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King's Road Noise Impact Assessment R1 07032016

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For:

Bagri Foundation

Report Title:

KING'S ROAD, READING

ENVIRONMENTAL NOISE IMPACT ASSESSMENT

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Introduction

Reading College is located to the north of King's Road within Reading Borough Council. 191 King's Road is currently serving as student accommodation and is situated to the west of the college. 187-189 King's Road has previously been used as commercial office space.

There is a car park that lays to the west of 191 and north of 187-189 King's Road. A proposal is being submitted for the formation of a new student accommodation building within the carpark area, an extension to the existing accommodation at 191 King's Road and the conversion of 187-189 King's Road to additional student accommodation.

The conversion of 187-189 King's Road from commercial offices to student accommodation may include item(s) of air conditioning plant which must be assessed in accordance with the Local Authority's noise policy.

The nearest noise sensitive dwellings are positioned to the south of 187-189 King's Road on the opposite side of the road.

The site location and nearest noise sensitive receptors are shown in Appendix A. The proposed development scheme is shown in Appendix C.

Gillieron Scott Acoustic Design have been commissioned to undertake a background noise survey and to assess the potential noise impact from new items of plant in accordance with Reading Borough Council's adopted noise policy.

It is assumed that the operational hours of any potential new plant will be 24 hours.

The findings of the noise impact assessment are presented in the following sections of this report together with supporting Appendices.

1.0 Brief

- Undertake noise measurements at two fixed monitoring locations over an extended period of time.
- Undertake weather measurements
- Identify noise sensitive dwellings located in the vicinity of the site and assess the topography of the intervening ground.
- Analyse the site-acquired data from these two fixed noise monitoring locations and determine the appropriate noise criteria to adopt from Reading Borough Council's noise policy.
- Using representative measured data from the survey, calculate an emission limit for any new items of proposed plant, to satisfy the Local Authority's noise policy.
- Provide a technical report detailing findings of the noise survey.

2.0 Summary

An environmental noise survey was undertaken from Friday 26th to Monday 29th February 2016. Measurements were undertaken at two fixed locations.

Reading Borough Council requires that plant items are assessed in accordance with British Standard 4142: 2014.

Weather measurements were undertaken as part of the assessment and it has been determined that all noise measurements taken during the survey were undertaken during conditions that are conducive to acoustic measurement.

Measurement position 1 was subjectively judged to be representative of the noise environment at the nearest noise sensitive receptors. A representative measured background sound level from this position of 51 dB $L_{A90,15min}$ has been calculated.

The following acoustic feature corrections were applied: 2 dB penalty for tonality, 3 dB penalty for impulsivity and 3 dB penalty intermittency.

A cumulative noise emission level of 67 dB(A) has been defined, 1m from the plant items.

With plant noise emission limits now known, any potential item(s) of plant that might be introduced in the future can be designed to ensure the Local Authority's noise criteria is met.

3.0 Plant Noise Assessment Criteria

The noise strategy implemented by Reading Borough Council in relation to noise and vibration impact assessment is as follows:

“Noise Assessments should be prepared by suitably qualified acousticians. They should usually outline the existing noise environment, the potential noise sources from the development, or the noise sources likely to affect the development, together with any mitigation measures. Advice should be sought from the council’s Public Protection Service for individual requirements. (BS4142). The assessment should include information about: the sound power level and the likely resultant noise level of equipment at the site boundary for all noise-producing machinery such as extract ventilation systems, refrigeration equipment etc. that is likely to be installed; where any noise-generating plant or equipment will be located and installed so as to reduce noise impacts on neighbouring properties; delivery times and opening hours for commercial premises within noise sensitive areas; details of waste collection for example pubs/clubs where glass collection could be noisy. Proposed developments immediately adjoining (including below or above) residential premises should provide full details of sound insulation measures, position and design of entrances/exits plus car parking. For pubs and clubs, consideration of location provided for smokers to prevent noise impact from patrons outside the premises.”

A plant noise impact assessment in accordance with British Standard 4142: 2014 is, therefore, required.

4.0 Context

The proposed development site is situated to the north of King’s Road, Reading. This section of King’s Road has one-way traffic flow and comprises four lanes; two single bus lanes running either side of two central lanes, one of which travels in the opposing direction to the other lanes. King’s Road services a high traffic flow with a reasonable percentage of Heavy Goods Vehicles (HGVs). There is a bus stop located in the nearside lane in close proximity to the southern façade of the building at 187-189 King’s Road.

Reading College is located immediately east of 191 King’s Road. Wipro Technologies, a commercial premises is located to the east of 187-189 King’s Road Wipro Technologies is serviced by multiple plant units located on the roof of the building. Additional commercial premises are located to the north of the development site. The nearest residential properties to the development are located to the south, on the opposite side of King’s Road.

The closest noise sensitive dwellings positioned to the south of King’s Road have been observed to have double glazing with trickle ventilators. It is more likely, therefore, that sufficient ventilation is provided to the majority of these dwellings throughout most of the year by the fitted trickle vents, with purge ventilation only being sought by opening windows during periods of high temperature.

The noise in the vicinity of the nearest noise sensitive receptors comprises of road traffic from King’s Road and air traffic noise due to Heathrow Airport. Noise emanating from King’s Road dominates the acoustic environment in the proximity of these dwellings. Subjectively, the ambient sound level is relatively high.

5.0 Survey Details

Two measurement positions were utilised as part of this assessment, Measurement Position 1 and Measurement Position 2 (MP1 & MP2). Measurement locations are shown in Appendices A and B.

The clocks on the sound levels meters were synchronised with one another before deployment. The meters were then set to integrate sound levels over 15-minute periods in synchronisation mode. In this measurement mode, the 15-minute logged levels at the Measurement Positions were being made at approximately the same time.

MP1 was located approximately 1m from the southern façade of 187-189 King's Road at first floor height. This measurement location was chosen as it was secure and it had line of sight to King's Road. The microphone location was also positioned at a similar distance away from the road as the nearest noise sensitive dwellings and measurements made here were deemed to be representative of the immediate noise environment of those dwellings. There were no suitable 'free-field' measurement position available. Noise at this location included road traffic noise and air traffic noise.

Measurements at MP1 were made between 1530 hours on Friday the 26th to 1530 hours Sunday 28th February 2016.

The equipment at both Measurement Positions was calibrated before and after the survey period. The standardised calibrator emits a level 114 dB at 1 kHz.

The measurement equipment at MP1 was calibrated to 114.8 dB at the beginning of the survey period; 114.8 is the GRAS Environmental Microphone's specified calibration level when used with the Norsonic 118 Sound Level Meter. Calibration after the survey period found a drift of 0.5 dB with a calibration level of 114.3 dB observed. This level of drift in calibration causes a small amount of uncertainty in the measurement results. This will be discussed further.

MP2 was located approximately 1m from the western façade of the existing student accommodation building, 191 King's Road. The microphone was positioned approximately 1.5m above ground. This measurement location was chosen as it was secure. There was no suitable 'free-field' measurement position available. Sources of noise at this location included road traffic noise, air traffic noise and some activity noise from the student accommodation.

Measurements at MP2 were made between 1645 hours on Friday the 26th to 1130 hours Monday the 29th of February 2016.

MP2 was located further from King's Road and also benefitted partial screening from road traffic noise.

The measurement equipment at MP2 was calibrated to 114.0 dB at the beginning of the survey period. Calibration after the survey period found a drift of 0.3 dB with a calibration level of 113.7 dB observed. This is considered an insignificant drift in calibration.

In line with Reading Borough Council's adopted noise policy, a representative background sound level $L_{A90,15min}$ has been determined, in order to set an emission limit from proposed items of plant.

The weather during the survey period was generally dry with low wind speeds. A weather station was deployed adjacent to MP2 in order to ensure that any noise measurements made during conditions that were not conducive to acoustic measurement could be excluded from the assessment. A graphical representation of the weather data is shown in Appendix I.

It has been noted that weather measurements at MP2 were made in a more sheltered position than MP1 and that wind speeds were likely to have been higher at MP1.

Details of the equipment used for the survey are shown in Appendix D.

6.0 Survey Results

The table below shows the results from the noise survey undertaken at Monitoring Position 1.

Period	Representative $L_{A90, 15min}$ (dB)	Period $L_{Aeq,T}$ (dB)
Day (7:00-23:00)	59	71.2
Night (23:00-07:00)	51	67.8

Histograms have been plotted separately for the daytime and night-time periods in order to determine the representative background sound levels.

A representative measured background sound level at MP1 of 59 dB $L_{A90, 15min}$ during the daytime and 51 dB $L_{A90, 15min}$ during the night-time has been determined. Day and night-time histograms are presented in Appendix G. The full survey results from this measurement position (to one decimal place) are shown in Appendix E.

The table below shows the results from the noise survey undertaken at Monitoring Position 2.

Period	Representative $L_{A90, 15min}$ (dB)	Period $L_{Aeq,T}$ (dB)
Day (7:00-23:00)	44	51.3
Night (23:00-07:00)	39	47.7

A representative measured background sound level at MP2 of 44 dB $L_{A90, 15min}$ during the daytime and 39 dB $L_{A90, 15min}$ over the night-time has been determined. Day and night-time histograms are presented in Appendix H. The full survey results (to one decimal place) are shown in Appendix F.

7.0 Plant Noise Design Criteria

Measured background sound levels at MP1 have been deemed to be representative of the immediate noise environment of the nearest noise sensitive receptors. The background sound level from MP1 will be used to define plant noise criteria.

As it is envisaged that the proposed plant will have the facility to operate 24 hours and so the representative background sound level from the night-time period of 51 dB $L_{A90, 15min}$ has been used.

As the schedule of plant and proposed location(s) are not yet known, a plant noise emission limit has been defined using a worst case location, in order to ensure that the Local Authority's noise policy is met.

The plant noise assessment has been carried out in the table below.

Element	Level	Comments
Background Sound Level at Receptor	51 dB(A)	Representative Background Sound Level, night-time, MP2
Façade Correction	+ 3 dB	Measurements made 1m from facade
Reflective Surfaces	- 6 dB	2 acoustically hard reflective surfaces in close proximity to the unit(s)
Acoustic Feature Corrections	- 8 dB	2 dB Tonal penalty, 3 dB Impulsivity penalty, 3 dB Intermittency Penalty
Distance Attenuation	+ 32 dB	Point source distance attenuation over approximately 38 metres
Rating Level 5 dB Below Background Sound Level	- 5dB	Ensuring Rating Level is sufficiently below Background Sound Level
Cumulative Emission limit	67 dB(A)	Maximum emission limit 1m from plant items

A cumulative noise emission limit of 67 dB(A) has been defined at a distance of 1m from the unit(s).

Setting an emission limit that ensures the Rating Level is -5 dB below the background sound level is an indication that there is little likelihood of adverse impact on the noise sensitive receptors.

An explanation for the acoustic feature corrections applied as part of this assessment is provided in Appendix J.

When information on the schedule of plant and proposed location(s) becomes available, this should be submitted to GSAD for approval.

8.0 Uncertainty

Calibration of the equipment at MP1 before and after the survey period gave rise to a drift in calibration of 0.5 dB. This adds a small degree of uncertainty to the results at this position.

Calibration at MP2 gave rise to a drift of 0.3 dB. This is considered an insignificant drift in calibration.

Weather conditions during the survey were generally dry with low wind speeds. Weather measurements were, however, taken at MP2, whereas the noise measurements used for the assessment were made at MP1. MP2 was noted to be a relatively sheltered location and the wind speeds were likely to have been higher at MP1. Although this adds uncertainty to the appropriateness

of the weather measurements, conditions were also subjectively observed to be calm and dry at the beginning and end of the survey.

Given the context of the location, the uncertainty of the assessment does not have any significance to the outcome of the assessment.

9.0 Conclusion

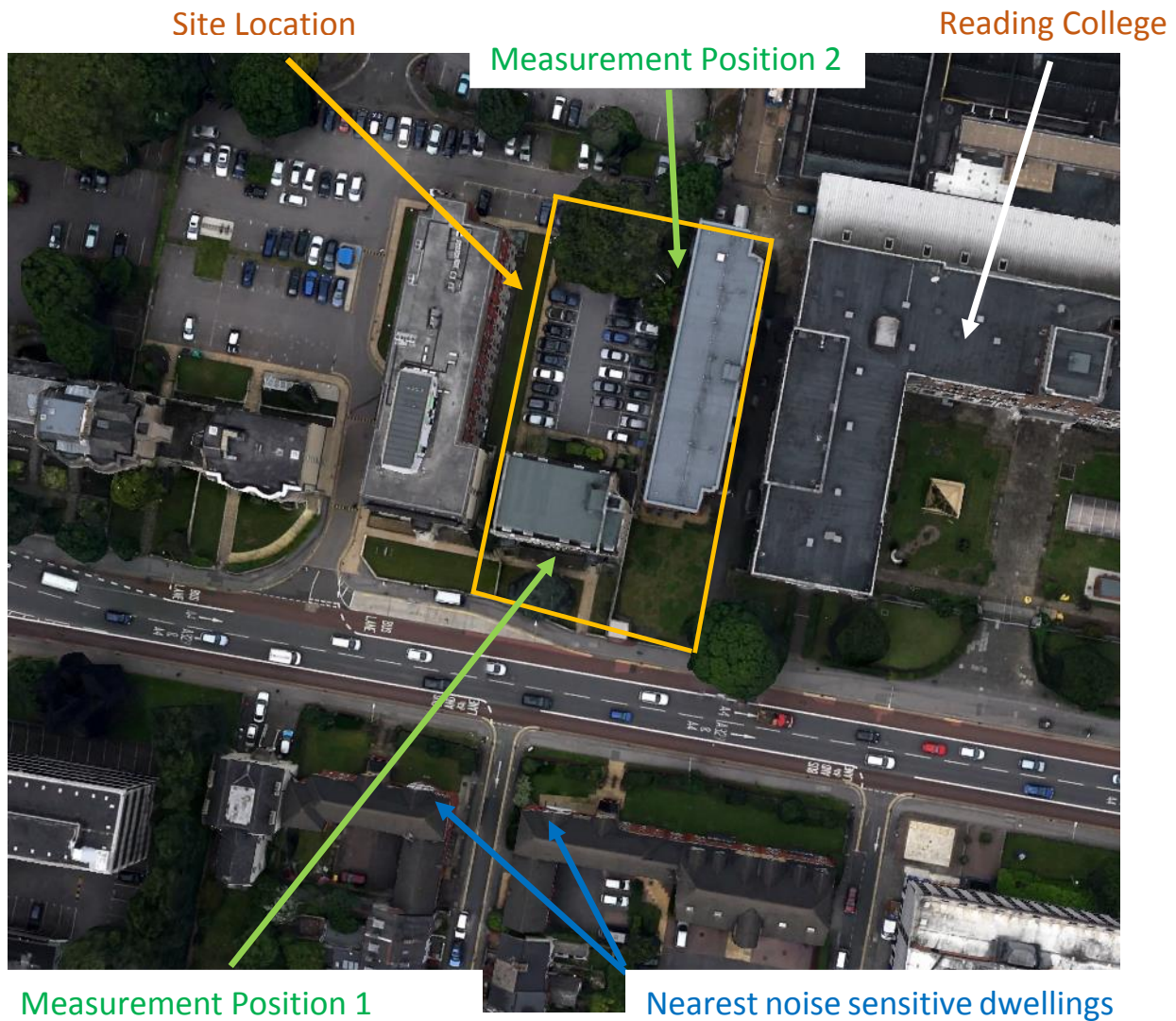
A noise survey utilising two measurement positions has been deployed at the development site in order to determine background sound levels. The survey was carried out from Friday the 26th to Monday the 29th of February 2016.

A representative background sound level of the immediate noise environment of the nearest noise sensitive receptor during the night-time has been determined.

Acoustic feature corrections of 8 dB have been applied, based on GSAD's previous experience and a cumulative plant noise emission limit has been defined 1m from proposed items of plant, to ensure that noise policy it met.

APPENDICES

APPENDIX A: Site Location & Measurement Position Overview



APPENDIX B: Measurement Position Photographs

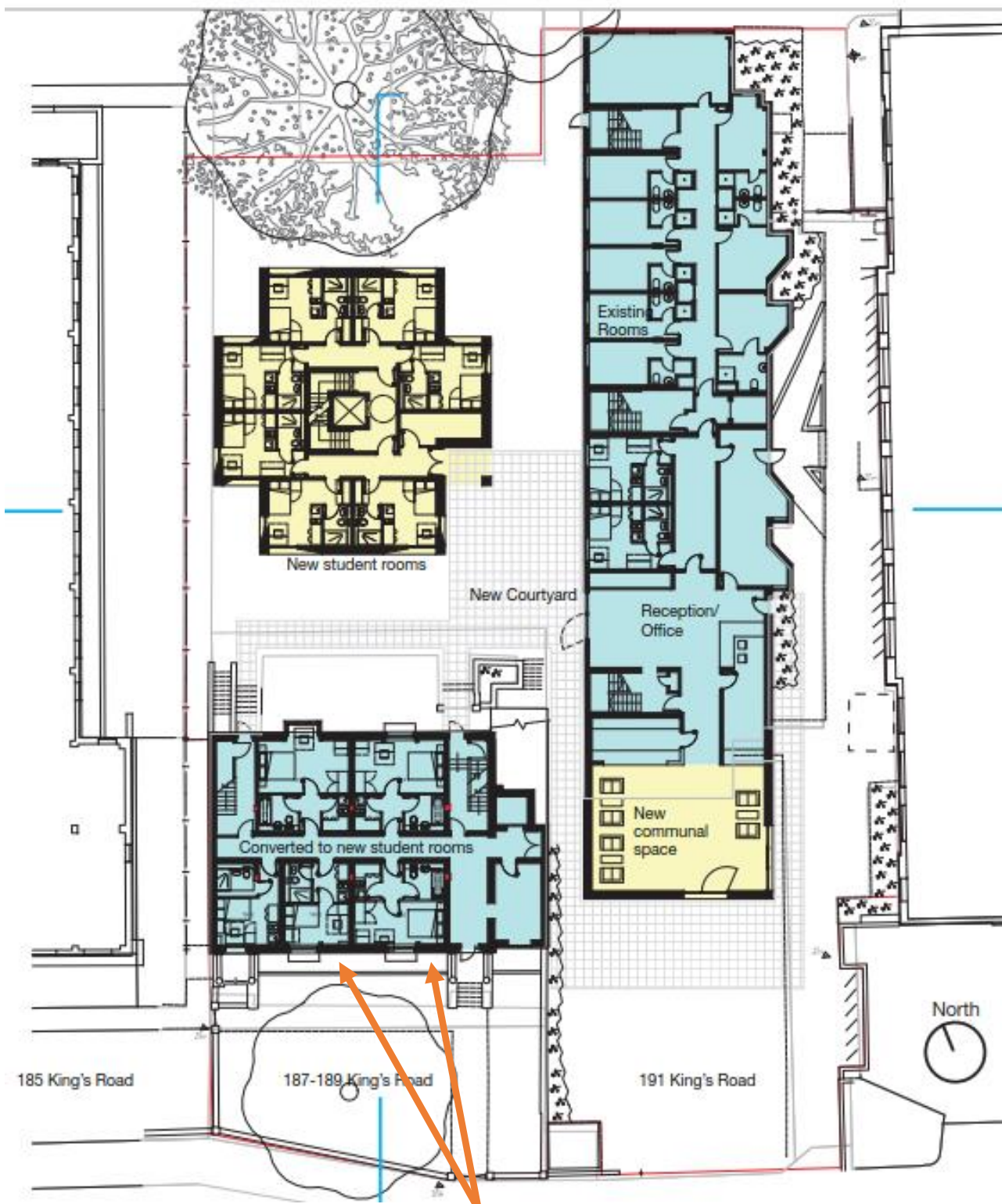
Measurement Position 1



Measurement Position 2 with weather station



APPENDIX C: Proposed Development and Plant Location



Indicative Plant Location at basement level
of southern façade 187-189 King's Road

APPENDIX D: Equipment

Norsonic 118 Real Time Analyser
Norsonic 118 Real Time Analyser
Norsonic 1251 Calibrator
GRAS Environmental Microphone
Tripods
Extension cables
Environmental windshields
Weather Station - Watson W-8681-PRO II

Calibration certificates are available on request.

APPENDIX E: Survey Results – MP1

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
26/02/2016	15:30:00	69.0	62.0	50.6	49.1	44.4	40.2	40.9	37.3	36.4	40.9
26/02/2016	15:45:00	76.1	59.6	51.4	48.7	43.9	41.6	40.8	38.1	43.7	35.4
26/02/2016	16:00:00	64.6	58.8	47.5	46.5	43.7	41.2	41.2	42.6	37.0	36.5
26/02/2016	16:15:00	65.1	59.8	48.2	46.0	44.2	42.5	41.3	41.2	44.0	35.7
26/02/2016	16:30:00	66.7	59.6	48.6	46.4	43.4	42.4	41.3	39.7	37.1	34.0
26/02/2016	16:45:00	65.3	60.4	48.7	47.5	45.1	42.4	43.7	42.2	36.7	34.1
26/02/2016	17:00:00	64.6	59.2	48.0	45.8	43.1	41.8	41.2	40.8	48.7	51.4
26/02/2016	17:15:00	64.8	59.6	49.3	45.0	43.5	40.8	39.5	38.2	37.8	40.0
26/02/2016	17:30:00	72.8	59.6	51.9	47.9	45.3	43.6	43.2	42.4	41.3	35.7
26/02/2016	17:45:00	70.1	63.5	50.0	46.6	43.1	41.1	39.8	37.1	35.4	29.5
26/02/2016	18:00:00	71.3	63.7	53.7	47.7	42.9	40.5	40.3	39.9	36.3	29.5
26/02/2016	18:15:00	77.0	61.8	55.0	49.8	46.2	43.7	43.0	42.4	45.1	35.1
26/02/2016	18:30:00	72.1	64.9	53.1	49.3	45.1	42.8	41.7	38.3	34.0	29.6
26/02/2016	18:45:00	72.6	63.1	57.2	51.6	49.3	51.3	49.5	46.7	42.1	38.4
26/02/2016	19:00:00	72.0	67.3	53.5	49.0	44.1	41.2	40.1	38.3	34.1	30.0
26/02/2016	19:15:00	71.7	65.2	51.4	47.9	44.8	43.6	43.7	43.8	45.2	34.1
26/02/2016	19:30:00	71.8	65.4	51.3	47.4	43.5	40.8	39.2	36.7	34.6	27.9
26/02/2016	19:45:00	73.3	63.9	59.5	60.1	58.9	53.8	49.6	46.3	41.4	37.7
26/02/2016	20:00:00	72.2	64.5	51.9	47.9	43.5	40.8	39.4	36.7	32.2	26.9
26/02/2016	20:15:00	71.3	62.2	51.0	46.8	42.5	39.7	38.3	36.1	32.5	28.7
26/02/2016	20:30:00	71.2	62.2	51.4	47.0	42.6	40.4	38.4	36.1	31.3	26.3
26/02/2016	20:45:00	71.9	60.5	52.1	48.3	47.0	45.6	45.7	44.5	41.4	37.5
26/02/2016	21:00:00	70.7	61.2	50.0	46.0	47.7	40.0	38.1	37.9	31.7	25.2
26/02/2016	21:15:00	72.8	60.0	51.8	47.4	43.0	41.0	40.4	37.7	34.7	29.4
26/02/2016	21:30:00	71.0	62.4	51.0	47.1	43.7	39.8	38.3	35.7	31.5	26.5
26/02/2016	21:45:00	69.9	60.7	49.4	45.2	40.6	37.9	36.8	34.6	29.1	23.1
26/02/2016	22:00:00	70.3	59.4	49.8	45.7	41.0	38.6	37.1	33.7	31.8	26.3
26/02/2016	22:15:00	71.2	61.0	50.3	46.2	41.7	39.2	37.6	35.1	32.0	25.3
26/02/2016	22:30:00	69.9	58.2	49.7	45.6	43.0	39.7	37.0	34.6	30.2	24.4
26/02/2016	22:45:00	70.5	61.2	50.1	46.0	43.0	39.3	37.7	35.2	32.0	26.2
26/02/2016	23:00:00	70.1	56.0	49.6	45.6	41.8	38.1	36.0	34.8	29.4	25.2
26/02/2016	23:15:00	69.8	56.7	49.9	45.8	42.0	38.5	36.6	34.1	31.2	25.5
26/02/2016	23:30:00	68.8	55.6	48.5	44.3	39.7	37.1	35.5	32.1	27.1	21.8
26/02/2016	23:45:00	68.2	52.7	48.1	44.4	42.7	39.1	37.4	34.6	30.5	24.8
27/02/2016	00:00:00	69.0	54.7	49.1	45.3	41.3	38.5	37.1	34.7	29.4	26.0
27/02/2016	00:15:00	68.1	56.0	48.3	45.0	40.8	38.6	37.4	34.7	30.3	24.6
27/02/2016	00:30:00	67.5	53.0	47.3	43.6	39.5	36.6	35.1	32.3	28.4	21.5
27/02/2016	00:45:00	67.7	51.0	47.6	44.0	40.3	37.0	35.4	32.6	28.4	22.4
27/02/2016	01:00:00	69.3	55.9	49.2	45.8	41.7	38.8	37.0	35.6	31.8	25.8
27/02/2016	01:15:00	68.2	53.3	48.5	44.8	41.6	39.2	36.9	35.0	33.3	23.8
27/02/2016	01:30:00	66.8	50.5	46.8	43.1	38.5	35.7	34.1	31.4	26.1	21.7

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
27/02/2016	01:45:00	68.1	50.6	48.0	44.3	40.5	37.3	35.6	33.4	27.7	22.2
27/02/2016	02:00:00	68.5	53.6	48.4	44.7	40.7	38.0	36.1	33.7	28.2	22.6
27/02/2016	02:15:00	68.0	53.6	48.1	44.3	40.6	37.7	35.7	33.5	27.6	21.6
27/02/2016	02:30:00	66.1	48.8	46.3	42.6	38.2	35.5	33.6	30.3	25.0	19.5
27/02/2016	02:45:00	66.9	51.0	47.6	43.8	39.8	37.2	36.8	33.8	29.1	22.7
27/02/2016	03:00:00	66.7	49.6	47.7	44.4	40.6	39.0	37.6	35.3	30.3	24.7
27/02/2016	03:15:00	67.4	48.0	47.7	43.6	39.2	36.5	37.4	31.7	27.1	21.5
27/02/2016	03:30:00	68.1	53.4	47.5	43.9	39.5	36.7	35.3	33.2	30.2	22.9
27/02/2016	03:45:00	65.6	45.4	45.7	41.7	40.6	35.6	33.5	31.7	28.0	21.4
27/02/2016	04:00:00	67.3	52.5	47.5	43.9	39.8	39.2	36.6	33.6	29.3	24.1
27/02/2016	04:15:00	65.9	48.4	46.1	42.6	38.6	36.0	34.4	30.6	26.1	21.8
27/02/2016	04:30:00	66.1	46.8	46.3	42.6	37.8	35.1	34.0	32.2	26.6	20.4
27/02/2016	04:45:00	65.1	46.1	45.0	41.4	37.5	35.7	34.5	31.1	30.8	23.3
27/02/2016	05:00:00	66.2	47.9	45.7	41.6	37.2	33.7	32.0	29.5	25.1	19.6
27/02/2016	05:15:00	65.4	45.4	45.5	41.4	36.9	34.4	32.7	29.6	24.8	20.5
27/02/2016	05:30:00	66.3	47.2	45.9	41.9	37.6	35.0	33.9	30.3	25.4	19.8
27/02/2016	05:45:00	66.7	48.3	46.3	42.1	37.3	34.2	32.3	29.6	25.8	19.1
27/02/2016	06:00:00	66.7	50.9	46.9	43.3	39.1	38.0	36.2	33.1	31.3	24.8
27/02/2016	06:15:00	68.8	49.8	48.9	45.1	40.7	37.9	36.0	34.5	29.1	23.2
27/02/2016	06:30:00	68.8	51.2	49.4	45.6	41.6	40.7	38.1	35.7	31.5	28.0
27/02/2016	06:45:00	68.8	50.3	48.6	44.6	40.1	37.7	35.9	33.2	28.2	23.1
27/02/2016	07:00:00	69.7	53.4	49.9	46.0	41.4	39.4	37.8	35.1	33.0	28.0
27/02/2016	07:15:00	69.6	51.8	49.6	45.7	40.9	37.9	36.1	33.9	30.3	23.8
27/02/2016	07:30:00	70.0	54.6	50.5	46.8	42.8	40.7	39.5	37.4	34.9	29.6
27/02/2016	07:45:00	69.8	56.5	50.0	46.3	42.9	40.8	39.4	37.1	33.9	27.6
27/02/2016	08:00:00	70.6	55.7	50.6	46.9	42.9	40.0	38.3	35.7	31.6	26.1
27/02/2016	08:15:00	71.1	55.1	50.8	46.9	43.3	40.0	37.8	35.3	31.2	26.2
27/02/2016	08:30:00	71.4	58.5	50.8	46.7	42.6	40.9	39.2	35.7	33.2	27.9
27/02/2016	08:45:00	71.9	58.9	51.1	47.4	44.1	43.8	41.9	41.0	38.4	33.3
27/02/2016	09:00:00	71.6	61.3	50.9	47.1	42.9	41.0	39.0	37.0	33.7	29.3
27/02/2016	09:15:00	71.1	56.6	50.2	46.4	42.3	39.2	37.8	35.5	31.5	28.1
27/02/2016	09:30:00	72.0	60.9	52.1	49.6	45.7	43.8	42.8	41.4	36.2	30.9
27/02/2016	09:45:00	72.2	61.3	50.8	46.9	42.3	39.2	37.2	41.5	42.5	25.9
27/02/2016	10:00:00	72.9	57.1	52.5	51.2	47.3	43.2	41.1	39.1	35.5	33.5
27/02/2016	10:15:00	71.4	59.0	50.6	46.9	42.6	40.5	39.3	37.6	35.9	31.1
27/02/2016	10:30:00	71.5	60.2	51.0	47.4	43.8	41.0	40.2	38.1	35.1	30.8
27/02/2016	10:45:00	71.3	60.2	50.6	47.1	43.3	40.9	38.8	36.3	32.8	27.4
27/02/2016	11:00:00	71.6	61.8	51.0	47.2	43.3	41.0	40.1	37.8	34.6	31.2
27/02/2016	11:15:00	71.2	61.6	50.6	46.5	42.2	38.8	37.3	35.3	33.5	30.5
27/02/2016	11:30:00	71.0	60.4	50.4	46.7	42.7	40.3	39.1	37.1	33.1	28.8
27/02/2016	11:45:00	77.5	62.6	61.8	54.3	56.8	54.2	49.7	44.6	42.6	37.9
27/02/2016	12:00:00	74.0	62.0	52.4	47.2	42.6	40.1	38.3	36.2	38.9	33.9
27/02/2016	12:15:00	70.5	62.2	49.9	46.6	43.3	40.7	39.8	41.8	37.5	31.2

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
27/02/2016	12:30:00	72.6	60.9	51.1	46.4	42.5	39.3	37.9	38.3	35.2	37.2
27/02/2016	12:45:00	72.0	60.5	49.0	45.7	47.2	43.5	50.0	39.5	42.1	43.3
27/02/2016	13:00:00	70.6	58.9	51.4	45.5	44.2	42.5	41.8	40.2	39.4	34.1
27/02/2016	13:15:00	68.0	58.5	55.5	51.0	48.5	45.2	44.1	40.6	42.1	39.7
27/02/2016	13:30:00	72.9	60.7	48.8	45.8	42.4	40.7	41.9	44.5	48.2	36.0
27/02/2016	13:45:00	73.3	58.1	51.5	46.3	42.7	41.1	39.8	37.7	38.4	32.0
27/02/2016	14:00:00	64.5	59.0	46.1	43.8	40.3	39.3	36.7	39.0	35.1	36.1
27/02/2016	14:15:00	65.9	60.1	47.2	44.4	43.6	40.4	39.8	42.7	39.2	36.2
27/02/2016	14:30:00	69.3	66.0	51.3	44.0	41.2	38.3	41.0	38.9	40.1	37.9
27/02/2016	14:45:00	68.6	61.4	48.3	45.5	44.0	40.9	40.0	38.5	37.0	34.5
27/02/2016	15:00:00	70.8	61.8	50.0	46.1	41.9	39.1	37.8	39.9	37.4	38.3
27/02/2016	15:15:00	71.5	62.8	50.7	46.6	42.2	39.3	38.2	36.1	33.9	29.7
27/02/2016	15:30:00	71.5	59.4	50.4	46.3	42.1	40.2	37.6	35.1	31.9	26.8
27/02/2016	15:45:00	72.4	63.3	54.2	48.8	46.0	42.6	41.5	38.7	34.9	31.9
27/02/2016	16:00:00	71.1	61.5	55.2	47.9	44.1	40.9	39.9	37.6	43.6	40.0
27/02/2016	16:15:00	67.9	60.8	47.7	45.2	42.4	41.7	47.1	41.0	39.0	37.2
27/02/2016	16:30:00	66.8	60.9	47.5	45.1	41.3	39.8	40.6	41.0	37.1	40.1
27/02/2016	16:45:00	68.0	62.3	48.6	45.8	43.5	40.7	40.9	38.0	38.5	37.7
27/02/2016	17:00:00	69.1	59.9	47.9	44.4	41.6	39.9	42.5	36.9	35.7	34.5
27/02/2016	17:15:00	65.6	60.7	47.1	45.0	41.9	39.6	38.4	37.6	40.1	37.3
27/02/2016	17:30:00	73.6	60.3	49.8	45.6	42.2	40.3	40.1	38.1	36.1	37.4
27/02/2016	17:45:00	77.1	60.8	51.7	46.0	42.6	43.0	40.1	38.1	41.7	40.1
27/02/2016	18:00:00	67.8	61.1	47.9	44.3	40.5	38.5	40.0	37.7	36.1	41.2
27/02/2016	18:15:00	72.6	60.6	52.4	47.7	44.0	41.2	39.8	37.9	36.6	35.3
27/02/2016	18:30:00	73.6	62.0	52.1	47.4	43.2	41.4	40.8	40.4	36.7	32.5
27/02/2016	18:45:00	71.3	61.0	50.7	46.8	42.9	40.5	39.0	37.1	39.4	46.1
27/02/2016	19:00:00	71.8	63.3	51.1	46.8	42.2	39.1	38.3	35.1	30.7	26.2
27/02/2016	19:15:00	72.0	63.6	51.6	47.8	44.1	41.1	39.5	37.0	33.5	28.2
27/02/2016	19:30:00	71.4	62.5	50.9	46.6	42.5	39.4	37.9	36.2	31.5	28.2
27/02/2016	19:45:00	74.7	60.9	53.4	47.5	43.1	40.5	38.7	36.3	35.0	28.4
27/02/2016	20:00:00	71.9	59.7	61.6	57.0	52.4	51.6	48.5	43.7	38.5	32.6
27/02/2016	20:15:00	70.3	56.6	50.1	45.9	41.3	38.8	37.2	35.4	31.4	33.4
27/02/2016	20:30:00	71.1	58.6	50.4	46.5	42.1	39.4	44.6	38.2	34.1	29.4
27/02/2016	20:45:00	70.4	59.8	49.7	45.4	40.9	37.9	37.8	33.9	28.9	24.0
27/02/2016	21:00:00	71.4	58.7	57.3	53.0	51.1	47.1	45.1	43.6	37.9	32.7
27/02/2016	21:15:00	71.2	59.4	54.7	50.3	44.6	42.3	39.7	37.0	32.7	29.1
27/02/2016	21:30:00	70.0	56.5	49.8	45.8	41.5	38.9	37.2	35.6	34.3	26.9
27/02/2016	21:45:00	70.4	58.0	50.1	46.2	41.6	38.7	37.0	34.1	30.1	25.0
27/02/2016	22:00:00	69.8	55.7	49.6	45.6	41.1	38.4	37.1	34.4	30.6	28.7
27/02/2016	22:15:00	70.4	55.4	49.6	45.7	41.2	38.7	42.9	41.4	31.5	25.6
27/02/2016	22:30:00	70.0	56.3	49.5	45.4	40.8	37.7	36.2	34.3	29.1	23.3
27/02/2016	22:45:00	70.1	57.7	49.8	46.0	42.1	40.6	41.7	38.9	34.9	29.7
27/02/2016	23:00:00	69.6	53.9	49.8	45.8	41.7	39.0	37.4	35.4	30.6	26.7

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
27/02/2016	23:15:00	69.9	54.2	49.4	45.3	40.7	38.1	36.4	33.4	29.1	25.0
27/02/2016	23:30:00	69.5	54.6	49.1	45.1	41.0	38.4	37.0	34.1	30.5	28.8
27/02/2016	23:45:00	69.5	53.3	49.1	45.2	40.7	37.5	35.9	33.1	28.1	23.0
28/02/2016	00:00:00	69.0	55.0	48.8	44.9	40.3	37.3	35.4	33.5	28.7	22.1
28/02/2016	00:15:00	69.1	55.0	49.0	45.2	41.1	38.1	36.1	33.6	28.7	23.8
28/02/2016	00:30:00	68.4	54.8	48.1	44.4	39.9	37.2	35.7	33.0	27.6	22.1
28/02/2016	00:45:00	67.6	51.2	47.6	43.9	40.2	36.9	35.1	32.9	28.1	22.5
28/02/2016	01:00:00	68.5	54.0	48.6	44.9	40.7	37.7	36.3	36.6	31.6	24.8
28/02/2016	01:15:00	68.1	54.2	47.9	44.4	40.3	38.0	36.8	33.7	29.6	25.3
28/02/2016	01:30:00	68.1	54.6	47.8	43.8	39.1	36.0	34.2	31.5	26.6	20.5
28/02/2016	01:45:00	67.6	54.1	48.0	44.2	39.9	37.2	35.8	34.6	28.2	22.9
28/02/2016	02:00:00	68.2	55.0	49.3	44.4	39.9	37.8	39.8	35.7	31.8	25.5
28/02/2016	02:15:00	68.1	53.4	48.2	44.4	40.5	37.3	35.6	32.8	27.7	22.0
28/02/2016	02:30:00	67.8	53.9	48.3	44.9	40.6	37.9	41.5	34.8	30.2	23.8
28/02/2016	02:45:00	67.5	52.7	47.7	44.1	40.1	37.4	36.1	33.4	29.3	26.0
28/02/2016	03:00:00	68.0	52.5	47.9	44.2	40.0	37.4	36.0	33.4	28.9	23.6
28/02/2016	03:15:00	68.6	53.0	49.1	45.3	40.9	38.1	36.6	34.1	29.3	28.9
28/02/2016	03:30:00	67.7	50.8	47.6	43.9	39.3	36.6	35.7	32.1	26.7	21.6
28/02/2016	03:45:00	67.5	52.3	47.5	43.7	40.0	36.6	35.2	32.9	27.8	22.1
28/02/2016	04:00:00	66.6	49.7	46.5	42.7	38.0	35.2	33.2	30.2	25.7	20.8
28/02/2016	04:15:00	66.6	49.5	46.4	42.5	37.8	34.9	33.0	30.1	26.0	27.8
28/02/2016	04:30:00	64.8	44.7	44.7	41.0	36.0	32.9	31.2	28.2	23.1	17.9
28/02/2016	04:45:00	65.2	45.9	45.6	42.2	39.4	35.7	34.6	33.9	28.7	22.3
28/02/2016	05:00:00	65.2	45.5	44.9	41.5	36.9	34.1	31.6	28.3	23.1	17.3
28/02/2016	05:15:00	65.8	48.4	45.5	41.5	36.8	34.2	33.0	30.2	25.7	20.8
28/02/2016	05:30:00	65.9	46.6	45.4	41.4	36.2	33.4	32.2	30.2	25.4	22.4
28/02/2016	05:45:00	65.6	45.4	45.2	41.4	37.9	36.4	34.3	31.3	31.4	25.2
28/02/2016	06:00:00	66.4	50.6	46.0	42.1	37.7	35.1	33.5	30.7	28.0	20.1
28/02/2016	06:15:00	66.7	51.1	46.6	42.5	37.7	35.4	33.7	31.4	26.0	22.2
28/02/2016	06:30:00	68.8	46.9	47.2	43.5	39.9	36.4	35.4	32.9	28.7	25.3
28/02/2016	06:45:00	67.2	48.8	47.1	43.7	42.0	38.4	36.8	34.9	33.0	28.2
28/02/2016	07:00:00	67.8	51.1	47.6	43.2	38.1	34.7	32.8	29.8	25.4	19.6
28/02/2016	07:15:00	68.5	50.7	48.5	44.7	40.8	39.7	37.2	34.2	30.9	25.3
28/02/2016	07:30:00	68.3	51.8	48.3	44.4	40.2	37.0	35.2	32.4	27.6	22.3
28/02/2016	07:45:00	68.0	52.5	48.4	45.0	41.5	39.4	38.2	35.6	31.7	26.1
28/02/2016	08:00:00	67.7	51.0	47.6	44.2	41.5	36.8	35.4	32.6	28.7	23.7
28/02/2016	08:15:00	68.6	51.1	48.5	44.4	39.4	37.1	34.8	32.1	28.1	22.0
28/02/2016	08:30:00	68.9	55.1	48.9	45.1	40.6	38.0	37.1	33.7	31.2	24.7
28/02/2016	08:45:00	70.3	55.8	49.8	47.0	42.7	39.9	39.2	37.7	33.4	28.6
28/02/2016	09:00:00	70.2	54.4	50.0	46.3	41.9	39.1	38.0	35.2	31.0	25.5
28/02/2016	09:15:00	70.2	55.2	49.9	45.8	41.8	39.0	37.0	33.9	29.7	24.4
28/02/2016	09:30:00	71.0	57.2	50.5	46.5	42.6	39.7	38.0	35.8	31.0	25.2
28/02/2016	09:45:00	70.3	55.3	49.9	46.5	42.1	39.4	37.8	35.4	32.1	27.4

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
28/02/2016	10:00:00	70.7	57.7	50.2	46.3	42.8	39.7	38.5	35.6	31.4	27.1
28/02/2016	10:15:00	70.7	58.8	50.3	46.5	42.6	39.9	37.9	35.6	32.1	26.9
28/02/2016	10:30:00	71.4	60.1	50.6	46.5	42.3	39.4	37.6	35.1	31.0	29.2
28/02/2016	10:45:00	71.8	61.4	51.1	47.4	43.0	40.5	38.4	36.0	31.9	27.3
28/02/2016	11:00:00	70.6	57.9	49.8	46.2	42.2	40.2	39.1	36.8	32.8	27.3
28/02/2016	11:15:00	70.6	55.8	49.9	45.9	41.7	39.1	37.3	37.1	31.8	27.0
28/02/2016	11:30:00	71.0	56.1	49.8	45.8	41.2	38.2	37.0	34.3	30.9	26.2
28/02/2016	11:45:00	70.9	59.0	49.9	46.2	42.0	39.6	37.5	35.3	31.1	27.1
28/02/2016	12:00:00	72.0	57.5	51.5	46.1	41.9	38.9	37.7	36.1	30.5	26.1
28/02/2016	12:15:00	71.9	61.6	51.4	47.4	43.8	41.2	38.9	36.2	33.0	29.2
28/02/2016	12:30:00	69.6	61.0	49.1	45.4	41.6	40.0	39.1	37.9	35.8	36.8
28/02/2016	12:45:00	69.7	62.2	49.2	45.7	44.1	39.8	38.2	43.5	37.7	33.4
28/02/2016	13:00:00	69.7	60.2	48.7	45.0	41.1	39.1	37.0	35.2	35.6	31.2
28/02/2016	13:15:00	68.2	59.9	48.3	45.1	41.8	41.0	38.9	37.4	37.7	41.1
28/02/2016	13:30:00	65.3	58.9	46.3	43.5	40.4	39.0	40.8	39.4	38.0	31.9

APPENDIX F: Survey Results – MP2

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
26/02/2016	16:45:00	47.3	43.5	23.9	21.5	17.9	14.8	12.9	10.3	7.4	5.1
26/02/2016	17:00:00	49.9	43.4	22.8	20.2	16.8	14.5	12.4	9.6	6.9	4.9
26/02/2016	17:15:00	48.7	43.7	25.4	24.1	20.3	18.7	18.6	13.6	10.7	6.6
26/02/2016	17:30:00	51.7	44.3	25.9	21.3	19.0	14.3	12.4	9.8	7.1	4.8
26/02/2016	17:45:00	49.2	45.0	29.0	27.6	27.2	22.5	17.7	13.4	9.5	6.0
26/02/2016	18:00:00	49.7	45.4	26.8	23.6	19.6	18.2	16.5	12.7	9.4	6.3
26/02/2016	18:30:00	50.4	45.5	27.3	23.0	18.2	14.1	11.6	8.7	5.7	4.2
26/02/2016	18:45:00	50.8	45.5	30.4	25.2	21.3	17.5	13.5	11.7	6.7	4.8
26/02/2016	19:00:00	50.8	47.1	29.8	25.4	20.3	17.2	15.3	12.3	9.0	8.4
26/02/2016	19:15:00	49.9	46.2	25.3	21.8	17.4	15.1	13.0	10.0	7.1	5.1
26/02/2016	19:30:00	50.0	46.2	26.0	23.7	19.8	18.8	16.7	13.5	10.0	7.5
26/02/2016	19:45:00	50.7	45.9	31.3	27.6	21.7	17.7	14.2	10.4	7.0	4.8
26/02/2016	20:00:00	50.5	46.0	25.9	21.8	17.7	14.5	12.3	10.1	7.4	5.4
26/02/2016	20:15:00	49.8	44.9	25.1	20.8	17.2	18.4	17.5	11.6	7.5	4.8
26/02/2016	20:30:00	51.1	44.9	25.5	21.2	16.8	14.4	11.9	9.1	6.2	4.5
26/02/2016	20:45:00	50.8	44.4	25.7	22.1	18.1	15.6	13.2	10.0	6.6	4.7
26/02/2016	21:00:00	49.3	44.2	24.5	20.6	15.7	13.4	11.5	8.9	6.0	4.5
26/02/2016	21:15:00	52.8	45.4	26.3	22.3	18.0	15.9	13.9	10.7	7.5	5.1
26/02/2016	21:30:00	49.4	44.5	24.9	20.9	15.9	13.2	11.1	8.8	6.0	4.5
26/02/2016	21:44:00	48.8	43.4	23.6	19.7	15.4	13.4	11.9	9.7	6.6	4.6
26/02/2016	22:00:00	50.0	43.7	24.5	20.3	15.5	13.3	11.4	8.7	5.9	4.4
26/02/2016	22:15:00	50.1	44.6	26.5	23.0	27.8	19.8	15.2	15.1	10.7	6.9
26/02/2016	22:30:00	48.6	42.3	24.1	20.5	23.8	14.0	12.5	12.9	9.2	5.6
26/02/2016	22:45:00	50.2	44.2	26.6	21.9	16.4	15.5	13.2	9.9	6.7	4.7
26/02/2016	23:00:00	50.5	42.8	31.5	28.5	28.9	26.0	23.7	23.6	17.5	13.1
26/02/2016	23:15:00	50.9	42.1	26.5	21.7	16.8	14.9	12.9	10.1	6.6	4.6
26/02/2016	23:29:00	47.6	40.7	24.8	20.7	17.2	15.8	14.3	12.0	8.4	5.7
26/02/2016	23:45:00	47.9	40.3	25.3	22.6	18.0	17.4	16.8	13.9	11.7	7.7
27/02/2016	00:00:00	47.7	41.0	23.8	19.7	15.8	13.3	11.9	9.7	6.7	4.7
27/02/2016	00:15:00	46.9	40.5	22.9	19.6	15.2	12.8	10.9	8.8	6.2	4.5
27/02/2016	00:30:00	46.6	39.5	23.1	20.1	16.6	14.3	12.8	11.1	8.3	5.5
27/02/2016	00:45:00	46.6	39.6	22.4	19.0	15.4	12.9	11.1	9.2	6.6	4.7
27/02/2016	01:00:00	47.5	40.2	23.7	20.3	16.0	13.1	11.4	9.0	6.5	4.7
27/02/2016	01:15:00	46.5	39.1	22.8	19.2	15.4	12.9	10.8	8.7	6.0	4.5
27/02/2016	01:30:00	46.0	39.3	22.1	19.4	15.3	13.6	11.7	9.2	6.6	4.9
27/02/2016	01:45:00	46.6	38.6	22.6	19.1	14.8	12.3	10.4	8.2	5.9	4.5
27/02/2016	02:00:00	47.0	39.1	23.0	19.3	15.0	12.4	10.5	8.2	6.0	4.5
27/02/2016	02:15:00	47.5	39.2	22.6	18.8	14.8	12.1	10.3	8.2	5.6	4.3
27/02/2016	02:30:00	44.8	38.0	21.1	18.0	14.0	12.4	10.9	8.4	5.7	4.4
27/02/2016	02:45:00	45.6	38.0	22.0	18.4	14.3	11.6	10.1	7.9	5.5	4.3
27/02/2016	03:00:00	46.2	38.3	22.3	18.7	15.1	12.7	10.8	9.7	6.1	4.6

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
27/02/2016	03:15:00	47.7	38.1	22.2	18.5	14.8	12.4	10.6	8.6	6.4	4.7
27/02/2016	03:30:00	46.4	38.6	22.4	19.5	15.2	13.3	11.7	8.8	6.2	4.7
27/02/2016	03:45:00	46.4	37.6	21.1	18.2	15.1	12.7	11.0	9.4	6.7	4.9
27/02/2016	04:00:00	46.0	39.0	22.5	19.1	15.2	13.0	11.2	9.3	6.9	4.9
27/02/2016	04:14:00	44.9	38.6	21.4	18.4	14.7	12.2	10.8	9.0	6.5	4.7
27/02/2016	04:30:00	46.4	38.2	22.1	19.3	16.3	14.4	13.1	11.8	8.9	6.0
27/02/2016	04:45:00	44.1	38.1	20.8	18.3	15.2	13.1	11.4	9.9	7.0	4.8
27/02/2016	05:00:00	51.1	39.0	21.2	18.2	14.4	12.4	10.7	8.9	6.6	5.0
27/02/2016	05:15:00	46.3	36.5	21.4	19.2	15.7	13.0	11.6	9.9	7.3	5.2
27/02/2016	05:30:00	45.7	38.9	21.7	18.8	16.1	13.7	12.3	11.0	8.1	5.5
27/02/2016	05:45:00	50.1	38.6	22.2	19.0	15.4	13.3	11.8	9.9	7.2	5.1
27/02/2016	06:00:00	53.4	43.6	24.5	20.7	17.3	15.7	14.6	12.1	9.3	6.2
27/02/2016	06:15:00	52.5	42.8	25.1	23.6	19.1	17.1	16.7	12.1	8.7	5.8
27/02/2016	06:30:00	51.0	43.5	25.1	20.3	16.5	14.1	12.1	10.1	7.3	5.0
27/02/2016	07:00:00	49.7	43.8	24.9	20.9	16.8	14.1	12.1	10.1	7.7	5.6
27/02/2016	07:15:00	49.2	41.9	26.0	23.7	21.9	21.0	20.1	18.9	16.4	12.1
27/02/2016	07:30:00	53.0	43.7	26.5	23.8	21.5	20.7	20.9	17.6	15.9	11.7
27/02/2016	07:45:00	50.9	45.4	25.0	21.3	18.3	16.8	16.5	12.8	10.1	7.1
27/02/2016	08:00:00	51.9	43.6	25.4	21.5	18.1	15.6	13.9	12.5	9.7	6.5
27/02/2016	08:14:00	53.2	43.8	25.4	21.3	17.7	15.0	12.5	10.6	8.0	5.4
27/02/2016	08:30:00	53.6	44.4	25.1	20.7	17.6	32.9	29.2	10.9	6.6	5.3
27/02/2016	08:45:00	52.3	45.1	25.8	22.0	18.5	16.2	14.7	13.1	9.9	6.7
27/02/2016	09:00:00	52.3	46.6	26.5	23.5	21.3	19.7	18.6	17.3	14.4	9.9
27/02/2016	09:15:00	53.1	44.5	27.2	24.5	22.9	21.6	20.7	19.7	16.9	12.1
27/02/2016	09:30:00	52.9	46.3	28.9	26.4	24.8	23.2	21.7	20.3	17.2	12.3
27/02/2016	09:44:00	52.6	47.2	29.5	28.5	27.6	26.6	25.7	24.7	21.9	17.0
27/02/2016	10:00:00	54.0	48.1	30.8	30.3	29.6	28.7	27.8	26.7	24.0	18.8
27/02/2016	10:15:00	51.2	45.8	28.2	27.1	26.0	24.9	23.7	22.5	19.4	14.4
27/02/2016	10:29:00	51.6	46.2	27.9	26.4	25.3	24.0	22.7	21.5	18.4	13.5
27/02/2016	10:45:00	52.2	45.8	27.8	24.8	23.2	21.7	20.8	19.4	16.3	11.9
27/02/2016	11:00:00	53.8	46.9	27.2	24.5	22.7	21.4	20.0	18.8	15.8	11.3
27/02/2016	11:15:00	53.8	46.9	28.5	26.6	25.5	24.3	23.3	22.1	19.1	14.4
27/02/2016	11:30:00	53.1	46.0	31.4	27.1	26.1	24.0	22.5	21.3	18.4	14.2
27/02/2016	11:45:00	56.6	46.7	32.5	29.3	26.9	25.0	23.6	22.6	20.2	15.7
27/02/2016	12:00:00	54.3	46.7	28.0	25.6	24.1	22.7	21.4	20.4	17.4	12.8
27/02/2016	12:15:00	52.2	46.4	29.0	28.5	28.1	27.2	26.5	25.4	22.4	17.4
27/02/2016	12:30:00	52.3	46.1	31.1	30.8	30.5	29.4	28.6	27.5	24.5	19.5
27/02/2016	12:44:00	54.7	46.2	28.5	26.9	26.1	25.0	24.0	22.8	19.8	14.9
27/02/2016	13:00:00	51.5	44.8	30.2	29.7	29.3	28.3	27.5	26.3	23.4	18.6
27/02/2016	13:15:00	50.2	44.8	30.9	30.2	30.0	29.0	28.3	27.4	24.5	19.6
27/02/2016	13:30:00	53.3	45.7	30.9	30.6	30.1	29.2	28.5	27.4	24.7	19.8
27/02/2016	13:45:00	51.4	43.7	28.1	27.2	26.6	25.6	24.7	23.5	20.6	15.8
27/02/2016	14:00:00	48.9	44.1	27.0	26.9	26.5	25.7	24.9	23.7	20.7	15.8

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
27/02/2016	14:15:00	49.4	44.7	28.3	27.9	27.2	26.2	25.4	24.2	21.2	16.4
27/02/2016	14:30:00	52.2	48.3	33.5	30.9	30.3	29.6	29.0	27.9	25.1	20.3
27/02/2016	14:45:00	50.8	45.3	28.8	28.4	27.5	26.7	25.7	24.5	21.6	16.8
27/02/2016	15:00:00	51.6	45.7	27.1	24.9	23.3	22.4	21.6	20.3	17.3	12.7
27/02/2016	15:15:00	52.4	46.4	29.1	27.3	26.0	25.2	24.4	23.1	20.2	15.6
27/02/2016	15:30:00	50.8	46.0	29.3	29.1	28.6	27.8	27.2	26.6	23.7	18.6
27/02/2016	15:45:00	51.8	47.0	29.7	28.7	29.4	27.1	26.5	25.5	22.7	17.8
27/02/2016	16:00:00	52.9	46.1	33.2	30.3	29.5	28.4	27.6	26.6	23.6	18.6
27/02/2016	16:14:00	50.6	45.8	30.1	30.1	29.7	28.9	28.3	27.3	24.4	19.4
27/02/2016	16:30:00	49.2	45.3	30.6	30.9	30.8	29.8	29.0	27.9	24.8	20.0
27/02/2016	16:45:00	50.7	46.0	30.8	30.8	30.5	29.7	28.9	27.8	24.7	19.8
27/02/2016	17:00:00	49.3	44.1	26.1	25.4	24.6	23.8	22.7	21.4	18.3	13.9
27/02/2016	17:15:00	50.6	45.6	30.5	29.8	29.3	28.4	27.7	26.6	23.6	18.8
27/02/2016	17:30:00	51.8	44.3	27.1	26.5	25.9	24.9	24.1	22.9	19.8	15.3
27/02/2016	17:45:00	53.7	43.9	27.5	25.1	24.9	24.0	18.9	17.8	14.8	10.5
27/02/2016	18:00:00	50.4	44.2	31.3	39.0	43.0	39.4	27.7	29.3	23.3	13.7
27/02/2016	18:15:00	53.1	45.7	26.3	22.8	20.7	19.6	19.6	16.5	14.0	9.5
27/02/2016	18:30:00	53.0	44.8	27.8	22.5	24.3	18.2	18.3	15.4	11.9	7.9
27/02/2016	18:45:00	53.1	45.5	26.3	23.9	21.9	20.8	20.3	18.1	15.3	10.7
27/02/2016	19:00:00	51.2	47.2	28.0	26.9	26.1	25.1	24.2	23.0	19.9	15.3
27/02/2016	19:15:00	51.2	45.8	27.9	24.9	25.4	21.0	20.0	19.1	15.8	11.5
27/02/2016	19:30:00	51.1	45.5	25.7	22.4	19.8	18.2	17.0	15.5	12.5	8.7
27/02/2016	19:45:00	53.0	44.4	27.4	22.8	19.7	17.8	16.1	14.8	11.9	8.2
27/02/2016	20:00:00	51.2	43.6	32.7	28.1	26.3	21.1	18.0	16.6	12.9	9.0
27/02/2016	20:15:00	49.2	42.9	26.8	24.2	22.6	21.8	20.4	19.1	16.0	11.6
27/02/2016	20:30:00	50.1	43.9	26.9	22.5	28.3	18.0	17.0	19.6	12.4	8.5
27/02/2016	20:45:00	49.7	44.1	25.0	21.4	18.6	16.7	15.4	13.8	10.8	7.6
27/02/2016	21:00:00	50.7	44.8	32.7	28.6	25.6	20.4	18.2	16.2	12.9	9.0
27/02/2016	21:15:00	50.5	45.0	28.6	24.0	21.3	19.2	18.0	16.7	13.7	9.4
27/02/2016	21:30:00	50.6	45.2	29.7	25.8	22.0	19.4	18.5	17.5	14.6	9.4
27/02/2016	21:45:00	51.1	45.7	28.6	25.2	22.4	20.8	20.2	18.7	16.4	10.8
27/02/2016	22:00:00	51.6	44.0	26.7	22.9	19.9	18.3	17.0	15.4	12.3	8.5
27/02/2016	22:15:00	51.4	44.7	28.2	24.3	20.5	18.6	17.2	15.3	12.2	8.9
27/02/2016	22:30:00	49.6	43.0	25.9	22.3	19.4	17.7	16.1	14.1	11.0	7.4
27/02/2016	22:45:00	50.2	44.3	27.7	25.8	24.4	23.3	22.3	20.7	17.4	12.6
27/02/2016	23:00:00	49.3	42.6	27.0	25.2	24.1	22.7	21.7	20.4	17.2	12.5
27/02/2016	23:15:00	50.5	44.4	27.5	25.8	25.0	23.6	22.6	21.1	17.9	13.1
27/02/2016	23:30:00	48.5	41.9	25.3	23.5	22.3	21.0	20.0	18.6	15.4	11.0
27/02/2016	23:45:00	49.8	42.9	26.3	24.1	22.5	21.0	19.8	18.5	15.0	10.5
28/02/2016	00:00:00	49.0	42.7	26.9	25.1	24.0	22.9	21.8	20.4	17.0	12.3
28/02/2016	00:15:00	49.1	43.4	28.2	25.9	25.0	23.8	22.7	21.3	18.0	13.2
28/02/2016	00:30:00	48.7	42.6	26.5	25.2	23.6	22.4	21.3	19.8	16.5	11.8
28/02/2016	00:45:00	48.1	42.8	26.0	24.7	23.2	22.2	21.1	19.7	16.5	11.8

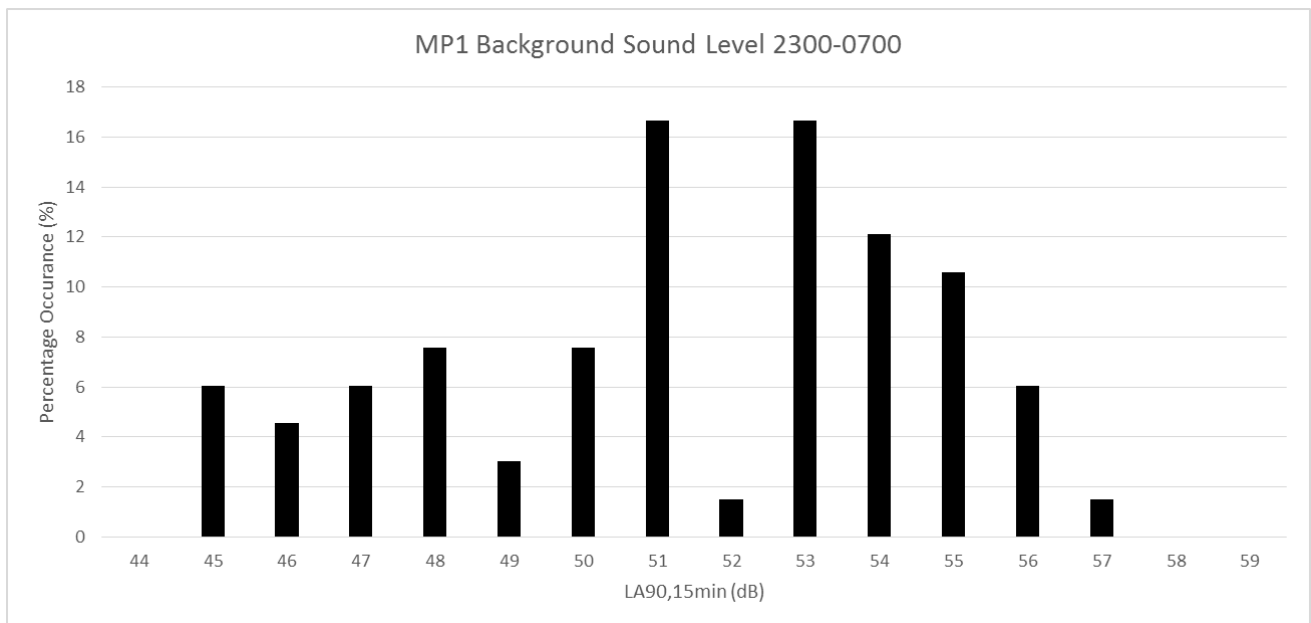
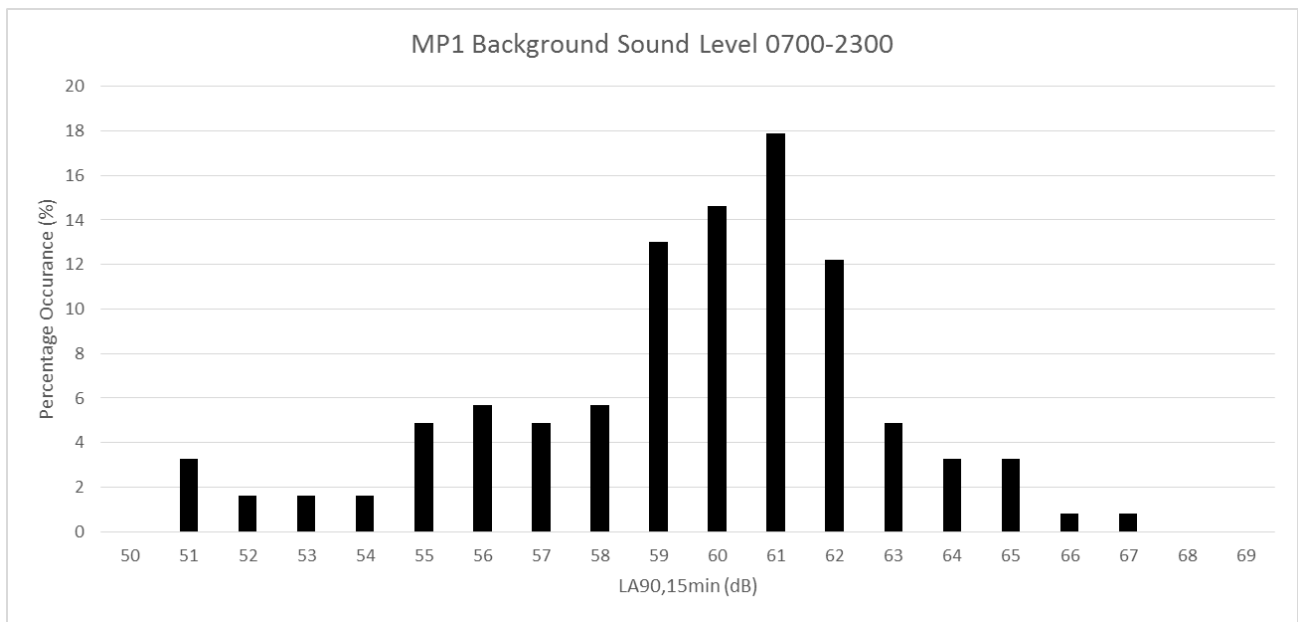
Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
28/02/2016	01:00:00	52.7	44.1	28.7	26.7	22.3	20.2	18.7	17.1	13.7	9.4
28/02/2016	01:15:00	48.2	41.6	26.8	25.9	24.1	23.6	22.4	20.5	17.2	12.5
28/02/2016	01:29:00	46.8	39.1	24.5	22.8	21.2	20.0	19.0	17.6	14.4	10.2
28/02/2016	01:45:00	46.7	41.0	24.6	23.0	21.7	20.5	19.5	18.0	14.7	10.3
28/02/2016	02:00:00	47.1	41.2	25.2	23.6	22.5	21.4	20.5	19.0	15.7	11.1
28/02/2016	02:15:00	47.1	40.1	24.0	21.5	19.6	18.2	17.1	15.6	12.5	8.6
28/02/2016	02:30:00	47.1	40.5	24.1	21.7	20.0	18.7	17.6	16.3	13.2	9.2
28/02/2016	02:45:00	46.8	39.9	24.7	23.4	22.4	21.3	20.3	19.0	15.7	11.1
28/02/2016	03:00:00	46.9	40.4	24.6	23.1	21.9	20.8	19.8	18.5	15.3	10.7
28/02/2016	03:15:00	47.3	40.3	24.9	22.6	21.1	19.8	18.7	17.3	14.2	9.9
28/02/2016	03:30:00	46.4	39.4	23.4	21.2	19.5	18.1	17.0	15.5	12.2	8.3
28/02/2016	03:44:00	46.4	40.1	23.4	21.1	19.4	18.0	16.8	15.2	12.1	8.2
28/02/2016	04:00:00	45.6	39.5	23.3	21.7	20.3	19.0	17.9	16.5	13.3	9.3
28/02/2016	04:15:00	45.7	39.4	24.8	24.1	22.6	20.9	20.6	19.3	15.3	10.4
28/02/2016	04:30:00	45.5	39.1	23.8	23.2	22.4	21.4	20.3	19.0	15.7	11.1
28/02/2016	04:45:00	44.5	37.3	23.0	21.7	20.5	19.2	18.0	16.4	13.0	8.7
28/02/2016	05:00:00	45.0	39.2	23.1	22.1	21.5	20.0	18.9	17.3	13.9	9.5
28/02/2016	05:15:00	45.1	39.3	23.2	21.9	20.7	19.5	18.5	17.0	13.8	9.5
28/02/2016	05:29:00	45.2	38.0	22.3	20.5	19.0	17.7	16.6	15.1	12.0	8.2
28/02/2016	05:45:00	45.3	38.9	22.9	21.6	20.6	19.5	18.4	16.8	13.6	9.2
28/02/2016	06:00:00	47.4	42.1	23.7	22.5	21.0	19.9	18.9	17.0	13.7	9.5
28/02/2016	06:15:00	49.0	42.3	23.7	21.5	20.3	19.1	17.9	16.3	13.0	8.7
28/02/2016	06:30:00	48.2	40.8	22.9	20.1	22.9	16.8	14.5	14.6	10.0	6.6
28/02/2016	06:45:00	47.7	41.2	23.9	22.2	20.9	19.5	18.4	17.1	14.0	9.7
28/02/2016	07:00:00	48.7	41.7	25.1	22.2	20.5	19.2	18.1	16.6	13.6	9.4
28/02/2016	07:15:00	50.6	42.2	26.3	25.2	24.4	23.5	22.4	21.0	17.7	12.8
28/02/2016	07:29:00	52.2	43.8	26.5	24.7	24.0	23.1	21.8	20.0	16.7	11.8
28/02/2016	07:45:00	48.1	42.6	25.4	23.8	22.5	26.7	23.9	18.7	15.4	10.8
28/02/2016	08:00:00	48.6	42.5	25.0	23.8	22.8	21.6	20.5	19.1	15.6	11.0
28/02/2016	08:15:00	48.8	42.1	25.6	24.0	22.9	21.7	20.7	19.4	16.1	11.4
28/02/2016	08:30:00	49.4	43.4	27.0	25.9	25.1	24.0	23.0	21.6	18.2	13.1
28/02/2016	08:44:00	50.8	43.7	28.1	27.3	26.3	25.2	24.3	23.1	19.8	14.7
28/02/2016	09:00:00	50.8	43.9	26.3	23.8	22.2	21.0	19.5	17.9	14.6	10.0
28/02/2016	09:15:00	50.4	44.1	30.4	30.3	30.0	29.2	28.5	27.3	24.2	18.9
28/02/2016	09:30:00	50.4	44.2	28.4	27.3	26.7	25.6	24.8	23.5	20.3	15.1
28/02/2016	09:45:00	51.6	45.2	30.2	29.2	28.7	27.7	26.8	25.6	22.3	17.1
28/02/2016	10:00:00	51.0	45.2	30.1	29.8	29.5	28.6	27.8	26.6	23.3	18.0
28/02/2016	10:15:00	52.9	45.6	28.0	26.8	26.0	24.9	23.9	22.5	19.1	13.9
28/02/2016	10:30:00	53.8	47.1	28.8	28.3	28.8	26.3	25.3	23.9	20.5	15.2
28/02/2016	10:45:00	54.1	47.1	29.1	28.3	27.6	26.6	25.8	24.5	21.2	15.9
28/02/2016	11:00:00	49.9	44.7	27.7	26.6	25.9	24.8	23.8	22.2	18.8	13.5
28/02/2016	11:15:00	50.9	44.1	32.1	32.3	32.3	31.6	31.0	29.9	26.8	21.7
28/02/2016	11:30:00	53.2	47.2	29.9	29.3	29.8	28.0	27.1	25.9	22.7	17.5

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
28/02/2016	11:45:00	54.9	47.1	30.9	29.5	28.8	27.9	27.0	25.8	22.7	17.7
28/02/2016	12:00:00	53.2	47.2	33.7	34.0	34.0	33.3	32.7	31.6	28.6	23.5
28/02/2016	12:15:00	51.7	46.8	32.3	32.4	32.1	31.3	30.6	29.5	26.4	21.3
28/02/2016	12:30:00	51.2	46.5	30.9	30.8	30.6	29.7	28.9	27.6	24.5	19.4
28/02/2016	12:45:00	52.4	46.6	29.4	29.4	29.2	28.2	27.4	26.2	23.1	18.1
28/02/2016	13:00:00	50.1	44.8	28.0	27.7	27.4	26.6	26.2	24.9	21.9	16.9
28/02/2016	13:15:00	51.2	46.3	31.0	31.3	31.2	30.5	29.7	28.5	25.5	20.5
28/02/2016	13:30:00	52.5	45.2	34.2	34.9	35.1	34.6	33.5	32.8	30.2	25.1
28/02/2016	13:45:00	50.0	46.1	33.0	33.8	33.8	33.1	32.4	31.6	29.1	24.1
28/02/2016	13:59:00	52.8	46.1	29.5	29.7	29.2	28.4	27.6	26.7	24.3	19.3
28/02/2016	14:15:00	51.5	46.9	30.5	30.5	30.0	29.3	28.6	27.7	24.8	19.7
28/02/2016	14:30:00	51.5	46.4	30.9	30.7	30.5	29.7	28.9	27.8	24.8	19.8
28/02/2016	14:45:00	52.5	46.7	30.8	30.8	31.0	29.7	28.9	27.9	24.9	20.0
28/02/2016	15:00:00	51.5	47.1	32.3	32.9	32.9	32.3	31.6	30.5	27.7	22.7
28/02/2016	15:15:00	49.9	44.9	28.5	28.1	27.1	26.3	25.6	24.5	21.8	16.7
28/02/2016	15:30:00	50.9	45.9	29.5	29.7	29.2	28.5	27.6	26.7	24.2	19.1
28/02/2016	15:45:00	52.6	45.4	28.7	28.5	28.0	27.3	26.5	25.8	23.2	18.1
28/02/2016	16:00:00	52.6	46.9	28.9	28.3	27.4	26.6	25.4	24.1	21.7	16.6
28/02/2016	16:15:00	51.9	45.7	28.2	27.3	26.4	25.3	24.2	23.0	20.1	15.4
28/02/2016	16:30:00	49.2	45.2	28.2	28.6	28.2	27.1	26.1	25.2	22.5	17.3
28/02/2016	16:45:00	48.5	44.4	30.0	30.2	29.7	28.9	27.9	26.7	24.1	19.1
28/02/2016	17:00:00	48.5	44.4	30.3	31.0	30.7	30.1	29.4	28.5	25.9	21.0
28/02/2016	17:14:00	50.0	43.3	24.4	20.9	17.7	16.4	14.3	12.3	9.9	6.5
28/02/2016	17:30:00	51.5	45.0	25.9	22.3	24.0	19.6	17.1	14.6	11.3	7.2
28/02/2016	17:45:00	50.2	44.3	25.8	23.5	21.7	20.7	19.5	18.1	15.5	11.2
28/02/2016	18:00:00	52.6	43.5	26.4	21.1	17.9	15.5	15.3	11.0	8.0	5.5
28/02/2016	18:15:00	50.5	42.9	26.1	35.4	38.1	39.2	21.9	22.8	24.7	12.6
28/02/2016	18:29:00	50.1	44.1	25.2	21.4	19.2	16.1	14.1	11.5	8.2	5.2
28/02/2016	18:45:00	52.5	45.8	24.6	20.4	17.2	14.8	12.5	10.8	8.1	5.5
28/02/2016	19:00:00	52.6	44.0	25.2	21.3	17.6	15.6	13.3	11.5	8.8	5.9
28/02/2016	19:15:00	51.2	45.0	24.8	20.6	16.0	13.4	12.6	9.0	6.4	4.8
28/02/2016	19:45:00	51.0	43.8	24.2	19.7	15.3	12.5	10.5	8.7	6.2	4.7
28/02/2016	20:00:00	50.4	44.8	25.0	20.5	16.0	12.8	10.8	8.5	6.6	4.6
28/02/2016	20:15:00	52.3	46.5	25.2	21.6	17.1	14.6	12.9	10.2	7.4	5.3
28/02/2016	20:30:00	49.9	42.2	24.7	20.1	15.6	12.9	10.8	8.7	6.6	4.7
28/02/2016	20:45:00	52.6	43.8	26.5	22.1	17.2	14.3	12.0	9.3	6.6	4.8
28/02/2016	21:00:00	50.0	42.9	25.7	21.5	17.3	15.2	13.4	10.7	8.0	5.6
28/02/2016	21:15:00	49.3	42.2	24.7	21.1	17.8	16.1	14.3	12.6	9.7	6.5
28/02/2016	21:29:00	49.6	42.3	25.3	22.0	19.0	17.4	15.6	13.9	11.3	7.2
28/02/2016	21:45:00	52.2	42.6	26.2	23.6	20.2	18.6	16.4	14.4	11.5	7.7
28/02/2016	22:00:00	48.4	41.5	24.8	22.2	19.6	18.1	16.6	15.0	12.1	8.1
28/02/2016	22:15:00	47.8	41.3	24.3	21.5	19.3	17.2	15.6	14.3	11.2	7.5
28/02/2016	22:29:00	47.4	40.9	23.8	21.5	23.6	18.3	15.9	14.8	11.6	7.6

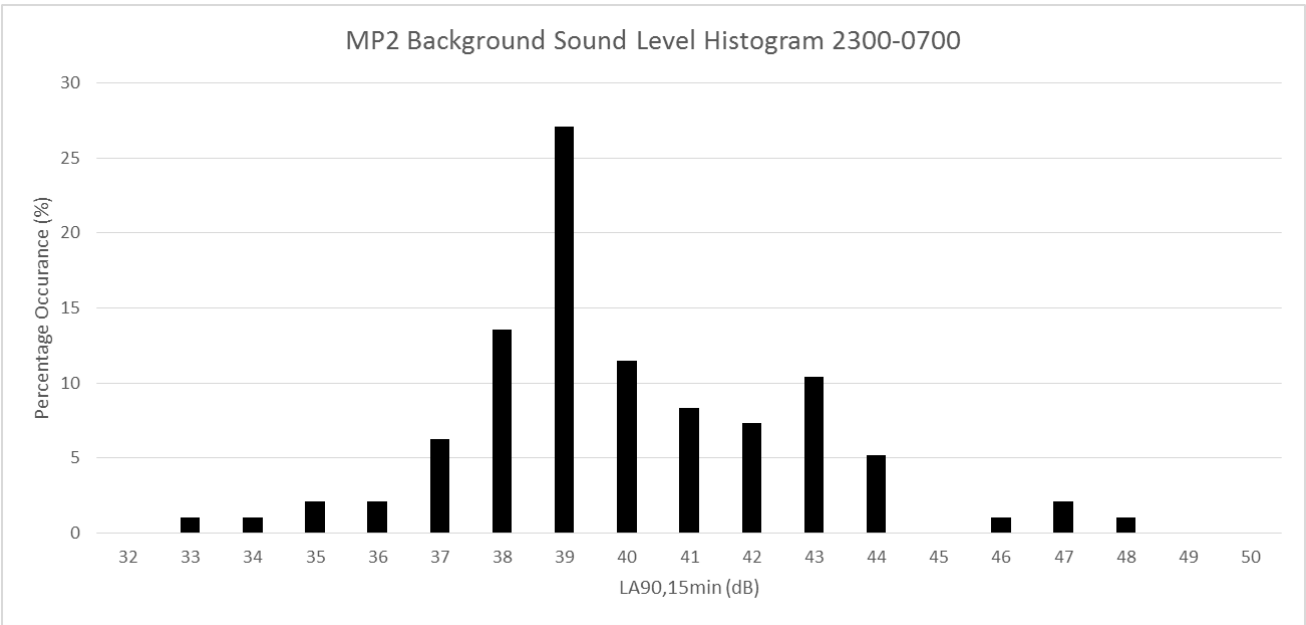
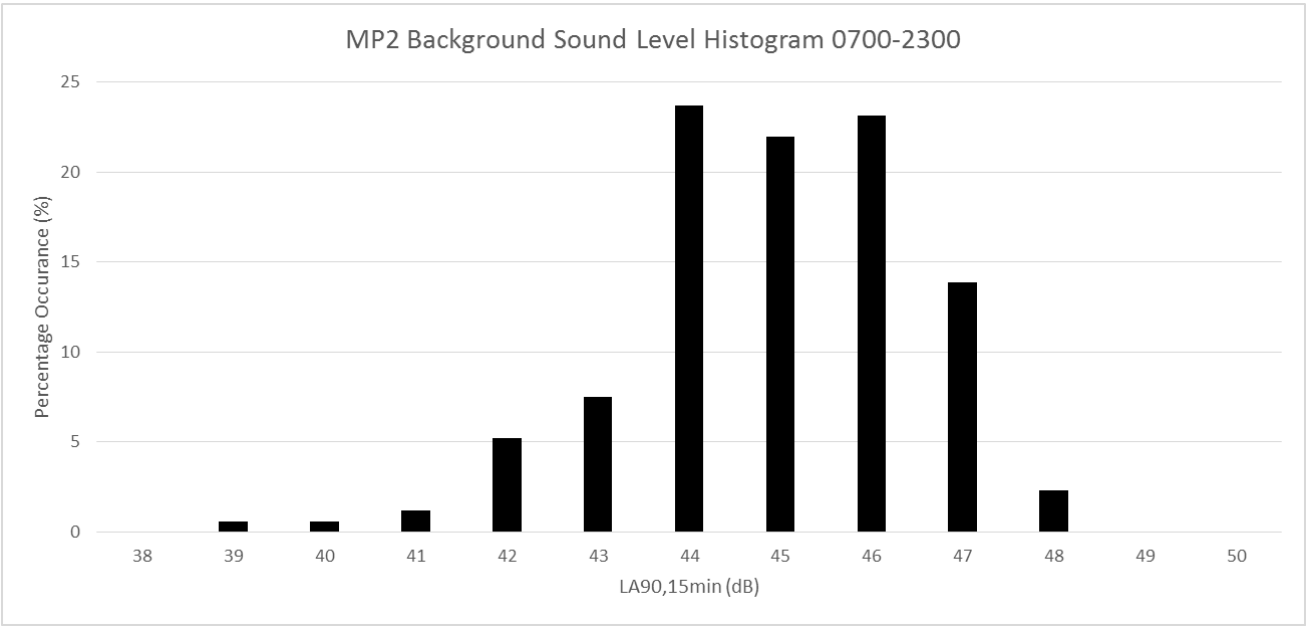
Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
28/02/2016	22:45:00	46.2	40.1	22.8	20.9	18.7	16.7	14.7	13.2	10.2	6.7
28/02/2016	22:59:00	46.9	39.3	23.1	21.2	17.8	16.2	14.0	11.8	8.9	5.9
28/02/2016	23:15:00	45.7	38.5	23.2	21.5	19.7	18.1	16.4	14.9	12.0	8.0
28/02/2016	23:30:00	45.0	38.2	21.0	18.1	15.0	13.0	11.6	9.6	7.0	5.1
28/02/2016	23:45:00	46.3	38.8	22.7	21.0	19.1	17.5	16.8	15.8	12.9	8.8
28/02/2016	23:59:00	44.2	37.1	20.1	17.3	14.2	12.5	11.0	9.1	6.6	4.9
29/02/2016	00:15:00	44.7	37.2	19.8	17.2	14.2	12.4	11.4	9.2	6.6	5.1
29/02/2016	00:30:00	45.7	38.7	21.8	18.8	15.3	14.7	12.6	10.2	8.8	5.1
29/02/2016	00:45:00	44.7	37.4	21.3	20.6	15.2	13.9	12.5	9.6	6.9	5.1
29/02/2016	01:00:00	44.8	35.6	20.7	17.7	14.2	12.5	11.0	8.8	6.3	4.7
29/02/2016	01:15:00	43.5	37.6	21.2	17.4	15.9	13.4	10.9	9.1	6.4	4.9
29/02/2016	01:30:00	42.2	34.6	18.5	16.5	13.3	11.9	10.7	8.6	6.3	4.7
29/02/2016	01:45:00	43.0	36.6	19.2	16.7	13.3	12.0	10.9	8.5	5.9	4.7
29/02/2016	02:00:00	40.7	32.8	17.2	15.6	12.5	11.3	10.0	8.0	5.8	4.6
29/02/2016	02:15:00	43.0	38.7	18.0	16.0	12.7	11.5	10.0	7.9	5.7	4.5
29/02/2016	02:30:00	42.2	38.6	17.7	16.2	13.0	12.1	10.7	8.4	6.0	4.6
29/02/2016	02:44:00	42.2	35.8	18.8	16.5	13.5	12.2	11.5	11.2	8.8	4.7
29/02/2016	03:00:00	41.9	38.1	17.9	16.3	13.1	12.1	10.8	8.7	6.2	4.7
29/02/2016	03:15:00	43.5	37.8	20.2	18.0	14.5	13.5	11.9	9.7	7.2	5.5
29/02/2016	03:30:00	44.1	38.5	21.3	20.0	16.2	15.4	14.1	11.5	8.5	6.0
29/02/2016	03:45:00	42.9	38.6	19.7	18.7	15.0	14.5	13.1	10.2	7.2	5.3
29/02/2016	04:00:00	42.9	34.4	20.3	19.8	16.1	15.3	14.1	11.9	8.9	6.5
29/02/2016	04:15:00	43.0	35.1	21.5	20.7	16.8	15.8	14.5	12.1	8.5	5.9
29/02/2016	04:30:00	44.8	37.8	21.4	20.1	16.1	15.4	14.1	11.5	8.1	5.7
29/02/2016	04:45:00	45.1	38.8	21.8	20.0	15.9	14.9	13.5	10.6	7.7	5.4
29/02/2016	05:00:00	46.6	40.3	23.2	21.0	16.4	15.3	13.8	11.2	7.9	5.5
29/02/2016	05:15:00	48.2	41.7	24.1	21.3	17.0	15.9	14.2	11.2	8.1	5.5
29/02/2016	05:30:00	49.3	42.9	27.6	25.5	22.0	19.0	14.8	12.9	8.9	6.3
29/02/2016	05:45:00	49.3	43.0	25.6	22.2	17.5	16.0	14.7	11.1	7.9	5.7
29/02/2016	06:15:00	52.7	46.2	29.2	26.2	21.6	18.8	26.0	13.8	9.0	7.3
29/02/2016	06:30:00	53.0	46.8	27.5	24.3	19.2	17.8	19.9	13.5	9.8	6.9
29/02/2016	06:45:00	53.1	47.0	27.5	23.8	19.4	18.6	19.8	11.2	8.2	5.9
29/02/2016	07:00:00	53.1	48.1	28.3	24.4	20.8	24.8	26.9	12.6	8.7	6.2
29/02/2016	07:15:00	51.1	47.8	26.5	23.8	20.0	18.5	16.9	12.2	8.9	6.0
29/02/2016	07:30:00	48.8	46.9	24.7	23.3	19.6	18.4	18.3	12.8	9.3	6.3
29/02/2016	07:45:00	48.3	46.8	24.7	24.6	20.4	17.2	16.4	12.9	10.1	6.3
29/02/2016	08:00:00	47.9	46.4	24.1	22.2	19.0	17.7	17.9	12.4	11.0	6.3
29/02/2016	08:15:00	48.5	45.7	33.0	32.5	33.2	31.6	32.1	32.8	31.1	27.6
29/02/2016	08:29:00	47.2	45.1	25.9	22.7	18.2	15.9	13.5	10.6	7.3	5.1
29/02/2016	08:45:00	48.7	44.6	25.3	22.5	19.4	15.9	14.1	10.0	7.1	5.0
29/02/2016	09:00:00	52.6	45.3	28.8	24.3	21.0	17.8	15.7	13.3	9.3	8.8
29/02/2016	09:15:00	50.4	45.7	26.7	23.6	19.9	17.4	15.2	12.3	9.0	6.0
29/02/2016	09:30:00	50.5	46.0	28.0	25.2	22.6	19.5	17.4	13.7	9.5	6.3

Date	Time	L _{Aeq}	L _{A90}	L _{A90}							
				63	125	250	500	1k	2k	4k	8k
29/02/2016	09:45:00	52.4	45.8	27.4	24.5	22.3	18.7	16.2	13.4	13.2	7.4
29/02/2016	10:00:00	49.9	43.9	26.1	23.3	19.6	16.6	14.7	12.0	8.4	5.9
29/02/2016	10:15:00	50.4	45.4	26.4	24.0	19.9	17.9	16.1	12.7	9.5	6.6
29/02/2016	10:30:00	50.1	45.2	26.5	23.3	19.0	15.8	13.7	10.9	7.7	5.2
29/02/2016	10:45:00	50.0	44.6	26.4	24.9	27.0	16.7	15.0	12.3	8.7	6.0
29/02/2016	11:00:00	50.6	44.1	28.0	24.2	19.7	16.3	14.1	11.0	8.0	5.5
29/02/2016	11:14:00	50.4	44.4	26.3	22.1	17.8	19.3	18.3	11.1	8.3	5.7
29/02/2016	11:30:00	51.3	45.2	35.2	34.7	35.3	36.0	37.1	35.9	32.2	26.1

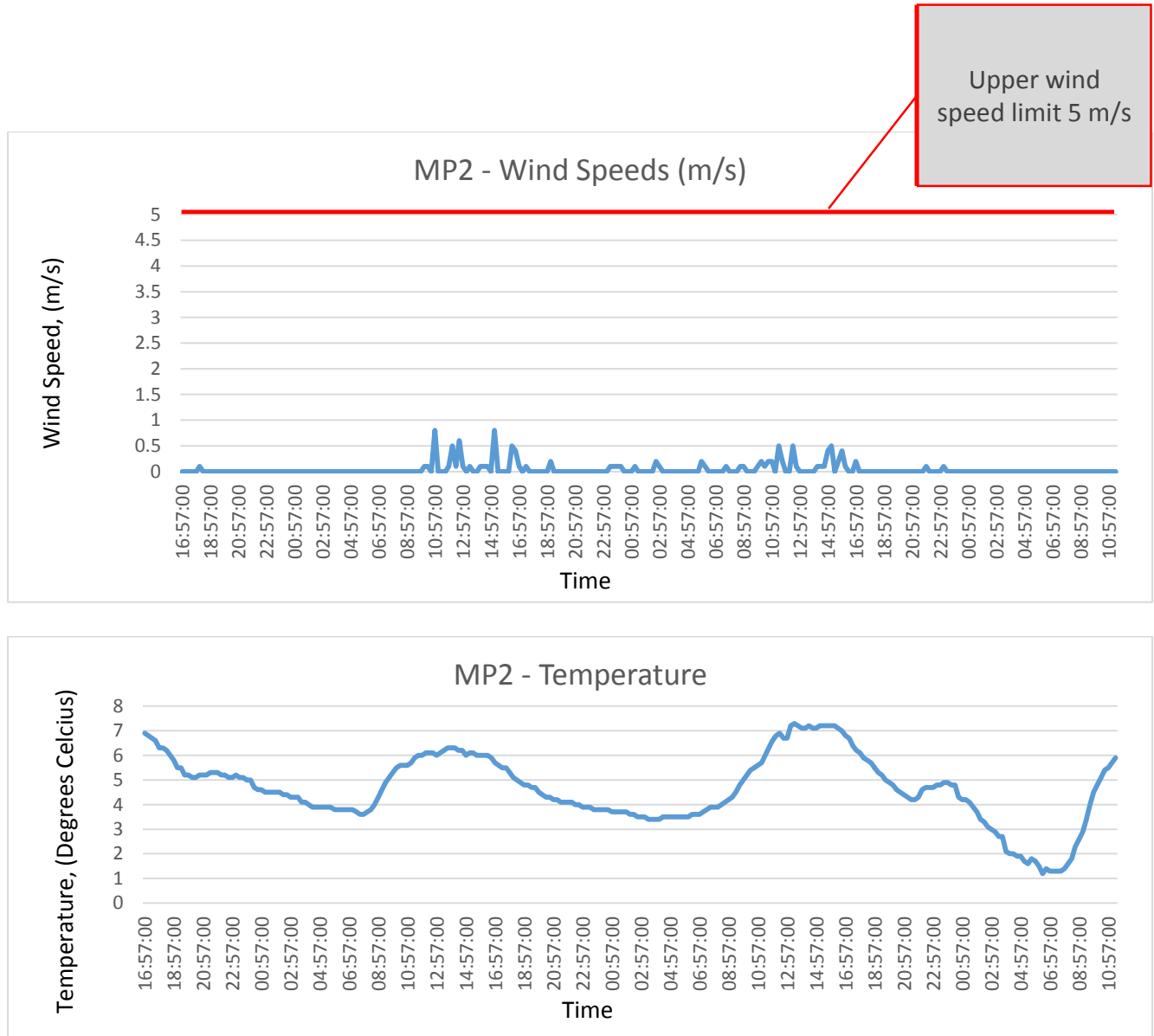
APPENDIX G: MP1 Day and Night-time Histograms



APPENDIX H: MP2 Day and Night-time Histograms



APPENDIX I: Graphical Representations of Weather Data



No rainfall was logged during the measurement period.

APPENDIX J: Acoustic Feature Corrections

A rating penalty has been established based on a subjective assessment of characteristics. As the schedule of plant items is not known, penalties have been applied based on GSAD's previous experience.

A total rating penalty of 8 dB has been applied.

2 dB penalty for tonality: typical condenser units can have tonal components that are perceptible. Tonal components may or may not be audible at the receptors located at a distance of 38m, however, a small correction has been applied to adopt a cautious approach.

3 dB penalty for impulsivity: some condenser units can start up with an initial 'clunk'. Impulsivity of a unit may or may not be audible at the receptors located at a distance of 38m, however, a small correction has been applied to adopt a cautious approach.

3 dB penalty for intermittency: condenser units turn on / off during operation. On / off states may or may not be perceptible at the receptors located at a distance of 38m, however, a small correction has been applied to adopt a cautious approach.

APPENDIX K: Glossary of Acoustic Terms

DECIBEL (dB) - A unit of sound pressure measurement

Sound Pressure Level in dB (L_p) = $20 \log (\text{Measured sound pressure/Reference sound pressure} = 20 \mu\text{Pa})$

dB(A) - The A-weighted sound pressure level, the weighting network reduces low frequency sound in a similar way to the human ear.

REVERBERATION TIME (RT or T) – decay of sound in rooms

The time taken for a sound, once terminated, to fall through 60dB i.e. to one millionth of its original sound intensity. T_{30} – RT for first 30dB of decay. RT_{500} - Mid frequency RT.

HERTZ (Hz) - a unit of frequency measurement. The normal range of hearing is from 20Hz to about 15kHz.

ABSORPTION COEFFICIENT – degree to which a material absorbs sound.

The ratio of absorbed to incident sound energy (perfect absorber = 1)

SOUND REDUCTION INDEX R – quantity which describes a material's ability to reduce the sound pressure level across it (e.g. a wall or floor)

$$R = L_1 - L_2 + 10 \log (S/A)$$

L_1 - Average sound pressure level in source room (averaged from 100 Hz – 3150 Hz)

L_2 - Average sound pressure level in receiving room (averaged from 100 Hz – 3150 Hz)

S – Wall Area (m^2)

A – Total absorption in receiving room (m^2 units)

R_w – weighted sound reduction index

AVERAGE ROOM TO ROOM LEVEL DIFFERENCE – D , dB = $L_1 - L_2$, averaged 1/3 octave bands from 100Hz – 3150kHz.

D_w – weighted value of D (usually 2 - 3dB higher)

$D_{nT, w}$ – D_w corrected for reverberation time of receiving room

NOISE RATING CURVES (NR CURVES) – set of curves used to describe optimum background noise levels for different tasks.

$L_{10/90}$ LEVEL (dB) - The level in dB of a time varying sound pressured level (e.g. traffic) exceeded for 10%/90% of the time of measurement.

L_{90} is usually called the BACKGROUND NOISE LEVEL.

L_{eq} AVERAGE SOUND PRESSURE LEVEL – level dB of a time varying sound pressure level with equal amounts of energy above and below it, for the time of measurement.

TONAL NOISE – noise of a single frequency (or a narrow band of frequencies that can be perceived as a tone), audible above the broad band noise background. Noise which is at least 5dB above the average of the 1/3 octave band sound pressure levels immediately on either side of it.