



HEPWORTH

ACOUSTICS

Noise and Vibration Consultants

PROPOSED NEW AUDI DEALERSHIP AND SERVICING CENTRE, ANGMERING

NOISE IMPACT ASSESSMENT

On behalf of:

Caffyns plc

Report No: P15-397-R03
November 2015

PROPOSED NEW AUDI DEALERSHIP AND SERVICING CENTRE, ANGMERING

NOISE IMPACT ASSESSMENT

Report prepared by:
Hepworth Acoustics Ltd
First Floor Aztec Centre
Aztec West
Almondsbury
Bristol
BS32 4TD

On behalf of:
Caffyns plc

Report prepared by:
Graham Bowland BSc MIOA – Chief Consultant

Report checked by:
Donald Quinn BSc MIOA – Managing Director

CONTENTS

1.0	INTRODUCTION	1
2.0	ACOUSTIC CRITERIA	3
3.0	BACKGROUND NOISE SURVEY	5
4.0	OPERATIONAL NOISE SURVEY	6
5.0	NOISE ASSESSMENT AND MITIGATION MEASURES	10
6.0	SUMMARY AND CONCLUSIONS	13
	 FIGURE 1 – SITE PLAN	 14
	 APPENDIX I: NOISE UNITS & INDICES	 15
	APPENDIX II: BACKGROUND NOISE SURVEY RESULTS	17

1.0 INTRODUCTION

- 1.1 Hepworth Acoustics Ltd was commissioned by Caffyns plc to carry out a noise impact assessment relating to a planning application for a proposed new Caffyns Audi dealership and servicing centre at a site to the north of the A529 Roundstone By-pass Road, in Angmering, West Sussex.
- 1.2 The site is current occupied by two existing residential properties to the south and east and by large commercial greenhouses to the north.
- 1.3 The proposals incorporate car displays and customer parking to the frontage of the site to the A259, and a single main building housing the dealership and service centre to the east section. To the northern end of the east section of the site is proposed further parking space, and a separate valet building to the far north.
- 1.4 The building is to be generally a long rectangle in shape, oriented north to south. At ground level, the front section of the building will house a showroom and sales centre, and the rear section will house the servicing centre. A small area of first floor accommodation is proposed to the centre of the building, housing administrative and ancillary staff areas, and a plant room.
- 1.5 The nearest residential property to the main proposed development building is Kelston House, Roundstone Lane. This property incorporates a main house adjacent to Roundstone Lane with a substantial garden with outbuildings. The curtilage of this property adjoins the northern boundary of the southern section of the proposed development site, and the western boundary of the east section of the proposed development site.
- 1.6 A further residential property located to the north of the site is Quiet Waters, Roundstone Lane. It is believed that the curtilage of this property adjoins the north boundary of the proposed development site, however, there is a wooded area separating the main house and garden areas of this property from the boundary.
- 1.7 A plan is provided in Figure 1 showing the site boundary and development layout plan incorporating the proposed ground floor layout. This assessment is based on the plans shown in Figure 1.

- 1.8 It is understood that the proposed hours of operation of the dealership are 0830-1800hrs Monday-Friday, 0900-1700hrs Saturdays and 1000-1600hrs on Sundays, whereas the hours of operation of the servicing centre will be 0800-1800hrs Monday-Friday and 0830-1230hrs Saturdays, with no Sunday operation.
- 1.9 The various noise indices referred to in this report are described in Appendix I. All noise levels mentioned in the text have been rounded to the nearest decibel, as fractions of decibels are imperceptible.

2.0 ACOUSTIC CRITERIA

2.1 The National Planning Policy Framework (NPPF) 2012 provides some general guidance to local authorities on taking noise in to account in planning policies and decisions. This includes guidance that local authorities should *'aim to avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development'*.

2.2 No specific guidance is given in the NPPF on acoustic criteria, therefore, the guidance discussed below has been used to determine acceptable noise criteria.

BS 4142

2.3 British Standard 4142: 2014 *'Methods for rating and assessing industrial and commercial sound'* provides methods for rating and assessing sound of an industrial and/or commercial nature.

2.4 BS 4142 requires the 'rating' noise level for the operation to be compared with the L_{A90} background noise level in the absence of the operational noise. The 'rating' level is derived based on the 'specific' L_{Aeq} noise level attributable to the operation with an 'acoustic feature' penalty added for any noise sources which give rise to tonal, impulsive, intermittent, or other characteristics readily distinctive against the residual acoustic environment.

2.5 BS 4142 stipulates that noise impacts should be assessed over a reference time interval of 1-hour during the daytime (0700-2300hrs).

2.6 An initial estimate of the impact of the operation is determined by subtracting the background level from the rating level. BS 4142 states that:

- Typically, the greater this difference, the greater the magnitude of the impact
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context

- The lower the rating level is relative to the measured background level, the less likely it is that the operation 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, depending on the context.

2.7 Where the initial estimate of the impact needs to be modified due to the context, BS 4142 states that all pertinent factors should be taken into account in determining whether the initial estimate of the impact needs to be modified, including:

- The absolute level of sound, including *“where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds background”*
- The character and level of the residual sound
- The sensitivity of the receptor and whether dwellings ... will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:
i) façade insulation treatment, ii) ventilation and/or cooling, and iii) acoustic screening.

3.0 BACKGROUND NOISE SURVEY

- 3.1 A survey of prevailing background noise levels was carried out at the site during all proposed operational hours, as applicable to each day, on Friday 21, Saturday 22, Sunday 23 and Thursday 27 August 2015.
- 3.2 Noise monitoring was undertaken in sequential 15-minute samples at a single location to the north boundary of the nearest residential premises to the development, i.e. Kelston House. This location is identified in Figure 1 and is considered representative in terms of the background noise climate at the rear façade of the main house and across the garden at this property, and also at the main house and garden area of Quiet Waters.
- 3.3 The noise measurements were undertaken using a Norsonic 118 Type 1 Integrating Sound Level Meter (serial no. 31617). Calibration checks were carried before and after the survey using a Norsonic 1251 class 1 acoustical calibrator (serial no. 20804), and no variation in the calibration levels was noted.
- 3.4 The measurement microphone was fitted with a windshield and mounted in 'free-field' conditions. The weather during the noise survey periods was dry with wind speeds up to 5m/s.
- 3.5 The background noise data has been analysed and the mean and modal averages for each survey day have been calculated.
- 3.6 The background noise survey results are presented in full in Appendix II, and are summarised in Table 1.

Table 1 : Summary of Background Noise Level Survey

Date	Period	Average dB LA90,15min Background Noise Level	
		Mean	Mode
Fri 21 Aug 2015	0800-1800hrs	48	48
Sat 22 Aug 2015	0830-1700hrs	51	52
Sun 23 Aug 2015	1000-1600hrs	52	51
Thu 27 Aug 2015	0800-1800hrs	52	51

4.0 OPERATIONAL NOISE SURVEY

- 4.1 A survey of typical operational noise levels was carried out at the new Caffyns Volkswagen dealership and servicing centre in Worthing on Friday 21 August 2015. This development is very comparable in size and scale, and in terms of all the type of operations, to those proposed at the Angmering Audi development.
- 4.2 Noise measurements were taken of servicing workshop activities, valet activities and general vehicle manoeuvres around the site. The purpose of these measurements was to provide representative source noise level data to use as a basis for prediction of operational noise levels at the proposed Angmering Audi development.
- 4.3 The noise measurements were undertaken using a Bruel & Kjaer 2260 Type 1 Integrating Sound Level Meter (serial no. 2467014). Calibration checks were carried before and after the survey using a Bruel & Kjaer Acoustic Calibrator, Type 4231 (serial no. 2389221), and no variation in the calibration levels was noted.

Workshop

- 4.4 With regard to the workshop, this was noted to be broadly similar in size and arrangement to that proposed at the Angmering Audi development, with a main workshop roller shutter door at one end and a separate MOT bay roller shutter door at the opposite end. These were both open during the operational noise survey, not least as it was a warm day. It is understood that whilst it is usual and preferable to operate with at least the main workshop door open, it is not essential for either of them to be open in terms of the ventilation of the space.
- 4.5 It was confirmed that the workshop operation during the survey was representative of typical conditions, albeit noted that it could be slightly busier at times. In general, noise generation due to working practices was sparse and sporadic, and the workshop radio was the dominant noise source for most of the time.

- 4.6 Minor noise generating activity was due to the use of battery powered hand tools, occasional closure of car doors and staff voices etc. More significant occasional noise is due to use of compressed air guns for wheel nut removal/replacement and car lift operation in the work bays.
- 4.7 A number of noise measurements were undertaken of the general reverberant workshop noise, and also specifically during use of a compressed air gun (operated 'artificially' for a sustained period to assist the noise survey) and of a car lift.
- 4.8 Internal noise measurements were taken as a moving average along the central area of the workshop, biased towards the areas where higher levels were generated throughout the individual measurement periods. Noise measurements during certain activities were also undertaken at 5m to the outside of the open main workshop roller shutter door.
- 4.9 The measured workshop noise levels are summarised in Table 2.

Table 2 : Summary of Workshop Noise Level Measurements

Noise Source	Location	dB LAeq
General Workshop Noise – Higher Level of Activity	Internal	70
	External	58
General Workshop Noise – Lower Level of Activity	Internal	64
Compressed Air Gun (Sustained Operation)	Internal	87
	External	74
Car Lift (Upwards)	Internal	74
Car Lift (Downwards)	Internal	66

- 4.10 From observations of working practices and discussions with servicing centre staff, it is considered that a highly pessimistic estimate for a worst-case one-hour workshop noise level would be based on a cumulative on-time of 4-minutes for each of the compressed air gun, lift upwards and lift downwards, with the general workshop noise at the measured lower level of activity for the remainder of the time.
- 4.11 Based on the measurements summarised in Table 2, this yields a worst-case internal noise level of 76dB LAeq,1hr.

- 4.12 This is 6dB above the measured noise level for a higher level of general activity, corresponding to the busiest (i.e. noisiest) period observed during the survey, and hence corresponds to a fourfold intensification of operation in comparison to that measurement period. This may therefore be taken to be a very robust prediction of the worst-case one-hour workshop noise level.
- 4.13 Further, it can be seen from the comparison of internal and external noise levels for the compressed air gun noise that there is a difference of 13dB between internal noise levels and at 5m externally to the open main roller shutter door. This is generally consistent with the 12dB difference noted for general activity, but is considered more reliable based on the very steady nature of the source.
- 4.14 Based on the above, a reference noise level of 63dB $L_{Aeq,1hr}$ at 5m externally to an open roller shutter door may be determined.

Valet

- 4.15 With regard to the valet operation, this is carried out in two adjacent areas, wet and dry, within a garage type building with open frontage.
- 4.16 Noise generating activity is jet wash and vacuum cleaner use.
- 4.17 Noise measurements were taken at 5m from the open frontage of the valet area, and also at 5m to the side of the valet, i.e. level with the front wall, such that internal operations were fully screened. Where necessary, valet noise levels at 5m to the side of the building have been corrected for residual ambient noise, measured in the absence of any valet operations.
- 4.18 The measured valet noise levels are summarised in Table 3.

Table 3 : Summary of Valet Noise Level Measurements

Noise Source	Location	dB L_{Aeq}
Vacuum Cleaner	To front	68
	To side (corrected for background)	53
Jet Wash	To front	73
	To side (corrected for background)	56

- 4.19 From observations of working practices and discussions with servicing centre staff, it is considered that a highly pessimistic estimate for a worst-case one-hour valet noise level would be based on a cumulative on-time of 10-minutess for each of the vacuum cleaner and jet wash noise. Based on the measurements summarised in Table 3, this yields a worst-case noise level of 66dB $L_{Aeq,1hr}$ at 5m from the front of the valet.
- 4.20 Further, it can be seen that there is a minimum difference of 15dB between noise levels to the front and to the side of the valet building.

Vehicle Manoeuvres

- 4.21 As set of noise measurements was undertaken at 5m from a number of vehicles manoeuvring slowly around the site and/or in and out of parking bays. These noise measurements were undertaken in terms of the L_{AE} or SEL (Sound Event Level) index.
- 4.22 The measured vehicle manoeuvre noise levels are summarised in Table 4.

Table 4 : Summary of Vehicle Manoeuvre Noise Level Measurements

Noise Source	Sound Event Level dB L_{AE}	
	Range	Logarithmic Average
Vehicle Manoeuvre at 5m	64-70	69

5.0 NOISE ASSESSMENT AND MITIGATION MEASURES

- 5.1 Based on the provisions of BS 4142, it is recommended that the rating level for noise associated with the proposed development should not exceed the existing background noise level. This is an indication of the proposed development having a low noise impact.
- 5.2 Based on the findings of the background noise survey as summarised in Table 1, it is recommended that this should be based on the lowest measured daily mean or modal average 15-minute background noise level, i.e. 48 dB L_{A90} .
- 5.3 This assessment is firstly based upon the predicted impact at Kelston House. Due to the size of the garden area separating the site boundary and the main house, it is considered unduly onerous to apply the above recommended noise limit at the boundary itself. It is hence recommended that the limit should be applied at approximately one third of the distance from the centre of the east boundary of the garden to the rear façade of the house, hence at approximately 25m to the west of the centre of the east boundary of the garden. This will consequently result in an even lower noise impact at the house itself and in areas of the garden closer to it.
- 5.4 The assessment is also based upon the predicted impact at the main house and garden area of Quiet Waters, beyond the intervening wooded area.
- 5.5 Based on a situation of zero noise mitigation (i.e. excluding any potential attenuation due to existing boundary fencing, the acoustic integrity of which cannot be guaranteed), the noise impact has been predicted at the noise assessment locations described above.
- 5.6 This is based on the worst-case reference noise levels for workshop noise assuming that the main north-facing workshop roller shutter door may be open during serving centre operational hours, but that the roller shutter door to the MOT bay and any other doors are kept closed, except for allowing brief necessary opening for access and egress of vehicles when necessary.
- 5.7 The sound reduction via a closed roller shutter door has been conservatively estimated to be 25dB (inside to outside at 5m), based on experience of similar constructions. This is considered robust, noting that the reduction has been shown to be 13dB with the door fully open.

Noise Predictions to Kelston House

- 5.8 On this basis, the total worst-case one-hour workshop noise level is predicted to be 35dB at the assessment location. This assumes a conservative correction of -15dB to account for the acoustic screening provision of the building edge from the main workshop roller shutter door, noting that there will be no line-of-sight to Kelston House from this point. Accounting for the intermittent and impulsive character of some of the workshop noise sources, an acoustic feature correction of +9dB is considered appropriate in accordance with BS 4142. The predicted rating noise level for the workshop noise is therefore 44dB at the assessment location at Kelston House.
- 5.9 The worst-case rating noise level of the valet noise is predicted to be 49dB at the assessment location at Kelston House, again based on an acoustic feature correction of +9dB.
- 5.10 It has been assumed that there may be up to 40 vehicle movements within 5m of the boundary of Kelston House. Based on the logarithmic average L_{AE} noise levels for vehicle manoeuvres, this equates to a vehicle noise level of 35dB at the assessment location at Kelston House. It is not considered that any acoustic feature penalty should be applied to this noise source, as it is comparable in character to the residential noise climate of the area.
- 5.11 Accounting for all of the above, a cumulative rating level of 50dB is predicted at the assessment location at Kelston House. This level is 2dB above the recommended limit and hence it is recommended that a degree of noise mitigation is incorporated within the proposed scheme.

Noise Predictions to Quiet Waters

- 5.12 The total worst-case rating level for the workshop noise is predicted to be 48dB at the noise assessment location at Quiet Waters, based on an acoustic feature correction of +9dB.
- 5.13 The worst-case rating noise level of the valet noise is predicted to be 53dB at the assessment location at Quiet Waters, again based on an acoustic feature correction of +9dB.
- 5.14 It has been assumed that there may be up to 80 vehicle movements within 5m of the boundary of Quiet Waters. Based on the logarithmic average L_{AE} noise levels for vehicle manoeuvres, this equates to a vehicle noise level of 40dB at the assessment location.

- 5.15 Accounting for all of the above, a cumulative rating level of 54dB is predicted at the assessment location at Quiet Waters. This level is 6dB above the recommended limit and hence it is recommended that a degree of noise mitigation is incorporated within the proposed scheme.
- 5.16 To achieve the required level of additional mitigation, it is recommend that a purpose built acoustic screen is incorporated to extend continuously around all areas of the site boundary as necessary to interrupt line-of-sight (at ground level) between all areas of significant noise generation within the proposed development and any part of the Kelston House or Quiet Waters curtilages.
- 5.17 The acoustic screen should be no less than 1.8m in height and should be of overall mass not less than 10kg/m² and nominal thickness not less than 20mm (e.g. close boarded timber). The construction should be imperforate with no holes or gaps and should be sealed at the base.
- 5.18 Further to the above, it will also be necessary to control noise emissions from all fixed building services plant associated with the development, e.g. for air-conditioning systems. No detailed information on specific plant items and locations have been provided at this stage, however to ensure that there is no encroachment upon the recommended noise limits for the development overall, it is recommend that the cumulative rating level of any such plant is designed to not exceed a rating level of 38dB at the assessment locations. This must take account of any tonal, impulsive or intermittent characteristics of the plant noise in accordance with the guidelines set out in BS 4142.
- 5.19 It is anticipated that the recommended plant noise level limit may be readily achieved via use of standard noise control techniques, including selection of low noise equipment, location of plant away from sensitive areas, localised acoustic screening and/or incorporation of purpose built noise control apparatus, such as in-duct attenuators and acoustic louvres etc.

6.0 SUMMARY AND CONCLUSIONS

- 6.1 Hepworth Acoustics has undertaken a noise impact assessment relating to a planning application for a proposed new Caffyns Audi dealership and servicing centre at a site to the north of the A529 Roundstone By-pass Road, in Angmering, West Sussex.
- 6.2 A background noise survey has been undertaken at the site over a number of periods covering proposed operational hours during the week and at weekends.
- 6.3 A survey of typical operational noise levels has been undertaken at a similar development to that proposed: Caffyns Volkswagen dealership and servicing centre at Worthing.
- 6.4 The noise impact of the proposed development has been assessed in accordance with British Standard 4142: 2014 *'Methods for rating and assessing industrial and commercial sound'*.
- 6.5 Recommendations have been made to ensure a low noise impact from the development in line with BS 4142.

[illegible]

Appendix I: Noise Units & Indices

Sound and the decibel

A sound wave is a small fluctuation of atmospheric pressure. The human ear responds to these variations in pressure, producing the sensation of hearing. The ear can detect a very wide range of pressure variations. In order to cope with this wide range of pressure variations, a logarithmic scale is used to convert the values into manageable numbers. Although it might seem unusual to use a logarithmic scale to measure a physical phenomenon, it has been found that human hearing also responds to sound in an approximately logarithmic fashion. The dB (decibel) is the logarithmic unit used to describe sound (or noise) levels. The usual range of sound pressure levels is from 0 dB (threshold of hearing) to 120dB (threshold of pain).

Due to the logarithmic nature of decibels, when two noises of the same level are combined together, the total noise level is (under normal circumstances) 3 dB(A) higher than each of the individual noise levels e.g. 60 dB(A) plus 60 dB(A) = 63 dB(A). In terms of perceived 'loudness', a 3 dB(A) variation in noise level is a relatively small (but nevertheless just noticeable) change. An increase in noise level of 10 dB(A) generally corresponds to a doubling of perceived loudness. Likewise, a reduction in noise level of 10 dB(A) generally corresponds to a halving of perceived loudness.

Frequency and Hertz (Hz)

As well as the loudness of a sound, the frequency content of a sound is also very important. Frequency is a measure of the rate of fluctuation of a sound wave. The unit used is cycles per second, or hertz (Hz). Sometimes large frequency values are written as kilohertz (kHz), where 1 kHz = 1000 Hz.

Young people with normal hearing can hear frequencies in the range 20 Hz to 20 kHz. However, the upper frequency limit gradually reduces as a person gets older.

Sound and the decibel

The ear is not equally sensitive to sound at all frequencies. It is less sensitive to sound at low and very high frequencies, compared with the frequencies in between. Therefore, when measuring a sound made up of different frequencies, it is often useful to 'weight' each frequency appropriately, so that the measurement correlates better with what a person would actually hear. This is usually achieved by using an electronic filter called the 'A' weighting, which is built into sound level meters. Noise levels measured using the 'A' weighting are denoted dB(A) or dBA.

Glossary of Terms

When a noise level is constant and does not fluctuate, it can be described adequately by measuring the dB(A) level. However, when the noise level varies with time, the measured dB(A) level will vary as well. In this case it is therefore not possible to represent the noise climate with a simple dB(A) value. In order to describe noise where the level is continuously varying, a number of other indices can be used. The indices used in this report are described below.

- L_{Aeq} This is the A-weighted 'equivalent continuous noise level' which is an average of the total sound energy measured over a specified time period. In other words, L_{Aeq} is the level of a continuous noise which has the same total (A-weighted) energy as the real fluctuating noise, measured over the same time period. It is increasingly being used as the preferred parameter for all forms of environmental noise.
- L_{Amax} This is the maximum A-weighted noise level that was recorded during the monitoring period.
- L_{A10} This is the A-weighted noise level exceeded for 90% of the time period. L_{A10} is used as a measure of road traffic noise.
- L_{A90} This is the A-weighted noise level exceeded for 90% of the time period. L_{A90} is used as a measure of background noise.
- L_{AE} This is the total A-weighted sound energy produced by an event and is effectively the L_{Aeq} of an event normalised to a duration of 1 second in length. L_{AE} can be scaled according to the number of events and can be further manipulated to provide an average noise level $L_{Aeq,T}$.

Appendix II: Background Noise Survey Results

Date	Start Time	Noise Level dB			
		L _{Aeq}	L _{Amax}	L _{A10}	L _{A90}
21/08/2015	08:00	66	77	70	52
21/08/2015	08:15	66	70	69	52
21/08/2015	08:30	60	76	67	51
21/08/2015	08:45	55	74	54	50
21/08/2015	09:00	56	76	56	50
21/08/2015	09:15	56	87	54	50
21/08/2015	09:30	55	76	54	49
21/08/2015	09:45	53	71	54	49
21/08/2015	10:00	52	67	53	49
21/08/2015	10:15	51	61	52	49
21/08/2015	10:30	53	79	54	48
21/08/2015	10:45	57	78	56	49
21/08/2015	11:00	52	77	53	47
21/08/2015	11:15	54	78	53	48
21/08/2015	11:30	52	72	52	48
21/08/2015	11:45	55	79	56	47
21/08/2015	12:00	57	83	60	47
21/08/2015	12:15	53	67	55	46
21/08/2015	12:30	54	73	53	48
21/08/2015	12:45	53	78	52	47
21/08/2015	13:00	51	67	53	48
21/08/2015	13:15	52	77	54	48
21/08/2015	13:30	53	74	53	48
21/08/2015	13:45	54	77	54	48
21/08/2015	14:00	50	55	51	48
21/08/2015	14:15	52	71	53	46
21/08/2015	14:30	50	67	52	46
21/08/2015	14:45	51	66	52	47
21/08/2015	15:00	52	66	54	49
21/08/2015	15:15	52	69	53	47
21/08/2015	15:30	51	76	52	47
21/08/2015	15:45	51	66	52	47
21/08/2015	16:00	54	73	54	48
21/08/2015	16:15	50	61	52	46
21/08/2015	16:30	51	67	53	48
21/08/2015	16:45	50	61	52	48
21/08/2015	17:00	51	69	53	48

Date	Start Time	Noise Level dB			
		L _{Aeq}	L _{Amax}	L _{A10}	L _{A90}
21/08/2015	17:15	50	76	52	47
21/08/2015	17:30	53	78	54	48
21/08/2015	17:45	52	76	53	49
22/08/2015	08:30	52	66	54	50
22/08/2015	08:45	53	67	55	50
22/08/2015	09:00	53	73	54	50
22/08/2015	09:15	53	73	55	51
22/08/2015	09:30	54	71	55	52
22/08/2015	09:45	54	64	55	52
22/08/2015	10:00	54	65	55	52
22/08/2015	10:15	53	61	54	50
22/08/2015	10:30	55	76	55	51
22/08/2015	10:45	54	73	55	52
22/08/2015	11:00	54	68	55	51
22/08/2015	11:15	52	62	54	51
22/08/2015	11:30	52	66	53	50
22/08/2015	11:45	52	62	53	50
22/08/2015	12:00	54	76	55	50
22/08/2015	12:15	53	72	54	51
22/08/2015	12:30	52	64	54	50
22/08/2015	12:45	53	70	54	51
22/08/2015	13:00	53	66	55	52
22/08/2015	13:15	53	58	55	52
22/08/2015	13:30	56	79	55	51
22/08/2015	13:45	53	66	55	51
22/08/2015	14:00	54	73	55	50
22/08/2015	14:15	55	79	54	51
22/08/2015	14:30	57	77	56	51
22/08/2015	14:45	55	72	56	52
22/08/2015	15:00	54	62	56	52
22/08/2015	15:15	54	70	55	52
22/08/2015	15:30	54	74	56	51
22/08/2015	15:45	57	80	56	52
22/08/2015	16:00	54	67	56	52
22/08/2015	16:15	55	70	56	53
22/08/2015	16:30	55	65	56	53
22/08/2015	16:45	54	67	56	52
23/08/2015	10:00	59	64	60	57
23/08/2015	10:15	59	66	60	58
23/08/2015	10:30	58	64	59	57

Date	Start Time	Noise Level dB			
		L _{Aeq}	L _{Amax}	L _{A10}	L _{A90}
23/08/2015	10:45	61	66	62	59
23/08/2015	11:00	58	64	60	54
23/08/2015	11:15	55	62	57	53
23/08/2015	11:30	55	65	57	53
23/08/2015	11:45	54	66	56	52
23/08/2015	12:00	53	63	55	51
23/08/2015	12:15	52	61	54	50
23/08/2015	12:30	52	64	54	49
23/08/2015	12:45	53	68	54	50
23/08/2015	13:00	53	59	54	51
23/08/2015	13:15	53	61	54	51
23/08/2015	13:30	53	60	54	51
23/08/2015	13:45	53	59	55	51
23/08/2015	14:00	52	59	54	50
23/08/2015	14:15	53	67	55	51
23/08/2015	14:30	55	74	55	51
23/08/2015	14:45	53	67	54	51
23/08/2015	15:00	53	61	55	51
23/08/2015	15:15	53	62	54	50
23/08/2015	15:30	55	80	55	51
23/08/2015	15:45	53	74	54	51
27/08/2015	08:00	59	68	62	56
27/08/201	08:15	56	65	58	54
27/08/201	08:30	59	85	58	53
27/08/201	08:45	55	67	57	53
27/08/201	09:00	55	60	57	53
27/08/201	09:15	55	61	57	53
27/08/201	09:30	59	80	57	52
27/08/201	09:45	57	75	58	53
27/08/201	10:00	55	73	56	51
27/08/201	10:15	54	74	55	52
27/08/201	10:30	58	80	56	52
27/08/201	10:45	59	81	58	51
27/08/201	11:00	57	78	57	51
27/08/201	11:15	55	76	55	51
27/08/201	11:30	55	73	56	50
27/08/201	11:45	54	66	55	51
27/08/201	12:00	56	73	57	51
27/08/201	12:15	55	74	56	51
27/08/201	12:30	55	79	56	51

Date	Start Time	Noise Level dB			
		L _{Aeq}	L _{Amax}	L _{A10}	L _{A90}
27/08/201	12:45	54	61	56	52
27/08/201	13:00	56	71	58	52
27/08/201	13:15	58	80	58	52
27/08/201	13:30	58	81	56	51
27/08/201	13:45	57	78	57	52
27/08/201	14:00	55	73	56	52
27/08/201	14:15	54	65	56	52
27/08/201	14:30	54	71	55	52
27/08/201	14:45	55	75	56	52
27/08/201	15:00	55	68	57	52
27/08/201	15:15	54	62	56	52
27/08/201	15:30	53	67	55	51
27/08/201	15:45	54	75	55	51
27/08/201	16:00	53	59	55	51
27/08/201	16:15	54	62	56	52
27/08/201	16:30	53	64	55	51
27/08/201	16:45	58	80	55	51
27/08/201	17:00	53	59	55	51
27/08/201	17:15	53	62	55	51
27/08/201	17:30	54	60	55	51
27/08/201	17:45	56	76	56	52