5	59.8	62.4	61.1	57.1	48.9	40.8	22.5
	55.1	67.3	42.5	60.4	46.6	44.4	63.8	60.4	57.6	54.1	51.8	49.9	48.0	41.8	34.3	17.5
	54.3	71.3	43.0	54.9	47.5	44.8	56.8	59.3	54.7	54.0	51.1	48.6	47.6	40.2	33.9	20.1

NIGHT TIME NOISE LEVELS 23:00 - 07:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz) 31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
	50.5	67.5	42.2	52.2	47.1	44.8	55.4	55.4	53.5	50.2	44.9	45.5	44.1	37.4	30.5	20.4
	50.4	67.1	42.7	50.0	45.7	44.0	52.3	54.2	52.3	50.0	44.2	46.5	43.4	35.0	25.8	13.6
	51.6	75.9	42.2	52.6	48.0	44.1	53.2	54.4	52.8	50.2	46.0	46.4	45.9	38.2	30.0	15.7
01:00 - 02:00 *Continued*	49.1	70.0	42.5	51.5	46.1	43.8	52.4	52.8	52.2	49.6	44.2	42.6	42.6	37.6	28.8	13.9
	64.7	81.5	42.7	61.9	47.9	44.5	66.8	68.2	71.6	60.9	59.2	60.1	57.9	51.7	45.3	29.1
	66.9	85.5	42.3	65.7	45.5	44.0	64.9	65.4	65.8	60.6	61.3	63.3	60.6	53.6	45.8	28.5
	46.3	54.7	41.7	49.8	44.4	43.1	50.2	49.8	49.5	47.8	41.7	41.7	38.5	27.8	17.6	9.1
	48.4	66.2	41.6	48.3	44.7	43.1	51.9	55.9	50.7	49.6	43.3	44.0	40.8	31.6	23.4	12.5
	49.0	68.1	41.4	48.2	44.3	43.0	50.3	52.3	51.6	50.2	43.4	44.6	41.4	33.6	26.4	13.3
	46.0	61.0	40.7	48.5	44.1	42.5	55.6	52.2	50.1	47.4	41.3	41.3	37.6	29.0	25.2	14.2
	59.5	73.4	40.9	62.1	44.5	42.3	65.3	59.2	57.2	55.2	56.5	55.7	51.6	46.2	37.0	18.7
	51.4	67.9	42.4	50.2	45.9	44.0	59.0	62.6	59.5	51.1	44.3	45.4	45.2	39.2	31.1	17.6
02:00 - 03:00	46.7	57.4	42.0	49.3	44.7	43.3	51.1	51.6	51.4	49.3	42.2	41.0	38.6	28.0	19.7	9.2
	45.2	52.3	42.2	46.4	44.8	43.5	50.8	50.3	51.2	48.4	40.9	39.6	34.7	23.5	13.8	9.1
	48.8	64.6	42.2	51.1	46.1	43.8	55.2	56.1	52.0	49.1	43.5	44.0	42.2	32.5	25.1	13.5
	48.8	65.1	42.4	48.6	44.7	43.6	55.6	53.2	52.0	49.8	44.0	44.6	40.5	31.0	23.8	12.6
	50.5	68.1	42.4	51.2	46.0	43.8	55.4	56.2	52.9	50.1	43.6	45.1	44.9	38.5	30.0	16.1
	52.7	72.1	42.3	50.4	45.5	43.6	57.2	57.9	52.1	51.2	46.7	48.0	46.8	40.1	34.1	22.5
	47.8	64.1	42.3	48.2	45.1	43.9	55.8	57.0	52.1	49.3	42.8	43.2	39.5	30.0	23.2	10.7
	48.0	63.5	42.1	48.2	44.8	43.6	56.3	53.2	51.5	49.0	42.8	43.6	40.4	30.5	21.5	10.9
	50.5	64.8	42.6	51.6	46.0	44.1	55.5	53.5	52.9	50.6	44.6	46.6	43.4	31.7	21.9	11.5
	62.7	79.3	42.5	60.6	46.0	43.9	59.1	59.5	58.9	57.2	57.5	57.7	56.6	52.5	44.3	24.2
	49.4	66.0	42.1	49.2	45.1	43.5	55.8	56.3	51.8	49.7	43.4	44.9	42.6	34.9	25.2	13.2
	46.6	60.6	41.8	48.2	44.9	43.3	56.4	53.6	50.6	48.7	41.7	41.7	38.2	29.8	22.1	11.4
	67.5	84.7	42.4	65.3	47.0	43.9	68.1	71.2	72.2	62.3	62.1	63.7	60.5	53.8	45.6	28.3
03:00 - 04:00	67.0	85.2	41.2	63.3	46.5	43.8	62.6	66.7	67.0	60.8	61.9	63.3	60.5	53.3	45.9	28.9
	63.1	79.1	41.6	64.5	46.7	43.3	67.2	67.2	69.4	59.7	58.8	58.6	55.6	49.6	42.3	24.9
	46.9	61.8	42.0	48.2	44.6	43.4	51.0	50.2	50.7	48.7	41.7	42.3	38.5	28.9	21.6	9.5
	50.9	67.3	42.5	51.0	45.7	44.1	57.3	60.3	52.4	50.8	45.2	46.5	43.9	36.2	28.3	14.9
	47.4	60.4	41.4	48.3	44.5	42.9	55.9	55.7	50.3	48.4	42.3	42.4	39.8	34.0	24.5	10.7
	45.3	49.9	42.1	47.4	44.7	43.3	49.5	49.5	49.9	48.3	40.9	40.3	35.5	23.6	13.4	8.5
	48.7	62.4	42.3	51.4	45.9	44.0	51.8	52.6	52.8	49.6	43.4	44.1	41.6	31.1	26.5	19.6
	50.5	65.0	41.5	52.6	44.6	43.0	56.7	62.4	53.5	50.0	44.3	46.4	43.5	33.7	27.2	14.6
	63.6	80.6	42.5	62.6	45.9	43.9	68.1	69.2	66.9	59.5	58.5	59.4	56.9	50.9	44.2	28.1
	51.5	70.2	42.7	49.3	45.9	44.2	52.7	56.6	53.0	51.0	45.7	48.2	43.4	35.0	28.5	15.7
	63.3	79.9	42.2	63.6	45.8	43.5	62.9	66.4	63.5	59.7	58.7	59.2	56.3	49.6	41.6	23.8
04:00 - 05:00	44.7	51.7	41.6	47.0	43.8	42.7	50.2	51.3	49.7	47.8	40.4	39.3	34.6	22.2	12.5	8.5
	46.7	68.1	41.6	47.5	44.5	42.9	50.6	50.4	50.2	48.1	41.2	42.4	38.3	24.9	15.9	9.0
	44.8	56.9	40.9	45.8	43.6	42.5	49.0	49.2	49.6	47.3	40.2	39.6	35.6	26.0	20.9	10.7
	45.2	52.8	41.4	47.3	43.9	42.6	50.4	48.4	49.3	47.6	40.7	40.3	36.3	25.0	16.1	9.4
	62.8	75.2	41.3	68.4	45.1	43.2	62.8	61.8	58.9	58.8	56.0	58.1	57.3	52.2	43.9	25.3
	49.7	68.0	41.7	48.9	45.3	43.6	54.0	58.4	51.5	49.0	43.0	45.0	43.4	36.0	28.9	14.8
	49.8	67.6	42.1	51.2	44.4	43.3	56.4	52.5	51.0	50.2	44.4	45.7	42.4	34.0	27.0	14.4
	48.4	65.7	42.3	49.6	45.0	43.7	55.8	51.2	50.9	50.1	43.3	43.8	40.7	30.3	24.5	30.2
	57.0	69.5	42.1	62.5	45.5	43.4	62.9	61.2	58.2	55.3	53.4	51.3	48.0	43.2	50.9	43.2
	47.4	61.6	42.0	48.1	44.1	43.0	53.4	53.6	50.7	48.7	43.5	42.6	38.9	31.2	24.9	12.0
05:00 - 06:00	50.2	68.5	41.6	51.3	44.4	42.8	54.8	57.8	51.7	49.3	43.9	45.1	44.1	37.8	30.3	16.8
	44.8	55.4	41.0	46.5	44.1	42.3	51.6	48.7	49.4	47.8	40.5	39.7	35.0	25.1	17.1	8.8
	63.9	80.7	41.5	63.4	47.0	43.5	66.4	67.4	69.3	59.7	58.3	60.0	56.9	50.0	41.7	24.4
	45.7	56.8	41.9	47.1	45.1	43.5	51.9	52.5	50.6	48.4	41.0	39.7	35.8	34.1	29.1	9.8

NIGHT TIME NOISE LEVELS 23:00 - 07:00

Date / Time	LAeq	Lmax	Lmin	LA10	LA50	LA90	Octave Band Centre Frequency (Hz)									
							31.5	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
05:00 - 06:00 *Continued*	53.3	66.5	42.8	56.1	49.3	45.1	53.9	53.8	51.5	50.6	45.8	48.0	47.4	44.0	38.9	23.9
	60.4	67.5	56.2	62.4	59.8	57.2	56.8	53.3	50.4	49.4	48.0	53.0	55.9	53.2	48.5	34.6
	59.2	67.2	56.2	59.8	59.0	57.7	53.8	50.8	50.4	49.6	47.3	51.8	54.8	51.9	47.0	33.0
	61.0	63.8	58.6	62.2	60.9	59.6	53.7	52.3	51.3	49.9	48.7	53.6	56.6	53.8	49.2	35.6
	59.7	67.4	54.8	61.4	59.5	56.3	60.6	55.4	51.4	50.6	49.4	52.8	55.1	52.0	47.4	33.7
06:00 - 07:00	58.2	61.4	54.9	60.2	58.1	55.5	54.7	51.3	50.8	49.8	46.8	50.7	53.6	50.8	46.4	32.9
	67.5	82.7	59.5	66.4	65.2	64.0	61.7	64.2	63.1	57.6	60.0	61.6	62.3	58.8	54.8	41.9
	65.8	73.9	54.7	69.4	64.0	57.2	58.2	53.9	53.6	53.4	54.2	58.5	60.7	58.7	56.7	44.3
	66.0	69.9	58.5	68.5	65.3	61.8	58.2	58.7	53.0	53.0	54.3	58.8	61.0	58.9	56.5	44.0
	61.5	69.6	57.1	63.4	61.4	58.3	53.7	51.3	51.3	50.4	50.6	54.2	56.9	54.0	50.1	37.1
	62.3	69.6	58.8	64.3	61.7	60.0	58.8	58.0	52.3	51.4	50.7	55.0	57.8	55.1	51.2	38.3
	59.4	73.0	56.5	60.6	58.4	57.4	63.8	63.4	54.8	51.0	50.0	52.4	54.6	51.6	46.8	33.6
	57.1	68.3	49.4	60.3	54.7	51.1	57.5	63.7	56.2	52.0	47.8	50.2	52.5	48.4	43.2	29.6
	55.8	67.4	46.9	60.1	52.2	48.4	58.3	59.9	52.8	50.5	48.9	49.9	51.1	45.1	39.2	24.8
	51.7	65.7	45.9	54.0	48.9	47.1	56.2	54.9	51.9	49.9	44.3	46.3	46.4	40.7	35.1	20.8
	54.1	66.5	47.7	58.0	51.2	48.9	57.2	56.3	54.8	51.1	47.4	47.4	49.7	42.4	35.8	21.2
	54.7	71.2	46.2	58.0	51.0	47.6	57.5	62.0	60.4	53.8	47.3	47.5	49.5	43.6	37.6	23.2

Calculation Sheet BS 8233:2014
(Table 2 / 4)

Client	Brooks Murray Architects
Site	The Magdala, 2a South Hill Park, London
Figure	4

Maximum Criteria	
Daytime	Night Time
35	30

Floor	Second Floor
Room	Kitchen/Dining/Living

Daytime	MET
Evening	MET

Proposed Window Configeration 4 / 16 / 4 with acoustic through frame slotvent

Leqff	*The equivalent continuous sound pressure level outside the room elements under consideration*
A0	*The reference absorption area of 10m2 and is independent of frequency*
Sf	*The total façade area of the room in question*
Swi	*The area of the windows in the room*
Sew	*The area of the external wall of the room*
Srr	*The area of the ceiling of the room (if applicable)*
S	*The total area of the elements through which sound enters the room*
Dne	*The insulation value of the trickle ventilator (if applicable)*
Rwi	*The sound reduction index of the window*
Rew	*The sound reduction index of the external wall*
Rrr	*The sound reduction index of the ceiling/roof (if applicable)*
A	*The equivalent absorption area of the receiving room where A=0.163V/T*

Formula Leq2=Leqff+10log[A0/S*10^(-Dne/10)+Swi/S*10^(-Rwi/10)+Sew/10*10^(-Rew/10)+Srr/S*10^(-Rrr/10)] +10log(S/A) +3

	Octave Band Centre Frequency (Hz)					
	125	**250**	**500**	**1000**	**2000**	**4000**
Sf	29	29	29	29	29	29
Sr	0	0	0	0	0	0
Swi	9	9	9	9	9	9
Sew	20	20	20	20	20	20
Srr	0	0	0	0	0	0
S	29	29	29	29	29	29
A0	10	10	10	10	10	10
V	125	125	125	125	125	125
T (BS8233)	0.50	0.50	0.50	0.50	0.50	0.50
A	40	40	40	40	40	40
Daytime Leqff	60.8	57.2	53.8	54.7	53.9	51.4
Night time Leqff	62.6	57.3	54.6	55.3	53.3	51.3
Dne	40.0	38.0	37.0	34.0	37.0	38.0
Rwi	21.1	19.7	31.1	38.2	41.3	38.7
Rew	40.0	44.0	45.0	51.0	56.0	61.0
Rrr	28.0	34.0	40.0	45.0	49.0	53.0

***estimated**

Predicted dB(A) Level Within The Above Room During Daytime Hours (07:00-23:00)	$L_{Aeq\ 16\ HOUR}$	**28.3**	**dB(A)**

Predicted dB(A) Level Within The Above Room During Night Time Hours (23:00-07:00)	$L_{Aeq\ 8\ HOUR}$	**28.8**	**dB(A)**

Calculation Sheet BS 8233:2014
(Table 2 / 4)

Client	Brooks Murray Architects
Site	The Magdala, 2a South Hill Park, London
Figure	5

Maximum Criteria	
Daytime	Night Time
35	30

Floor	Third Floor
Room	Kitchen/Dining/Living

Daytime	MET
Evening	MET

Proposed Window Configeration 4 / 14 / 6 with acoustic through frame slotvent

Leqff	*The equivalent continuous sound pressure level outside the room elements under consideration*
A0	*The reference absorption area of 10m2 and is independent of frequency*
Sf	*The total façade area of the room in question*
Swi	*The area of the windows in the room*
Sew	*The area of the external wall of the room*
Srr	*The area of the ceiling of the room (if applicable)*
S	*The total area of the elements through which sound enters the room*
Dne	*The insulation value of the trickle ventilator (if applicable)*
Rwi	*The sound reduction index of the window*
Rew	*The sound reduction index of the external wall*
Rrr	*The sound reduction index of the ceiling/roof (if applicable)*
A	*The equivalent absorption area of the receiving room where A=0.163V/T*

Formula Leq2=Leqff+10log[A0/S*10^(-Dne/10)+Swi/S*10^(-Rwi/10)+Sew/10*10^(-Rew/10)+Srr/S*10^(-Rrr/10)] +10log(S/A) +3

	Octave Band Centre Frequency (Hz)					
	125	**250**	**500**	**1000**	**2000**	**4000**
Sf	19	19	19	19	19	19
Sr	28	28	28	28	28	28
Swi	5	5	5	5	5	5
Sew	14	14	14	14	14	14
Srr	28	28	28	28	28	28
S	47	47	47	47	47	47
A0	10	10	10	10	10	10
V	73	73	73	73	73	73
T (BS8233)	0.50	0.50	0.50	0.50	0.50	0.50
A	23	23	23	23	23	23
Daytime Leqff	60.8	57.2	53.8	54.7	53.9	51.4
Night time Leqff	62.6	57.3	54.6	55.3	53.3	51.3
Dne	40.0	38.0	37.0	34.0	37.0	38.0
Rwi	24.4	26.5	36.2	41.7	40.3	42.6
Rew	40.0	44.0	45.0	51.0	56.0	61.0
Rrr	28.0	34.0	40.0	45.0	49.0	53.0

***estimated**

Predicted dB(A) Level Within The Above Room During Daytime Hours (07:00-23:00)	$L_{Aeq\ 16\ HOUR}$	**28.0**	**dB(A)**

Predicted dB(A) Level Within The Above Room During Night Time Hours (23:00-07:00)	$L_{Aeq\ 8\ HOUR}$	**28.7**	**dB(A)**

Calculation Sheet BS 8233:2014
(Table 2 / 4)

Client	Brooks Murray Architects
Site	The Magdala, 2a South Hill Park, London
Figure	6

Maximum Criteria	
Daytime	Night Time
35	30

Floor	Third Floor
Room	Bedroom 1

Daytime	MET
Evening	MET

Proposed Window Configeration 4 / 14 / 6 with acoustic through frame slotvent

Leqff	*The equivalent continuous sound pressure level outside the room elements under consideration*
A0	*The reference absorption area of 10m2 and is independent of frequency*
Sf	*The total façade area of the room in question*
Swi	*The area of the windows in the room*
Sew	*The area of the external wall of the room*
Srr	*The area of the ceiling of the room (if applicable)*
S	*The total area of the elements through which sound enters the room*
Dne	*The insulation value of the trickle ventilator (if applicable)*
Rwi	*The sound reduction index of the window*
Rew	*The sound reduction index of the external wall*
Rrr	*The sound reduction index of the ceiling/roof (if applicable)*
A	*The equivalent absorption area of the receiving room where A=0.163V/T*

Formula Leq2=Leqff+10log[A0/S*10^(-Dne/10)+Swi/S*10^(-Rwi/10)+Sew/10*10^(-Rew/10)+Srr/S*10^(-Rrr/10)] +10log(S/A) +3

	Octave Band Centre Frequency (Hz)					
	125	**250**	**500**	**1000**	**2000**	**4000**
Sf	8	8	8	8	8	8
Sr	14.5	14.5	14.5	14.5	14.5	14.5
Swi	2.5	2.5	2.5	2.5	2.5	2.5
Sew	5.5	5.5	5.5	5.5	5.5	5.5
Srr	14.5	14.5	14.5	14.5	14.5	14.5
S	22.5	22.5	22.5	22.5	22.5	22.5
A0	10	10	10	10	10	10
V	38	38	38	38	38	38
T (BS8233)	0.50	0.50	0.50	0.50	0.50	0.50
A	12	12	12	12	12	12
Daytime Leqff	60.8	57.2	53.8	54.7	53.9	51.4
Night time Leqff	62.6	57.3	54.6	55.3	53.3	51.3
Dne	40.0	38.0	37.0	34.0	37.0	38.0
Rwi	24.4	26.5	36.2	41.7	40.3	42.6
Rew	40.0	44.0	45.0	51.0	56.0	61.0
Rrr	28.0	34.0	40.0	45.0	49.0	53.0

***estimated**

Predicted dB(A) Level Within The Above Room During Daytime Hours (07:00-23:00)	$L_{Aeq\ 16\ HOUR}$	**28.9**	**dB(A)**

Predicted dB(A) Level Within The Above Room During Night Time Hours (23:00-07:00)	$L_{Aeq\ 8\ HOUR}$	**29.6**	**dB(A)**