

Technical Note

Project:	Nishkam West London	Job No:	60343680
Subject:	Noise Impact Assessment		
Prepared by:	Roslyn Andrews	Date:	25.6.15
Checked by:	Ben Hammond	Date:	26.6.15
Approved by:	Corinne Ballarini	Date:	29.6.15

1. Acoustic Design Statement

The proposed new Nishkam West London school building will be designed to comply with Requirement E4 of the Building Regulations. The normal way of demonstrating compliance is to ensure the building has been designed in accordance with the performance standards contained within Acoustic design of schools: performance standards, Building Bulletin 93, December 2014 (BB93).

The proposed design intent for Nishkam, West London will be to demonstrate compliance with Requirement E4 primarily by incorporating the design guidance provided within the BB93. Where relevant, guidance shall be drawn from this document with regards to any alternative performances standards being proposed.

2. Noise Ingress and Egress

2.1 Noise Ingress

A 24 hour noise survey has been undertaken at the proposed developments site between the 18th and 19th of June 2015 to inform the ambient expected to influence the proposed building envelope, along with measuring background noise levels at the nearest noise sensitive receptor to enable the setting of appropriate plant limits. Full details of the survey are detailed within AECOM's External Noise Survey Note dated 26th June 2015 attached in Appendix A. A plan of the proposed site is shown below in Figure 2.1 for information; this shows the locations of the proposed building, noise sources influencing the site and nearest noise sensitive receivers.



Figure 2.1: Plan of the Proposed Site

Road traffic noise from Wood Lane and frequent aircraft landing in a westerly direction at the nearby Heathrow Airport were noted to dominate the noise climate at the site. Other sources of noise which also contributed to the noise environment were road traffic from Syon Lane and rail traffic noise.

The noise levels measured across the site ranged from 47-66 dB L_{Aeq} , with noise from discrete events of between 51-73 dB L_{A1} and maximum levels between 58-80 dB L_{max} being recorded. The typical expected noise levels that façades of the proposed school will have incident on them during the daytime have been derived from the measurement results. These have been based on an average of the typical worst case measurement results. These levels have been used to determine the maximum openable area for windows within a typical classroom, and other teaching areas in order to meet the upper limit for the indoor ambient noise levels given in BB93 (Further details can be found in Appendix A, Section 4.2).

This suggests that a restricted natural/hybrid ventilation system will be required in order to achieve the ambient and regular discrete event noise levels for a normal classroom as given within BB93. To more sensitive spaces such as SEN spaces and music rooms a highly attenuated/mechanical ventilation system is expected to be required. This is understood to be the current design intent.

2.2 Noise Egress

Noise breakout from general activities taking place within the school are unlikely to affect the neighbours as the building facade is to be designed to reasonable levels of noise ingress, therefore it will also help to control noise breakout.

Consideration has also been made to the levels of noise expected as a result of pupil and community use of the sports fields along with noise from general playground activities. Although the levels of noise generated will vary depending on the number of people and the type of activities being undertaken, typical levels of noise produced by pupils and community members during sports games, break times and general external activities have been assumed to be around 75dBA. Based on these noise levels, noise influencing the nearest noise sensitive neighbours, some 15m away from the football pitch and 40m from the MUGA pitch, are expected to be below 65 dB $L_{Amax1hr}$. These predictions are expected to be reasonably worst case values and do not take into consideration of any additional attenuation that may be expected due to the established landscaping around the site, ground cover and directionality. As a result noise levels at the nearest noise sensitive neighbours are likely to be similar to the ambient noise levels measured as a result of the road and air traffic movements. These noise levels are also expected to be similar to the noise levels produced when the field was used being used for sporting activities. Although these noise levels are expected to be similar, noise from such activities are likely to be audible at times as it will be of a different character to the prevailing noise climate. However, it is not possible to state whether such noise will be considered disturbing by neighbours but it is expected the noise will only occur at set times during the day and will not be constant therefore minimising the noise impact.

3. Building Services Noise

3.1 Criteria

3.3.1 BS 4142: 2014

British Standard BS 4142: 2014 'Methods for rating and assessing industrial and commercial sound' provides a methodology for assessing whether noise from industrial and commercial activities is likely to give rise to complaints from nearby noise-sensitive premises. This method compares the sound level from the source in question (called the 'specific sound level') with the background sound level in the absence of the noise source, taking into account the character and type of noise. Unusual acoustic features associated with tonality, impulsivity, intermittency, and other sound characteristics where

present, are accounted for under BS 4142 by the addition of a rating penalty to the specific sound level. The corrected specific sound level is the 'rating level'.

The Standard notes that the lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact. A difference of around +5 dB is likely to be an indication of an adverse impact whilst a difference of around +10 dB is likely to be an indication of a significant adverse impact.

3.1.2 Environmental Protection Act 1990

Under the provisions of the Environmental Protection Act 1990 (EPA 1990), occupants of neighbouring properties could take direct action if they believe they have been subjected to a noise nuisance.

Achievement of a BS 4142 rating level of between 5 and 10 dB below the lowest background noise level at the façade of the nearest neighbouring noise sensitive development is considered a robust approach to minimising the risk of such action being upheld.

3.1.3 Local Authority's Guidelines

The following statement is included within the Local Authority, Hounslow Council Policy EQ5 guidelines:

'Demonstrate that new plant and machinery (including ventilation) does not harm the amenity of neighbouring properties and generates noise level that is at least 10dB below the background noise levels.'

This will be considered when setting the plant noise emission limits.

3.2 Noise Emission Limits

Noise emission limits have been set based on achieving a level of 10 dB below the existing typically lowest background sound levels measured during the detailed 24 hour external noise survey in line with achieving Local Authority requirements. Table 3.1 below details these proposed limits at the various noise sensitive receptors.

Noise Emission Limit at 1m from the façade of the NNSR		
Location of NNSR	Time Period	Building Services Noise Limit (dB L_{Ar})
Crowntree Close Stags Way Braybourne Drive	Daytime (07:00 – 19:00)	36
	Evening (19:00 – 23:00)	34
	Night-time (23:00 – 07:00)	28
Wood Lane	Daytime (07:00 – 23:00)	35
	Evening (19:00 – 23:00)	34
	Night-time (23:00 – 07:00)	27

All values are sound pressure levels in dB re 20 μ Pa

Table 3.1: Noise Emission Limits

These limits should be met with all plant operating simultaneously. In line with guidance within BS 4142, all sources should be controlled such that they do not produce any “unusual acoustic features associated with tonality, impulsivity, intermittency, and other sound characteristics” at any noise sensitive façade, where they do contain such features a further rating penalty will apply to the emission limit stated above.

3.3 Initial Plant Noise Assessment

Control of external noise egress to nearby noise sensitive receivers will be designed in accordance with the Local Authority requirements.

It is understood the majority of the external plant is currently proposed to be located on the roof above the kitchen. Two AHU’s are also proposed above the primary dining room store along with a few extract fans located on the roof over the faith space.

The nearest noise sensitive receptors are understood to be located at least 60m from the nearest plant item and as such distance attenuation in the region of 35 dB is expected to apply. Additional benefits from screening and directivity may also apply

Based on the above achieving these plant limits are not expected to be particularly onerous.

Once full plant details and layouts are known a full plant assessment can be undertaken to assess the potential implications. Advice will be given to mitigate where necessary in order to control plant noise to meet the proposed limits. This will be developed further as the design progresses.

Where significant items of building services plant are proposed close to noise sensitive spaces (for example above lightweight roofs or close to ventilation opening) it is likely that internal noise levels will increase. As such, locating external plant adjacent to noise sensitive spaces should be avoided where possible and specific treatments applied where plant cannot be located elsewhere. The impact on the building will be considered in the design.

Appendix A- External Noise Survey Note

Technical Note

Project:	Nishkam School, West London	Job No:	60343680
Subject:	External Noise Survey		
Prepared by:	Benjamin Hammond	Date:	25/06/2015
Checked by:	Roslyn Andrews	Date:	26/06/2015
Approved by:	Corinne Ballarini	Date:	29/06/2015

1 Introduction

- 1.1 A 24-hour external noise survey has been undertaken at the site of the proposed Nishkam School, West London.
- 1.2 Unattended long-term measurements were taken as well as short term attended measurements.
- 1.3 The purpose of the survey was to measure prevailing background sound levels in order to set appropriate plant noise emission limits to comply with any Local Authority planning conditions.
- 1.4 Additional measurements were taken to inform ambient noise levels expected to influence the façade of the proposed development to allow a detailed assessment of the acoustic design of the building envelope to be made.
- 1.5 A glossary of acoustic terminology in this report is presented in Appendix A. Full noise measurement results are included in Appendix B.

2 External Noise Survey

2.1 Site Description

- 2.1.1 The site of the proposed Nishkam School, West London is located in Isleworth, Greater London. To the south west, south east and north east of the site run Wood Lane, Braybourne Drive, and Syon lane respectively. The railway line connecting Osterley Station and Boston Manor runs to the north west of the site.
- 2.1.2 The nearest noise sensitive receivers (NNSRs) are considered to be residential buildings on Crowtree Close, Stags Way, Braybourne Drive, and Wood Lane.
- 2.1.3 Heathrow Airport is located 5.5km to the west of the site. On site it was noted that the majority of planes were landing at the airport, generally passing by the south and west of the site.
- 2.1.4 On site it was noted that a double earth bund is located along the eastern site boundary which provides some screening to road traffic on Syon Lane.

2.2 Survey Methodology

- 2.2.1 Unattended noise measurements were taken between 13:30 on Thursday, June 18th, 2015 and 13:30 on Friday, June 19th, 2015 at location U1 and between 16:30 on Thursday, June 18th, 2015 and 14:00 on Friday, June 19th, 2015 at location U2. These are displayed in Figure 2.1. Locations U1 and U2 are approximately 15m and 10m from Braybourne Drive and Wood Lane respectively.



Figure 2.1: Proposed Site Plan, Displaying Approximate Measurement Locations

- 2.2.2 Attended noise measurements were conducted between 13:59 and 15:14 on Thursday, June 18th, 2015. Attended measurement locations are displayed in Figure 2.1 as A1 and A2. Locations A1 and A2 are located approximately 95m and 10m respectively from Wood Lane.
- 2.2.3 The microphone at attended measurement locations was positioned approximately 1.2 metres above ground height. The microphones at unattended measurement locations were positioned approximately 1.8m above ground height. Additionally, microphones at all measurement locations were positioned at least 3 metres away from all acoustically reflective surfaces other than the ground that could contribute to the measured sound levels. Measurements are therefore considered to be taken under free field conditions.
- 2.2.4 Generally during the attended measurement period, weather conditions were sunny with a light breeze. Additionally, no rainfall was forecast overnight. A summary of the measured weather conditions is shown in table 2.1:

Measurement Time (Date)	Wind Speed, m/s (Wind Direction)	Temperature, °C
13:30 (June 18 th , 2015)	2.6 (northerly)	21.3
13:30 (June 19 th , 2015)	2.5 (northerly)	21.7

Table 2.1 – Measured Weather Conditions

- 2.2.5 The following equipment was used to conduct the sound measurements:

Location	Equipment	Type	Serial No.
U1	Norsonic 140	Integrating – averaging sound level meter	1402919
U2, A1, A2	Norsonic 140	Integrating – averaging sound level meter	1404740
All	Norsonic 1251	Calibrator	31431

Table 2.2: Sound Measurement Equipment

- 2.2.6 Field calibration checks of the sound level meters and associated microphones were performed prior to and on completion of the measurements in accordance with recommended practice. The accuracy of the calibrator can be traced to the National Physical Laboratory Standards. No significant drift in calibration occurred during the measurement period.
- 2.2.7 Measurements were taken in 15 minute sample periods. During each measurement period, a range of noise indicators were recorded, including: the L_{Aeq} (commonly associated with ambient sound levels), the L_{A1} (the level exceeded for 1 percent of the time) and the L_{A90} (typically used to represent the background sound level). Single figure and spectral sound data was measured for each measurement period.
- 2.2.8 During attendance on site, intermittent periods of construction work were taking place at the southern corner of the site. It is understood that construction work was taking place between 8:00 – 16:00 on both of the measurement dates. This construction work was located approximately 130m from A1, 100m from A2, 130m from U1, and 80m from U2. At the measurement locations construction noise was typically at a very low level. It was noted on site

that the difference between the noise levels with the presence and absence of construction noise was insignificant.

- 2.2.9 During attendance at the site, it was noted that the dominant source of noise at all measurement locations was contributed by frequent planes landing at the airport typically passing by the south and west of the site. During the attended measurement at 14:59, it was noted that the runway operation had been switched to the southern runway for planes landing at Heathrow airport. At this time, planes were significantly quieter than they were during the other attended measurements as they passed further away from the site.
- 2.2.10 In the absence of air traffic noise, continuous road traffic noise from Syon Lane significantly contributed to the sound climate. During attendance, it was noted that road traffic noise from Syon Lane marginally increased from locations A2 to A1.
- 2.2.11 During attendance, it was noted that road traffic from Wood Lane was infrequent. During the first attended measurement at location A2, air traffic was noted to be louder and more frequent than road traffic from Wood Lane, and therefore road traffic from Wood Lane during this measurement did not significantly contribute to the overall measured noise levels. During the second attended measurement at location A2, air traffic was noted to be quieter and less frequent than air traffic during previous measurements, and therefore noise from road traffic from Wood Lane during this measurement was more prominent in the sound climate.
- 2.2.12 Other sources of noise included constant wind in the trees, bird song, and very faint infrequent rail noise. Additionally, noise from a construction truck at the south of the site was distantly audible. This truck driving along the south of the site is expected to have influenced certain measurements at location U1, causing the maximum sound pressure level for these measurements.

3 Noise Emission

3.1 Criteria

3.1.1 Local Authority Requirements

- 3.1.1.1 The following statement is included within the Local Authority, Hounslow Council Policy EQ5:

“Demonstrate that new plant and machinery (including ventilation) does not harm the amenity of neighbouring properties and generates noise level that is at least 10dB below the background noise levels”

This will be considered when setting the plant noise emission limits. The “Hounslow Local Plan, Substantive Version – Part 1, May 2015” also states that BS 4142:2014 should inform noise assessments.

3.1.2 BS 4142:2014

- 3.1.2.1 British Standard BS 4142:2014 ‘*Methods for rating and assessing industrial and commercial sound*’ provides a methodology for assessing whether noise from industrial and commercial activities is likely to give rise to complaints from nearby noise-sensitive premises. This method compares the noise level from the source in question (called the ‘specific sound level’) with the background sound level in the absence of the noise source, taking into account the character and type of noise. Unusual acoustic features associated with tonality, impulsivity, intermittency, and other sound characteristics where present, are accounted for under BS 4142 by the addition of a rating penalty to the specific sound level. The corrected specific sound level is the ‘rating level’.
- 3.1.2.2 The Standard notes that the lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact. A difference of around +5 dB is likely to be an indication of an adverse impact whilst a difference of around +10 dB is likely to be an indication of a significant adverse impact.

3.1.3 *Environmental Protection Act 1990*

- 3.1.3.1 Under the provisions of the Environmental Protection Act, occupants of neighbouring properties could take direct action if they believe they have been subjected to a noise nuisance.
- 3.1.3.2 Achievement of a BS 4142 Rating Level of between 5 and 10 dB below the lowest background noise level at the façade of the nearest neighbouring noise sensitive development is considered a robust approach to minimising the risk of such action being upheld.

3.2 **Measurement Results**

- 3.2.1 In summary, the typically lowest background sound level measured at locations U1 and U2 are presented in Table 3.1. The background sound level is considered to be representative of the background sound level at the nearest noise sensitive premises.

Measurement Location	Time Period	Lowest Measured Background Sound Level (dB $L_{A90, 15min}$)
U1	Daytime (07:00 – 19:00)	46
	Evening (19:00 – 23:00)	44
	Night-time (23:00 – 07:00)	38
U2	Daytime (07:00 – 23:00)	45
	Evening (19:00 – 23:00)	44
	Night-time (23:00 – 07:00)	37

All values are sound pressure levels measured in dB re 20 μ Pa

Table 3.1: Lowest Measured Background Sound Levels

3.3 **Noise Emission Limits**

- 3.3.1 Background sound levels measured at location U1 are considered to be representative of those influencing the NNSRs on Crowtree Close, Stags Way, and Braybourne Drive. Background sound levels measured at location U2 are considered to be representative of the levels influencing the NNSRs on Wood Lane.
- 3.3.2 Based on the background sound levels measured, the following noise emission limits from external building services on the site upon being developed should be targeted one metre from the window of the NNSRs. This is based on achieving the Local Authority’s requirements of 10dB below the measured background level.

Noise Emission Limit, 1m from the façade of the NNSR		
Location of NNSR	Time Period	Building Services Noise Limit (dB L _{Ar})
Crowntree Close Stags Way Braybourne Drive	Daytime (07:00 – 19:00)	36
	Evening (19:00 – 23:00)	34
	Night-time (23:00 – 07:00)	28
Wood Lane	Daytime (07:00 – 23:00)	35
	Evening (19:00 – 23:00)	34
	Night-time (23:00 – 07:00)	27

All values are sound pressure levels in dB re 20 µPa

Table 3.2: Noise Emission Limits

- 3.3.3 The above limits should be met with all external building services operating simultaneously. In line with the guidance within BS 4142, if sources produce any unusual acoustic features associated with tonality, impulsivity, intermittency, or other sound characteristics at any noise sensitive façade, the above limits should have a rating penalty applied.
- 3.3.4 Proposed plant items on the development will be located at least 30m from the NNSRs; as such approximately 30dB of distance attenuation is expected to the NNSR from any external plant items. Additional benefits from screening and directivity may also apply.
- 3.3.5 In order to achieve the above building services noise limits, careful selection of plant items, as well as plant screening and attenuation will likely be required.
- 3.3.6 Once full plant details and layouts are known, a full plant assessment can be undertaken to assess the potential implications. Advice will be given to mitigate where necessary in order to control plant noise to meet the proposed limits. This will be developed further as the design progresses.
- 3.3.7 Where significant items of building services plant are proposed close to noise sensitive spaces (for example above lightweight roofs or close to ventilation opening) it is likely that internal noise levels will increase. As such, locating external plant adjacent to noise sensitive spaces should be avoided where possible and specific treatments applied where plant cannot be located elsewhere. The impact on the building will be considered in the design.

4 Noise Ingress

4.1 Design Criteria

4.1.1 The proposed new Nishkam West London school building will be designed to comply with Requirement E4 of the Building Regulations. The normal way of demonstrating compliance is to ensure the building has been designed in accordance with the performance standards contained within Acoustic Design of Schools: Performance Standards, Building Bulletin 93, December 2014 (BB93).

4.2 Measurement Results

4.2.1 The typical expected noise levels that façades of the proposed school will have incident on them have been derived from the measurement results. The derived L_{eq} and L_1 octave band levels are shown in Table 4.1 below. The derived values used for the daytime noise levels are based on an average of the typical worst case measurement results.

	Octave Frequency Bands (Hz)								dBA
	63	125	250	500	1K	2K	4K	8K	
dB $L_{eq,15mins}$	63	58	58	57	54	48	41	36	58
dB $L_{1,15mins}$	72	67	67	66	63	57	55	53	67

All of the data are sound pressure levels in dB re 20 μ Pa

Table 4.1: Expected Building Façade Incident Daytime Noise Levels

4.2.2 Initial noise ingress predictions have been undertaken based on the facade incident levels as stated in Table 4.1. These levels have been used to determine the maximum openable area for windows within a typical classroom, and other teaching areas in order to meet the upper limit for the indoor ambient noise levels given in BB93.

4.2.3 Calculations of indoor ambient noise levels are based on typical classrooms as shown in drawing numbers 14201 – 14203 produced by BAM Design Ltd.

4.2.4 To achieve an indoor ambient noise level of 40 dB L_{Aeq} within a typical classroom, assuming a natural or hybrid ventilation system as stated within BB93 guidance, a maximum un-attenuated open area of 0.2 m² is expected to be required. This equates to approximately two top hung windows restricted to an opening of 5 cm.

4.2.5 In order to protect students from regular discrete noise events, e.g. aircraft or trains, indoor ambient noise levels should not exceed 60 dB $L_{A1, 30mins}$. This is predicted to be achieved within typical classrooms based on the open areas as stated above. It is thus expected that students will be protected from regular discrete noise events by utilizing the above limits for natural ventilation.

4.2.6 To less sensitive teaching spaces such as design and technology spaces, larger un-attenuated openings in the region of 0.5 m² are expected to meet the noise limits stated in BB93. This equates to approximately three top hung windows restricted to an opening of 22cm.

4.2.7 It should be noted that natural ventilation is not expected to be deemed appropriate for more sensitive spaces such as music rooms or teaching spaces intended specifically for students with special hearing and communication needs.

5 Conclusion

- 5.1 An external noise survey was undertaken at the site of the proposed Nishkam School, West London.
- 5.2 The typically lowest background sound levels were measured for the daytime and night-time periods at locations with a noise climate considered to be representative of the NNSRs.
- 5.3 Based upon the relevant criteria, building services noise emission limits have been determined. By controlling building services to meet these noise emission limits, it is likely that this will satisfy the criteria of the Local Authority.
- 5.4 Based on an initial assessment, providing suitable plant specifications and methods of noise mitigation are considered, such as plant screening, the noise limits are expected to be achieved. However a detailed plant assessment will need to be undertaken as the design develops.
- 5.5 Based on typical worst case measured noise levels, initial noise ingress calculations have been undertaken. This suggests that a restricted natural/hybrid ventilation system will be required in order to achieve the ambient and discrete noise levels for a normal classroom as given within BB93. The maximum unattenuated open area within a classroom to the outdoor area has been calculated to be 0.2m^2 . A larger opening of around 0.5m^2 is expected to be suitable for less sensitive teaching spaces.
- 5.6 To more sensitive spaces such as SEN spaces and music rooms a highly attenuated/mechanical ventilation system is expected to be required.

Appendix A: Acoustic Terminology

This document provides a layperson’s explanation of the acoustics terms that appear in this report. It is not intended to give full scientific definitions and explanations or go into detail on how and why things are as they are. Some obsolete terms and abbreviations have been included as they still appear in documents from time to time.

<p>A-weighting L_A or L_{pA}, L_{WA},</p> <p>obsolete – dBA, dB(A)</p> <p>similar – C-weighting L_C or L_{pC}, L_{WC}</p>	<p>The human ear does not sense all frequencies of sound equally. Our sensitivity is at a maximum at around 2 kHz and steadily decreases above and below. Below 20 Hz and above about 20 kHz we can’t hear at all.</p> <p>Within its operating limits a precision measurement microphone measures all frequencies the same so the output it produces does not reflect what we would actually hear. The A-weighting is an electronic filter that matches the response of a sound level meter to that of the human ear. When A-weighted the Sound Pressure Level L_p becomes L_{pA} (or L_A) and the Sound Power Level L_W becomes L_{WA}.</p> <p>It used to be common to identify that a level was A-weighted by writing dB(A) or dBA instead of dB. These terms are now obsolete and should not be used as they conflict with other, non-acoustic, uses of decibels</p> <p>The response of the human ear varies depending on how loud the sound is. A-weighting matches the response of a sound level meter to human hearing at low levels (~ 40-90 dB). For higher levels there are other weightings the most common of which is the C-weighting.</p>
<p>$L_{N,T}$ $L_{AN,T}$ $L_{AFN,T}$ N = %age value, 0-100 T = measurement time eg. L_{A90}, L_{A10}, L_{AF90}, 5 min</p>	<p><i>The percentage exceedence sound pressure level ($L_{N,T}$),</i> <i>The A-weighted percentage exceedence sound pressure level ($L_{AN,T}$), the A-weighted percentage exceedence sound pressure level with a FAST time constant ($L_{AFN,T}$).</i></p> <p>This is the sound pressure level exceeded for $N\%$ of time period T. eg. If an A-weighted level of x dB is exceeded for a total of 6 minutes within one hour, the level will have been above x dB for 10% of the measurement period. This is written as $L_{A10,1hr} = x$ dB.</p> <p>L_{A0} (the level exceeded for 0 % of the time) is equivalent to the L_{Amax} and L_{A100} (the level exceeded for 100 % of the time) is equivalent to the L_{Amin}.</p> <p>It is good practice to include the letter which identifies the time constant used as this can make a significant difference to the value.</p>
<p>$L_{eq,T}$ $L_{Aeq,T}$ T = measurement time eg. $L_{Aeq,5min}$</p>	<p><i>The equivalent continuous sound pressure level over period T ($L_{eq,T}$),</i> <i>The A-weighted equivalent continuous sound pressure level over period T ($L_{Aeq,T}$).</i></p> <p>This is effectively the average sound pressure level over a given period. As the decibel is a logarithmic quantity the L_{eq} is not a simple arithmetic mean value.</p> <p>The L_{eq} is calculated from the raw sound pressure data. It is not appropriate to include a reference to the FAST and SLOW time constants in the notation</p>
<p>L_Ar</p>	<p>Rating Level as defined by BS4142:2014 <i>Specific sound level plus any adjustment for the characteristic features of the sound.</i></p>

<p>decibels dB</p>	<p>The decibel is not a true measurement unit nor is it exclusive to acoustics. The decibel is a logarithmic ratio of two values of a variable. Decibels are used because they can represent very wide ranges of ratios (from trillionths and billionths to billions and trillions) with a small range of decibel values. Decibels can be used to represent measured values by using a known reference value in the ratio. When using decibels to measure something it is therefore important to specify what variable is actually being measured and what reference level has been used. This is done by adding a reference value statement in the form “dB re x units”, where the units indicate the variable being measured and x is the reference value.</p> <p>Decibels are used in acoustics because the human ear responds to sound in a logarithmic way and the quantities measured in acoustics vary over wide ranges. However, decibels are used in acoustics to measure several different things which it is important not to confuse with each other.</p> <p>To avoid confusion there is a notation system that identifies what a decibel value is for. The notations take the form of an italic capital letter and some subscript characters. The capital identifies the general type of value and the subscripts give specific details of what is being represented.</p> <p>L_{xxx} denotes a level (ie a value measured in dB by comparison with a reference value);</p> <p>D_{xxx} denotes a difference between two levels;</p> <p>R_{xxx} denotes a rating (or index), which is measure of the generalised acoustic performance of a material or construction based on a difference between two levels;</p> <p>C_{xxx} denotes a correction (or constant)</p> <p>Of these only those with <i>L</i> notations require a reference value statement. Those with <i>D</i> or <i>R</i> notations are effectively ratios of two measured values not one measured value and a reference value and those with <i>C</i> notations are not based on reference values at all. A reference value statement therefore has no meaning when describing <i>D</i>, <i>R</i> and <i>C</i> decibels.</p> <p>Because decibels are logarithmic they have to be added, subtracted, multiplied, divided and averaged using different techniques from normal numbers.</p>
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This document provides a layperson’s explanation of the acoustics terms that commonly appear in reports. It is not intended to give full scientific definitions and explanations or go into detail on how and why things are as they are. Some obsolete terms and abbreviations have been included as they still appear in documents from time to time.

<p>Many words have more specific meanings when used in acoustics than in every-day language.</p> <p>sound</p> <p>level</p> <p>loudness</p> <p>noise</p> <p>index</p> <p>indicator</p> <p>weighted</p> <p>apparent</p> <p>standardised</p> <p>normalised</p> <p>insulation</p> <p>attenuation</p>	<p>is used to describe the physical phenomenon of the transmission of energy through gaseous or liquid media via rapid fluctuations in pressure.</p> <p>used solely to describe values measured in decibels</p> <p>is the human perception of the level of sound</p> <p>has no strict definition and is often used interchangeably with sound however it is usually taken to mean unwanted sound</p> <p>a value based on the mathematical processing of raw data</p> <p>a value used to indicate the likelihood of a particular response of effect eg. $L_{10,18hr}$ is an index based on statistical processing of sound pressure data that is used as an indicator for road traffic noise response.</p> <p>values modified to reflect sensitivities at particular frequencies.</p> <p>measured in situ</p> <p>a generalised value based on an in-situ measurement with a correction based on a space with standard reverberation</p> <p>a generalised value based on an in-situ measurement with a correction based on space with standard absorption area</p> <p>resistance to the passage of airborne sound</p> <p>amount by which sound or vibration is reduced when passing through a structure or system</p>
<p>Pitch, frequency</p> <p>tonal sound</p> <p>broadband sound</p> <p>impulsive sound</p> <p>frequency analysis</p>	<p>The sound we perceive can have different characteristics. These can range from low-pitched hums to high-pitched squeals and impulsive sounds. In engineering acoustics the word frequency rather than pitch tends to be used when describing the characteristics of a sound. The unit of frequency is the Hertz (Hz), which is the number of pressure fluctuations per second.</p> <p>Any sound can be defined by its frequency content. Some sounds comprise just one discrete frequency (tonal sounds). Others are distributed over wide frequency ranges (broad band sound). Impulsive sounds are made up short pulses of high frequency components. Sources often produce all of these types of sound at the same time.</p> <p>There are different ways of analysing and displaying the frequency content of a sound:</p> <p>Octave Band Analysis is the simplest method. The audible range of frequencies is divided into 10 bands.</p> <p>Third-Octave Band Analysis more detailed with 30 bands</p> <p>Narrow Band Analysis 12th Octave (120 bands), 24th Octave (240),</p> <p>Fast Fourier (FFT) Analysis a high resolution technique that can give extremely detailed information on frequency content</p>
<p>Sound Pressure Level</p> <p>Lp</p> <p>obsolete – SPL</p>	<p>This is the basic measure of how much sound there is at a given location. It is a measure of the size of the pressure fluctuations in the air that we perceive as sound.</p> <p>Sound Pressure Level is expressed in decibels with a reference level of 20 μPa (Lp in dB re 20 μPa)</p>

<p>L_p L_{pA} (or L_A)</p> <p>L_{AF}, L_{AS}</p>	<p><i>The instantaneous sound pressure level (L_p)</i> <i>The A-weighted instantaneous sound pressure level (L_{pA} or L_A)</i></p> <p>This is the root mean square size of the pressure fluctuations in the air. This level can fluctuate wildly even for seemingly steady sounds. To make sound level meters easier to read the values on the display are smoothed or damped out. This is effectively done by taking a rolling average of the previous 0.125 s (FAST time constant) or the previous 1 s (SLOW time constant).</p> <p>The letters F or S are added to the subscripts in the notation to indicate when the FAST or SLOW time constant has been used. These are often omitted but it is good practice to include them.</p>
<p>L_{max} L_{Amax} L_{AFmax}</p> <p>L_{min}, L_{Fmin}</p>	<p><i>The maximum instantaneous sound pressure level (L_{max}),</i> <i>The A-weighted maximum instantaneous sound pressure level (L_{Amax})</i> <i>The A-weighted maximum instantaneous sound pressure level with a FAST time constant (L_{AFmax}).</i></p> <p>This is the highest instantaneous sound pressure level reached during a measurement period.</p> <p>The opposite of the L_{max} is the <i>minimum instantaneous sound pressure level</i> or L_{min} etc.</p> <p>It is good practice to include the letter which identifies the time constant used as this can make a significant difference to the value.</p>

Appendix B: Measurement Results

Full results of statistical and spectral data measured are presented in Appendix A. All of the data are sound pressure levels in dB re 20 μ Pa and are of 15 minute duration.

Project:	Nishkam, West London		
Section:	Attended External Noise Level Measurements	Job No:	60343680
Formatted by:	BH	Date:	18/19th June 2015

Time	Measurement Location	L_{Aeq}	L_{Amax}	L_{A1}	L_{A90}	Commentary
13:59 - 14:14	A1	55	67	64	48	Dominant source of noise was from planes passing by the south and west of the site - See Section 2.2.9
14:18 - 14:33	A2	56	71	65	45	
14:39 - 14:54	A1	57	73	67	48	
14:59 - 15:14	A2	49	64	56	46	Runway operation switched from northern runway to southern runway - See Section 2.2.9

L_{eq}

Time	Measurement Location	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
13:59 - 14:14	A1	60	52	55	54	51	43	31	24
14:18 - 14:33	A2	61	53	56	54	52	44	31	24
14:39 - 14:54	A1	61	55	57	56	53	45	33	23
14:59 - 15:14	A2	57	53	48	47	46	35	29	26

L_1

Time	Measurement Location	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
13:59 - 14:14	A1	68	60	65	63	60	52	40	35
14:18 - 14:33	A2	68	62	66	64	61	53	41	34
14:39 - 14:54	A1	70	65	66	66	63	55	45	33
14:59 - 15:14	A2	65	65	59	56	50	41	36	35

L_{90}

Time	Measurement Location	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
13:59 - 14:14	A1	54	43	40	44	45	34	22	14
14:18 - 14:33	A2	54	44	39	43	43	32	22	17
14:39 - 14:54	A1	53	45	42	45	45	34	23	15
14:59 - 15:14	A2	52	43	40	43	43	32	22	17

Project:	Nishkam., West London		
Section:	Unattended External Noise Level Measurements	Job No:	60343680
	(Location U1)	Date:	18/19th June 2015
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Time	L_{Aeq}	L_{Amax}	L_{A1}	L_{A90}	Commentary
13:30 - 13:45	59	73	69	47	Highlighted results are expected to have been caused by construction at the south of the site. See section 2.2.12
13:45 - 14:00	56	72	66	46	
14:00 - 14:15	66	87	80	47	
14:15 - 14:30	60	80	73	46	
14:30 - 14:45	55	70	64	46	
14:45 - 15:00	57	73	68	46	
15:00 - 15:15	49	61	56	46	
15:15 - 15:30	47	58	51	45	
15:30 - 15:45	48	59	52	46	
15:45 - 16:00	49	64	57	47	
16:00 - 16:15	49	65	57	46	
16:15 - 16:30	48	59	55	46	
16:30 - 16:45	50	71	58	46	
16:45 - 17:00	50	65	59	46	
17:00 - 17:15	50	73	60	46	
17:15 - 17:30	48	58	52	46	
17:30 - 17:45	48	68	55	45	
17:45 - 18:00	49	70	59	46	
18:00 - 18:15	53	80	64	46	
18:15 - 18:30	48	67	53	46	
18:30 - 18:45	51	75	62	45	
18:45 - 19:00	49	71	59	45	
19:00 - 19:15	48	65	53	46	
19:15 - 19:30	48	64	54	46	
19:30 - 19:45	48	61	54	46	
19:45 - 20:00	49	61	58	46	
20:00 - 20:15	50	68	59	46	
20:15 - 20:30	50	69	58	46	
20:30 - 20:45	50	66	61	46	
20:45 - 21:00	48	61	56	45	
21:00 - 21:15	47	64	57	45	
21:15 - 21:30	46	57	50	45	
21:30 - 21:45	48	65	55	45	
21:45 - 22:00	48	63	56	46	
22:00 - 22:15	47	53	50	45	
22:15 - 22:30	46	56	49	45	
22:30 - 22:45	46	62	51	44	
22:45 - 23:00	46	55	49	44	
23:00 - 23:15	46	52	49	44	
23:15 - 23:30	46	55	51	44	
23:30 - 23:45	46	52	49	44	
23:45 - 00:00	45	53	48	43	
00:00 - 00:15	45	65	49	42	
00:15 - 00:30	44	55	50	41	
00:30 - 00:45	47	61	55	42	
00:45 - 01:00	44	59	51	41	
01:00 - 01:15	42	52	47	40	
01:15 - 01:30	44	59	55	39	

Project: **Nishkam., West London**

Section: **Unattended External Noise Level Measurements**

Job No: **60343680**

(Location U1)

Date: **18/19th June 2015**

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Time	L_{Aeq}	L_{Amax}	L_{A1}	L_{A90}	Commentary
01:30 - 01:45	40	47	44	38	
01:45 - 02:00	41	48	46	39	
02:00 - 02:15	40	48	45	38	
02:15 - 02:30	40	47	43	37	
02:30 - 02:45	40	50	44	37	
02:45 - 03:00	40	46	43	38	
03:00 - 03:15	40	46	43	37	
03:15 - 03:30	41	49	46	38	
03:30 - 03:45	44	67	52	40	
03:45 - 04:00	49	70	60	40	
04:00 - 04:15	49	62	56	43	
04:15 - 04:30	49	69	57	43	
04:30 - 04:45	48	62	54	44	
04:45 - 05:00	51	69	60	46	
05:00 - 05:15	50	65	58	46	
05:15 - 05:30	51	69	58	47	
05:30 - 05:45	56	75	68	48	
05:45 - 06:00	51	60	55	48	
06:00 - 06:15	58	71	68	49	
06:15 - 06:30	57	73	68	49	
06:30 - 06:45	56	70	67	48	
06:45 - 07:00	59	75	69	48	
07:00 - 07:15	59	76	69	48	
07:15 - 07:30	58	72	68	48	
07:30 - 07:45	57	71	66	48	
07:45 - 08:00	59	78	69	49	
08:00 - 08:15	56	75	66	48	
08:15 - 08:30	57	71	66	48	
08:30 - 08:45	57	72	67	48	
08:45 - 09:00	59	77	68	48	
09:00 - 09:15	58	74	69	48	
09:15 - 09:30	59	74	68	47	
09:30 - 09:45	58	73	69	48	
09:45 - 10:00	58	74	68	48	
10:00 - 10:15	60	78	72	49	
10:15 - 10:30	58	75	68	48	
10:30 - 10:45	60	78	71	48	
10:45 - 11:00	57	75	67	48	
11:00 - 11:15	59	76	70	48	
11:15 - 11:30	60	78	73	49	
11:30 - 11:45	58	73	69	49	
11:45 - 12:00	57	71	66	48	
12:00 - 12:15	58	73	68	47	
12:15 - 12:30	56	71	66	48	
12:30 - 12:45	57	71	67	48	
12:45 - 13:00	57	74	67	46	
13:00 - 13:15	56	71	67	47	
13:15 - 13:30	58	74	68	48	

Project:	Nishkam, West London		
Section:	Unattended Spectral L_{eq} Measurements	Job No:	60343680
	(Location U1)	Date:	18/19th June 2015
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Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
13:30 - 13:45	60	59	59	57	54	46	44	42
13:45 - 14:00	59	56	57	55	52	44	38	36
14:00 - 14:15	61	55	55	54	51	43	63	61
14:15 - 14:30	60	56	56	55	52	43	55	55
14:30 - 14:45	58	54	55	53	50	44	42	41
14:45 - 15:00	62	57	57	56	53	45	37	32
15:00 - 15:15	59	55	49	47	45	37	33	39
15:15 - 15:30	56	49	45	45	44	33	31	30
15:30 - 15:45	60	49	45	45	45	37	34	29
15:45 - 16:00	63	53	47	46	46	39	36	37
16:00 - 16:15	64	54	48	46	45	38	34	33
16:15 - 16:30	55	51	46	45	45	37	38	38
16:30 - 16:45	52	45	45	45	45	38	43	42
16:45 - 17:00	53	45	44	44	44	44	42	41
17:00 - 17:15	53	46	45	45	45	37	44	42
17:15 - 17:30	53	45	45	45	44	38	34	32
17:30 - 17:45	53	46	45	45	44	36	38	40
17:45 - 18:00	54	48	46	45	44	38	41	41
18:00 - 18:15	54	46	45	46	45	44	42	50
18:15 - 18:30	56	47	46	46	45	36	33	32
18:30 - 18:45	54	46	45	45	44	44	44	41
18:45 - 19:00	54	46	45	45	44	38	39	42
19:00 - 19:15	54	51	45	45	44	36	34	31
19:15 - 19:30	55	48	46	45	45	36	37	31
19:30 - 19:45	54	48	46	45	45	38	35	31
19:45 - 20:00	53	48	46	46	45	41	36	42
20:00 - 20:15	53	45	46	45	45	38	41	43
20:15 - 20:30	52	47	46	46	45	38	43	34
20:30 - 20:45	53	46	46	46	45	38	44	34
20:45 - 21:00	52	47	45	44	44	32	33	40
21:00 - 21:15	51	44	45	44	44	39	31	32
21:15 - 21:30	52	44	45	44	44	31	26	32
21:30 - 21:45	52	46	47	45	45	32	35	40
21:45 - 22:00	51	45	46	45	45	38	34	34
22:00 - 22:15	51	44	45	45	45	32	23	21
22:15 - 22:30	51	44	44	43	44	32	25	23
22:30 - 22:45	52	44	44	43	44	33	29	23
22:45 - 23:00	54	46	44	43	44	31	25	23
23:00 - 23:15	56	46	44	43	43	32	29	27
23:15 - 23:30	53	50	45	43	44	30	22	20
23:30 - 23:45	55	46	44	43	43	31	27	25
23:45 - 00:00	50	41	43	42	43	32	29	27
00:00 - 00:15	50	41	43	43	42	31	26	24
00:15 - 00:30	50	44	43	42	42	28	20	18
00:30 - 00:45	50	50	50	45	42	29	19	17
00:45 - 01:00	51	43	44	42	40	29	27	29
01:00 - 01:15	48	44	43	40	39	26	15	15
01:15 - 01:30	48	48	49	41	38	26	22	23

Project:	Nishkam, West London		
Section:	Unattended Spectral L_{eq} Measurements	Job No:	60343680
	(Location U1)	Date:	18/19th June 2015
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Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
01:30 - 01:45	48	38	39	38	38	25	16	15
01:45 - 02:00	48	39	41	39	39	26	14	13
02:00 - 02:15	47	38	39	38	38	25	12	12
02:15 - 02:30	47	38	39	38	37	23	12	12
02:30 - 02:45	49	39	40	38	37	24	13	13
02:45 - 03:00	47	38	40	39	37	23	12	13
03:00 - 03:15	47	38	39	38	37	24	13	13
03:15 - 03:30	48	39	41	40	39	25	11	12
03:30 - 03:45	49	44	45	43	40	32	18	12
03:45 - 04:00	47	39	40	38	39	40	35	48
04:00 - 04:15	51	40	41	40	41	42	44	40
04:15 - 04:30	49	41	42	42	42	39	45	42
04:30 - 04:45	51	43	44	45	43	32	41	40
04:45 - 05:00	52	43	44	46	45	35	45	44
05:00 - 05:15	51	43	45	46	45	40	44	41
05:15 - 05:30	52	46	46	46	46	38	46	43
05:30 - 05:45	52	45	46	46	47	38	52	51
05:45 - 06:00	53	46	47	47	47	37	41	38
06:00 - 06:15	58	56	57	56	53	46	50	48
06:15 - 06:30	58	56	57	55	53	45	44	40
06:30 - 06:45	58	54	56	54	51	43	46	46
06:45 - 07:00	60	58	59	58	55	47	44	42
07:00 - 07:15	60	58	59	58	55	47	40	42
07:15 - 07:30	59	57	58	56	53	46	44	43
07:30 - 07:45	58	56	57	56	52	45	43	41
07:45 - 08:00	59	58	59	58	54	47	44	41
08:00 - 08:15	60	55	55	55	52	45	38	41
08:15 - 08:30	60	56	57	55	53	45	38	39
08:30 - 08:45	62	57	57	56	53	46	39	36
08:45 - 09:00	62	58	58	56	54	47	48	46
09:00 - 09:15	61	58	58	57	54	46	41	33
09:15 - 09:30	60	58	58	57	54	46	47	45
09:30 - 09:45	60	57	58	57	53	45	45	41
09:45 - 10:00	62	57	58	57	53	45	36	35
10:00 - 10:15	59	56	57	56	53	46	54	54
10:15 - 10:30	59	58	58	57	54	46	44	43
10:30 - 10:45	60	58	58	57	54	46	52	52
10:45 - 11:00	59	57	57	56	53	45	35	31
11:00 - 11:15	61	64	60	58	55	47	37	37
11:15 - 11:30	60	57	58	56	53	45	54	53
11:30 - 11:45	62	59	59	57	54	46	40	35
11:45 - 12:00	59	56	57	56	52	45	41	33
12:00 - 12:15	60	59	59	57	54	46	37	29
12:15 - 12:30	58	56	56	55	52	44	36	30
12:30 - 12:45	61	56	57	55	52	45	34	32
12:45 - 13:00	59	57	58	56	53	47	35	30
13:00 - 13:15	60	56	57	55	52	45	35	31
13:15 - 13:30	59	57	57	56	54	46	45	41

Project:	Nishkam, West London		
Section:	Unattended Spectral L₁ Measurements	Job No:	60343680
	(Location U1)	Date:	18/19th June 2015
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Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
13:30 - 13:45	68	70	70	68	64	57	57	53
13:45 - 14:00	67	66	67	65	62	54	49	47
14:00 - 14:15	66	64	65	64	60	52	77	76
14:15 - 14:30	67	66	66	64	62	53	70	69
14:30 - 14:45	65	64	64	63	59	56	58	57
14:45 - 15:00	68	68	68	66	64	56	44	40
15:00 - 15:15	66	67	60	55	49	46	43	52
15:15 - 15:30	65	57	51	49	48	41	39	38
15:30 - 15:45	69	58	50	50	48	46	45	38
15:45 - 16:00	73	63	52	50	53	49	44	43
16:00 - 16:15	76	65	55	52	52	46	45	45
16:15 - 16:30	61	62	52	51	48	46	51	50
16:30 - 16:45	59	51	52	48	47	48	53	51
16:45 - 17:00	58	50	50	49	46	56	54	54
17:00 - 17:15	59	51	51	49	47	48	57	55
17:15 - 17:30	57	50	51	50	47	48	44	43
17:30 - 17:45	59	52	51	50	46	44	48	53
17:45 - 18:00	61	58	53	51	49	49	56	54
18:00 - 18:15	60	52	51	53	52	56	55	62
18:15 - 18:30	63	55	53	53	50	44	40	44
18:30 - 18:45	61	52	50	53	51	58	57	51
18:45 - 19:00	61	52	51	50	47	51	54	55
19:00 - 19:15	61	65	51	50	47	48	45	41
19:15 - 19:30	64	59	51	50	48	46	49	40
19:30 - 19:45	59	58	50	49	48	50	43	39
19:45 - 20:00	58	60	54	55	48	54	48	55
20:00 - 20:15	61	53	52	49	47	48	54	58
20:15 - 20:30	56	60	52	52	48	49	56	46
20:30 - 20:45	59	53	55	52	49	50	58	47
20:45 - 21:00	57	59	52	48	47	38	49	55
21:00 - 21:15	57	48	50	49	47	54	44	45
21:15 - 21:30	58	49	50	48	46	36	37	46
21:30 - 21:45	58	53	55	53	48	37	48	51
21:45 - 22:00	56	52	53	50	47	52	45	49
22:00 - 22:15	57	51	51	51	47	34	30	28
22:15 - 22:30	56	50	50	48	47	36	35	33
22:30 - 22:45	61	52	49	49	47	42	41	37
22:45 - 23:00	65	56	50	47	46	36	35	34
23:00 - 23:15	65	54	49	46	46	39	39	37
23:15 - 23:30	63	63	56	48	47	33	31	29
23:30 - 23:45	67	57	51	46	46	36	36	34
23:45 - 00:00	54	45	48	46	46	36	37	35
00:00 - 00:15	56	47	50	48	46	37	37	36
00:15 - 00:30	57	52	52	49	46	32	27	25
00:30 - 00:45	56	63	61	56	47	39	25	23
00:45 - 01:00	61	52	54	50	45	37	40	42
01:00 - 01:15	53	56	53	45	43	30	25	26
01:15 - 01:30	53	61	63	50	43	32	33	35

Project:	Nishkam, West London		
Section:	Unattended Spectral L₁ Measurements	Job No:	60343680
	(Location U1)	Date:	18/19th June 2015
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Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
01:30 - 01:45	53	43	43	42	42	28	23	24
01:45 - 02:00	51	45	47	44	44	30	23	21
02:00 - 02:15	51	42	44	43	43	30	19	18
02:15 - 02:30	51	42	44	43	41	27	16	17
02:30 - 02:45	54	43	48	43	41	30	21	20
02:45 - 03:00	51	42	45	43	40	28	19	20
03:00 - 03:15	51	44	42	42	41	28	16	16
03:15 - 03:30	52	44	47	44	43	30	17	17
03:30 - 03:45	54	50	54	53	46	45	30	18
03:45 - 04:00	51	44	45	41	42	50	47	61
04:00 - 04:15	61	45	44	45	46	53	53	49
04:15 - 04:30	54	47	50	49	48	50	53	52
04:30 - 04:45	55	50	50	51	47	38	51	49
04:45 - 05:00	56	48	49	53	48	42	55	58
05:00 - 05:15	55	49	51	54	49	53	55	52
05:15 - 05:30	56	56	52	51	50	50	55	52
05:30 - 05:45	56	49	50	50	49	48	65	64
05:45 - 06:00	57	50	53	50	50	46	52	50
06:00 - 06:15	66	67	67	67	64	57	63	61
06:15 - 06:30	66	67	67	66	64	58	57	53
06:30 - 06:45	66	66	67	66	62	55	57	57
06:45 - 07:00	68	68	69	68	65	58	57	55
07:00 - 07:15	68	68	69	68	65	58	51	50
07:15 - 07:30	68	69	68	67	63	57	56	56
07:30 - 07:45	67	65	66	66	62	54	55	53
07:45 - 08:00	67	68	68	68	64	58	55	53
08:00 - 08:15	68	64	65	65	62	55	49	55
08:15 - 08:30	67	66	66	65	62	55	47	52
08:30 - 08:45	68	67	67	66	63	56	51	46
08:45 - 09:00	68	68	69	67	63	57	61	60
09:00 - 09:15	70	68	68	67	65	57	51	43
09:15 - 09:30	68	68	68	67	64	57	60	58
09:30 - 09:45	67	68	69	68	64	56	58	53
09:45 - 10:00	70	68	69	67	64	55	44	45
10:00 - 10:15	67	66	66	65	63	56	69	69
10:15 - 10:30	69	68	69	67	64	57	57	56
10:30 - 10:45	68	68	69	67	64	57	67	66
10:45 - 11:00	67	67	68	67	63	56	43	40
11:00 - 11:15	69	77	70	69	66	58	46	47
11:15 - 11:30	68	67	68	67	64	56	69	68
11:30 - 11:45	70	69.8	69.8	67.8	64.4	56.5	47	44.4
11:45 - 12:00	65.8	65.7	66.2	65.8	61.9	55.1	50.9	43.5
12:00 - 12:15	68.4	69.6	69.1	67.5	63.9	57.4	48.1	40.5
12:15 - 12:30	66.4	65.4	66.1	65.2	61.2	54.7	46.3	41.7
12:30 - 12:45	68.5	66.3	67.1	65.9	62.9	55.4	43.4	41.7
12:45 - 13:00	67.1	67.4	67.6	66.1	62.9	57.4	44.5	38
13:00 - 13:15	67.1	67.6	67.5	65.9	62.6	56.4	44.2	39.5
13:15 - 13:30	67.6	67.3	67.6	66.4	64.4	56.4	59.3	55.4

Project:	Nishkam, West London		
Section:	Unattended Spectral L_{90} Measurements	Job No:	60343680
	(Location U1)	Date:	18/19th June 2015
Formatted by:	BH		

Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
13:30 - 13:45	54	46	45	44	44	32	22	19
13:45 - 14:00	54	45	43	44	43	32	24	21
14:00 - 14:15	56	46	43	44	43	33	23	18
14:15 - 14:30	54	45	43	43	43	32	23	19
14:30 - 14:45	51	44	43	43	42	32	24	20
14:45 - 15:00	57	47	44	43	43	34	29	25
15:00 - 15:15	53	44	43	43	43	32	24	21
15:15 - 15:30	50	43	42	42	42	30	22	20
15:30 - 15:45	53	44	42	43	44	31	22	19
15:45 - 16:00	58	48	44	44	43	34	27	22
16:00 - 16:15	55	47	44	43	42	33	24	20
16:15 - 16:30	51	43	42	43	42	32	24	22
16:30 - 16:45	49	42	42	43	43	31	23	21
16:45 - 17:00	50	42	41	43	43	31	22	22
17:00 - 17:15	50	43	42	43	43	32	25	23
17:15 - 17:30	50	42	42	43	43	32	23	20
17:30 - 17:45	50	42	42	43	43	31	24	21
17:45 - 18:00	51	43	43	43	43	31	24	22
18:00 - 18:15	50	43	42	42	42	31	24	23
18:15 - 18:30	51	43	43	43	43	32	23	20
18:30 - 18:45	50	42	42	42	42	31	22	21
18:45 - 19:00	50	43	42	42	42	31	22	20
19:00 - 19:15	50	42	42	43	43	32	24	22
19:15 - 19:30	50	43	43	43	43	32	23	22
19:30 - 19:45	50	43	43	43	43	32	26	24
19:45 - 20:00	50	42	43	43	43	32	25	22
20:00 - 20:15	49	42	43	43	43	32	23	19
20:15 - 20:30	49	42	43	43	43	31	25	22
20:30 - 20:45	49	42	43	43	43	32	23	19
20:45 - 21:00	49	41	42	43	43	30	18	15
21:00 - 21:15	48	41	42	42	42	30	17	14
21:15 - 21:30	49	41	42	42	42	29	17	14
21:30 - 21:45	48	41	43	43	43	30	14	12
21:45 - 22:00	48	41	43	43	43	30	14	12
22:00 - 22:15	48	40	42	42	43	30	17	14
22:15 - 22:30	48	40	42	42	42	30	19	16
22:30 - 22:45	48	40	41	41	42	29	14	13
22:45 - 23:00	48	41	41	41	42	29	15	13
23:00 - 23:15	49	41	41	41	42	29	21	18
23:15 - 23:30	47	39	41	41	42	28	16	14
23:30 - 23:45	46	39	41	40	41	29	17	15
23:45 - 00:00	47	39	41	40	41	29	24	21
00:00 - 00:15	47	38	40	39	40	27	15	13
00:15 - 00:30	46	38	39	38	39	26	14	13
00:30 - 00:45	46	38	40	39	40	26	14	12
00:45 - 01:00	46	38	39	38	38	25	13	12
01:00 - 01:15	46	38	38	38	37	24	11	11
01:15 - 01:30	45	37	38	36	35	23	11	12

Project:	Nishkam, West London		
Section:	Unattended Spectral L₉₀ Measurements	Job No:	60343680
	(Location U1)	Date:	18/19th June 2015
Formatted by:	BH		

Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
01:30 - 01:45	45	36	37	36	36	23	11	12
01:45 - 02:00	45	36	38	37	36	23	11	11
02:00 - 02:15	44	36	37	35	35	22	11	11
02:15 - 02:30	44	35	36	35	34	21	10	11
02:30 - 02:45	45	36	37	35	34	21	10	11
02:45 - 03:00	45	36	38	36	34	21	11	11
03:00 - 03:15	44	36	37	35	34	20	11	12
03:15 - 03:30	46	37	38	36	35	22	10	11
03:30 - 03:45	46	38	39	38	37	24	11	11
03:45 - 04:00	45	36	38	36	36	27	16	11
04:00 - 04:15	46	38	39	38	38	30	23	16
04:15 - 04:30	46	38	40	39	38	28	19	13
04:30 - 04:45	48	40	41	41	41	29	19	13
04:45 - 05:00	49	40	42	43	43	30	18	14
05:00 - 05:15	48	40	42	43	43	31	20	15
05:15 - 05:30	49	41	43	44	44	31	21	16
05:30 - 05:45	50	42	44	44	45	33	23	17
05:45 - 06:00	51	43	45	45	46	33	20	15
06:00 - 06:15	53	46	47	47	46	33	23	18
06:15 - 06:30	53	46	47	46	46	33	23	18
06:30 - 06:45	53	45	46	45	45	33	24	20
06:45 - 07:00	54	46	46	45	45	33	23	18
07:00 - 07:15	54	46	46	45	45	33	23	19
07:15 - 07:30	53	46	45	45	45	34	25	20
07:30 - 07:45	53	46	46	46	45	34	27	22
07:45 - 08:00	53	47	46	46	45	35	28	23
08:00 - 08:15	55	46	45	46	45	35	26	21
08:15 - 08:30	55	47	46	46	45	34	25	22
08:30 - 08:45	56	46	45	46	44	34	26	24
08:45 - 09:00	55	47	45	46	45	35	27	23
09:00 - 09:15	54	46	45	46	44	33	23	19
09:15 - 09:30	54	45	45	45	44	32	25	21
09:30 - 09:45	54	45	45	45	44	33	27	24
09:45 - 10:00	55	47	46	46	45	35	27	24
10:00 - 10:15	53	46	46	46	45	34	29	27
10:15 - 10:30	53	46	46	46	45	33	27	25
10:30 - 10:45	54	46	46	46	45	33	27	24
10:45 - 11:00	54	47	46	46	45	33	25	22
11:00 - 11:15	55	47	46	46	45	35	29	26
11:15 - 11:30	53	46	46	46	45	35	26	22
11:30 - 11:45	55	47	46	46	45	34	29	25
11:45 - 12:00	54	47	46	45	45	34	26	22
12:00 - 12:15	53	47	45	45	44	33	23	19
12:15 - 12:30	52	45	44	45	45	34	26	20
12:30 - 12:45	54	46	45	45	44	34	25	20
12:45 - 13:00	53	46	44	44	43	32	23	20
13:00 - 13:15	54	47	44	44	43	33	25	22
13:15 - 13:30	53	47	46	46	44	33	26	22

Project: **Nishkam School, West London**

Section: **Unattended External Noise Level Measurements** Job No: **60343680**

(Location U2) Date: **18/19th June 2015**

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Time	L_{Aeq}	L_{Amax}	L_{A1}	L_{A90}
16:30 - 16:45	51	71	61	46
16:45 - 17:00	51	70	64	46
17:00 - 17:15	54	70	65	45
17:15 - 17:30	51	70	63	46
17:30 - 17:45	54	75	66	46
17:45 - 18:00	52	75	64	46
18:00 - 18:15	53	73	65	46
18:15 - 18:30	55	77	66	46
18:30 - 18:45	53	73	66	44
18:45 - 19:00	53	72	65	45
19:00 - 19:15	52	68	63	46
19:15 - 19:30	52	70	64	46
19:30 - 19:45	53	72	66	46
19:45 - 20:00	53	69	65	46
20:00 - 20:15	50	66	60	46
20:15 - 20:30	53	71	66	46
20:30 - 20:45	52	73	65	46
20:45 - 21:00	51	71	63	46
21:00 - 21:15	52	75	65	45
21:15 - 21:30	52	72	64	45
21:30 - 21:45	50	67	62	46
21:45 - 22:00	51	70	62	46
22:00 - 22:15	50	68	61	46
22:15 - 22:30	50	69	64	45
22:30 - 22:45	49	69	61	44
22:45 - 23:00	50	71	63	44
23:00 - 23:15	49	67	60	44
23:15 - 23:30	49	70	61	44
23:30 - 23:45	46	61	52	43
23:45 - 00:00	47	70	56	43
00:00 - 00:15	46	68	53	42
00:15 - 00:30	46	69	52	41
00:30 - 00:45	47	62	57	41
00:45 - 01:00	46	64	56	40
01:00 - 01:15	43	51	47	40
01:15 - 01:30	44	59	55	39
01:30 - 01:45	40	51	44	38
01:45 - 02:00	45	68	53	39
02:00 - 02:15	40	48	44	37
02:15 - 02:30	39	50	43	37
02:30 - 02:45	45	71	51	37
02:45 - 03:00	40	48	45	37
03:00 - 03:15	40	51	44	37
03:15 - 03:30	39	46	43	36
03:30 - 03:45	41	56	46	38
03:45 - 04:00	43	54	50	39
04:00 - 04:15	42	48	46	40
04:15 - 04:30	43	59	50	41

Project: **Nishkam School, West London**

Section: **Unattended External Noise Level Measurements** Job No: **60343680**

(Location U2) Date: **18/19th June 2015**

Formatted by: **BH**

Time	L_{Aeq}	L_{Amax}	L_{A1}	L_{A90}
04:30 - 04:45	44	57	51	41
04:45 - 05:00	47	64	54	43
05:00 - 05:15	50	64	60	44
05:15 - 05:30	50	63	60	45
05:30 - 05:45	49	63	55	47
05:45 - 06:00	50	67	58	48
06:00 - 06:15	57	72	67	48
06:15 - 06:30	56	70	67	48
06:30 - 06:45	56	72	67	47
06:45 - 07:00	59	73	69	47
07:00 - 07:15	60	74	70	47
07:15 - 07:30	59	73	69	48
07:30 - 07:45	58	73	67	48
07:45 - 08:00	60	76	69	49
08:00 - 08:15	58	72	67	51
08:15 - 08:30	58	74	67	48
08:30 - 08:45	59	76	69	49
08:45 - 09:00	59	76	68	48
09:00 - 09:15	59	75	69	48
09:15 - 09:30	59	71	68	47
09:30 - 09:45	58	72	69	47
09:45 - 10:00	58	73	68	48
10:00 - 10:15	58	73	67	48
10:15 - 10:30	59	74	69	48
10:30 - 10:45	58	73	68	49
10:45 - 11:00	58	71	67	48
11:00 - 11:15	60	74	68	48
11:15 - 11:30	58	77	68	49
11:30 - 11:45	60	87	69	48
11:45 - 12:00	58	74	67	49
12:00 - 12:15	59	74	68	48
12:15 - 12:30	59	70	67	50
12:30 - 12:45	59	73	68	48
12:45 - 13:00	58	75	68	47
13:00 - 13:15	58	76	69	47
13:15 - 13:30	58	72	69	47
13:30 - 13:45	58	69	67	48
13:45 - 14:00	58	73	67	49

Project:	Nishkam, West London		
Section:	Unattended Spectral L_{eq} Measurements	Job No:	60343680
	(Location U2)	Date:	18/19th June 2015
Formatted by:	BH		

Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
16:30 - 16:45	55	48	47	47	49	42	38	35
16:45 - 17:00	58	49	47	47	49	42	34	30
17:00 - 17:15	57	50	48	49	50	47	39	34
17:15 - 17:30	54	47	47	47	48	44	40	36
17:30 - 17:45	58	50	49	49	51	45	38	34
17:45 - 18:00	59	55	50	49	49	43	38	32
18:00 - 18:15	58	50	49	48	50	43	38	34
18:15 - 18:30	62	53	50	50	52	46	39	34
18:30 - 18:45	57	49	47	49	50	43	34	28
18:45 - 19:00	59	51	49	49	50	44	38	35
19:00 - 19:15	55	51	47	47	48	41	43	41
19:15 - 19:30	57	50	47	48	49	42	35	31
19:30 - 19:45	56	51	48	49	50	44	39	34
19:45 - 20:00	52	49	47	47	48	48	38	27
20:00 - 20:15	53	46	46	46	47	39	33	30
20:15 - 20:30	56	50	48	49	51	43	35	28
20:30 - 20:45	55	48	48	49	50	42	33	28
20:45 - 21:00	55	49	48	48	48	41	32	25
21:00 - 21:15	57	49	48	48	50	43	34	27
21:15 - 21:30	55	49	48	48	49	42	30	23
21:30 - 21:45	54	49	48	47	47	38	28	24
21:45 - 22:00	53	47	47	47	48	40	28	20
22:00 - 22:15	52	47	46	46	47	39	29	25
22:15 - 22:30	54	47	47	47	48	40	31	27
22:30 - 22:45	51	43	45	45	47	39	28	25
22:45 - 23:00	57	47	46	46	48	40	31	27
23:00 - 23:15	53	46	45	45	46	38	31	34
23:15 - 23:30	52	51	46	47	46	38	31	26
23:30 - 23:45	50	45	43	43	43	33	30	28
23:45 - 00:00	50	41	43	44	45	37	33	31
00:00 - 00:15	48	41	43	43	44	36	28	24
00:15 - 00:30	50	44	43	43	43	36	24	20
00:30 - 00:45	48	50	50	46	42	30	23	20
00:45 - 01:00	50	44	44	43	43	34	23	17
01:00 - 01:15	47	43	42	40	40	26	15	14
01:15 - 01:30	47	48	49	41	39	26	16	14
01:30 - 01:45	47	38	38	38	38	25	19	18
01:45 - 02:00	46	40	41	42	43	32	21	16
02:00 - 02:15	45	37	38	38	38	24	13	12
02:15 - 02:30	44	37	38	37	37	23	12	12
02:30 - 02:45	48	40	40	40	43	36	23	15
02:45 - 03:00	45	37	39	39	38	24	14	12
03:00 - 03:15	44	37	38	38	37	24	16	14
03:15 - 03:30	45	37	40	38	36	23	13	12
03:30 - 03:45	47	43	42	39	37	27	16	12
03:45 - 04:00	45	37	39	38	39	32	36	32
04:00 - 04:15	48	39	39	39	39	32	26	19
04:15 - 04:30	47	41	42	41	41	30	27	20

Project:	Nishkam, West London		
Section:	Unattended Spectral L_{eq} Measurements	Job No:	60343680
	(Location U2)	Date:	18/19th June 2015
Formatted by:	BH		

Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
04:30 - 04:45	48	42	42	42	41	31	30	21
04:45 - 05:00	50	43	44	44	44	35	31	23
05:00 - 05:15	49	43	44	44	43	33	45	43
05:15 - 05:30	50	46	45	45	45	32	44	43
05:30 - 05:45	50	44	45	46	46	33	37	34
05:45 - 06:00	52	45	46	47	48	38	34	28
06:00 - 06:15	58	57	58	56	53	45	36	25
06:15 - 06:30	58	56	57	55	52	45	36	26
06:30 - 06:45	61	55	57	55	52	45	37	31
06:45 - 07:00	61	59	60	58	55	49	40	33
07:00 - 07:15	61	59	59	58	56	50	41	33
07:15 - 07:30	61	58	59	57	55	48	39	34
07:30 - 07:45	60	57	58	56	54	47	38	33
07:45 - 08:00	60	59	60	58	55	50	43	34
08:00 - 08:15	63	57	57	56	54	49	43	32
08:15 - 08:30	64	58	58	56	54	48	43	33
08:30 - 08:45	66	59	58	57	55	49	41	33
08:45 - 09:00	63	59	60	57	54	48	37	30
09:00 - 09:15	66	59	59	58	55	48	39	32
09:15 - 09:30	64	59	59	57	55	49	39	34
09:30 - 09:45	63	59	59	57	54	47	38	32
09:45 - 10:00	65	59	59	57	54	46	38	35
10:00 - 10:15	60	57	58	56	53	47	44	38
10:15 - 10:30	61	59	59	57	54	47	48	47
10:30 - 10:45	63	59	59	57	54	47	41	39
10:45 - 11:00	63	59	58	56	54	47	39	34
11:00 - 11:15	64	65	60	58	55	48	40	35
11:15 - 11:30	63	58	59	57	53	47	41	38
11:30 - 11:45	65	60	60	58	56	50	42	36
11:45 - 12:00	63	58	58	56	54	47	42	40
12:00 - 12:15	63	59	59	57	54	48	39	31
12:15 - 12:30	63	57	57	56	54	51	50	38
12:30 - 12:45	63	58	58	56	54	48	45	35
12:45 - 13:00	65	58	58	57	54	48	39	33
13:00 - 13:15	63	58	58	57	54	48	41	36
13:15 - 13:30	59	58	58	56	54	48	41	37
13:30 - 13:45	62	59	59	56	53	47	40	38
13:45 - 14:00	65	58	58	56	53	47	39	34

Project:	Nishkam, West London		
Section:	Unattended Spectral L₁ Measurements	Job No:	60343680
	(Location U2)	Date:	18/19th June 2015
Formatted by:	BH		

Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
16:30 - 16:45	64	59	57	56	59	52	46	43
16:45 - 17:00	71	61	58	59	62	56	45	41
17:00 - 17:15	69	61	59	60	63	61	52	46
17:15 - 17:30	63	58	58	57	60	57	53	49
17:30 - 17:45	69	61	60	61	64	58	49	43
17:45 - 18:00	67	63	62	60	62	55	47	41
18:00 - 18:15	70	61	60	60	63	56	48	45
18:15 - 18:30	76	63	60	60	63	58	51	46
18:30 - 18:45	66	60	60	61	64	57	46	37
18:45 - 19:00	71	61	59	60	62	57	52	45
19:00 - 19:15	66	63	58	57	61	55	57	55
19:15 - 19:30	69	62	58	58	61	55	46	41
19:30 - 19:45	67	63	59	60	63	57	48	42
19:45 - 20:00	60	61	58	58	61	63	52	36
20:00 - 20:15	62	56	56	55	58	51	44	42
20:15 - 20:30	68	62	60	61	64	57	46	38
20:30 - 20:45	66	59	60	59	63	56	43	39
20:45 - 21:00	67	60	58	59	60	54	44	36
21:00 - 21:15	69	62	58	59	63	56	46	38
21:15 - 21:30	67	61	58	59	62	55	44	35
21:30 - 21:45	64	58	57	57	59	53	42	36
21:45 - 22:00	63	56	58	57	60	54	42	33
22:00 - 22:15	64	57	55	55	58	53	40	36
22:15 - 22:30	64	59	58	58	62	55	43	36
22:30 - 22:45	62	55	57	56	59	53	41	36
22:45 - 23:00	65	58	56	57	61	54	43	37
23:00 - 23:15	62	56	55	55	58	51	41	38
23:15 - 23:30	63	64	56	59	57	51	43	37
23:30 - 23:45	60	57	52	49	48	43	41	39
23:45 - 00:00	56	48	50	50	54	47	43	41
00:00 - 00:15	54	47	51	51	49	43	36	34
00:15 - 00:30	58	52	51	51	48	42	34	31
00:30 - 00:45	55	62	62	58	48	38	32	30
00:45 - 01:00	60	54	54	54	54	48	34	26
01:00 - 01:15	52	55	53	45	45	30	25	23
01:15 - 01:30	53	62	63	50	43	31	23	21
01:30 - 01:45	56	44	42	42	42	30	29	28
01:45 - 02:00	52	47	47	48	51	39	29	27
02:00 - 02:15	50	43	42	42	42	28	21	19
02:15 - 02:30	50	42	42	42	41	27	17	16
02:30 - 02:45	60	50	48	46	49	42	30	19
02:45 - 03:00	51	41	43	45	42	28	21	16
03:00 - 03:15	50	41	41	43	42	28	22	20
03:15 - 03:30	49	41	45	43	41	28	21	14
03:30 - 03:45	53	50	50	45	41	34	25	16
03:45 - 04:00	49	42	43	42	43	38	49	45
04:00 - 04:15	58	45	43	42	44	38	34	26
04:15 - 04:30	54	50	51	49	45	36	36	27

Project:	Nishkam, West London		
Section:	Unattended Spectral L₁ Measurements	Job No:	60343680
	(Location U2)	Date:	18/19th June 2015
Formatted by:	BH		

Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
04:30 - 04:45	56	52	48	49	46	40	40	27
04:45 - 05:00	57	52	52	51	50	45	42	32
05:00 - 05:15	56	51	52	51	47	44	58	57
05:15 - 05:30	56	57	54	49	48	37	58	57
05:30 - 05:45	55	50	50	53	49	39	50	46
05:45 - 06:00	60	52	55	54	56	50	45	41
06:00 - 06:15	66	67	68	67	62	56	50	36
06:15 - 06:30	68	67	67	65	62	56	49	37
06:30 - 06:45	69	67	68	66	62	58	50	43
06:45 - 07:00	70	69	69	68	65	60	52	43
07:00 - 07:15	70	70	69	68	66	61	54	46
07:15 - 07:30	71	70	69	67	65	60	51	44
07:30 - 07:45	69	68	67	66	63	58	48	41
07:45 - 08:00	68	70	69	69	65	59	51	44
08:00 - 08:15	73	65	65	65	63	58	50	42
08:15 - 08:30	70	67	67	65	63	58	51	43
08:30 - 08:45	72	69	67	67	65	61	51	42
08:45 - 09:00	70	69	70	66	64	58	47	40
09:00 - 09:15	76	69	70	68	65	58	50	43
09:15 - 09:30	72	69	69	67	64	59	49	47
09:30 - 09:45	71	69	69	68	64	59	49	42
09:45 - 10:00	72	71	70	68	64	56	47	46
10:00 - 10:15	69	67	67	66	63	57	52	47
10:15 - 10:30	71	69	69	68	64	58	63	62
10:30 - 10:45	70	69	69	67	64	57	50	47
10:45 - 11:00	71	68	68	66	63	58	50	43
11:00 - 11:15	72	77	70	67	64	58	51	43
11:15 - 11:30	71	69	69	67	63	57	53	48
11:30 - 11:45	73	70	70	68	65	59	50	46
11:45 - 12:00	72	67	67	66	63	57	55	53
12:00 - 12:15	71	69	69	67	64	58	50	39
12:15 - 12:30	70	66	67	65	62	57	58	46
12:30 - 12:45	71	68	68	66	64	57	54	42
12:45 - 13:00	72	68	68	67	64	58	48	42
13:00 - 13:15	71	69	68	68	65	59	53	47
13:15 - 13:30	69	69	68	67	65	59	53	49
13:30 - 13:45	69	68	68	66	62	57	49	44
13:45 - 14:00	72	67	68	66	63	58	51	45

Project:	Nishkam, West London		
Section:	Unattended Spectral L_{90} Measurements	Job No:	60343680
	(Location U2)	Date:	18/19th June 2015
Formatted by:	BH		

Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
16:30 - 16:45	48	40	41	43	44	32	25	20
16:45 - 17:00	48	40	41	42	43	31	23	17
17:00 - 17:15	48	40	41	42	43	31	25	21
17:15 - 17:30	48	40	41	42	43	32	25	19
17:30 - 17:45	48	41	41	42	43	32	27	22
17:45 - 18:00	49	41	42	43	43	32	25	19
18:00 - 18:15	49	41	42	42	43	32	26	21
18:15 - 18:30	49	42	42	42	43	32	24	19
18:30 - 18:45	49	40	41	41	41	30	23	19
18:45 - 19:00	49	41	42	42	43	31	22	18
19:00 - 19:15	49	41	41	42	43	32	25	20
19:15 - 19:30	48	40	41	42	43	32	25	19
19:30 - 19:45	48	41	42	42	43	32	25	20
19:45 - 20:00	48	41	42	43	43	31	22	17
20:00 - 20:15	47	40	42	43	44	32	24	17
20:15 - 20:30	47	40	42	43	44	31	23	18
20:30 - 20:45	47	40	42	43	44	31	24	19
20:45 - 21:00	47	39	42	43	43	31	18	14
21:00 - 21:15	46	39	42	42	43	30	17	13
21:15 - 21:30	46	40	42	42	43	30	17	13
21:30 - 21:45	47	40	42	43	43	30	15	12
21:45 - 22:00	46	39	42	43	43	30	15	12
22:00 - 22:15	46	40	42	42	43	30	17	14
22:15 - 22:30	46	39	42	42	42	30	20	15
22:30 - 22:45	45	38	40	41	42	29	16	13
22:45 - 23:00	45	39	41	41	41	29	19	15
23:00 - 23:15	46	40	41	41	42	30	21	16
23:15 - 23:30	44	38	40	41	42	29	21	16
23:30 - 23:45	44	37	40	40	41	29	21	16
23:45 - 00:00	44	37	39	40	40	29	25	21
00:00 - 00:15	44	37	39	39	39	27	17	13
00:15 - 00:30	44	37	38	38	39	26	15	12
00:30 - 00:45	43	36	39	39	39	26	17	13
00:45 - 01:00	44	36	38	38	37	25	13	12
01:00 - 01:15	44	36	38	38	37	24	11	11
01:15 - 01:30	43	36	37	36	36	23	12	11
01:30 - 01:45	43	35	36	35	35	22	11	11
01:45 - 02:00	43	36	37	36	36	23	11	11
02:00 - 02:15	42	34	36	34	34	21	11	11
02:15 - 02:30	41	33	35	34	34	21	11	11
02:30 - 02:45	42	35	36	34	33	20	10	11
02:45 - 03:00	42	35	37	35	34	21	11	11
03:00 - 03:15	42	34	35	35	34	21	12	12
03:15 - 03:30	43	35	36	34	33	20	10	11
03:30 - 03:45	43	36	37	36	34	22	11	11
03:45 - 04:00	42	35	37	35	35	27	16	11
04:00 - 04:15	44	37	38	36	36	27	22	14
04:15 - 04:30	44	36	38	38	38	27	19	14

Project:	Nishkam, West London		
Section:	Unattended Spectral L_{90} Measurements	Job No:	60343680
	(Location U2)	Date:	18/19th June 2015
Formatted by:	BH		

Time	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
04:30 - 04:45	45	38	39	39	39	28	22	17
04:45 - 05:00	46	39	40	41	41	28	22	17
05:00 - 05:15	46	39	40	41	41	29	22	17
05:15 - 05:30	47	40	42	42	43	30	22	16
05:30 - 05:45	47	41	43	44	44	31	21	14
05:45 - 06:00	48	41	44	45	45	32	21	15
06:00 - 06:15	50	44	45	45	45	32	21	15
06:15 - 06:30	50	44	45	45	45	33	22	17
06:30 - 06:45	51	43	44	44	45	33	24	19
06:45 - 07:00	53	44	44	44	45	33	24	18
07:00 - 07:15	53	44	44	44	45	33	24	17
07:15 - 07:30	53	44	44	44	45	34	28	21
07:30 - 07:45	53	45	44	44	45	35	28	20
07:45 - 08:00	54	46	46	45	46	38	32	23
08:00 - 08:15	57	49	45	46	47	42	38	26
08:15 - 08:30	58	49	45	45	45	36	28	18
08:30 - 08:45	60	50	47	46	45	38	30	20
08:45 - 09:00	55	47	45	45	44	35	28	18
09:00 - 09:15	57	49	45	45	44	35	28	19
09:15 - 09:30	58	47	45	44	44	33	26	19
09:30 - 09:45	57	47	44	44	44	34	27	20
09:45 - 10:00	57	48	45	45	45	36	29	22
10:00 - 10:15	52	44	44	45	45	34	30	24
10:15 - 10:30	53	45	45	45	45	34	30	26
10:30 - 10:45	56	47	45	45	45	36	30	25
10:45 - 11:00	58	48	45	45	45	35	29	23
11:00 - 11:15	58	50	44	44	44	36	31	23
11:15 - 11:30	56	49	46	46	46	38	32	24
11:30 - 11:45	58	49	45	45	45	36	28	20
11:45 - 12:00	56	49	46	45	45	35	29	22
12:00 - 12:15	54	47	45	45	45	34	26	19
12:15 - 12:30	58	49	47	47	47	39	34	27
12:30 - 12:45	55	48	44	45	45	36	30	23
12:45 - 13:00	52	46	44	43	43	33	26	19
13:00 - 13:15	54	46	43	43	43	34	26	19
13:15 - 13:30	52	45	44	44	44	33	27	21
13:30 - 13:45	54	47	45	45	44	35	30	22
13:45 - 14:00	58	52	46	45	45	36	29	20